bmcsoftware

CONTROL-O User Guide

Supporting

CONTROL-O version 6.3.01

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Contacting BMC Software

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Have the following information available so that Customer Support can begin working on your issue immediately:

- product information
  - product name
  - product version (release number)
  - license number and password (trial or permanent)
- operating system and environment information
  - machine type
  - operating system type, version, and service pack or other maintenance level such as PUT or PTF
  - system hardware configuration
  - serial numbers
  - related software (database, application, and communication) including type, version, and service pack or maintenance level
- sequence of events leading to the issue
- commands and options that you used
- messages received (and the time and date that you received them)
  - product error messages
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  - messages from related software

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About This Guide

CONTROL-O is a component member of the INCONTROL™ by BMC Software family of products. This guide is the basic publication on how to use CONTROL-O software.

This guide should be used by everyone who will be using CONTROL-O for console management at your site.

This guide contains detailed information on all CONTROL-O functions and facilities. It is comprised of the following chapters:

Chapter 1, "Introduction"

Overview of CONTROL-O introducing key concepts underlying CONTROL-O logic and providing a general description of the CONTROL-O environment.

Chapter 2, "Online Facilities"

Walkthrough guide to the CONTROL-O and IOA Online facilities. All CONTROL-O and IOA screens are displayed and discussed in logical sequence.

Chapter 3, "Rule Parameters"

Detailed description of each rule definition parameter (in alphabetical order) accompanied by examples. This is preceded by a series of sample rules that demonstrate the implementation of CONTROL-O rule definition logic.

Chapter 4, "AutoEdit Facility"

Detailed description of AutoEdit variable syntax. This facility automatically edits symbols in rule parameters at time of rule activation or during rule ordering.

Chapter 5, "CONTROL-O Servers"

Organizational considerations and procedures for managing CONTROL-O servers.

Chapter 6, "Extended Automation Mechanism"

Description of the CONTROL-O Extended Automation Mechanism (XAM). The XAM interface enables sharing of information between CONTROL-O and external user-written programs.

Appendix A, "Editing Rule Definitions in the IOA Edit Environment"

Appendix B, "KOA VTAM Exception Codes"

Appendix C, "List of Commands for Which Dealiasing Is Supported"

Conventions Used in This Guide

Notational conventions that may be used in this guide are explained below.

Standard Keyboard Keys

Keys that appear on the standard keyboard are identified in boldface, for example, **Enter, Shift, Ctrl+S** (a key combination), or **Ctrl S** (a key sequence).

WARNING

The commands, instructions, procedures, and syntax illustrated in this guide presume that the keyboards at your site are mapped in accordance with the EBCDIC character set. Certain special characters are referred to in this documentation, and you must ensure that your keyboard enables you to generate accurate EBCDIC hex codes. This is particularly true on keyboards that have been adapted to show local or national symbols. You should verify that

$ is mapped to x'5B'
# is mapped to x'7B'
@ is mapped to x'7C'

If you have any questions about whether your keyboard is properly mapped, contact your system administrator.

Preconfigured PFKeys

Many commands are preconfigured to specific keys or key combinations. This is particularly true with regard to numbered PFKeys, or pairs of numbered PFKeys. For example, the END command is preconfigured to, and indicated as, **PF03/PF15**. To execute the END command, press either the **PF03** key or the **PF15** key.

Instructions to enter commands may include

- only the name of the command, such as, enter the END command
- only the PF keys, such as, press **PF03/PF15**
- or both, such as, press **PF03/PF15,** or enter the END command

Command Lines and Option Fields

Most screens contain a command line, which is primarily used to identify a single field where commands, or options, or both, are to be entered. These fields are usually designated COMMAND, but they are occasionally identified as COMMAND / OPT or COMMAND / OPTION.

Option field headings appear in many screens. These headings sometimes appear in the screen examples as OPTION, or OPT, or O.

Names of Commands, Fields, Files, Functions, Jobs, Libraries, Members, Missions, Options, Parameters, Reports, Subparameters, and Users

The names of commands, fields, functions, jobs, libraries, members, missions, options, parameters, reports, subparameters, users, and most files, are shown in standard UPPERCASE font.

User Entries

In situations where you are instructed to enter characters using the keyboard, the specific characters to be entered are shown in this **UPPERCASE BOLD** text, for example, type **EXITNAME.**

Syntax statements

In syntax, the following additional conventions apply:

- A vertical bar (|) separating items indicates that you must choose one item. In the following example, you would choose *a*, *b*, or *c*:

  a | b | c

- An ellipsis (. . .) indicates that you can repeat the preceding item or items as many times as necessary.

- Square brackets ([ ]) around an item indicate that the item is optional. If square brackets ([ ]) are around a group of items, this indicates that the item is optional, and you may choose to implement any single item in the group. Square brackets can open ([ ) and close ( ]) on the same line of text, or may begin on one line of text and end, with the choices being stacked, one or more lines later.

- Braces ({ }) around a group of items indicates that the item is mandatory, and you must choose to implement a single item in the group. Braces can open ({) and close (}) on the same line of text, or may begin on one line of text and end, with the choices being stacked, one or more lines later.

Screen Characters

`All syntax, operating system terms, and literal examples are presented in this typeface`. This includes JCL calls, code examples, control statements, and system messages. Examples of this are:

- calls, such as

```
CALL 'CBLTDLI'
```

- code examples, such as

```
FOR TABLE owner.name USE option, . . . ;
```

- control statements, such as

```
//PRDSYSIN DD * USERLOAD PRD(2) PRINT
```

- system messages, both stand-alone, such as `You are not logged on to database database_name`, and those embedded in text, such as the message `You are not logged on to database database_name`, are displayed on the screen.

Variables

Variables are identified with *italic* text. Examples of this are:

- In syntax or message text, such as
  `Specify database` *database_name*
- In regular text, such as
  replace database *database_name1* with database *database_name2* for the current session
- In a version number, such as
  EXTENDED BUFFER MANAGER for IMS 4.1.*xx*

Special elements

This book includes special elements called *notes* and *warnings*:

NOTE

Notes provide additional information about the current subject.

WARNING

Warnings alert you to situations that can cause problems, such as loss of data, if you do not follow instructions carefully.

Information New to This Version

Where substantive additions and modifications to the content of this guide occur, revision bars have been inserted in the margin.

Additional information that is new to this version is described in Appendix C of the *INCONTROL for z/OS Upgrade Guide*.

Related Publications

CONTROL-O Conversion Guide

Concepts and steps required for converting from other console automation products to CONTROL-O.

CONTROL-O/COSMOS User Guide

A complete guide to CONTROL-O / COSMOS features, options and implementation.

CONTROL-O SolveWare Reference Guide

Predefined solutions and rules which can be used for solving commonly encountered automation problems.

INCONTROL for z/OS Administrator Guide

Information for system administrators about customizing and maintaining INCONTROL products.

INCONTROL for z/OS Installation Guide

A step-by-step guide to installing INCONTROL products using the INCONTROL™ Installation and Customization Engine (ICE) application.

INCONTROL for z/OS Messages Manual

A comprehensive listing and explanation of all IOA and INCONTROL messages and codes.

INCONTROL for z/OS Security Guide

A step-by-step guide to implementing security in INCONTROL products using the ICE application.

INCONTROL for z/OS Utilities Guide

Describes utilities designed to perform specific administrative tasks that are available to INCONTROL products.

Chapter 1

Introduction

This chapter contains the following topics:

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Main Components 34
Expanded CONTROL-O Functionality 36
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CONTROL-O Concepts 47
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Date Definition Concepts 49
System Date 49
Working Date 49
Date Standards and Date Field Formats 50
Prerequisite Condition Concepts 51
Rule Ordering, Activation, and Triggering 52

INCONTROL Products and IOA

The CONTROL-O Console Automation System is a component member of the INCONTROL by BMC Software suite of products, a fully integrated suite designed to automate, manage and streamline operations on the z/OS mainframe and other platforms. The INCONTROL family of products also includes client/server products that facilitate the automation of other platforms.

IOA

The Integrated Operations Architecture (IOA) is at the heart of the INCONTROL family of products. IOA has a common core of shared code as the foundation of its architecture design. INCONTROL's IOA environment has several inherent design advantages, including a common user interface and a shared data repository. A key feature of the IOA environment is its integrated application design, which includes:

- Integrated User Notification
- Management by Exception
- Integrated Scheduling
- Interdependency and Interrelationship Handling
- Common Help Facility
- Integrated Management Reporting
- Common Method for Sharing Information
- Unified Installation and Maintenance
- Unified Security Implementation
- Open Interface Design

INCONTROL

The INCONTROL family of products includes those shown in Table 1:

Table 1 List of INCONTROL Products

Product	Description
CONTROL-M	**Automated Production Control and Scheduling System** Manages and automates the setup, scheduling and execution of jobs in the data center.
CONTROL-M/Restart	**Restart Management System** Automates the activities that must be performed when restarting failed jobs, including the scratching and uncataloging of data sets created by failed jobs.
CONTROL-M/Tape	**Removable Media Management System** Increases utilization of removable media and controls retention periods. Prevents misuse of media, and provides tape library and vault control.
CONTROL-M/Analyzer	**Automated Information Integrity System** Performs in-stream validation, accuracy, and reasonability checks on information used by data center production tasks (for example, reports, databases).
CONTROL-D	**Output Management System** Automatically schedules and controls every aspect of report processing and distribution, including report decollating, bundling, printing, online viewing, and archiving.
CONTROL-V	**Quick Access Archive Viewing System** Provides online access to archived reports and documents by indexed data retrieval.
CONTROL-D/ Page On Demand	**Report Retrieval and Display System** Enables end users to retrieve and view pages of reports that reside on mainframe storage in real time. Indexed reports can be retrieved by index name and value. AFP and XEROX reports can also be retrieved and displayed using CONTROL-D / Web Access Server or CONTROL-D / Page On Demand API.
CONTROL-D/ Image	**Image Output Management System** Enables output from commercial imaging equipment to be imported into either CONTROL-D or CONTROL-V for decollation, distribution and viewing, and into CONTROL-V for archiving and indexed retrieval.
CONTROL-O	**Console Automation System and Desired State Monitoring System** Monitors and automatically responds to messages, commands, and data set events, as well as various other system events. The CONTROL-O / COSMOS feature allows for status monitoring while maintaining all critical system objects in a desired and ideal status.

Functional Approach

CONTROL-O automatically detects messages, commands, and events, and responds by performing console actions according to predefined user specifications.

- Some examples of message, command, and event criteria that can be used to trigger a response from CONTROL-O are

  — a specific message containing a specific string
  — an action threshold
  — a day, time, or date
  — a message issued by a specific job
  — a data set event
  — OMEGAMON exception event

- Some of the actions CONTROL-O can perform in response to detected messages, commands and events are

  — suppress a message
  — reply to a WTOR message
  — modify the text of a message
  — reroute a message
  — change the descriptor code of a message
  — issue an operator command
  — initiate a job or a started task
  — notify the user of a system event
  — perform a TSO command
  — perform a KeyStroke OpenAccess script to automate VTAM applications KeyStroke OpenAccess scripts are described in "KOA Recording" on page 203

CONTROL-O has many facilities and components. Working together, they serve to automate the data center. This chapter introduces CONTROL-O facilities and components from a functional perspective, beginning with the major components that comprise the heart of CONTROL-O and progressing to the less central components which enhance the functionality of CONTROL-O.

Main Components

The main components essential to CONTROL-O are

- CONTROL-O rule definitions
- CONTROL-O monitor

CONTROL-O Rule Definitions

A CONTROL-O rule is a set of parameters that define actions to be performed upon the detection of specified message, command and event criteria. When message, command and event criteria are detected, the rule is triggered (that is, the actions specified in the rule are performed).

Each rule definition contains the sections shown in Table 2:

Table 2 Rule Definition Sections

Section	Description
Message/Event Selection Criteria	The message, command, or event that, when detected, triggers the rule.
General Parameters	General information about the rule, such as its description and security mode.
Action Parameters	Actions to be performed when the rule is triggered.
Basic Scheduling Parameters	Days and dates on which a CONTROL-O rule is eligible for triggering.
Runtime Scheduling Parameters	Conditions that must exist before a CONTROL-O rule is eligible for triggering.

Each rule only needs to be defined once. (The mechanism used to define CONTROL-O rules is discussed later in this chapter.) Once defined, the rule definition is saved. It can be modified later on as required, and the changes saved.

Rule definitions are stored in members in partitioned data sets (libraries) as follows:

- Multiple rule libraries can be defined.
- Multiple rule tables are stored together in partitioned data sets called rule libraries.
- Rule definitions for related topics (for example, IPL or CICS) are generally stored together in a single member called a “rule table.”

The CONTROL-O Monitor

The CONTROL-O monitor is a started task that handles rule processing. It detects messages, commands and events in the z/OS environment, and triggers rules accordingly.

- It operates continuously 24 hours a day. It constantly scans the environment for messages, commands, and events that trigger predefined actions, that is, CONTROL-O rules.

- It interacts with the CONTROL-O subsystem to manage all CONTROL-O activity, and performs housekeeping tasks at regular intervals.

Expanded CONTROL-O Functionality

Having explained the main components of CONTROL-O, we can now build upon this foundation and describe a number of the facilities and components that enhance the CONTROL-O functionality.

Automated Loading of Rules

CONTROL-O rules are normally loaded when CONTROL-O is activated. A predefined list of rule tables is scanned for rules that should be activated for the current day or date. Rules with day or date specifications, meaning their basic scheduling criteria, that are met, are loaded into memory.

CONTROL-O rules should be automatically reloaded each day through the Daily rule. A Daily rule orders a list of rule tables each day at a specified time. A sample Daily rule (DAILY) is supplied in the CONTROL-O Rules library.

Message Manipulation

One of the primary functions of CONTROL-O is message manipulation. Messages sent to the console can be suppressed, forwarded, translated, and so on, depending on the actions specified in CONTROL-O rules. A message can also be used to trigger other actions, such as forcing a CONTROL-M job, or issuing an z/OS command.

CONTROL-O can also send WTO and WTOR messages:

- WTO messages are sent through the Shout facility, described immediately below.
- WTOR messages are sent through a DO ASKOPER statement, described in "DO ASKOPER: Automated Console Action Parameter" on page 321.

Operator Notification (Shout Facility)

CONTROL-O can send messages (known as Shout messages) to specified locations in response to detected messages, commands, or events. For each Shout message to be sent, the user defines the message, the degree of urgency, and the location to which the message should be sent.

For more information on the Shout facility, see "DO SHOUT: Automated Console Action Parameter" on page 387.

Monitoring of Conditions

CONTROL-O constantly scans a list of user-defined conditions called the IOA Conditions file. Conditions in this file can be set by CONTROL-O or any other INCONTROL product at your site. A rule is triggered by the detection of conditions (specified in the runtime criteria of the rule) that did not previously exist, or the absence of a condition that previously existed.

AutoEdit Facility

The AutoEdit facility enables inclusion of user-defined variables and system variables in rule definitions. AutoEdit variables are generally specified in place of hard coded values which change frequently, such as the current date. The variables are resolved (that is, they are replaced with the appropriate values) during rule processing. The use of AutoEdit variables can eliminate the need to edit and update rules once they have been defined.

User-defined variables that are defined as Global variables can be used by other CONTROL-O rules triggered on the same system.

User-defined variables that are defined as Sysplex-wide variables can be used by other CONTROL-O rules triggered anywhere in the Sysplex.

For added flexibility, various AutoEdit functions and control statements can be used to manipulate variables and constants anywhere AutoEdit expressions are used.

For more information on the AutoEdit facility, see Chapter 4, “AutoEdit Facility.”

IOA Variable Database Facility

The IOA Variable Database Facility enables creation and modification of AutoEdit Variable databases. These databases are used to hold Global AutoEdit variables, which can be created, accessed and updated by CONTROL-O rules and KOA scripts. When Sysplex support (the XAE Facility) is installed, these variable databases can be accessed by different instances of CONTROL-O across the Sysplex.

NOTE

When the CONTROL-M Event Manager (CMEM) is installed, variables from a specific variable database called IOAVAR allow for enhanced sharing of variables between CONTROL-O rules and CONTROL-M jobs.

The IOA Variable Database Facility is accessed online by means of Option IV of the IOA Primary Option Menu.

KeyStroke Languages

KeyStroke languages are languages that can be used to simulate, in batch, the keystrokes of the user. The types of KeyStroke languages that can be used with CONTROL-O are shown below.

KeyStroke Language	Description
KSL	A general purpose language which simulates, in batch, keystrokes entered in the IOA Online facility. KSL language statements are specified in “programs” called scripts. KSL scripts can be used to automate routine tasks, and to generate reports based on IOA and product-specific repository files.
KOA	An extension of KSL. KOA (Keystroke Open Access) includes all KSL commands and functions as well as additional commands used for interfacing with VTAM applications. With KOA, the user can automate 2-way communication with any VTAM application, such as performance monitors or NetView.

For more information on KeyStroke Language, refer to the *KeyStroke Language (KSL) User Guide.*

Accumulating Statistics

CONTROL-O accumulates statistics about rule processing, through the Message Statistics facility. The Message Statistics facility records all messages and commands detected by CONTROL-O, and allows them to be sorted and selected based on various criteria.

By studying information provided by the Message Statistics facility, you can evaluate console automation at your site and what can be done to improve it. For example, if you determine that certain messages are issued frequently but are not responded to by CONTROL-O, you may want to define CONTROL-O rules that will handle, or suppress, those messages automatically and in this way, save the operator valuable time.

For more information, see “Message Statistics Screen” on page 125.

Controlling Availability of Resources (Objects)

CONTROL-O / COSMOS is an integral feature of CONTROL-O. CONTROL-O / COSMOS manages the status of objects in the computing environment, such as started tasks and terminals. CONTROL-O / COSMOS periodically checks each object in the computing environment and determines if its current status is the desired status. If necessary, CONTROL-O / COSMOS takes steps to ensure that the desired status is established.

CONTROL-O / COSMOS also simplifies the automation of your system startup and shutdown.

Various online screens enable manipulation of objects controlled by CONTROL-O / COSMOS.

For more information on CONTROL-O / COSMOS, see the *CONTROL-O/COSMOS User Guide*.

IOA Log Facility

Messages issued by CONTROL-O are written in the IOA Log file. The IOA Log file is a repository of messages issued by all INCONTROL products. Through the IOA Log facility, the user can examine messages issued by CONTROL-O during rule processing.

Operation Modes

CONTROL-O rules can be run in the operation modes shown in Table 3.

Table 3 CONTROL-O Operation Modes

Mode	Description
Production mode	All specified actions within a rule are performed, but are not recorded in the CONTROL-O Automation Log.
Test mode	Console actions are not performed, but are recorded in the CONTROL-O Automation Log. Global variables are updated.
Log mode	All specified actions within a rule are performed (as in production mode) and intercepted events and actions are recorded in the CONTROL-O Automation Log.

Modes can be specified globally for all CONTROL-O operations or for specific rules. For more information, see "MODE: General Parameter" on page 430, and the CONTROL-O LOG operator command in the CONTROL-O chapter of the *INCONTROL for z/OS Administrator Guide*.

Utilities

Utilities provided with CONTROL-O are used to perform a variety of management functions and generate reports that assist in the efficient use of CONTROL-O. These utilities are described in the *INCONTROL for z/OS Utilities Guide*.

Rule Scheduling Through Calendars: IOA Calendar Facility

You can simplify the specification of scheduling criteria for rules by using calendar definitions. A calendar definition consists of a defined schedule (for example, Mondays through Fridays in each week in each month) which can be applied to rules.

Calendars are defined in the IOA Calendar facility. Each calendar is assigned a unique name, which can be specified in rule definitions. A particular calendar, or schedule, only needs to be defined once.

Specification of the name of a calendar in rule definitions causes that calendar to be used to schedule those rules.

Two types of calendars can be defined:

- Regular
- Periodic

Regular calendars contain schedules that can be easily defined using Basic Scheduling parameters. These calendars consist of scheduling dates or days (of the week) which can be fixed according to monthly patterns.

Example 1

- WEEKDAYS – schedules rules each Monday through Friday in each month
- WEEKENDS – schedules rules each Saturday and Sunday in each month
- QUARTERLY – schedules rules on the last day of each quarter: March 31, June 30, Sept. 30, Dec. 31

Regular calendars are useful when a large number of rules have the same schedule. The schedule can be defined once in a calendar and the calendar can be specified in relevant rules to individually define that schedule in each rule definition.

Periodic calendars are useful in situations where basic scheduling criteria would be difficult to define because they do not easily conform to fixed day or date of the week and month breakdowns.

Example 2

PAYCAL – Schedules missions, for example, payroll, every other Wednesday. Scheduling occurs on the first, third, and (if there is one) fifth Wednesday of some months. Scheduling occurs on the second and fourth Wednesday of other months.

The IOA Calendar facility is described in “IOA Calendar Facility” on page 237.

Automation in Different Environments

CONTROL-O can interact with the various products in use at your site to provide a wide variety of solutions to common problems and to automate many routine tasks at your site. Some components with which CONTROL-O interacts are

- CICS Automation
- JES2 and JES3
- IMS
- CONTROL-O Extended Automation Mechanism (XAM)
- OMEGAMON products
- SMS
- job SYSOUT processing

CICS Automation

CONTROL-O can automate the operation of CICS, controlling multiple CICS regions from one terminal. About 50% of all CICS messages are routed to CICS transient queues and not to the MVS console. These messages can be automated in the same way as messages routed to MVS consoles.

CONTROL-O CICS automation can

- manage all CICS messages
- manage the availability, serviceability, and recoverability of CICS
- start and stop CICS regions and change startup parameters
- inform CONTROL-M of CICS status
- instruct CONTROL-M to submit a job that processes a file that was closed under CICS

JES2 and JES3

CONTROL-O can automate JES2 and JES3 operations. JES2 and JES3 messages and commands are automated in the same way as messages and commands routed to MVS consoles.

IMS

CONTROL-O can automate the operation of IMS. Messages routed to the IMS Master terminal can be managed in the same way as messages routed to MVS consoles.

The automation of IMS by CONTROL-O can

- manage IMS error and warning messages
- manage the availability, serviceability and recoverability of IMS
- start and stop IMS/DC, and change startup parameters
- inform CONTROL-M of IMS/DC status
- trigger CONTROL-M to submit an IMS recovery job
- receive performance data through a KOA Script, and act accordingly

SMS

SMS includes definitions referenced by the SMS ACS routines. When SMS is implemented, any change to a definition may affect any or all of the CONTROL-O rules at your site. To prevent this, the SMS administrator can configure CONTROL-O rules to override SMS ACS routines, thereby forcing storage methods as defined by CONTROL-O.

The SMS administrator can create and test SMS definitions without influencing other SMS definitions. To determine the behavior of SMS definitions, CONTROL-O users can inspect the trace of the SMS rules in the Automation Log.

In addition, CONTROL-O can add automation to SMS processing that is not available through SMS ACS routines.

Job SYSOUT Processing

Many applications write messages to a Job SYSOUT data set and use it as their internal log. CONTROL-O can intercept messages that are written to Job SYSOUT data sets.

CONTROL-O Extended Automation Mechanism

The XAM (Extended Automation Mechanism) interface of CONTROL-O enables you to share information between an external environment and CONTROL-O, using CLIST, REXX, user-written programs, and so on. The XAM interface can also be used to issue requests that trigger CONTROL-O actions. Actions that can be requested are

- AutoEdit Expression Resolution
- AutoEdit Local Variable Setting
- AutoEdit Global Variable Setting
- CONTROL-O Rule Triggering

For more information, see Chapter 6, “Extended Automation Mechanism.”

Communication with Other Systems

CONTROL-O can issue messages and commands on other systems, and it can respond to messages and commands from other systems.

Particular responses to messages can be made dependent on which system or console issued the message.

CONTROL-O directs actions to be performed on other systems through the SYSTEM subparameter or by the %%$COMMSYS system variable in DO COMMAND, DO COND, DO DISPLAY, DO FORCEJOB, DO RESOURCE, DO RULE, DO SHOUT and DO CTD REQ statements.

- If the systems are members of a Sysplex environment, CONTROL-O routes action requests to the specified member of the Sysplex environment, using the extended MCS console for DO COMMAND and DO DISPLAY, and XCF services for DO RULE.

- If the systems are connected through VTAM or TCP, CONTROL-O uses the IOA gateway to transfer action requests to the specified system, and waits for the response if necessary, for example, if `WAITRESP=Y` is specified in a DO COMMAND statement.

MAINVIEW® Alarm Manager

The MAINVIEW Alarm Manager inspects data collected by the MAINVIEW line of monitors for values indicating a potential performance problem. It then issues a warning or informs the user about the problem, as specified in the alarm definition.

For more information, see "ON MVALARM: Message/Event Selection Parameter" on page 468.

Online User Interface

Until now we have seen how CONTROL-O automates console management and we have discussed a number of the available facilities which enhance the functionality of CONTROL-O.

However, as mentioned earlier, CONTROL-O provides an online user interface which enables the user to

- interface with most of the previously described facilities
- intervene in the processes of console management
- immediately access up-to-date information on console automation processing

The online user interface is provided through online facilities that are accessed through the IOA Primary Option menu.

Certain online facilities are unique to CONTROL-O, and other facilities are shared by many or all INCONTROL products.

All IOA and CONTROL-O Online facilities are described in detail in Chapter 2, "Online Facilities." They are outlined briefly on the following pages.

NOTE

Your INCONTROL administrator can limit the options displayed on a user-by-user basis, and can alter option numbers and customize option descriptions. Product-supplied default options are discussed in this overview.

Rule Definition Facility

The CONTROL-O Rule Definition facility is accessed through Option OR of the Primary Option menu. It is the main online facility for creating, defining, modifying, and deleting the following:

- rule libraries
- rule tables
- rule definitions

In addition, this facility can be used to

- edit a rule definition
- manually order or force a rule or rule table

  Ordering activates a rule only if its basic scheduling criteria are met. Forcing activates a rule regardless of its basic scheduling criteria.

Rule Status Screen

The Rule Status screen is accessed through Option OS of the IOA Primary Option menu. It displays all rules currently loaded into memory and their statuses. The various fields in this screen provide information on

- whether or not the rule is currently being processed
- the number of times the rule has been triggered
- the rule type
- the rule location (that is, the member and library containing the rule definition)
- the mode, owner, and runtime security of the rule

A show option window can be used to limit the information displayed in this screen, according to the contents of the various fields for each rule.

Message Statistics Facility

The Message Statistics facility is accessed through Option OM of the IOA Primary Option menu. It accumulates statistical information on messages and commands issued in the system. This information is stored in a data set which is created during CONTROL-O installation and which is unique to each CONTROL-O system.

Automation Log

Automation information is stored in the Automation Log, which is accessed through Option OL in the IOA Primary Option menu.

The Automation Log facility accumulates and displays automation information from all input available to CONTROL-O, including console, IMS, CICS messages, CONTROL-O events, CONTROL-O internal messages, application internal logs, and rule traces.

Comprehensive SHOW selection criteria allow the user to query the log for analysis and statistical purposes. This analysis and statistical information is especially useful when planning, implementing and checking console automation.

Users may also choose to switch between viewing the current log, archived logs, or logs of other systems within a shared DASD environment, without interfering with the ongoing accumulation and display of messages within any of these logs.

In a Sysplex environment, viewing of the OPERLOG can be synchronized with the viewing of the Automation Log.

Automation Options

Automation Options are a set of operator productivity tools that can be activated online. A menu of Automation Options is accessed through option OA in the IOA Primary Option menu. The Automation Options shown in Table 4 are provided with CONTROL-O.

Table 4 CONTROL-O Automation Options (part 1 of 2)

Option	Description
COMMAND	Allows operator commands to be entered, and displays the command responses.
CONSOLES	Displays the contents of active MCS consoles according to a specified console ID or name. The Console Display screen is a replica of the specified console.

Table 4 CONTROL-O Automation Options (part 2 of 2)

Option	Description
ENQ	Displays enqueue information, which is information about jobs that hold resources, and jobs that are waiting for resources. This option facilitates the tracking of resource contention problems between jobs so that when conflicts are resolved, overall efficiency of the site is improved.
GLOBALS	Displays CONTROL-O Global variables and their values according to specified selection criteria.
OPERATOR	Displays a submenu of preset operator commands. Upon selection, commands are entered and the responses are displayed.
SAMPLES	Sample implementations of Automation Options.
SERVERS	Allows online tracking and control of CONTROL-O servers. Servers increase the efficiency and enhance the performance of TSO and KOA requests by eliminating the need to set up an environment for execution of each TSO or KOA request.
SUBSYS	Displays a list of the MVS subsystems, their statuses, and their active functions.

KOA Recorder Facility

The KOA Recorder facility records manually performed keystrokes and automatically generates a KOA script. Generation of a KOA script using this facility is much easier than writing the KOA script in a file.

CONTROL-O/COSMOS Status Monitoring System

The CONTROL-O / COSMOS Status Monitoring System is a feature of CONTROL-O, offering monitoring of objects within the system and maintaining them in specified desired statuses. CONTROL-O / COSMOS is accessed through Option OC of the IOA Primary Option menu. For more information, see the *CONTROL-O/COSMOS User Guide*.

IOA Conditions/Resources Screen

The IOA Conditions / Resources screen is accessed through Option 4 of the IOA Primary Option menu. It displays information from the IOA Conditions file, which contains the list of all existing prerequisite conditions, and the CONTROL-M Resources file, which contains the list of Quantitative resources and Control resources. The IOA Conditions / Resources screen enables the user to

- view IOA prerequisite conditions
- view CONTROL-M Quantitative resources
- add or delete prerequisite conditions or resources
- change the available quantity of Quantitative resources

IOA Log Screen

IOA messages are written to the IOA Log file. Messages can be viewed using Option 5 in the IOA Primary Option menu. These messages record every significant event in the life of jobs, started tasks, missions, rules, and similar entities under the control of INCONTROL products. This includes messages generated for normal processing and any error conditions encountered during processing. The IOA Log file also contains messages directed to the IOA Log from the Shout facility.

The IOA Log file stores a limited number of messages, as specified by means of an installation parameter. Each new entry in the IOA Log file overwrites the oldest existing entry. The user can filter IOA Log file contents displayed in the IOA Log screen, using a Show Screen filter window that allows specification of viewing criteria for each field in the IOA Log screen.

IOA Calendar Facility

The IOA Calendar facility is accessed through Option 8 of the IOA Primary Option menu. IOA calendars allow definition of common scheduling patterns that then simplify the specification of basic scheduling criteria in rule definitions. The IOA Calendar facility enables the user to create, define, modify, and delete IOA calendars.

CONTROL-O Concepts

Having discussed CONTROL-O from a functional viewpoint, and having briefly outlined the online user interface to CONTROL-O, it is now worthwhile to discuss certain important concepts in CONTROL-O functioning.

IOA Core and the CONTROL-O Repository

A differentiation is made between files belonging to a particular product such as CONTROL-O, and IOA files that are shared among INCONTROL products. Shared IOA files are collectively referred to as the IOA Core. The IOA Core consists of the files shown in Table 5.

Table 5 IOA Core Files

File	Description
IOA Log File	File in which all messages issued by INCONTROL products are recorded.
IOA Conditions File	File listing available conditions identified and tracked by the CONTROL-O monitor.
IOA Manual Conditions File	File listing prerequisite conditions that must be added manually. These are prerequisite conditions required by CONTROL-M jobs or CONTROL-D missions, and which are not automatically added by other jobs or missions in the Active Jobs or Missions files.
IOA Calendar Tables	Files containing IOA calendar definitions.
Dynamic Destination Table	File containing a list of destinations for messages issued by the IOA Shout facility.
Mail Destination Table	File containing a list of mail destinations for messages issued by the IOA Shout facility.
SNMP Destination Table	File containing a list of SNMP destinations for messages issued by DO SNMP action.

Files belonging to a particular product are called the “repository” of that product. The CONTROL-O repository consists of the files shown in Table 6.

Table 6 CONTROL-O Repository Files (part 1 of 2)

File	Description
Rule Tables	Tables containing CONTROL-O rule definitions.
Message Statistics File	List of all messages and commands detected in the system, and various information about each message, such as frequency, and whether it was suppressed.
Automation Log	Automation information about all input available to CONTROL-O. This includes the following: ■ messages and commands of the console, IMS, CICS, and internal logs of monitored applications ■ CONTROL-O internal messages ■ CONTROL-O rule traces

Table 6 CONTROL-O Repository Files (part 2 of 2)

File	Description
Global AutoEdit Library	A list of user-defined Global variables. The members of this library are loaded when CONTROL-O is started, and they can be updated or reloaded using various operator commands. For more information about Global variables, see "Global Variables" on page 561 and the CONTROL-O chapter of the *INCONTROL for z/OS Administrator Guide*.
AutoEdit Variable Database Files	A set of three IOA Access Method files containing all information about existing AutoEdit Variable databases. Variable databases are loaded when CONTROL-O is started and can be updated or reloaded using various operator commands.

Variable databases can also be modified through the Online Variable Database Definition facility (Screen IV), which is described in "IOA Variables Database Facility" on page 203.

Date Definition Concepts

The following types of date definitions are recognized by CONTROL-O:

- system date
- working date

System Date

The date as supplied by the operating system. This date should reflect the actual calendar date that starts and ends at midnight.

Working Date

Many sites do not use midnight as the formal time for changing to a new date. For example, a site may determine that all processing performed between the hours of midnight and 6:00 a.m. belongs to the previous day. In this case, the installation working date at the site changes at 6:00 a.m., not at midnight.

The working date, which is the time at which the date changes at the site, is defined in the CONTROL-O installation parameters. The Daily rules are generally triggered at the beginning of the working day.

Date Standards and Date Field Formats

Date standards and date field formats use either Gregorian or Julian dates.

Gregorian Dates

Gregorian dates are indicated in this guide by the symbols shown in Table 7.

Table 7 Gregorian Date Notation

Symbol	Description
dd	Day of the month (from 01 through 31)
mm	Month (from 01 through 12)
yy	Year. Last two digits of the year.
	Note: If the last two digits in the specified year are a number less than 56, INCONTROL presumes that the year is in the 21st century. For example, if yy=15, the year 2015 would be presumed. Otherwise, INCONTROL presumes that the year is in the 20th century. For example, if yy=80, the year 1980 would be presumed.
yyyy	Year. 4-digit year

Whether a field holds a 4-character date (month and day), a 6-character date (month, day and 2-digit year) or an 8-character date (month, day and 4-digit year) depends on the field. However, the format of the 4-character, 6-character or 8-character date depends on the installation-defined date standard.

INCONTROL products support three date standards for Gregorian dates. Each standard has a 4-character format, a 6-character format, and an 8-character format. Only one Gregorian date standard is defined at any site.

These supported Gregorian date standards are described in Table 8.

Table 8 Supported Gregorian Dates

Standard	4-Character Date	6-Character Date	8-Character Date
MDY	mmdd	mmddyy	mmddyyyy
DMY	ddmm	ddmmyy	ddmmyyyy
YMD	mmdd	yymmdd	yyyymmdd

Julian Dates

Julian dates (also supported by INCONTROL products) are indicated in this guide by the symbols shown in Table 9.

Table 9 Julian Date Notation

Symbol	Description
jjj or ddd	Day of the year (001 - 365 or 366, as appropriate for the year)
yy	Last two digits of the year
yyyy	Four digits of the year

Julian date fields have either three, five, or seven characters. Whether a Julian date field holds a 3-character date (day of year only), 5-character date (day of year and 2-digit year) or a 7-character date (day of year and 4-digit year) depends on the field definition. However, the format of the date depends on the installation-defined date standard.

For example, the Julian date for the calendar date of 28 February 2000 would be represented in jjj or ddd format as 059, in yyjjj or yyddd format as 00059, and in yyyyjjj or yyyyddd format as 2000059.

Prerequisite Condition Concepts

The prerequisite condition concept is one of the key concepts of CONTROL-O processing.

A prerequisite condition is a user-defined descriptive name given to a certain situation or condition. Prerequisite conditions can be specified in either of the following types of statements in a CONTROL-O rule definition.

Table 10 Prerequisite Condition Statements

Statement	Description
DO COND statements	Used to set or clear a prerequisite condition.
IN statements	A Runtime Scheduling parameter used to make the triggering of a rule dependent on the existence or nonexistence of a specified prerequisite condition.

Prerequisite conditions enable the establishment of rule dependencies. They can also serve as a method of communication between CONTROL-O and the other INCONTROL products at your site.

CONTROL-O uses prerequisite conditions to track the statuses of various aspects of the environment. When the status of a specific aspect of the environment changes, a CONTROL-O rule can set or delete a condition to indicate this and subsequently trigger rules whose execution is dependent on the status of this condition.

Example

To initiate CICS startup, add prerequisite condition CICS-START to the IOA Conditions file through use of a DO COND statement.

A rule dependent on this prerequisite condition is triggered to stop all initiators in the system. This prevents new jobs from competing with CICS for the resources of the system.

After a few minutes, the initiators that were stopped during CICS startup can be restarted.

Additional Aspects of Prerequisite Condition Functioning

Prerequisite conditions are entirely under user control. Rule dependencies do not have to be as simple as the above example illustrates. An almost unlimited number of conditions and rule dependencies can be created.

- Rule execution can be dependent on more than one prerequisite condition.
- Rules can add and/or delete more than one prerequisite condition.
- The same prerequisite condition can be added by more than one rule (caution should be used).
- The same prerequisite condition can be used as an IN condition for more than one rule.

Prerequisite Condition Dates

IN statements and DO COND statements each provide a field used to specify a date for each prerequisite condition. A DO COND prerequisite condition which is added with a particular date cannot satisfy an IN statement in which this prerequisite condition is specified with a different date.

Rule Ordering, Activation, and Triggering

CONTROL-O rule utilization consists of three phases. CONTROL-O rules are ordered, activated, and triggered as described below.

When CONTROL-O is brought up, rules in tables specified in the CONTROL-O procedure are automatically ordered depending on their basic scheduling criteria. Rule tables can be also manually ordered or forced at any time through the Table List screen or an operator command. The ordering or forcing of rules places them in the memory of the CONTROL-O monitor.

Ordered or forced rules are now eligible for activation. CONTROL-O monitors the IOA environment and activates rules when their runtime scheduling criteria are satisfied. Runtime scheduling criteria can, for example, make rule activation dependent upon specific prerequisite conditions, or they can limit the activation of the rule to a specific time period. For more information, see "Runtime Scheduling Parameters" on page 115, and "Runtime Scheduling Parameters – Summary" on page 269.

Activated rules are eligible for triggering. A rule is triggered by an occurrence of the message, command or event specified in the ON statements in the rule. When a rule is triggered, the actions defined in the rule are performed. For more information, see "ON Statement: Message/Event Selection Parameter" on page 434.

NOTE

Only a currently activated rule can be triggered. If the runtime scheduling criteria for an activated rule are no longer satisfied, the rule is deactivated, and cannot be triggered.

Chapter 2

Online Facilities

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Overview

The Online facility is the basic means of communication between the user and CONTROL-O.

Online rule definition gives you the ability to define and modify rule definitions in the CONTROL-O environment.

The Message Statistics screen displays statistics for messages and commands intercepted by CONTROL-O.

The Rule Status screen selectively displays the statuses of rules that have been loaded into memory by CONTROL-O. The Rule Status screen can also be used to hold, delete or free rules.

Automation Options that display, modify, or act upon IOA components or system components can be selected. Customized Automation Options can be designed and added to the Automation Options provided by CONTROL-O.

The Automation Log screen displays the stream of messages and commands captured by CONTROL-O together with additional information relevant to the automation process.

The IOA Variable Database Definition facility enables definition and modification of databases containing Global AutoEdit variables. Variable databases are used extensively by CONTROL-O / COSMOS. For more information, see the *CONTROL-O/COSMOS User Guide*.

The CONTROL-O / COSMOS Status screen displays resources controlled by CONTROL-O / COSMOS. For more information, see the *CONTROL-O/COSMOS User Guide*.

The KOA Recorder facility captures manually entered keystrokes and generates a KOA script.

The following pages describe the main features of the Online facility.

IOA Features

This section discusses the IOA features common to all INCONTROL products.

General IOA Features

General IOA features include:

- Customization
- Environment Support
- Terminal Support
- Special Character Usage on Terminals
- Color Support
- Prefixing
- Character Masking

Customization

IOA screens, constants, messages, colors, commands and PFKey definitions can be site-modified to adapt them to local needs. For further details see the *INCONTROL for z/OS Installation Guide*.

INCONTROL products can be customized globally, that is, for the whole site, using the INCONTROL Installation and Customization Engine (ICE), according to profile variables defined during installation.

In addition, INCONTROL products can be customized to respond differently to individual users if these profile variables are specified in User profile members.

For example, depending on the setting of a variable in a particular User profile member, upon exit from a screen in which changes have been requested, this INCONTROL product may either perform the requested changes automatically, or display a confirmation window before performing the changes.

Customization issues are discussed in the IOA administration chapter of the *INCONTROL for z/OS Administrator Guide*.

NOTE

Due to customization, screens and examples illustrated in this guide may differ from the ones used at your site.

Environment Support

The Online facility can be activated under the following environments:

- TSO (native)
- TSO / ISPF
- ROSCOE / ETSO
- CICS
- VTAM
- IMS / DC
- IDMS / DC
- COM-PLETE

Cross memory interfaces to the Online monitor are optional under native TSO, TSO / ISPF and ROSCOE / ETSO. They are always used under the other environments.

There are slight differences in the operation of the online facility under the different environments. Special notes are provided in this guide where applicable.

Terminal Support

IOA supports the following models of IBM 3270 terminals:

- Model 2 — 24 lines, 80 columns
- Model 4 — 43 lines, 80 columns
- Model 3 — 32 lines, 80 columns
- Model 5 — 27 lines, 132 columns

NOTE

When using the IOA online facility under IMS / DC and IDMS / DC, all model types display 24 lines and 80 columns.

IOA adjusts to the screen size to use the maximum available data area on the screen.

Special Character Usage on Terminals

In certain cases, special keyboard characters, such as $, #, and @, are assigned special meanings. The characters specified appear on standard American terminals but may not be available on other keyboards. In addition, some special characters on your keyboard may be assigned different hexadecimal values than the ones recognized by IOA. Special keyboard mapping requirements, and a complete discussion of the conventions used in this guide, are shown in “Conventions Used in This Guide” on page 26.

Color Support

Table 11 Special Characters and Hexadecimal Assignments

Character	Hexadecimal Assignment
$	5B
	Note: On British keyboards, use the £ (pound) symbol.
|	4F
@	7C
¬	5F
!	5A
\	E0

When INCONTROL products are activated from a screen with extended 7-color support, IOA makes extensive use of the color attributes of the screen.

Like all screen attributes, the color attribute for each field is defined externally to the program and can be locally modified by the site.

NOTE

IOA does not automatically recognize IMS/DC and IDMS/DC terminals as supporting extended color attributes. If your IMS/DC or IDMS/DC terminal supports extended color attributes and you want IOA to recognize this, refer to the IOA administration chapter of the *INCONTROL for z/OS Administrator Guide* for more information.

At this time, IOA does not support extended color attributes under COM-PLETE.

Due to ISPF characteristics, color changes cannot occur in adjacent columns but must be separated by an attribute byte without color, that is, black. Therefore, some IOA screens have a different appearance under ISPF than under other online environments, such as native TSO and CICS.

Prefixing

For fields that automatically support prefixing, selection strings are always treated as prefixes. Selection is made if a segment of the text beginning with the first letter (that is, any prefix) matches the selection criteria.

Examples

Assume the following names exist: A3, A4, M, M01, M03, M12, M13, M22, M23, M30, M33, M103, M135, M301.

Table 12 Prefixing Examples

Entry	Matching Values
blank	All of the above values
A	A3, A4
M	M, M01, M03, M12, M13, M22, M23, M30, M33, M103, M135, M301
M1	M12, M13, M103, M135
M13	M13, M135

If a field supports prefixing, this is indicated in its description.

Character Masking

For fields that support masking, mask characters function as follows:

- * represents any number of characters (including no characters).
- ? represents any one character.

For fields that do not automatically support prefixing, a prefix value can be specified by ending the selection string with an asterisk.

Examples

Assume the following names exist: A3, M, M3, M01, M03, M13, M23, M33, M103, M435, M2243.

Table 13 Masking Examples

Entry	Matching values
*	All the above values
M?3	M03, M13, M23, M33
M?3*	M03, M13, M23, M33, M435
M??3	M103
M*3	M3, M03, M13, M23, M33, M103, M2243
M*	M, M3, M01, M03, M13, M23, M33, M103, M435, M2243 Since the last character in this example is *, M is treated as a prefix.

If a field supports masking, this fact is indicated in its description.

IOA Entry Panel

Enter the IOA online facility according to the instructions of your INCONTROL administrator. Upon entering the IOA online facility, the IOA Entry Panel may be displayed.

NOTE

Display of the IOA Entry Panel is optional. If your INCONTROL administrator determined that the entry panel is bypassed, the IOA Primary Option menu, which is discussed in the following section, is displayed.

Figure 1 IOA Entry Panel

```
---------------------------  IOA ENTRY PANEL  ----------------------------



          +-----------------------------------------------------------+
          |                                                           |
          |          USER ID      ===>                                |
          |                                                           |
          |          PASSWORD     ===>                                |
          |                                                           |
          |          NEW PASSWORD ===>           ===>                 |
          |                                                           |
          +-----------------------------------------------------------+





      PLEASE FILL IN USER ID AND PASSWORD AND PRESS ENTER            18.30.18
```

Type your user ID and password and press **Enter**. If you enter a correct user ID and password, the IOA Primary Option menu is displayed.

The IOA online facility allows three attempts to enter a valid user ID and password combination. After the third unsuccessful attempt, the program is terminated.

To change a password, type the new password twice, once in the NEW PASSWORD field, and once in the confirmation field to the right of the NEW PASSWORD field.

IOA Primary Option Menu

The IOA Primary Option menu is the primary interface to functions available under the various INCONTROL products. The options displayed in the menu depend on the INCONTROL products installed at the site, and the functions and facilities that have been authorized to you.

If only CONTROL-O is installed at your site, and you are authorized to access all functions and facilities, the screen shown in Figure 2 is displayed:

NOTE

When the Online facility is activated as an ISPF application, Option 6 is displayed as "6 UTILITIES Online Utilities." In this case, Option 6 activates the Online utilities under ISPF. When the Online facility is not activated under TSO or TSO/ISPF, Option 6 is inactive.

Figure 2 IOA Primary Option Menu when only CONTROL-O is Installed

```
--------------------        IOA PRIMARY OPTION MENU        ------------------(1)
OPTION ===>                                                 USER        N22A
                                                            DATE        19.08.01



  4   COND-RES          IOA Conditions/Resources Display
  5   LOG               IOA Log Display
  6   TSO               Enter TSO Command
  7   MANUAL COND       IOA Manual Conditions Display
  8   CALENDAR DEF      IOA Calendar Definition
 IV   VARIABLE DATABASE IOA Variable Database Definition Facility
  C   CMEM DEFINITION   CTM Event Manager Rule Definition
 OR   RULE DEFINITION   CTO Rule Definition
 OM   MSG STATISTICS    CTO Message Statistics Display
 OS   RULE STATUS       CTO Rule Status Display
 OL   AUTOMATION LOG    CTO Automation Log Display
 OA   AUTOMATION OPTS   CTO Automation Options Menu
 OC   COSMOS STATUS     CTO COSMOS Status Screens
 OK   KOA RECORDER      CTO Record VTAM Scripts



COMMANDS:  X - EXIT, HELP, INFO  OR CHOOSE A MENU OPTION             18.11.23
```

To select an option, type the option number or letter in the OPTION field and press **Enter**. Alternatively, for a number option, press the PFKey with the same number. For example, to select the LOG option, press **PF05/PF17**.

NOTE

Your INCONTROL administrator can limit the options displayed on a user-by-user basis, and can alter option numbers and customize option descriptions. Product-supplied default options are discussed in this guide.

Option OK (KOA Recorder facility) is available only under IOATSO, and not under IOAISPF or IOAMON.

Certain IOA functions and facilities (options) are shared by all INCONTROL products. These shared IOA commands, functions and facilities are described later in this chapter, and outlined in Table 14.

Table 14 INCONTROL Shared IOA Functions and Facilities

Option	Function	Description
4	COND/RES	Display and update the status of the IOA Conditions file and the CONTROL-M Resources file.
5	LOG	View audit trail information about jobs, missions, and rules scheduled under the supervision of INCONTROL products.
6	TSO	Perform TSO commands.
	Note: When the Online facility is activated as an ISPF application, Option 6 is displayed as "6 UTILITIES Online Utilities." In this case, Option 6 activates the Online utilities under ISPF. When the Online facility is not activated under TSO or TSO/ISPF, Option 6 is inactive.	
7	MANUAL COND	Display the list of prerequisite conditions that should be confirmed manually by operations personnel.
8	CALENDAR DEF	Define scheduling calendars.
X	EXIT	Exit the Online facility.
INFO	INFO	Display a window in the IOA Primary Option Menu. The window contains information about installed INCONTROL products. For more details on the information displayed by this command, refer to “IOA Version Information” later in this chapter.

NOTE

Entering **=1** in the command line of any other screen returns you to the IOA Primary Option Menu that is displayed at your site.

The functions and facilities (options) shown in Table 15 are applicable to CONTROL-O.

Table 15 CONTROL-O Functions and Facilities

Option	Function	Description
IV	IOA VARIABLE DATABASE DEFINITION	IOA Variable Database Definition facility This is also available to CONTROL-M.
OR	CTO RULE DEFINITION	CONTROL-O Rule Definition facility.
OM	CTO MESSAGE STATISTICS DISPLAY	CONTROL-O Message Statistics facility.
OS	CTO RULE STATUS DISPLAY	CONTROL-O Rule Status facility.
OL	CTO AUTOMATION LOG DISPLAY	CONTROL-O Automation Log facility.
OA	CTO AUTOMATION OPTIONS MENU	CONTROL-O Automation Options facility.
OC	CTO COSMOS STATUS SCREENS	CONTROL-O / COSMOS Status Monitoring System, a separately licensed product described in the *CONTROL-O/COSMOS User Guide.*
OK	CTO RECORD VTAM SCRIPTS	KOA Recorder facility to record VTAM scripts.

The IOA Primary Option menu shown in Figure 3 is displayed at sites supporting all currently available INCONTROL mainframe products.

NOTE

Option OK (KOA Recorder facility) is available only under IOATSO, and not under IOAISPF or IOAMON.

When the IOA online facility is activated as an ISPF application, Option 6 is displayed as "6 UTILITIES Online Utilities." In this case, Option 6 activates the Online utilities under ISPF. When the online facility is not activated under TSO or TSO / ISPF, Option 6 is inactive.

Figure 3 IOA Primary Option Menu when all INCONTROL Products are Installed

```
---------------------        IOA PRIMARY OPTION MENU        ------------------(1)
OPTION ===>                                                    USER        N06

IOA                        CONTROL-D/V                 CONTROL-O

  4  COND-RES                 A  MISSION STATUS          OR  RULE DEFINITION
  5  LOG                      M  MISSION DEF             OM  MSG STATISTICS
  6  TSO                      R  REPORT DEF              OS  RULE STATUS
  7  MANUAL COND              T  RECIPIENT TREE          OL  AUTOMATION LOG
  8  CALENDAR DEF             U  USER REPORTS            OA  AUTOMATION OPTS
 IV  VARIABLE DATABASE        F  PC PACKET STATUS        OC  COSMOS STATUS
                             DO  OBJECTS                 OK  KOA RECORDER


CONTROL-M & CTM/Restart    CONTROL-M/Analyzer          CONTROL-M/Tape

  2  JOB SCHEDULE DEF        BB  BALANCING STATUS        TR  RULE DEFINITION
  3  ACTIVE ENV.             BM  MISSION DEF             TP  POOL DEFINITION
  C  CMEM DEFINITION         BV  DB VARIABLE DEF         TV  VAULT DEFINITION
                             BR  RULE DEFINITION         TI  INQ/UPD MEDIA DB
                             BA  RULE ACTIVITY           TC  CHECK IN EXT VOL


COMMANDS:  X - EXIT, HELP, INFO  OR CHOOSE A MENU OPTION                16.20.21
```

NOTE

Entering **=1** in the command line of any other screen returns you to the IOA Primary Option Menu that is displayed at your site.

For a description of the options for other INCONTROL products, see the user guides of the respective products.

Additional options available on the IOA Primary Option Menu when operating CONTROL-O with other INCONTROL products, are listed in Table 16.

Table 16 IOA Primary Option Menu Options (part 1 of 2)

Option	Name	Description
2	JOB SCHEDULE DEF	Define or modify job production parameters.
3	JOB STATUS	Display and update status of jobs scheduled under CONTROL-M.
C	CMEM DEFINITION	Define or modify CMEM rules.
Note: The 2, 3, and C options are available only at sites where CONTROL-M is installed.		
A	MISSION STATUS	Display and update active mission status.
M	MISSION DEF	Define migration, printing, backup, and restore missions.
R	REPORT DEF	Define decollating missions (including indexing).

Table 16 IOA Primary Option Menu Options (part 2 of 2)

Option	Name	Description
T	RECIPIENT TREE	Display and update the recipient tree.
U	USER REPORTS	Display and update the status of user reports. View reports online.
F	PC PACKET STATUS	Display the status of reports (packets) scheduled for transfer from the mainframe to a PC.
DO	OBJECTS	Manage CONTROL-D objects.
Note: The A, M, R, T, U, F, and DO options are available only at sites where CONTROL-D or CONTROL-V are installed.		
BB	BALANCING STATUS	Display and update the status of active balancing missions.
BM	MISSION DEF	Define balancing missions.
BV	DB VARIABLE DEF	Define, display and update Database variables.
BR	RULE DEFINITION	Define balancing rules.
BA	RULE ACTIVITY	Display rule activity and the result of invoking CONTROL-M / Analyzer rules.
Note: The BB, BM, BV, BR, and BA options are available only at sites where CONTROL-M / Analyzer is installed.		
TR	RULE DEFINITION	Define rules.
TP	POOL DEFINITION	Define pools.
TV	VAULT DEFINITION	Define vaults.
TI	INQ / UPD MEDIA DB	Display the Inquire / Update screen.
TC	CHECK IN EXT VOL	Check in external volumes.
Note: The TR, TP, TV, TI, and TC options are available only at sites where CONTROL-M / Tape is installed.		

IOA Version Information

Enter **INFO** (or **I**) in the OPTION field of the IOA Primary Option menu to display the IOA Version Information window, as illustrated in Figure 4. This window lists the version and level of each INCONTROL product installed at the site, plus the CPU ID and current system date. The IOA Version Information window also identifies the unique IOA QNAME assigned to the site. For further information about the IOA QNAME, see the IOA operational parameters step, the IOAPLEX parameters step, and the adding IOA structures to the CFRM step, all in the *INCONTROL for z/OS Installation Guide*. Press **Enter** or **END** (**PF03/PF15**) to exit the window and return to the IOA Primary Option menu.

Figure 4 IOA Version Information

```
---------------------       IOA PRIMARY OPTION MENU       ------------------(1)
OPTION ===>                                               USER        N06

IOA                        CONTROL-D/V                CONTROL-O
                +---------------------------------------------+
  4  COND-RES   |           IOA VERSION INFORMATION           | EFINITION
  5  LOG        |                                             | ATISTICS
  6  TSO        |   IOA                  Version 6.1.00       | TATUS
  7  MANUAL CON |   IOAGATE              Version 6.1.00       | TION LOG
  8  CALENDAR D |   CONTROL-M            Version 6.1.00       | TION OPTS
 IV  VARIABLE D |   CONTROL-M/RESTART    Version 6.1.00       |  STATUS
                |   CONTROL-M/ANALYZER   Version 6.1.00       | CORDER
                |   CONTROL-M/TAPE       Version 6.1.00       |
                |   CONTROL-D            Version 6.1.00       |
CONTROL-M & CTM |   CONTROL-V            Version 6.1.00       | ape
                |   CONTROL-O            Version 6.1.00       |
  2  JOB SCHEDU |                                             | EFINITION
  3  ACTIVE ENV |                                             | EFINITION
  C  CMEM DEFIN |   DATE  19.08.01  CPUID  02078D 7060        | DEFINITION
                |   IOA QNAME  IOAR610                        | D MEDIA DB
                |                                             | IN EXT VOL
                +---------------------------------------------+

COMMANDS:  X - EXIT, HELP, INFO  OR CHOOSE A MENU OPTION              17.00.29
```

Multi-Screen Control

It is not necessary to return to the IOA Primary Option menu to move from one online facility to another.

To speed up transfer of control between screens of different facilities and to enable you to manage several online facilities at the same time, transfer control commands can be specified. Transfer commands take you directly from your current screen to the requested screen. Transfer commands can be used to reach any screen that can be accessed through the IOA Primary Option menu at your site.

Each transfer control command consists of an equals sign immediately followed by one of the options of the IOA Primary Option menu, which represents the target screen of the transfer. For example, from any screen, enter:

Table 17 IOA Transfer Control Commands

Option	Description
=5	to access the IOA Log screen.
=4	to access the IOA Conditions/Resources screen.
=OS	to access the CONTROL-O Rule Status screen.
=1	to access the IOA Primary Option menu.

If you use a transfer command to reach another screen, the state of the current screen remains unchanged when you return to it using another transfer command.

The INCONTROL administrator can globally deactivate any or all of the transfer commands.

Fast Exit From the IOA Online Facility

To exit immediately from the IOA Online facility, type **=X** on the command line and press **Enter**.

In most cases, the **=X** command has the same effect as pressing **END** (**PF03/PF15**) in all open screens and then entering **X** (Exit) in the IOA Primary Option menu. Any window, such as the Exit Option window, that would be displayed when exiting an open screen is displayed when the **=X** command is entered.

However, when the **=X** command is entered while definition screens such as the Calendar Definition screen are open, changes to the open definition screens are cancelled. Changes currently in definition facility list screens, for example, changes to previously closed definition screens, are not cancelled. Those screens and all other open screens are treated as if **END** (**PF03/PF15**) has been entered.

NOTE

The **=X** command is intentionally not supported on certain screens.

Screen Layout

Most IOA screens are divided into four basic areas, as described in Table 18. The example shown in Figure 5 is the IOA Log screen.

Table 18 Basic IOA Screen Areas (part 1 of 2)

Screen Area	Description
Screen Description and Message Line	This line at the top of the screen describes the purpose of the screen. In the example screen, this is the “IOA Log.” A screen identifier may appear in the upper right corner. In the example screen, this is (5). This line is also used to display messages.
Screen Header and Command Area	This area is used for online commands, and, where applicable, headings of the screen data.

Table 18 Basic IOA Screen Areas (part 2 of 2)

Screen Area	Description
Data Area	On some screens, the data area can be scrolled. For more information, see "Scrolling Commands" on page 73.
Screen Bottom	This area of the screen usually contains a list of available commands or options (in the example screen, SHOW, GROUP, CATEGORY, and SHPF), or a brief explanation about screen usage. The current time is displayed in the lower right corner.

Figure 5 IOA Log Screen

```
FILTER:            ---------------- IOA LOG  -------------------------------(5)
COMMAND ===>                                                   SCROLL===> CRSR
SHOW LIMIT ON ==>                                          DATE 291201 - 010102
DATE   TIME   ODATE  USERID   CODE    ------ M E S S A G E --------------------
311201 184915 311201 K48      SUB13AI JOB K48RUN1 / OID=005W9 SUBMITTER STARTED
                                       PROCESSING JOB ON SYSTEM: OS35
311201 184915 311201 K48      SUB133I JOB K48RUN1 K48RUN /27255 OID=005W9
                                      SUBMITTED FROM LIBRARY (P) K48.LIB.JOB
311201 184918 311201 K48      SPY28GI JOB K48RUN1 K48RUN /27255 OID=005W9 TAPE
                                      DRIVE UNITS USED=00 00
311201 184918 311201 K48      SPY281I JOB K48RUN1 K48RUN /27255 OID=005W9 START
                                       01365.1849 STOP 01365.1849 CPU 0MIN
                                      00.05SEC SRB 0MIN 00.00SEC 0.00 4AOS35
311201 184918 311201 K48      SPY254I JOB K48RUN1 K48RUN /27255 OID=005W9
                                      SCANNED
311201 184918 311201 K48      SEL216W JOB K48RUN1 K48RUN /27255 OID=005W9
                                      UNEXPLAINED COND CODE 0015 STEP EXEC /
311201 184918 311201 K48      SEL214I JOB K48RUN1 K48RUN /27255 OID=005W9 RERUN
                                       NEEDED
311201 184918 311201 K48      SEL205I JOB K48RUN1 K48RUN /27255 OID=005W9 RERUN
                                       IN PROCESS USING MEM K48RUN1
311201 184918 311201 K48      SEL286I JOB K48RUN1 K48RUN /27255 OID=005W9
                                      WAITING FOR CONFIRMATION
CMDS: SHOW, GROUP, CATEGORY, SHPF                                     08.57.11
```

Commands and PFKeys

Commands are entered by typing a command in the COMMAND field and then pressing **Enter**, or by pressing a predefined PFKey, or a combination of both.

It is not necessary to enter the full command name; the shortest unique abbreviation of the command is sufficient. If the abbreviation is ambiguous, an appropriate message is displayed in the message area.

IOA commands are flexible; you can change command syntax or provide aliases (synonyms) to suit your site. If you want to add or change a command syntax, consult BMC Software Customer Support. The examples provided in this chapter exhibit the original command syntax supplied with this INCONTROL product.

PFKey command assignments can be site-customized. It is possible to assign PFKeys differently for each screen. To change PFKey command assignments, see your INCONTROL administrator.

Supplied PFKey definitions are consistent throughout most of the screens. For example, **PF08/PF20** is used to scroll down (forward) on all INCONTROL screens where scrolling is possible.

Table 19 Common PFKey Definitions

PFKey	Description
PF01/PF13	HELP
PF02/PF14	SHOW (where applicable)
	Note: When the IOA Online facility is activated in ISPF mode (as an ISPF application), **PF02/PF14** are usually assigned the ISPF SPLIT command. For more information, see "IOA Under ISPF" on page 78.
PF03/PF15	END – exit current screen and go back one level
PF04/PF16	RESET (where applicable)
PF05/PF17	FIND (where applicable)
PF06/PF18	=6 – transfer to TSO screen or application or to UTILITIES screen
	Note: This is disabled under ROSCOE/ETSO, CICS, VTAM, IMS/DC, IDMS/DC, COM-PLETE, and TSO cross memory option.
PF07/PF19	UP – scroll backward
PF08/PF20	DOWN – scroll forward
PF10/PF22	LEFT or PREV (where applicable)
PF11/PF23	RIGHT or NEXT (where applicable)
PF12	RETRIEVE – retrieves a sequence of commands and options entered by the user during the current session. These commands and options are displayed in reverse order on the command line of the current screen.
PF24	SHPF

To see the PFKey assignment of the screen with which you are working, type the **SHPF** reserved command in the command line and press **Enter**. The window show in Figure 6, describing the current PFKey assignment, is displayed. Press **Enter** again to close the window.

Figure 6 PFKey Assignment Window

```
FILTER:            ---------------- IOA LOG  -------------------------------(5)
COMMAND ===>                                                   SCROLL===> CRSR
SHOW LIMIT ON ==>                                          DATE 291201 - 010102
DATE   TIME   ODATE  USERID   CODE    ------ M E S S A G E --------------------
311201 184915 311201 K48      SUB13AI JOB K48RUN1 / OID=005W9 SUBMITTER STARTED
                                       PROCESSING JOB ON SYSTEM: OS35
311201 184915 311201 K48      SUB133I JOB K48RUN1 K48RUN /27255 OID=005W9
                                      SUBMITTED FROM LIBRARY (P) K48.LIB.JOB
311201 184918 311201 K48      SPY28GI JOB K48RUN1 K48RUN /27255 OID=005W9 TAPE
                                      DRIVE UNITS USED=00 00
311201 184918 311201 K48      SPY281I JOB K48RUN1 K48RUN /27255 OID=005W9 START
+-----------------------------------------------------------------------------+
|                                                                             |
|     ENTER ENTER                     PF13  HELP                              |
|     PF01  HELP                      PF14  SHOW                              |
|     PF02  SHOW                      PF15  END                               |
|     PF03  END                       PF16  RESET                             |
|     PF04  RESET                     PF17  FIND                              |
|     PF05  FIND                      PF18  =6                                |
|     PF06  =6                        PF19  UP                                |
|     PF07  UP                        PF20  DOWN                              |
|     PF08  DOWN                      PF24  SHPF                              |
|     PF12  RETRIEVE                                                          |
+-----------------------------------------------------------------------------+
```

If you type text in the COMMAND field and press a PFKey, the text in the COMMAND field is treated as a subparameter of the command assigned to the PFKey.

Additional key definitions are shown in Table 20.

Table 20 Additional Key Assignments

Key	Description
PA1	ABORT – forced exit If you press **PA1** while in AutoRefresh mode, AutoRefresh mode is canceled. AutoRefresh mode is described in “AutoRefresh Mode” on page 77.
PA2	Under native TSO and ROSCOE, the first time you press this key, the screen is refreshed. The second consecutive time, a copy of the screen is sent to be printed, or to a file, using a PRTDBG DD statement. For terminal models supporting PA3, the PA3 key is defined in exactly the same way as PA2. When the IOA online facility is activated as an ISPF application, PA2 is controlled by ISPF, and only refreshes the screen. To print the screen, see “IOA Under ISPF” on page 78. Under other online environments, such as CICS and VTAM, PA2 serves as a refresh only. Usually one of the PA keys is assigned a local print function.

For information on changing IOA PFKey definitions, see the appendix in the *INCONTROL for z/OS Administrator Guide* that deals with modifying IOA Online Facility Commands.

Scrolling Commands

Scrolling conventions are very similar to the ISPF conventions of IBM. The basic commands used for scrolling are shown in Table 21.

Table 21 Scrolling Commands

Command	PFKey	Description
UP	(**PF07/PF19**)	Scroll up (backward)
DOWN	(**PF08/PF20**)	Scroll down (forward)

These commands can be entered by typing the command in the COMMAND field or by pressing the predefined PFKey.

The scrolling amount is determined by the content of the SCROLL field in the right corner of the screen header. Valid scrolling amounts are shown in Table 22.

Table 22 Scrolling Amounts in the SCROLL Field

Scrolling Amount	Description
PAGE	Scroll a full page.
HALF	Scroll a half page.
CRSR	Scroll by cursor position. If the cursor is outside the data area, a full page is scrolled.
MAX	Scroll maximum available; for example, UP MAX scrolls to the top.

It is only necessary to type the first letter of the new amount in the SCROLL field in order to change the scrolling amount.

A scrolling amount other than that shown in the SCROLL field can be used by entering the amount directly after the scroll command itself, or by entering the scroll amount in the COMMAND field and pressing the appropriate scrolling PFKey. The scrolling amount in the SCROLL field remains unchanged.

Example

If PAGE is the value in the SCROLL field, to scroll to the bottom, type M (MAX) in the COMMAND field and press **PF08** (DOWN).

LOCATE Command

The LOCATE command, and its abbreviation, L, can be used to search for items in the NAME field in all “directory type” screens that contain scrollable data, such as the Calendar List screen. The syntax of the command is

```
LOCATE string
```

In this command, *string* is the search string. Apostrophes (‘single quotes’) or quotation marks (“double quotes”) are not required.

The search proceeds from the top of the list to the first item in the list that starts with the specified string. The cursor is positioned on the OPTION field at the beginning of the line containing the string, if found, or on the OPTION field of the alphabetically closest preceding value if the specified value is not found.

FIND Command

The FIND command, and its abbreviation, F, can be used in all screens that contain scrollable data to find and display the next occurrence of a character string. The syntax of the command is

```
FIND string [fromcol] [tocol] [PREV]
```

In this command

- *string* is the search string. Mandatory.
- *fromcol* is the first column in the search range. Optional.
- *tocol* is the last column in the search range. Optional.
- PREV is the indicator that the search must move backward, instead of forward, from the current cursor position. Optional.

General Rules

If the string contains blanks, enclose the string with apostrophes (‘single quotes’) or quotation marks (“double quotes”). For example:

```
FIND 'WAIT SCHEDULE'
```

The column range searched can be limited by entering *fromcol* or *tocol* values, or by entering both *fromcol* and *tocol* values.

The search for the string proceeds from the current cursor position forward, or backward if PREV is entered. If the string is found, the cursor is positioned at the start of the string.

To repeat the FIND to the next or previous occurrence of the string, press **PF05/PF17**.

NOTE

The following situations outline where the FIND command can, or should, be further modified to enhance its functionality.

- Some screens enable the user to limit the number of lines searched by a FIND command. This is discussed in the relevant screen descriptions.
- In some screens, the FIND command does not detect information that is to the right or left of the information displayed in the monitor. To ensure detection of the desired string, the screen must be displayed in wraparound mode, when available, before executing the FIND command.

Text String Searches

The FIND command can also be used to search for text strings, in which case the command will find all instances of the string, regardless of whether the characters within the string are lowercase, uppercase, or mixed case. To search for a text string, include the letter *T* immediately before a quoted string.

For example,

```
FIND T'WAIT SCHEDULE'
```

will find WAIT SCHEDULE, and it will also find *wait schedule*, and *Wait Schedule*, and any other case variant.

Text string searches are the default. If your system default is for text strings, You do not need to include the *T* if you perform a text string search. Your INCONTROL administrator can change the default to character string. In this case you do not need to include the *C* if you perform a character string search.

Character String Searches

The FIND command can be used to search for character strings, in which case the command will find all instances of the string, but only where the string contains characters that match the case specified. To search for a character string, include the letter *C* immediately before a quoted string.

For example,

```
FIND C'WAIT SCHEDULE'
```

will find WAIT SCHEDULE, but it will not find *wait schedule*, or *Wait Schedule*, or any other case variant.

CANCEL and RESET Commands

CANCEL and RESET commands are entered in the COMMAND field.

The CANCEL command cancels changes made in a definition screen, such as the IOA Calendar Definition screen, and exits the screen.

The RESET command (**PF04/PF16**) cancels Edit environment options specified in a definition screen. It does not cancel changes already made and it does not exit the screen or cancel Edit environment mode. For more information about the Edit environment, see Appendix A, "Editing Rule Definitions in the IOA Edit Environment."

The RESET command (**PF04/PF16**) can also be used in most windows, for example, the Show Screen Filter window, to cancel changes and close the window.

Online Help

The following types of online help are available for INCONTROL screens:

Screen help

Provides information about the entire screen. This help is available on all INCONTROL screens and is accessed by pressing the HELP key (**PF01/PF13**) while the cursor is positioned on the COMMAND field in the screen.

Line-sensitive Help

Provides information about the fields on a particular line on a screen. This help is available on several INCONTROL screens. It is accessed by pressing the HELP key (**PF01/PF13**) while the cursor is positioned on the desired line of the screen.

If line-sensitive help is not supported in a screen, pressing the HELP key (**PF01/PF13**) from anywhere in the screen displays the beginning of the Help panel.

Figure 7 IOA Help Screen

```
------------------------------ IOA HELP SCREEN --------------------- (CTMHDT2 )
COMMAND ===>                                                  SCROLL===> CRSR

  Calendar List Screen
  ====================

  The Calendar List screen displays a list of calendars (members) in the
  specified library. This screen can be entered directly from the entry
  panel or upon exiting the Year List screen.

  By default, only calendar names are listed in the screen. However, if
  the default has been modified at time of installation, statistical
  information is displayed for each calendar name.

  Use the scrolling PFKeys to scroll forward (PF08/PF20) and backward
  (PF07/PF19) on the Calendar List.

  To return to the entry panel, press END (PF03/PF15).


  Options of the Calendar List Screen
  -----------------------------------
  To request one of the following options, specify the option in the OPT
ENTER END OR PF03/PF15 TO EXIT THE HELP SCREEN                      08.55.40
```

Help can be scrolled using standard scrolling conventions.

To return to the original screen, use the **END** command (**PF03/PF15**).

The Help member name appears on the right in the Help screen header. Members containing the Help descriptions can be found in the IOA MSG library.

AutoRefresh Mode

Certain INCONTROL screens, as noted in this chapter where appropriate, support AutoRefresh mode. A screen display in AutoRefresh mode is automatically updated periodically with the most current data.

AutoRefresh mode can only be activated under native TSO or under ISPF. AutoRefresh mode is activated by the AUTO command. The format of the command is

AUTO *n*

In this command, *n* is any number of seconds from 1 through 99.

The screen is updated when the AUTO command is issued, and then periodically updated according to the interval (in seconds) specified in the AUTO command. A counter at the top of the screen displays the number of times the screen has been refreshed.

Example

The AUTO 5 command refreshes the screen every 5 seconds.

Cancelling AutoRefresh Mode

Under native TSO, the recommended method of cancelling AutoRefresh mode is as follows:

- For short interval values – Press **Enter**. Whenever **Enter** is pressed, or a command is issued, AutoRefresh mode is automatically cancelled at the end of the current interval.
- For long interval values – Press **Attn** (PA1) once.

Under ISPF, press **Attn** (PA1) or **Esc** once to cancel AutoRefresh mode.

IOA Under ISPF

The IOA Online facility can be activated as an ISPF application. As such, it can work in ISPF split screen mode like any other ISPF application.

WARNING

Multiple calls to the IOA ISPF interface can be performed in ISPF split screen mode as long as all invocations are for the same IOA environment. Otherwise, the results may be unpredictable.

The command line of the IOA Online facility is controlled by IOA. It is not possible to enter ISPF commands in an IOA screen. The ISPF commands shown in Table 23 must be defined to PFKeys.

Table 23 ISPF Commands that must be defined for PFKeys

Command	PFkey
SPLIT	Usually **PF02/PF14**
SWAP	Usually **PF09/PF21**

The rest of the PFKeys are controlled by IOA PFKey definitions, which are in the IOA PARM library.

It is possible to assign TSO / ISPF commands such as PRINT to PFKeys, or to change PFKey definitions by performing the following steps:

1. Exit from IOA and ISPF to the READY prompt.
2. Type the following command and press **Enter**:

   ```
   ISPSTART PANEL(ISR@PRIM) NEWAPPL(CTM)
   ```

   This command brings you to ISPF.
3. Type the **KEYS** command and press **Enter**. A set of key definitions is displayed.
4. Modify the key definitions as desired and exit from ISPF.

NOTE

ISPF KEY definitions for the following ISPF commands take precedence over IOA PFKey definitions: SPLIT, SWAP, KEYS, PRINT, PFSHOW. For example, if **PF02** is defined as SPLIT in ISPF, an IOA definition for **PF02** is ignored in online screens.

For all other ISPF commands, such as UP or DOWN, the key definitions in ISPF are ignored and the PFKey is interpreted according to the definition in the IOA Online facility.

Under ISPF, IOA Option 6 activates the Online Utilities panel. For more information about these utilities, see the *INCONTROL for z/OS Utilities Guide*.

For more information on changing IOA PFKey definitions, see the appendix in the *INCONTROL for z/OS Administrator Guide* that deals with modifying IOA Online Facility Commands.

IOA Editor

The IOA Editor enables you to edit members of a partitioned data set (PDS) using an editor similar to the ISPF editor. Enter **EDMEM** in the command line of any screen to display the Edit Entry Panel window, as shown in Figure 8.

Figure 8 IOA Editor Edit Entry Panel

```
---------------------       IOA PRIMARY OPTION MENU       ------------------(1)
OPTION ===>                                                USER        N06

IOA                        CONTROL-D/V                CONTROL-O

  4  COND/RES                A  MISSION STATUS         OR  RULE DEFINITION
  5  +-------------------------------------------------------------+ICS
  6  |                     EDIT ENTRY PANEL                        |
  7  |                                                             |LOG
  8  | LIBRARY ==>                                                 |OPTS
 IV  |                                                             |US
     | MEMBER  ==>                                                 |R
     |                                                             |
     | FILL IN PARAMETERS AND PRESS ENTER TO CONTINUE OR PF3 TO EXIT|
CONTR|                                                             |
     +-------------------------------------------------------------+
  2  JOB SCHEDULE DEF       BB  BALANCING STATUS       TR  RULE DEFINITION
  3  ACTIVE ENV.            BM  MISSION DEF            TP  POOL DEFINITION
  C  CMEM DEFINITION        BV  DB VARIABLE DEF        TV  VAULT DEFINITION
                            BR  RULE DEFINITION        TI  INQ/UPD MEDIA DB
                            BA  RULE ACTIVITY          TC  CHECK IN EXT VOL


COMMANDS:  X - EXIT, HELP, INFO  OR CHOOSE A MENU OPTION              19.12.05
```

To create a new member or edit an existing member, fill in the LIBRARY and MEMBER parameters and press **Enter**. The IOA Editor screen is opened for editing, as shown in Figure 9.

NOTE

If the member already exists in the specified library, the member is displayed for editing in the IOA Editor. Similarly, if you accessed the IOA Editor screen from Line Option J in either Screen 2 or Screen 3, the member in the library referred to in the schedule definition member will be displayed for editing.

Figure 9 IOA Editor

```
---------------------------  I O A   E D I T O R   ------------------- (EDMEM)
COMMAND ===>                                                SCROLL===> CRSR
ROW     PROD.V610.DEMO(TEST)                                    COL 001 072

......
......
......
......
......
......
......
......
......
......
************************ B O T T O M  O F  D A T A **************************





OPTIONS:  I INSERT  D DELETE  R REPEAT  C COPY  M MOVE  UC/LC UPPER/LOWER CASE
```

IOA Editor PFKey Functions

While working within the IOA Editor, PFKeys perform the functions shown in Table 24.

Table 24 PFKey Functions Within the IOA Editor Screen

PFKeys	Description
PF01 / PF13	Activates online help.
PF02 / PF14	Saves the current member.
PF03 / PF15	Terminates the editing session. If the edited member has been changed the member will be saved automatically.
PF04 / PF16	Cancels the editing session without saving changes.
PF05 / PF17	Invokes the FIND facility.
PF07 / PF19	Scrolls forward.
PF08 / PF20	Scrolls backward.
PF10 / PF22	Scrolls left.
PF11 / PF23	Scrolls right.

Commands of the IOA Editor Screen

Table 25 describes editing commands that can be executed by entering the command in the COMMAND line.

Table 25 IOA Editor Command Line Commands

Command	Description
SAVE	Saves all new data without terminating the edit session.
CANCEL	Terminates the edit session without saving new data.
COPY	Enables you to import a member from a specific library.

Table 26 describes editing commands that can be executed by entering the command in the leftmost position of the applicable row.

Table 26 IOA Editor Row Commands (part 1 of 2)

Command	Description
I	Inserts a new line below the current line. To insert more than one line for new data, enter **Inn**, where *nn* indicates the number of new lines to be inserted below the current line.
D	Deletes the current line. To delete more than one line, enter **Dnn**, where *nn* indicates the number of lines to be deleted below the current line. You can delete a block of lines by typing **DD** at the beginning of the first line of the block, and then entering **DD** at the beginning of the last line of the block.
R	Repeats the current line. To repeat a single line one or more times, enter **R***nn*, where *nn* indicates the number of times the current line is to be repeated. You can repeat a block of lines by typing **RR** at the beginning of the first line of the block, and then entering **RR** at the beginning of the last line of the block.
C	Identifies the source line for a copy operation. To copy more than a single line, enter **C***nn*, where *nn* indicates the number of lines to be copied. You can also copy a block of lines by typing **CC** at the beginning of the first line of the block, and then entering **CC** at the beginning of the last line of the block.
M	Identifies the source line for a move operation. To move more than a single line, enter **M***nn*, where *nn* indicates the number of lines to be moved. You can also move a block of lines by typing **MM** at the beginning of the first line of the block, and then entering **MM** at the beginning of the last line of the block.
A	Identifies the destination of a copy or move operation. When a line or block of lines has been selected for copying or moving, enter **A** at the point after which the copied lines are to be inserted.
B	Identifies the destination of a copy or move operation. When a line or block of lines has been selected for copying or moving, enter **B** at the point before which the moved lines are to be inserted.

Table 26 IOA Editor Row Commands (part 2 of 2)

Command	Description
LC	Changes text in a line from uppercase to lowercase. To change text in more than a single line to lowercase, enter **LC***nn*, where *nn* indicates the number of lines to be changed to lowercase.
UC	Changes text in a line from lowercase to uppercase. To change text in more than a single line to uppercase, enter **UC***nn*, where *nn* indicates the number of lines to be changed to uppercase.

IOA SET Command Panel

The IOA SET Command Panel enables you to set and stop TRACE levels, choose the language that is used in online screens and to set a dollar sign representation that will be used in online screens for system variables of type %%$VAR. Enter **SET** in the command line of any screen to display the SET Command Panel window, as shown in Figure 10.

Figure 10 IOA SET Command Panel

```
+-------------------------------------------------------------------------------+
|                        SET Command Panel                                      |
|                                                                               |
|                                                                               |
|  TRACE level     , ON  (Trace level 001-512, ON or OFF)                       |
|                                                                               |
|                                                                               |
|    LANGUAGE              ENG - English                                        |
|                          FRA - French                                         |
|                          GER - German                                         |
|                          JPN - Japanese                                       |
|                                                                               |
|                                                                               |
|    SPECIAL CHARACTERS: Dollar     Current representation is "$"(X'5B')       |
|                                                                               |
|                                                                               |
| FILL IN PARAMETERS AND PRESS ENTER TO CONTINUE OR PF3 TO EXIT                 |
|                                                                               |
+-------------------------------------------------------------------------------+
```

The process of setting TRACE levels and turning off a particular TRACE, and the process of setting language preferences for online screens and messages, begins in the SET Command Panel.

Using the SET Command Panel to set and end TRACE levels

Setting the TRACE level can help you monitor certain IOA Online facility and INCONTROL functions, such as security checks.

The following steps explain how to set or turn off a TRACE level:

1 Type a TRACE level number, from **1** through **256**, in the TRACE level field of the SET Command Panel.

2 In the (Trace level 1-256, ON or OFF) field, type **ON** to set a TRACE level, or **OFF** to turn off a TRACE level.

3 Press **Enter** to confirm the setting, in which case the following message is displayed:

```
CTMA2AI TRACE LEVEL nnn WAS SET xxx
```

In this message

- *nnn* is the TRACE level number.
- *xxx* indicates whether the TRACE level was set ON or turned OFF.

NOTE

TRACE level settings take effect immediately.

Using the SET Command Panel to set a dollar sign representation

Setting the dollar sign representation influences how System variables are shown in online screens.

The following steps explain how to set the dollar sign representation:

1 Type a $ character in the Dollar field using your keyboard.

2 Press **Enter** to confirm the setting, in which case the following message is displayed:

```
CTMA2DI THE NEW DOLLAR REPRESENTATION IS "c"(X'yy')
```

where

- *c* is $ character you set
- *yy* is the EBCDIC hexadecimal code for $

NOTE

There are differences in the EBCDIC hexadecimal code for the $ (dollar sign) character on keyboards that have been adapted to show local or national symbols.

Using the SET Command Panel to set language preferences

Setting the LANGUAGE influences the online screens and messages in subsequent sessions.

The following steps explain how to set language preferences:

1. In the LANGUAGE field, type one of the following sets of characters to select a language preference:

   - ENG, to set English as the preferred language
   - FRA, to set French as the preferred language
   - GER, to set German as the preferred language
   - JPN, to set Japanese as the preferred language

2. Press **Enter** to confirm the setting, in which case the following message is displayed:

```
CTMA27I THE NEW LANGUAGE WILL BE USED FROM THE NEXT LOGON TO
IOA
```

NOTE

Language preference settings do not take effect until your next logon to the system.

Rule Definition Facility

The CONTROL-O Rule Definition facility is composed of a series of screens that enable you to view, create, and modify rule definitions and parameters.

Rule definitions under CONTROL-O are stored in libraries (partitioned data sets). A library contains rule tables (members), and each table contains rules (criteria) for one or more console messages, commands, strings, or events. A table generally contains rules related to a specific topic, such as IPL. Although most sites designate a primary rule definition library, the number of rule definition libraries you can use is unlimited.

NOTE

The CONTROL-O Rule Definition facility does not support members which have been compressed using the ISPF PACK option.

The number of rule tables in a library, the number of rules in a table, and the size of each rule definition, are all calculated dynamically and are not dependent on parameter specification.

Accessing the Rule Definition Facility

The Rule Definition facility contains the screens shown in Table 27.

Table 27 Rule Definition Facility Screens

Screen	Description
Rule Definition Entry Panel	Allows specification of parameters which determine which screen is displayed.
Table List screen	Displays the list of tables (members) in the specified library.
Rule List screen	Displays the list of rules in a specific rule table.
Rule Definition screen	Displays the parameters of the selected rule. This screen is used to define, display and modify rule parameters.

To enter the Rule Definition facility, select Option OR on the IOA Primary Option menu and press Enter. The entry panel is displayed.

Creating Tables

Tables can be created in any of the following ways:

- by specifying the new table name in the entry panel and pressing **Enter**
- by using the SELECT command (described in "Options of the Table List Screen" on page 93) to specify the new table name in the Table List screen and pressing **Enter**

As a result of using either of the above methods, a skeletal rule definition (that is, one with most fields left blank) is displayed in the rule definition screen.

Fill in the blanks and save the screen entries. The table is created and the rule definition is the first and only definition in the Rule list of the table. As additional rule definitions are created in the table (described below), they are added to the list.

NOTE

Upon exiting the Rule List screen, if changes were made in at least one rule definition, an Exit Option window is displayed. One field of the window displays the table name. This value can be changed to a new table name that creates a new table in which the rule definitions are saved.

Creating Rule Definitions

Rule definitions can be created using two basic methods

- A skeletal rule definition can be created by specifying the name of a new rule definition in the entry panel. The table specified in the entry panel can be either a new or an existing table. In this case, virtually all fields of the rule definition are empty.

- A copy of an existing rule definition can be created using the INSERT option (described in "Options of the Rule List Screen" on page 97) in the Rule List screen. In this case, most fields of the new rule definition have the same values as the fields in the copied rule definition.

Performing Operations on Tables and Rules

Many operations can be performed on tables and on the rule definitions in them. These operations are performed using commands and options in the various screens of the Rule Definition facility.

Following is a brief summary of some of the major operations possible within the facility. Additional options and commands are explained following the summary.

Accessing (Editing or Browsing) a Table and its Rules

A table (that is, the rule definitions in the table) can be browsed or edited.

When browsed, the table cannot be modified or updated. When the table is edited, new rule definitions can be added and existing rule definitions can be modified or deleted.

Browsing, however, has the following advantages:

- Access and exit are quicker than in editing.
- Rule lists and definitions that are in use by another user can be viewed.
- Access for browsing might be granted, while though access for editing might be denied due to site security requirements.

To browse a table (and its rule list and rule definitions), use the BROWSE option in the Table List screen.

Specifying the table name in the entry panel or using the SELECT option in the Table List screen provides edit access.

Depending on user profile definitions, if the table requested for editing is in use, access is either granted in Browse mode, or access will not be granted.

Copying a Rule to Another Table

Rules can be copied from one table to another using the COPY option in the Rule List screen. For more information, see "Copying Rules to Another Table" on page 124.

Deleting a Table or a Rule

Unneeded rules can be deleted using the DELETE option in the Rule List screen. For more information, see "Options of the Rule List Screen" on page 97. Unneeded tables can be deleted using the DELETE option in the Table List screen. For more information, see "Deleting Tables" on page 93.

Ordering Multiple Tables

More than one table at a time can be ordered at one time. To select multiple tables, **Tab** down in the Tables List screen to each table that you want to select and enter the letter **O** next to the desired table. Press **Enter**. A popup confirmation window is displayed, prompting you to choose whether or not to view the confirmation window for each table.

If you choose not to view the confirmation screen before viewing each table (Confirm Y, Ask For Each One N), press **Enter**.

Saving Modifications

All changes made to a table and its rule scheduling definitions are kept in memory until the table is exited. Upon exiting the table, the user can choose to save or cancel the changes. For more information, see "Exiting the Rule Definition Screen" on page 120.

Entry Panel

Overview

The entry panel is displayed upon entering the Rule Definition facility (Option OR in the IOA Primary Option menu).

Figure 11 Rule Definition Facility Entry Panel

```
-------------------- CONTROL-O RULE DEFINITION ENTRY PANEL -----------------(OR)
COMMAND ===>



SPECIFY LIBRARY, TABLE NAME, RULE NAME

LIBRARY   ===> CTO.PROD.RULES
TABLE     ===>                      (Blank for table selection list)
RULE      ===>                      (Blank for rule selection list)





SHOW SCHEDULING CRITERIA ===> Y     (Y/N)





USE THE COMMAND "SHPF" TO SEE PFK ASSIGNMENT                           18.12.28
```

Fill in entry panel fields LIBRARY, TABLE, and RULE, as described below, to open the desired display. Type **Y** (Yes) or **N** (No) in the SHOW SCHEDULING CRITERIA field to determine whether scheduling parameters appear when the Rule Definition screen is displayed.

NOTE

If you use the selection list fields, their values are not erased until you exit the entry panel by pressing **END** (**PF03**/**PF15**).

- To display the list of tables in a library, do the following:

  1. Type the library name.
  2. Leave the table name blank or type the table name using mask characters (* and ?).
  3. Press **Enter**.

- To display the list of rules for a specific table, do the following:

  1. Type the library name.
  2. Type the table name.
  3. Press **Enter**.

If the table does not exist, the screen for defining a new rule is displayed.

- To display the details of a specific rule (Rule Definition screen), do the following:

  1. Type the library name.
  2. Type the table name.
  3. Type the rule name.
  4. Press **Enter**.

  If the table does not exist, or the rule in the specified table does not exist, the screen for defining a new rule in the table is displayed.

NOTE

If you enter the screen for defining a new rule and want to leave the screen without defining a rule, use the CANCEL command.

- To display the Search Window (described below), do the following:

  1. Type the library name.
  2. Type the rule name.
  3. Leave the table name blank or type the table name using mask characters (* or ?).
  4. Press **Enter**.

- To create a new rule table, do the following:

  1. Type library name.
  2. Specify a new table name.
  3. Press **Enter**.

  The Rule Definition screen, for defining the first rule in the new table, is displayed.

Search Window

The Search window, illustrated in Figure 12, allows the user to search for the specified rule in tables of the specified library. Tables in which the rule has been found are then displayed in the Table List screen.

Figure 12 Rule Definition Facility Entry Panel Search Window

```
-------------------- CONTROL-O RULE DEFINITION ENTRY PANEL ----------------(OR)
COMMAND ===>



SPECIFY LIBRARY, TABLE NAME, RULE NAME

LIBRARY   ===> CTO.PROD.RULES
TABLE     ===>                      (Blank for table selection list)
RULE      ===> CTOSAMPLE            (Blank for rule selection list)

                                      +----------------------------------------+
                                      |                                        |
                                      |    PLEASE SELECT ONE OF THE FOLLOWING: |
                                      |                                        |
                                      |    1  - STOP SEARCH IMMEDIATELY        |
                                      |    2  - ASK AGAIN AFTER 000010 TABLES  |
      SHOW SCHEDULING CRITERIA ===>   |    3  - UNCONDITIONAL SEARCH           |
                                      |                                        |
                                      |    NUMBER OF TABLES IN LIBRARY:  000015 |
                                      |    NUMBER OF SEARCHED TABLES:    000000 |
                                      |    NUMBER OF SELECTED TABLES:    000000 |
                                      |                                        |
                                     ----------------------------------------+
USE THE COMMAND SHPF TO SEE PFK ASSIGNMENT                            12.11.54
```

To close the Search Window without performing any action, press **PF03/PF15** (**END**).

To perform a search, select one of the following choices and press **Enter**:

`3 - UNCONDITIONAL SEARCH`

performs an uninterrupted search of all tables in the specified library.

The search is stopped immediately when you select Option 1.

`2 - ASK AGAIN AFTER` *number* `TABLES`

searches the specified number of tables in the specified library, and then pauses. The search number can be modified. The default is 10.

- Continue the search by pressing **Enter**.
- Stop the search by selecting option 1 (Stop Search Immediately).

If any tables are found, the Table List is displayed listing those tables.

During the search, the following information is displayed at the bottom of the window:

- Number of tables in library – the total number of tables in the specified library
- Number of searched tables – the cumulative number of tables searched

For example, if you perform three searches with a specified number of 10, the figure displayed is 30.

- Number of selected tables – the cumulative number of tables selected that contain the rule being searched

If any tables are selected during the search, the Table List is displayed listing those tables. If no tables are selected, the Search Window is closed and a message is displayed.

Table List Screen

The Table List screen, which is shown in Figure 13, displays a list of rule tables (members) in the specified library. You can enter this screen from the entry panel or when returning from the Rule List screen.

By default, only table names are listed in the screen. However, if the default has been modified at time of installation, statistical information is displayed with the table name (as shown in Figure 13).

Figure 13 Rule Definition Facility Table List Screen

```
TABLES OF LIBRARY CTO.PROD.RULES                                  ------------(OR)
COMMAND ===>                                                       SCROLL===> CRSR
OPT  NAME ------------ VV.MM  CREATED     CHANGED     SIZE  INIT   MOD   ID
$HASP             01.00 00/07/06 00/07/06 00:51    38    38     0 IOAPROD
COMMANDS          01.00 00/07/06 00/07/06 00:51    24    24     0 IOAPROD
CTD               01.01 00/07/06 00/11/06 12:24     7     6     0 M19A
CTM               01.00 00/07/06 00/07/06 00:51     7     7     0 IOAPROD
CTO               01.00 00/07/06 00/07/06 00:51     6     6     0 IOAPROD
DEVICES           01.00 00/07/06 00/07/06 00:51    54    54     0 IOAPROD
EVENTS            01.00 00/07/06 00/07/06 00:51    20    20     0 IOAPROD
IEA               01.00 00/07/06 00/07/06 00:51    32    32     0 IOAPROD
IEC               01.00 00/07/06 00/07/06 00:51     6     6     0 IOAPROD
IEE               01.00 00/07/06 00/07/06 00:51    17    17     0 IOAPROD
IFB               01.00 00/07/06 00/07/06 00:51    32    32     0 IOAPROD
IKT               01.00 00/07/06 00/07/06 00:51    13    13     0 IOAPROD
IMS               01.00 00/07/06 00/07/06 00:51    26    26     0 IOAPROD
IOS               01.00 00/07/06 00/07/06 00:51    10    10     0 IOAPROD
IST               01.00 00/07/06 00/07/06 00:51     8     8     0 IOAPROD
SHORTCMD          01.01 00/07/06 00/11/02 12:24    21    20     0 M19A
SHUTSYS           01.00 00/07/06 00/07/06 00:51    19    19     0 IOAPROD
STARTSYS          01.00 00/07/06 00/07/06 00:51     7     7     0 IOAPROD
STATS             01.00 00/05/11 00/05/11 17:35    40    40     0 CTO514
OPTIONS:  S SELECT   O ORDER   F FORCE   B BROWSE   D DELETE           12.24.50
```

To scroll down the Table list, press **PF08/PF20**. To scroll up the Table list, press **PF07/PF19**.

To return to the entry panel, press **PF03/PF15** (**END**).

Options of the Table List Screen

To request one of the following options, specify the option in the OPT field before the table name, and press **Enter**.

Table 28 Options of the Table List Screen

Option	Description
S(SELECT)	Display the list of rules in the table for any purpose, including editing and modification. Only one table can be selected at a time.
B(BROWSE)	Display the list of rules in a table for purposes of browsing. Only one table can be selected at a time.
O(ORDER)	Order all rules in the table, provided that their basic scheduling criteria (discussed later in this chapter) are met. Multiple tables can be selected.
F(FORCE)	Order all rules in the table, regardless of the rules' basic scheduling criteria (discussed later in this chapter). Multiple tables can be selected.
D(DELETE)	Delete the table (member) from the library. Multiple tables can be selected.

NOTE

The INCONTROL administrator can limit specific users so they can access only the BROWSE option.

When Ordering or Forcing a rule table, if the table is already active under the CONTROL-O monitor, it is replaced by the new copy of the table. All the previous rules of the table are deactivated and replaced by the rules scheduled by the Order or Force.

When ordering a rule table, if no rule has scheduling criteria that are met, the existing table remains in memory, that is, it is not replaced.

NOTE

After rule tables are loaded by the CONTROL-O monitor, the user can check the results of the loading in the IOA LOG or in the CONTROL-O monitor SYSPRINT.

To return to the entry panel, press **PF03/PF15** (**END**).

Deleting Tables

To delete tables, type **D** by the table names and press **Enter**.

The confirmation window shown in Figure 14 is displayed, in sequence, for each table selected for deletion.

Figure 14 Rule Definition Facility Delete Table Confirmation Window

```
TABLES OF LIBRARY CTO.PROD.RULES                                ------------(OR)
COMMAND ===>                                                     SCROLL===> CRSR
OPT  NAME ---          +--------------------------+ E  INIT   MOD   ID
$HASP                  |   CONFIRM DELETE OPTION  | 8    38     0 IOAPROD
D   COMMANDS   <-------|               (Y/N)      | 4    24     0 IOAPROD
CTD                    +--------------------------+ 7     6     0 M19A
CTM               01.00 00/07/06 00/07/06 00:51     7     7     0 IOAPROD
CTO               01.00 00/07/06 00/07/06 00:51     6     6     0 IOAPROD
DEVICES           01.00 00/07/06 00/07/06 00:51    54    54     0 IOAPROD
D   EVENTS            01.00 00/07/06 00/07/06 00:51    20    20     0 IOAPROD
IEA               01.00 00/07/06 00/07/06 00:51    32    32     0 IOAPROD
IEC               01.00 00/07/06 00/07/06 00:51     6     6     0 IOAPROD
IEE               01.00 00/07/06 00/07/06 00:51    17    17     0 IOAPROD
IEF               01.00 00/07/06 00/07/06 00:51    46    46     0 IOAPROD
IKT               01.00 00/07/06 00/07/06 00:51    13    13     0 IOAPROD
IMS               01.00 00/07/06 00/07/06 00:51    26    26     0 IOAPROD
IOS               01.00 00/07/06 00/07/06 00:51    10    10     0 IOAPROD
IST               01.00 00/07/06 00/07/06 00:51     8     8     0 IOAPROD
SHORTCMD          01.01 00/07/06 00/11/06 12:24    21    20     0 M19A
SHUTSYS           01.00 00/07/06 00/07/06 00:51    19    19     0 IOAPROD
STARTSYS          01.00 00/07/06 00/07/06 00:51     7     7     0 IOAPROD
STATS             01.00 00/05/11 00/05/11 17:35    40    40     0 CTO514
OPTIONS:  S SELECT   O ORDER   F FORCE   B BROWSE   D DELETE           12.24.50
```

- Type **Y** (Yes) in the window to delete the table.
- Type **N** (No) in the window to cancel the deletion request.

NOTE

If the PDSMAN product is operational at your site, $$$SPACE members cannot be deleted.

For each table deleted, a message is written to the IOA Log.

Rule List Screen

The Rule List screen displays the list of rules in a rule table in a specified library. This screen can be entered directly from the entry panel or the Table List screen, or upon returning from the Rule Definition screen.

NOTE

If the S (Select) option was specified in the Table List screen for a table which is currently in use ("selected") by another user, then depending on the User Profile definition, either the Rule List screen is not displayed (that is, the Table List screen remains displayed; this is the default), or the Rule List screen is displayed in Browse mode. In either case, an appropriate message is displayed.

Figure 15 Rule Definition Rule List Screen

```
RULES OF LIBRARY: CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                    SCROLL===> CRSR
OPT  RULE     TYP ---------------- DESCRIPTION -------------------------------
S   $HASP100  M  HANDLE ALL 'JOB ON RDR' MESSAGES
    $EJ       C  PROCESS JOB RECYCLING COMMANDS
    $HJ       C  PROCESS HOLD JOB COMMANDS
    $NBLC     S  HANDLE OUT OF BAL\ANCE APPLICATION
======= >>>>>>>>>>>>>>>>> NO MORE RULES IN THIS TABLE <<<<<<<<<<<<<<<<<<< ====

OPTIONS:  S SELECT   D DELETE   I INSERT  C COPY                      18.14.05
```

Format of the Rule List Screen

Next to each rule name in the Rule list, certain information can be displayed. The type and format of this information depends on whether the screen is displayed in DESC format or in STAT format:

- In DESC format, the description of the rule, taken from the DESCRIPTION field of the rule definition, is displayed. This is the default.
- In STAT format, the ISPF-like statistical information relating to the rule is displayed.

To change formats, use the DESC or STAT commands. To change the order in which the rules are displayed in the Rule List screen, use the SORT command. For more information about these commands, see Table 30 on page 96. Table 29 lists the Rule Types and their descriptions.

Table 29 Rule Definition Facility Rule Types

Type	Description
M	Message
S	String
C	Command
P	CONTROL-M/Links for Windows NT MESSAGE
E	Event
L	Rule
R	Job arrival
X	Job end
D	Data set
4	OMEGAMON exception interface
Z	Step
B	SMS Allocation event
V	MAINVIEW ALARM event
5	ON SYSOUT

Commands of the Rule List Screen

The commands in Table 30 can be entered in the COMMAND field of the Rule List screen.

Table 30 Commands of the Rule List Screen

Command	Description
DESC	The DESC command displays the rule description next to the rule name. The description is taken from the DESCRIPTION field in the rule.
STAT	The STAT command displays the following ISPF-like statistical information next to the rule names: ■ the creation date ■ the last modification date ■ the version and modification numbers ■ the user ID
SORT	sorts the list of rules in the Rule List screen according to specified criteria. Valid values are: ■ R (rule) - Sorted according to rule name ■ T (type) - Sorted according to rule type

Options of the Rule List Screen

Use one of the rule options shown in Table 31 by specifying the option before the rule name and pressing **Enter**.

Table 31 Options of the Rule List Screen

Option	Description
S (SELECT)	Display the Rule Definition screen which contains details of the specific rule. If the Rule Definition screen is displayed in Browse mode, the rule definition can only be browsed; it cannot be modified. If the Rule Definition screen is not displayed in Browse mode, the rule definition can be edited and updated.
D (DELETE)	Delete a rule from the Rule list.
I (INSERT)	Insert a new rule in the list. The Rule Definition screen appears, with the same parameter values as the rule marked I.
C (COPY)	Copy the rule to another table (described below). Multiple rules can be selected.

NOTE

If the Rule List screen is displayed in Browse mode, options D (Delete) and I (Insert) are not available.

Copying Rules to Another Table

To copy one or more rules from the current table to another table, type **C** (Copy) by the rules names in the Rule List screen and press **Enter**. The screen shown in Figure 16 is displayed.

Figure 16 Rule List Screen Copy Window

```
RULES OF LIBRARY: CTO.PROD.RULES                                TABLE: EXIT
COMMAND ===>                                                    SCROLL===> CRSR
OPT  RULE       TYP------------ DESCRIPTION -------------------------------
     EXIT        E EXIT    EXIT 000
     EXITMSG1    E EXIT    EXIT 001
     EXITMSG2    E EXIT    EXIT 002
     EXITMSG3    E EXIT    EXIT 003
     EXITMSG4 +-----------------------------------------------------------+
     EXITMSG5 |                                                           |
 C   EXITMSG6 |     SPECIFY DESTINATION LIBRARY,TABLE AND RULE NAME       |
     EXITMSG7 |                                                           |
     EXITMSG8 |  LIBRARY :  CTO.PROD.RULES                                |
     EXITMSG9 |  TABLE   :                                                |
     EXITMSG0 |  RULE    :  EXITMSG0                                      |
     EXITMSGA |                                                           |
     EXITMSGB |  PRESS END/RESET TO CANCEL     ENTER TO PERFORM THE COPY  |
     EXITMSGC +-----------------------------------------------------------+
     EXITMSGD    E EXIT    EXIT 00D
     EXITMSGE    E EXIT    EXIT 00E
     EXITMSGF    E EXIT    EXIT 00F
     EXITMSGG    E EXIT    EXIT 00G
     EXITMSGH    E EXIT    EXIT 00H
     EXITMSGI    E EXIT    EXIT 00I
 OPTIONS S SELECT D DELETE I INSERT C COPY                          15.37.39
```

The window contains the fields in Table 32. Some fields contain default values which can be modified.

Table 32 Fields of the Rule List Screen Copy Window

Field	Description
LIBRARY	Library containing the table into which the rule should be copied. Must be an existing library. Default: the current library
TABLE	Name of the table into which the rule should be copied.
	Note: A rule can only be copied to another table. It cannot be copied to its own table (even if the rule is renamed). If the specified table does not exist, the table is created when the request is performed.
RULE	Name of the rule to be copied. If multiple rules are selected, the window is first displayed with the first selected rule. As each request is preformed or canceled, the next requested rule name appears.

- To perform a request, press **Enter**.
- To cancel a request, press **PF03/PF15** (**END**) or **PF04/PF16** (**RESET**).

Rule Definition Screen

This screen is used to define, display and modify various rule parameters (such as those for a message, string, command, or event). The rule parameters determine CONTROL-O selection and action management. This screen can be entered directly from the entry panel or from the Rule List screen.

The rule parameters may take up more than one screen.

For a detailed explanation of each rule parameter, see Chapter 3, “Rule Parameters.”

NOTE

Parameters marked with the symbol ^{M} can have multiple occurrences. Whenever you fill in the last occurrence of the parameter on the screen, CONTROL-O adds a new empty occurrence of the parameter that can be filled in. The only limit to the number of occurrences is the region size available for the application.

To delete a parameter on the screen, erase it (press the EOF key, or blank it out). If additional operations are required, CONTROL-O issues appropriate instructions.

The rule parameters are divided into the following basic groups:

- Message and Event Selection parameters (see the ON MESSAGE field in Figure 17)
- General parameters (see the OWNER, THRESHOLD and DESCRIPTION fields in Figure 17)
- Automated Console Action parameters (see from the DO DISPLAY field to the DAYS field in Figure 17)
- Basic Scheduling parameters (optional - see from the DAYS field to the IN field in Figure 17)
- Runtime Scheduling parameters (optional - see the IN and TIME fields in Figure 17)

Figure 17 Rule Definition Screen

```
RL: $HASP100   LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
    +-------------------------------------------------------------------------+
  ON MESSAGE  = $HASP100
     JNAME PROD*    JTYPE J       SMFID        SYSTEM
ROUTE          DESC          CONSOLEID    CONSOLE
APPEARED     TIMES IN      MINUTES                          And/Or/Not
OWNER SYS3     GROUP                         MODE PROD    RUNTSEC
THRESHOLD
DESCRIPTION JES2 JOB ON RDR MESSAGE SUPPRESSION
DESCRIPTION
==========================================================================
/* SUPPRESS THE MESSAGE
DO DISPLAY  = SUPPRESS Y ROUTE     DESC    CONSOLEID    CONSOLE
SYSTEM
DO
==========================================================================
D O   O P T I O N S
ASKOPER  - Ask operator               COMMAND  - Issue operator command
COND     - Add/delete IOA conditions  CTD REQ  - O/F CONTROL-D mission
CTOPCMSG - Message to CTO/Server      DISPLAY  - Message control
DOM      - Delete operator message    FORCEJOB - Order job under CONTROL-M
KSL      - Activate a KOA script      RESOURCE - Change IOA resources
RULE     - Call another rule          SET      - Set CONTROL-O variable
SHOUT    - Notification facility      SMSCLASS - Set a new SMS class
SMSMSG   - Issue message by SMS ACS   STOPJOB  - Stop next job steps
SYSREQ   - System request             TSO      - Activate TSO command
WAIT     - Completion of events       >        - Open a new DO line
/* -PF16 - Add comment line           />       - Comment/Uncomment "DO"
IF / ELSE / ENDIF / ENDMSG / WHILE / ENDWHILE - Logical instructions
EXIT / RETURN / TERMINAT                      - End Process Instructions
==========================================================================
DAYS                                                        DCAL
                                                                  AND/OR
WDAYS   ALL                                                 WCAL
MONTHS  1- Y 2- Y 3- Y 4- Y 5- Y 6- Y 7- Y 8- Y 9- Y 10- Y 11- Y 12- Y
DATES
CONFCAL          SHIFT
ENVIRONMENT SMFID      SYSTEM
==========================================================================
IN
TIME FROM      UNTIL           INTERVAL      PRIORITY     CONTINUE SEARCH Y
======= >>>>>>>>>>>>>>> END OF RULE DEFINITION PARAMETERS <<<<<<<<<<<<<<< =====
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 06.44.34
```

Display and Non-Display of Scheduling Criteria

When **N** (No) has been typed in the Show Scheduling Criteria field of the Rule Definition Entry Panel, the Basic and Runtime Scheduling parameters are hidden. In the screen illustrated in Figure 18, the Automated Console Action parameters (DO OPTIONS) are also hidden.

Figure 18 Non-Display of Scheduling Criteria

```
RL: $HASP100   LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
ON MESSAGE  = $HASP100
JNAME PROD*    JTYPE J       SMFID        SYSTEM
ROUTE          DESC          CONSOLEID    CONSOLE
APPEARED     TIMES IN      MINUTES                          And/Or/Not
OWNER IOAADMIN GROUP                          MODE PROD    RUNTSEC
THRESHOLD
DESCRIPTION JES2 JOB ON RDR MESSAGE SUPPRESSION
DESCRIPTION
=============================================================================
/* SUPPRESS THE MESSAGE
DO DISPLAY  = SUPPRESS Y ROUTE     DESC    CONSOLEID    CONSOLE
SYSTEM
DO
==============================================================================
======= >>>>>>>>>>>>>>> END OF RULE DEFINITION PARAMETERS <<<<<<<<<<<<<<< =====
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 06.44.34
```

Typing the SCHED command (abbreviated to SC) in the COMMAND field alternately displays or hides the rule scheduling parameters (independently of the Show Scheduling Criteria field in the Rule Definition Entry Panel).

If you are not using the scheduling options of CONTROL-O, you should work with N (No) as the default.

NOTE

Scheduling criteria apply to a rule even when they are hidden.

Message/Event Selection Parameters

Message / Event Selection parameters specify selection conditions that must be fulfilled before CONTROL-O will perform designated actions.

Figure 19 shows a typical screen with Message Event Selection parameters.

Figure 19 Message Event Selection Parameters

```
RL: $HASP100   LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
ON MESSAGE  = $HASP100
JNAME          JTYPE         SMFID        SYSTEM
ROUTE          DESC          CONSOLEID    CONSOLE
APPEARED     TIMES IN      MINUTES                          And/Or/Not
OWNER IOAADMIN GROUP                          MODE PROD    RUNTSEC
THRESHOLD
DESCRIPTION JES2 'JOB ON RDR' MESSAGE SUPPRESSION
DESCRIPTION
===============================================================================
DO DISPLAY  = SUPPRESS Y ROUTE     DESC    CONSOLEID    CONSOLE
SYSTEM
```

Table 33 shows the options available when setting the ON parameter.

Table 33 ON Parameter Options (part 1 of 3)

Parameter	Description
ON[H]	Specifies the conditions under which the rule is to be performed. An ON statement is comprised of the ON field and the optional parameters listed below. At least one ON statement is required. Additional ON statements can be specified using the And / Or / Not option described below. Type one of the following options or abbreviations in the ON field and press **Enter**. Specify a value for the selected option, and specify values as indicated for any additional subparameters. ■ CO (COMMAND) – any operator command entered on the console ■ CT (CTOPCMSG – message issued by CONTROL-M / Links for Windows NT ■ D (DSNEVENT) – name (or mask) of the job to be monitored for data set events The rule is performed when data set disposition is performed by MVS, for specified data sets, at deallocation time during step termination or dynamic deallocation. Data set name and disposition are specified in subparameters.

Table 33 ON Parameter Options (part 2 of 3)

Parameter	Description
ON (continued)	■ E (EVENT) – Event identifier from 1 through 8 characters in length. Use of an ON EVENT statement indicates that CONTROL-O will use only the Runtime Scheduling criteria to determine whether or not to perform an action. For example, issue a command every hour. ■ JA (JOBARRIV) – Job name (or mask). The rule is performed when a job or started task arrives on the JES spool from any source. **Examples**: Jobs submitted by a TSO user, jobs submitted by CICS, and jobs received over an NJE network. ■ JE (JOBEND) – Job name (or mask). The rule is performed when a job or started task terminates. ■ M (MESSAGE) – Message identifier (ID) from 1 through 10 characters in length. ■ MV (MVALARM) – MAINVIEW alarm exception code (or mask) issued by MAINVIEW ALARM (a BMC Software product.) ■ OM (OMEGAEXP) – Exception code (or mask) issued by an OMEGAMON monitor. The rule is triggered when the specified exception code is issued from the specified OMEGAMON monitor. ■ R (RULE) – Rule identifier (name) from 1 through 8 characters in length. Use of an ON RULE statement indicates that the specified rule is performed only when it is invoked by a DO RULE statement which is part of another rule. ■ SMS – SMS (Storage Management System) data set allocation event. When a new data set is allocated, SMS calls three Automatic Class Selection (ACS) routines that set the data, management, and storage classes of the data set. The rule is triggered when the ACS routine is called. ■ STE (STEP) – Name or mask of the job to be monitored for the completion of a specified step. The rule is performed when the specified step of the specified job is completed. ■ STR (STRING) – Message text to be intercepted by CONTROL-O. The search for the specified string can be limited to a FROM and TO column range, using the COL subparameter. ■ SYSOUT – Message text issued to a SYSOUT DD stream. The rule is triggered when the message is issued.

Table 33 ON Parameter Options (part 3 of 3)

Parameter	Description
ON (continued)	The first ten characters of the value specified for the selected options will appear as the name of the rule in the Rule List and Rule Status screens. Mask characters (* and ?) can be used when specifying values for all ON selection options except ON EVENT and ON RULE. CONTROL-O AutoEdit variables can be specified and are resolved during rule ordering. For more information, see "ON Statement: Message/Event Selection Parameter" on page 434.

Table 34 shows the And/Or/Not subparameter that is displayed for all types of ON statements except ON EVENT and ON RULE.

Table 34 ON Statement And/Or/Not Subparameter

Subparameter	Description

And/Or/Not	Conjunctional parameter for linking ON statements.
	
	Specifying A (And), O (Or), or N (Not) opens a new ON statement and links the new statement to the line containing the A/O/N specification.
	
	Examples
	`ON MESSAGE -`
	`OR`
	`ON COMMAND`
	`ON DSNEVENT JOBA STEPA`
	`OR`
	`ON DSNEVENT JOBA STEPB`

	Note: When specifying multiple ON statements, ensure that the statements are not mutually exclusive or not connected by an AND parameter. Rules containing mutually exclusive ON statements connected by an AND parameter will never be triggered.

ON MESSAGE, ON STRING, ON COMMAND and ON CTOPCMSG Subparameters

Figure 20 shows the unique subparameters that are displayed for the following types of ON statements:

- MESSAGE
- STRING
- COMMAND
- CTOPCMSG

These subparameters cannot contain AutoEdit symbols.

Figure 20 Unique Subparameters for ON MESSAGE, ON STRING, ON COMMAND, ON CTOPCMSG

```
RL: $HASP263   LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
ON MESSAGE  = $HASP263
JNAME          JTYPE         SMFID        SYSTEM
ROUTE          DESC          CONSOLEID 01 CONSOLE
APPEARED 006   TIMES IN 0003 MINUTES                        And/Or/Not
OWNER IOAADMIN GROUP                          MODE PROD    RUNTSEC
THRESHOLD
DESCRIPTION JES CHECKPOINT CONTENTION PROBLEM HANDLING
DESCRIPTION
===============================================================================
DO SHOUT    = TO OPER2             URGENCY R SYSTEM CTO282I
MESSAGE JES CHECKPOINT CONTENTION PROBLEM -- PLEASE CHECK
```

Table 35 shows these unique subparameters, together with descriptions of each of them.

Table 35 Unique Subparameters for ON MESSAGE, ON STRING, ON COMMAND, ON CTOPCMSG

Subparameter	Description
JNAME	Name of the job that issues the message. Mask characters (* and ?) are supported.
JTYPE	Job type that issues the message.
SMFID	SMF ID of the CPU on which the message or command is issued.
SYSTEM	Name of the system from which the message or command originated. Mask characters (* and ?) are supported.
ROUTE	Route code of the message.
DESC	Descriptor code of the message.
CONSOLEID	Console ID to which the message is issued or on which the operator command is entered.
CONSOLE	Name of the console on which the message is displayed. Mask characters (* and ?) are supported.
APPEARED *n* TIMES IN *m* MINUTES	Number of times the message must appear within a specified number of minutes before the rule is triggered.

ON DSNEVENT and ON STEP Subparameters

Figure 21 shows the screen displayed when ON DSNEVENT is entered in the ON statement field.

Figure 21 Unique Subparameters for ON DSNEVENT and ON STEP Statements

```
RL: PRDJ0003   LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
ON DSNEVENT = PRDJ0003 JTYPE   SMFID    SYSTEM
DSN      PROD.*                                        DISP CATLG
PROCSTEP            PGMSTEP            STEPRC OK            And/Or/Not
OWNER IOAADMIN GROUP                          MODE PROD    RUNTSEC
THRESHOLD
DESCRIPTION NEW DATASET CREATED - TRIGGER A BACKUP JOB
DESCRIPTION
=================================================================================
```

Table 36 shows the subparameters that are displayed for ON DSNEVENT or ON STEP statements. These subparameters cannot contain AutoEdit symbols.

Table 36 Unique Subparameters for ON DSNEVENT and ON STEP Statements

Subparameter	Description
jobname	Name (or mask) of the job to be monitored for data set events.
JTYPE	Job type which issues the message.
SMFID	SMF ID of the CPU to monitor for data set events. Mask characters (* and ?) are supported.
SYSTEM	Name of the system to monitor for data set events. Mask characters (* and ?) are supported.
DSN	Name of data set (or masks) to be monitored.
DISP	Data set disposition.
PROCSTEP	Procedure step name (or mask) to be monitored for this event within the selected jobs.
PGMSTEP	Program step name (or mask) to be monitored for this event within the selected jobs.
STEPRC	Completion code of the step which is monitored.

General Parameters

The parameters shown in Figure 22 are used to provide general information about the rule and to determine the mode in which the rule is processed.

Figure 22 General Parameters

```
ON EVENT    = CNDRIVEN
OWNER IOAADMIN GROUP                          MODE PROD    RUNTSEC
THRESHOLD
DESCRIPTION EVENT RULE TRIGGERED EACH TIME THE CONDITION IS ADDED
DESCRIPTION
       ==================================================================================
```

Table 37 General Parameters

Parameter	Description
OWNER	ID of a user who requests CONTROL-O services (used for security purposes, documentation purposes, and for selection in the Show Option window in the Rule Status screen).
GROUP	Name of a group of rules.
MODE	Rule operation method. Determines whether or not a trace is issued, and whether or not commands are actually executed.
RUNTSEC	Type of runtime security checks to be carried out on the rule.
DESCRIPTION^{M}	Free text description of the rule definition. The first line appears as the description of the rule in the Rule List screen. The first 20 characters appear in the rule's description in the Rule Status screen. This parameter is not a selection parameter.

Automated Console Action Parameters: DO Statement

Automated Console Action parameters (DO statements) specify actions to be performed by CONTROL-O. These actions are performed only after conditions specified in the Message/Event Selection parameters have been fulfilled.

```
DESCRIPTION
      ==========================================================================
      DO
```

At least one DO statement must be specified in a rule. Note that the DO IF, DO ELSE and DO ENDIF statements provide Boolean "IF" logic capability, allowing for alternative actions to be performed. Repetition logic is provided using the DO WHILE and DO ENDWHILE statements.

To insert an "empty" DO between two existing DO lines, type the > character over the first letter in the DO field of the first line (for example, **DO >OMMAND**), and press **Enter**.

To delete a DO statement, place the cursor on the first letter in the DO field and press the **EOF** key on your keyboard or blank the field.

A list of allowable DO options is displayed under the Automated Console Action parameters section of the Rule Definition screen. The OPTLIST command can be used to alternately hide or display this list. For more information, see "OPTLIST" on page 116.

DO^{M} Options

The following are a description and example of each of the DO statement options.

DO ASKOPER – Issue a WTOR (Write to Operator with Reply) message.

```
DESCRIPTION
==============================================================================
DO ASKOPER  = HAVE YOU NOTIFIED SHIFT SUPERVISOR ? REPLY 'YES' OR 'NO'
ROUTE       CONSOLEID 01 CONSOLE                          TIMEOUT 0030
DO
```

DO COMMAND – Issue a specified MVS, VTAM or MVS subsystem operator command.

```
DESCRIPTION
       ==============================================================================
DO COMMAND  = D A,CICSPROD
   WAIT        CONSOLEID    CONSOLE          SYSTEM
   WAITMODE   Y             WAITRESP Y            TIMEOUT
   RESPMSG
DO
```

DO COND – Add or delete a prerequisite condition. Prerequisite conditions are used to trigger events in CONTROL-O or other INCONTROL products.

```
DESCRIPTION SIGNAL CONTROL-M THAT DB2 IS ACTIVE (AND NOT DOWN)
DESCRIPTION
==============================================================================
DO COND     = DB2-IS-ACTIVE        STAT +   DB2-IS-DOWN           STAT -
```

DO CTD REQ – Order or Force CONTROL-D mission request.

```
DESCRIPTION
       ==============================================================================
DO CTD REQ  = MISSION MIS1     CAT                       DATE ODAT   FORCE Y
                LIBRARY LIB1
```

DO CTOPCMSG – Specify a message to be sent to CONTROL-M/Links for Windows NT.

```
DESCRIPTION
       ==============================================================================
DO SHOUT    = TO OPER2             URGENCY  R          SYSTEM CTO282I82I
   MESSAGE NON-CORRECTABLE I/O ERR ON MVSRES (UNIT=230). PAGE TECH-SUPPORT
DO CTOPCMSG = PAGE SYSPROG DATA-CHECK ON MVSRES (UNIT=230)
DO
```

DO DISPLAY – Control the display of the message on the console, or control the execution of a command.

```
DESCRIPTION
       ==============================================================================
DO DISPLAY  = SUPPRESS Y ROUTE     DESC    CONSOLEID 01 CONSOLE
   SYSTEM
   NEWTEXT
DO
```

DO DOM – Delete a highlighted, unrollable message from the display.

```
DO DISPLAY  = SUPPRESS N ROUTE     DESC    CONSOLEID    CONSOLE
   SYSTEM
   NEWTEXT PLEASE MOUNT TAPE S89542 ON UNIT 480
DO SET      = %%NEWDOMID=%%$LDOMID                                GLOBAL  N
DO WAIT     = REPLY                DOM Y             TIMEOUT 9999
   MESSAGE
DO DOM      = %%NEWDOMID
DO
```

DO ENDMSG – Delimit DO statements which are processed during message interception in command-response mode or for multi-line messages.

```
DESCRIPTION
==============================================================================
DO SET      = %%JSTAT = INACTIVE                                  GLOBAL  N
DO COMMAND  = D A,CICSPROD
   WAIT        CONSOLEID    CONSOLE          SYSTEM
   WAITMODE   Y             WAITRESP Y            TIMEOUT
   RESPMSG
IF       %%$W2 %%$M* EQ CICSPROD
DO SET      = %%JSTAT = ACTIVE                                    GLOBAL  N
ENDIF
DO DISPLAY  = SUPPRESS A ROUTE     DESC    CONSOLEID    CONSOLE
   SYSTEM
   NEWTEXT
ENDMSG
DO SHOUT    = TO OPER              URGENCY R SYSTEMCTO282I
   MESSAGE JOB CICSPROD IS %%JSTAT
DO
```

DO EXIT – Exit from a multi-line message block or a DO WHILE block.

```
==============================================================================
DO SET      = %%$MLLEND=NO                                        GLOBAL  N
DO COMMAND  = $DA
   WAIT        CONSOLEID    CONSOLE          SYSTEM
   WAITMODE   Y             WAITRESP Y            TIMEOUT
   RESPMSG $HASP890     $HASP612
IF       %%$MSGID EQ $HASP612
DO SHOUT    = TO OPER              URGENCY R SYSTEM          CTO282I
   MESSAGE SYSTEM IS IDLE
EXIT     MESSAGE
DO
ENDIF
ENDMSG
DO
==============================================================================
```

DO FORCEJOB – Force a job under CONTROL-M.

```
==========================================================================
      DO FORCEJOB = TABLE   SMF          JOB CLEANSMF                  DATE ODAT
                    LIBRARY CTM.PROD.SCHEDULE
      DO
```

DO IF / DO ELSE / DO ENDIF – Provide Boolean “IF” logic capability allowing for alternative actions to be performed. Nesting levels can be displayed or hidden using the SHOWNEST command, described in “SHOWNEST Command” on page 362.

```
==========================================================================
DO DISPLAY  = SUPPRESS Y ROUTE     DESC    CONSOLEID    CONSOLE
   SYSTEM
DO SHOUT    = TO OPER              URGENCY R SYSTEMCTO282I
   MESSAGE TSO IS BENCHING SHUT DOWN. SHIFT SUPERVISOR MUST BE NOTIFIED.
DO SET      = %%RC = 4                                          GLOBAL  N
   WHILE    %%RC NE# 0
DO ASKOPER  = HAVE YOU NOTIFIED SHIFT SUPERVISOR?  REPLY 'YES' OR 'CANCEL'
   ROUTE       CONSOLEID    CONSOLE                          TIMEOUT 0030
IF       (%%$ASKRC EQ# 4) AND ((%%$RPLYTXT EQ YES) OR (%%$RPLYTXT EQ CANCEL))
DO SET      = %%RC = 0                                          GLOBAL  N
   ENDIF
   ENDWHILE
   IF       %%$RPLYTXT EQ YES
DO COMMAND  = P TSO
   WAIT        CONSOLEID    CONSOLE          SYSTEM
   WAITMODE   N
ELSE
DO SHOUT    = TO OPER              URGENCY R SYSTEMCTO282I
   MESSAGE ACTION CANCELED
ENDIF
DO
```

DO KSL – Execute a KeyStroke OpenAccess (KOA) script.

```
DESCRIPTION
       ==============================================================================
DO SET      = %%FILENAME = FILE01                                GLOBAL  N
DO SET      = %%FILESTAT = UNKNOWN                               GLOBAL  N
DO KSL      = CICSINQ %%FILENAME
   WAITMODE   Y                                      TIMEOUT         STOP Y
   INITPROC   CICSP          SHARELOC Y              IMMEDIATE Y
```

DO RESOURCE – Change the quantity of a Quantitative resource.

```
DESCRIPTION
==========================================================================
DO RESOURCE = TAPE                 0001 +
DO
==========================================================================
```

DO RETURN – Exit from the rule and return to the caller.

```
==============================================================================
IF       %%$V2 EQ  ''AAUTCNMI''
DO SET      = %%STATUS_NLDM = UP                                GLOBAL  Y
RETURN
ENDIF
IF       %%$V2 EQ  ''BNJDSERV''
DO SET      = %%STATUS_NPDA = UP                                GLOBAL  Y
ENDIF
DO
==============================================================================
```

DO RULE – Invoke another rule from within the current rule.

```
DESCRIPTION
==============================================================================
DO RULE     = GENALERT %%$JOBNAME %%ABEND                   OWNER  IOAADMIN
   TABLE               LIBRARY
DO
==============================================================================
```

DO SET – Assign a value to an AutoEdit variable.

```
DESCRIPTION
==============================================================================
DO SET      = %%IMS1_REPLY_ID = %%$REPLY                         GLOBAL  Y
DO
==============================================================================
```

DO SHOUT – Issue a message to a console, TSO user, ROSCOE user, IOA Log or Info / Management using the notification facility.

```
DESCRIPTION
==============================================================================
DO SHOUT    = TO TSO-DBA           URGENCY U SYSTEM                      CTO282I
   MESSAGE DB2 MASTER ABENDED - PLEASE CHECK!
DO
==============================================================================
```

DO SMSCLASS – Assign an SMS class name to a new data set.

```
==============================================================================
DO SMSCLASS = ID 01 CLASS SMS_CLASS_01
DO
==============================================================================
```

DO SMSMSG – Define a message to be displayed in the job log for a new data set.

```
==============================================================================
DO SMSMSG   = ID 1  MESSAGE SMS MESSAGE
DO
==============================================================================
```

DO STOPJOB – Stop the execution of the next steps of the job under which the rule is executing.

```
DESCRIPTION
==============================================================================
DO STOPJOB
DO
==============================================================================
```

DO SYSREQ – Execute system programmer requests.

```
DESCRIPTION
==================================================================================
DO SYSREQ   = ENQINFO    STATUS OWNER      SCOPE ALL       JOBNAME
   QNAME      SYSDSN     RNAME %%DSNAME
DO
```

DO TERMINAT – Terminate the process of the triggering rule, and all called rules (if any), and continue to the next rule.

```
ON EVENT    = TERMINAT
OWNER N18A     GROUP                        MODE LOG     RUNTSEC
THRESHOLD
DESCRIPTION
==============================================================================
DO SET      = %%A=BEFORE CALL                                  GLOBAL  N
DO RULE     = TERMINAT                                   OWNER
   TABLE               LIBRARY
   SYSTEM              SHARELOC       TIMEOUT
DO SET      = %%A=AFTER CALL                                   GLOBAL  N
DO
ON RULE     = TERMINAT
OWNER N18A     GROUP                        MODE LOG     RUNTSEC
THRESHOLD
DESCRIPTION
==============================================================================
DO SET      = %%A=CALLED RULE                                  GLOBAL  N
TERMINAT
DO SET      = %%A=AFTER TERMINAT                               GLOBAL  N
DO
```

DO TSO – Perform a TSO command, CLIST, or REXX procedure.

```
DESCRIPTION
==========================================================================
DO TSO      = LISTALC
   WAITMODE   Y                                    TIMEOUT         STOP Y
   INITPROC                 SHARELOC               IMMEDIATE N
DO SHOUT    = TO OPER              URGENCY R SYSTEMCTO282I
   MESSAGE CLIST LISTALC ENDED WITH RC=%%$TSORC    DESCRIPTION
DO
```

DO WAIT – Delay subsequent action until any of the specified events is completed.

```
DESCRIPTION
==========================================================================
DO DISPLAY  = SUPPRESS N ROUTE     DESC    CONSOLEID    CONSOLE
   SYSTEM
   NEWTEXT PLEASE MOUNT TAPE S89542 ON UNIT 480
DO SET      = %%NEWDOMID=%%$LDOMID                                GLOBAL  N
DO WAIT     = REPLY                DOM Y             TIMEOUT 9999
   MESSAGE
DO DOM      = %%NEWDOMID
DO
```

DO WHILE / DO ENDWHILE – Provide repetition (loop) logic capability so that other DO actions can be performed repeatedly.

Nesting levels can be displayed or hidden using command SHOWNEST described in "SHOWNEST Command" on page 362.

```
DESCRIPTION
       ==========================================================================
  DO DISPLAY  = SUPPRESS Y ROUTE     DESC    CONSOLEID    CONSOLE
     SYSTEM
  DO SHOUT    = TO OPER              URGENCY R SYSTEMCTO282I
     MESSAGE TSO IS BEING SHUT DOWN. SHIFT SUPERVISOR MUST BE NOTIFIED.
  DO SET      = %%RC = 4                                            GLOBAL  N
 WHILE    %%RC NE# 0
  DO ASKOPER  = HAVE YOU NOTIFIED SHIFT SUPERVISOR?  REPLY 'YES' OR 'CANCEL'
     ROUTE       CONSOLEID    CONSOLE                          TIMEOUT 0030
 IF       (%%$ASKRC EQ# 4) AND ((%%$RPLYTXT EQ YES) OR (%%$RPLYTXT EQ CANCEL))
  DO SET      = %%RC = 0                                            GLOBAL  N
 ENDIF
 ENDWHILE
 IF       %%$RPLYTXT EQ YES
  DO COMMAND  = P TSO
     WAIT        CONSOLEID    CONSOLE          SYSTEM
     WAITMODE   N
 ELSE
  DO SHOUT    = TO OPER              URGENCY R SYSTEMCTO282I
     MESSAGE ACTION CANCELED
 ENDIF
  DO
```

Basic Scheduling Parameters

CONTROL-O Basic Scheduling parameters specify on what dates the rule is a candidate for activation on a daily basis. The rule is “ordered” (that is, its basic scheduling criteria are checked; if fulfilled, the rule is ready to be activated — placed in the active CONTROL-O monitor environment). However, it is not activated until Runtime Scheduling and Message/Event criteria have been fulfilled.

Use of the Basic Scheduling parameters is optional and is usually performed by advanced CONTROL-O users. The “Show Scheduling Criteria” field of the entry panel manages the display of Basic and Runtime Scheduling parameters on the Rule Definition screen. It is also possible to control this feature from the Rule Definition screen. Type SCHED (or SC) in the command area and press **Enter** to alternate between display or non-display of the scheduling parameters.

Figure 23 shows the Basic Scheduling Parameters section of the Rule Definition screen.

Figure 23 Basic Scheduling Parameters

```
==============================================================================
DAYS                                                          DCAL
                                                                    AND/OR
WDAYS   ALL                                                   WCAL
MONTHS  1- Y 2- Y 3- Y 4- Y 5- Y 6- Y 7- Y 8- Y 9- Y 10- Y 11- Y 12- Y
DATES
CONFCAL          SHIFT
ENVIRONMENT SMFID      SYSTEM
==============================================================================
```

Table 38 shows the basic scheduling parameters, together with explanations of each of them.

Table 38 Basic Scheduling Parameters (part 1 of 2)

Parameter	Description
DAYS	Days of the month to schedule the rule. A maximum of two lines can be specified. The subparameters of the DAYS parameter are: ■ DCAL — DAYS calendar specification. ■ AND/OR — Conjunctional parameter which links the DAYS and WDAYS parameters.
WDAYS	Days of the week to schedule the rule. A maximum of two lines can be specified. WDAYS has the following subparameter: ■ WCAL — WDAYS calendar specification.
MONTHS	Months to order the rule.
DATES	Specific dates in the year to order the rule.

Table 38 Basic Scheduling Parameters (part 2 of 2)

Parameter	Description
CONFCAL	Name of a calendar used for rule scheduling confirmation. CONFCAL has the following subparameter: ■ SHIFT — Indicates if and when a rule should be scheduled when it fails confirmation by the CONFCAL calendar.
ENVIRONMENT	Environment in which the rule should be loaded. The subparameters of the ENVIRONMENT parameter are: ■ SMFID — SMF ID of the system in which the rule should be loaded. ■ SYSTEM — Name of the system in which the rule should be loaded.

Runtime Scheduling Parameters

CONTROL-O Runtime Scheduling parameters specify runtime scheduling conditions under which actions are performed by CONTROL-O. CONTROL-O does not scan for messages and commands unless all runtime parameters are fulfilled. For example, special network status monitoring is activated only during heavy data transmission.

Figure 24 shows the Runtime Scheduling parameters section of the Rule Definition screen.

Figure 24 Runtime Scheduling Parameters

```
==========================================================================
IN        IMS-ABEND            0101
TIME FROM 2200 UNTIL 0600      INTERVAL      PRIORITY 99  CONTINUE SEARCH Y
====== >>>>>>>>>>>>>>>> END OF RULE DEFINITION PARAMETERS <<<<<<<<<<<<<<<< ====
```

Commands of the Rule Definition Screen

Table 39 shows the commands, other than the /> command, that can be specified in the COMMAND field of the Rule Definition screen.

Table 39 Commands of the Rule Definition Screen (part 1 of 3)

Command	Description
EDIT	The EDIT command alternately enters and exits the Edit environment of the Rule Definition screen. The Edit environment provides ISPF-like line editing commands to the Rule Definition screen. For more information, see Appendix A, “Editing Rule Definitions in the IOA Edit Environment.”
SHPF	The SHPF command shows the current PFKey assignments.

Table 39 Commands of the Rule Definition Screen (part 2 of 3)

Command	Description
SCHED	The SCHED command (abbreviated SC) alternately displays or hides the rule scheduling parameters (independent of the Show Scheduling Criteria field).
OPTLIST	The OPTLIST command (abbreviated OPT or O) alternately displays or hides the list of allowable Automated Console Action parameters (DO OPTIONS).
SHOWNEST	The SHOWNEST command (abbreviated SH) alternately displays or hides level numbers for DO statement nesting, relative to the nesting level of DO IF, DO ELSE and DO ENDIF statements, and DO WHILE and DO ENDWHILE statements.
/>	The /> command comments out a DO statement in a CONTROL-O rule definition. To comment out a statement, type /> over the first two letters of the statement name (for example, for a DO COMMAND statement type /> over the CO in command), and press **Enter**. The entire statement is commented out. Valid formats of the /> command are: ■ /> OFF — The commented-out DO statement is hidden. ■ /> ON — The commented-out DO statement is displayed. Default. ■ /> — indicates whether /> ON or /> OFF mode is active For more information, see "Commenting Out Rule Statements" on page 118.
CAPS	By default, all entries of lowercase characters are converted and saved as uppercase. In CONTROL-O rules, certain fields (such as the string entered in the ON STRING field) can be enabled to accept and save lowercase characters, by using the CAPS OFF command. Valid formats of the CAPS command are: ■ CAPS OFF — enables certain user entries to be saved and displayed in lowercase characters ■ CAPS ON — forces all user entries to be displayed in uppercase characters, regardless of the case in which they were entered. Default. ■ CAPS — indicates whether CAPS ON or CAPS OFF mode is active
	Note: JCL jobs used by CONTROL-M do not support lowercase characters. BMC Software recommends that you do not use lowercase characters to define CONTROL-O variables if those variables are shared by CONTROL-M through IOAVAR.

Table 39 Commands of the Rule Definition Screen (part 3 of 3)

Command	Description
/*	The /* command enables the user to insert a comment into the Action section of the Rule Definition screen. Valid formats of the /* command are: ■ /* OFF — The comment line is hidden. ■ /* ON — The comment line is displayed. Default. ■ /* — indicates whether /* ON or /* OFF mode is active For more information, see the section immediately below, "Specifying Comments".

Specifying Comments

Comments are free text descriptions of rule definition parameters that are stored in a rule definition member. BMC Software recommends that you insert comments within rule definitions for clarification and documentation purposes. Comments are not processed during rule execution.

To insert a comment, position the cursor at the line before which the comment should be inserted, and press **CMNT** (**PF04/PF16**). A comment line is opened beginning with the symbol /*. To insert additional lines, fill in the current line and press **Enter**.

NOTE

Comments can also be inserted by either typing the CMNT command in the COMMAND field and moving the cursor to the line before which the comment should be inserted and pressing **Enter**, or by typing **/*** on an empty DO statement and pressing **Enter**.

The Rule Definition screen shown in Figure 25 illustrates comment usage.

Figure 25 Illustration of Rule Definition Comment Usage

```
RL: CANCEL *   LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
     +-------------------------------------------------------------------------+
  ON COMMAND  = CANCEL *
     JNAME CONSOLE  JTYPE         SMFID        SYSTEM       USERID
     ROUTE          DESC          CONSOLEID 01 CONSOLE
   APPEARED     TIMES IN      MINUTES                          And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION ASK FOR OPERATOR'S CONFIRMATION OF SENSITIVE COMMANDS
  DESCRIPTION
  ==========================================================================
  /* SUPPRESS ORIGINAL COMMAND
  DO DISPLAY  = SUPPRESS Y ROUTE     DESC    CONSOLEID    CONSOLE
     SYSTEM
  /* ASK OPERATOR FOR CONFIRMATION
  WHILE    %%$RPLYTXT NE YES AND %%$RPLYTXT NE NOT
  DO ASKOPER  = ENTER "YES" OR "NOT" FOR CONFIRMATION
  ROUTE       CONSOLEID    CONSOLE                          TIMEOUT
  ENDWHILE
  /* UPON CONFIRMATION, RE-ISSUE THE ORIGINAL COMMAND
  IF       %%$RPLYTXT EQ YES
  DO COMMAND  = %%$CMD
     WAIT        CONSOLEID    CONSOLE          SYSTEM
     WAITMODE   N
  ENDIF
  DO
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 14.51.58
```

An unlimited number of comment lines can be specified in a rule definition.

CONTROL-O line editing commands, similar to ISPF line commands, can be performed on comment lines. For more information, see Appendix A, “Editing Rule Definitions in the IOA Edit Environment.”.

Commenting Out Rule Statements

Existing DO statements in a CONTROL-O rule definition can be commented out through the /> command. This command can be useful for testing how a rule functions without certain statements, or for temporarily disabling certain functions normally performed by the rule.

To comment out a statement, type **/>** over the first two characters in the DO field, and press **Enter**. The characters /> are displayed before all lines that have been commented out.

Example

The following statement is used in the examples below:

```
DO COMMAND  = D T
  WAIT        CONSOLEID    CONSOLE          SYSTEM
  WAITMODE   N
```

Type the /> command.

```
DO />MMAND  = D T
  WAIT        CONSOLEID    CONSOLE          SYSTEM
  WAITMODE   N
```

Press **Enter**.

```
/> COMMAND  = D T
/> WAIT        CONSOLEID    CONSOLE          SYSTEM
/> WAITMODE   N
```

Note that all lines of the specified DO COMMAND statement are commented out.

Removing the Comment Indicators

To remove the comment indicator from a statement that has been commented out, type **/>** over the first two characters in the statement name and press **Enter**. For example:

```
/> />MMAND  = D T
/> WAIT        CONSOLEID    CONSOLE          SYSTEM
/> WAITMODE   N
```

Editing Rule Definitions in the Edit Environment

Rule Definition parameters can be edited, that is, moved, copied, deleted, or repeated, by performing IOA Line Editing commands, similar to standard ISPF line commands, from within the CONTROL-O Edit environment.

The Edit Environment in a Rule Definition screen is accessed by typing **EDIT** in the COMMAND field and pressing **Enter**.

A 2-character Line Editing command field, marked by underscores, is displayed for each line in the Rule Definition screen.

Editing commands are typed directly onto these underscores.

Figure 26 Entering Editing Commands

```
RL: $HASP250   LIB CTOP.PRODSMP.RULES                          TABLE: $HASP
COMMAND ===>                                                   SCROLL===> CRSR
-------------------------------------------------------------------------------
__ ON MESSAGE  = $HASP250
__    JNAME          JTYPE         SMFID        SYSTEM
__    ROUTE          DESC          CONSOLEID    CONSOLE
__    APPEARED     TIMES IN      MINUTES                          And/Or/Not
__ OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
__ THRESHOLD
C_ DESCRIPTION ***************************************
A_ DESCRIPTION * JES2 - SUPPRESS JOB PURGED MESSAGE *
__ DESCRIPTION
__ ==============================================================================
__ DO DISPLAY  = SUPPRESS   ROUTE     DESC    CONSOLEID    CONSOLE
__    SYSTEM
__ DO
__ ==============================================================================
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                  17.20.04
```

The line editing commands that you have typed are processed when **Enter** is pressed.

For more information and examples of editing rule definitions in the Edit environment, see Appendix A, “Editing Rule Definitions in the IOA Edit Environment,”

Exiting the Rule Definition Screen

The commands shown in Table 40 can be used to exit the Rule Definition screen.

Table 40 Commands for Exiting the Rule Definition Screen

Command	Description
NEXTRULE (**PF11/23**)	Keep the changes made to the rule parameters and enter the rule definition of the next rule in the Rule list.
PREVRULE (**PF10/22**)	Keep the changes made to the rule parameters and enter the rule definition of the previous rule in the Rule list.
END (**PF03/15**)	Keep the changes made to the rule parameters and return to the Rule List screen.
	Note: The changes to the parameters are kept in memory only. They are written to the disk only after you exit the Rule List screen.
CANCEL	Do not keep the changes made to the rule parameters, and return to the Rule List screen.

Exiting the Rule List Screen

Press **END** (**PF03/PF15**) to exit the Rule List screen. If changes have been made, the Exit Option window shown in Figure 27 is opened.

Figure 27 Rule List Screen Exit Option Window

```
RULES OF LIBRARY: CTO.PROD.RULES                                TABLE: $DSPOOL
COMMAN +-------------------------------------------------------+  ===> CRSR
OPT  R |                 PLEASE SELECT EXIT OPTION             |  ---------
     $ |                                                       |
     $ |     SAVE    CREATE                                    |
     $ |                                                       |
     $ |     LIBRARY CTO.PROD.RULES                            |
 ===== |     TABLE   $DSPOOL                                   |  <<<< ====
       |                                                       |
       +-------------------------------------------------------+

OPTIONS:  S SELECT   D DELETE   I INSERT                          17.05.45
```

You must type **Y** (Yes) or **N** (No) in one of the two exit options, SAVE or CREATE. It is possible to change the name of the library or the name of the table in the window. You will return either to the Table list or to the entry panel, depending on how you entered the Rule List screen.

NOTE

Changes made to rules in the table can be saved only by saving an entire table using the Exit Option window.

If you have entered an Exit Option window, but do not want to exit the Rule List screen, press **PF04/PF16** (**RESET**). The Rule List screen is then displayed, and the table is not saved.

Ordering Rule Tables

The Rule Definition screen is used to define and modify rules. Rule definitions are used by CONTROL-O to intercept and manage console messages (or commands, strings, or events). A rule definition that resides in the library is not “active” until it has been ordered. Rule tables can be ordered automatically each day or manually. For more information on automatic ordering of rule tables, see the CONTROL-O chapter of the *INCONTROL for z/OS Administrator Guide*.

When ordering or forcing a rule table, if the table is already active under the CONTROL-O monitor, it is replaced by the new copy of the table. All previous rules of the table are deactivated and replaced by the rules scheduled by the Order or Force.

Two ways to manually order rule tables are by using the O and F options of the Table List screen. These are described in Table 41.

Table 41 Options for Manually Ordering Rule Tables

Option	Description
O (ORDER)	Check the rules' Basic Scheduling parameters against the requested activation date. If a rule should be scheduled for that day, the rule is loaded into memory under the CONTROL-O monitor.
F (FORCE)	Activate the rules regardless of what is specified in each rule's Basic Scheduling parameters.

When you use the O and F options, the default confirmation window shown in Figure 28 is opened. If the default has been modified in a profile variable, a different confirmation window, requiring double confirmation, is opened.

Figure 28 Order and Force Confirmation Window

```
TABLES OF LIBRARY CTO.PROD.RULES                                  ------------(OR)
COMMAND ===>                                                       SCROLL===> CRSR
OPT  NAME ------------ VV.MM  CREATED     CHANGED     SIZE  INIT   MOD   ID
    $HASP             01.00 00/07/06 00/07/06 00:51    38    38     0 IOAPROD
    COMMANDS          01.00 00/07/06 00/07/06 00:51    24    24     0 IOAPROD
    CTD                    +-------------------------------+  6     0 M19A
    CTM                    |   CONFIRM     ODATE 060600    |
O   CTO        <-----------|   ASK FOR EACH ONE  Y         |
    DEVICES                +-------------------------------+  4     0 IOAPROD
    EVENTS            01.00 00/07/06 00/07/06 00:51    20    20     0 IOAPROD
    IEA               01.00 00/07/06 00/07/06 00:51    32    32     0 IOAPROD
O   IEC               01.00 00/07/06 00/07/06 00:51     6     6     0 IOAPROD
    IEE               01.00 00/07/06 00/07/06 00:51    17    17     0 IOAPROD
O   IEF               01.00 00/07/06 00/07/06 00:51    46    46     0 IOAPROD
    IFB               01.00 00/07/06 00/07/06 00:51    32    32     0 IOAPROD
    IKT               01.00 00/07/06 00/07/06 00:51    13    13     0 IOAPROD
    IMS               01.00 00/07/06 00/07/06 00:51    26    26     0 IOAPROD
    IOS               01.00 00/07/06 00/07/06 00:51    10    10     0 IOAPROD
    IST               01.00 00/07/06 00/07/06 00:51     8     8     0 IOAPROD
    SHORTCMD          01.01 00/07/06 00/11/02 12:24    21    20     0 M19A
    SHUTSYS           01.00 00/07/06 00/07/06 00:51    19    19     0 IOAPROD
    STARTSYS          01.00 00/07/06 00/07/06 00:51     7     7     0 IOAPROD
    STATS             01.00 00/07/11 00/07/11 17:35    40    40     0 CTOPROD
OPTIONS:  S SELECT   O ORDER   F FORCE   B BROWSE   D DELETE           12.24.50
```

The specified date can be changed. To confirm your selection, enter **Y** (Yes) in the CONFIRM field. If you decide not to order or force the table, enter **N** (No). The original screen is displayed.

The ASK FOR EACH ONE line is displayed if more than one Order or Force is requested. If you are certain that you want to order or force all indicated tables, and do not want to change the ODATE for any of the individual tables, you can type **Y** (Yes) in the CONFIRM field to bypass individual confirmations and **N** (No) in the ASK FOR EACH ONE field, and then press **Enter**. All tables marked O (or F) are ordered.

Wish WO0943

As a result of the Order or Force request an MVS MODIFY command is sent to the CONTROL-O monitor. Some installations may protect the MVS command. If the user is not authorized to issue an MVS MODIFY command the Order or Force fails.

If you apply this wish, by specifying WO0943 APPLY=YES in the IOADFLTL member, the MODIFY command will be executed under the CONTROL-O or CMEM monitor. Therefore, authority to issue an MVS MODIFY command is required only for the CONTROL-O or CMEM monitor USERID.

Wish WO0943 also introduces

- the following AutoEdit system variables, each of which return Wish WO0943 with a status of Y or N

  — %%$WO0943
  — %%$MODIFY_O_F

- the following CONTROL-O MODIFY command

  `F controlo,WISH=WO0943,`*`xxxxx`*

  In this command, *xxxxx* is either ENABLE or DISABLE

  This command allows the user to enable or disable optional Wish WO0943 without stopping CONTROL-O.

NOTE

This is a temporary change to the Wish only. In order to make the change permanent, Wish WO0943 must set to the required value, YES or NO, in the IOADFLTL member.

Copying Rules to Another Table

To copy one or more rules from the current table to another table, type **C** (Copy) by the rule names in the Rule List screen and press **Enter**. The window shown in Figure 29is displayed.

Figure 29 Window for Copying Rules to Another Table

```
RULES OF LIBRARY: CTO.PROD.RULES                                TABLE: EXIT
COMMAND ===>                                                    SCROLL===> CRSR
OPT  RULE       TYP------------- DESCRIPTION -------------------------------
EXIT        E EXIT    EXIT 000
EXITMSG1    E EXIT    EXIT 001
EXITMSG2    E EXIT    EXIT 002
EXITMSG3    E EXIT    EXIT 003
EXITMSG4 +-----------------------------------------------------------+
EXITMSG5 |                                                     |C   EXITMSG6 |
SPECIFY DESTINATION LIBRARY,TABLE AND RULE NAME       |
EXITMSG7 |                                                        |
EXITMSG8 |  LIBRARY :  CTO.PROD.RULES                             |
EXITMSG9 |  TABLE   :                                             |
EXITMSG0 |  RULE    :  EXITMSG0                                   |
EXITMSGA |                                                        |
EXITMSGB |  PRESS END/RESET TO CANCEL     ENTER TO PERFORM THE COPY  |
EXITMSGC +-----------------------------------------------------------+
EXITMSGD    E EXIT    EXIT 00D
EXITMSGE    E EXIT    EXIT 00E
EXITMSGF    E EXIT    EXIT 00F
EXITMSGG    E EXIT    EXIT 00G
EXITMSGH    E EXIT    EXIT 00H
EXITMSGI    E EXIT    EXIT 00I
OPTIONS S SELECT D DELETE I INSERT C COPY                          15.37.39
```

The fields in the window in Figure 29 are described in Table 42. Some fields contain default values which can be modified.

Table 42 Fields in the Window for Copying Rules to Another Table

Field	Description
LIBRARY	Library containing the table into which the rule should be copied. Must be an existing library. Default: the current library.
TABLE	Name of the table into which the rule should be copied. If the specified table does not exist, the table is created when the request is performed.
RULE	Name of the rule to be copied. If multiple rules are selected, the window is first displayed with the first selected rule. As each request is performed or canceled, the next requested rule name appears.

- To perform a request, press **Enter**.
- To cancel a request, press **PF03/PF15** (**END**) or **PF04/PF16** (**RESET**).

Message Statistics Screen

The Message Statistics screen displays statistics for all messages and commands intercepted by CONTROL-O. Selection criteria for statistics can be specified in the Show Option window, which is described in "Show Option Window" on page 129.

To enter the Message Statistics screen, select Option OM (CONTROL-O Message Statistics) in the IOA Primary Option menu.

Figure 30 Message Statistics Screen

```
------------- CONTROL-O MESSAGE STATISTICS FROM 12/12/00 11:12:51 ---------(OM)
COMMAND ===>                                                SCROLL===> CRSR
MSG  659,035  CMD    1,714  HANDLED  607,498  SUPPRESSED  606,885    SMFID FDSF
O ID        TYP    COUNT   HANDLED SUPPRESSED ------------ TEXT ---------------
  $HASP000 M   26,347 26,347 26,347  $HASP000 OK
     $HASP317   M    19,556    19,556    19,556  $HASP317 T17INS24 0005 DATA SETS
     $HASP250   M    17,091    17,091    16,993  $HASP317 T17INS24 IS PURGED
     ICH7001I   M    17,004    17,004    17,004  ICH7001I T72A     LAST ACCESS AT
     $HASP100   M    16,568    16,568    16,568  $HASP100 PRDKPL02 ON INTRDR
     $HASP373   M    12,995    12,995    10,307  $HAPS373 PRDKPL01 STARTED - INIT
     $HASP395   M    12,992    12,992    10,306  $HASP395 T44UPDTA ENDED
     IEF403I    M    12,991    12,991    12,991  IEF403I T44UPDTA - ENDED - TIME=
     IEF404I    M    12,990    12,990    12,990  IEF404I PRKDPL-1 - STARTED - TIM
     $HASP309   M    12,802    12,802    12,802  $HASP309    INIT 4 INACTIVE ****
     IEF125I    M     3,430     3,430     3,430  IEF125I T21 - LOGGED ON - TIME=1
     IEF667I    M     3,421     3,421     3,421  IEF667I WARNING MESSAGE(S) FOR J
     IEF126I    M     3,284     3,284     3,284  IEF126I T74 - LOGGED OFF - TIME=
     IEF234E    M     2,725     2,725         0  IEF234E K 481,994631,PVT,T15MALL
     IEF233A    M     2,499     2,499         0  IEF233A M 480,015537,,PRGPL27A,C
     $HASP688   M     1,683     1,683       906  $HASP688 T92PRNTS OUTGRP=1.1.1
     $HASP608   M     1,527         0         0  $HASP608 T02KPL91 EXECUTING A PR
     IEC705I    M     1,525     1,525         0  IEC705I TAPE ON 480,014901,SL,62
     IEE600I    M     1,504     1,504     1,009  IEE600I REPLY TO 72 IS; NOHOLD
OPTIONS:  S SHOW  X EXCLUDE  R RESET                                    14.29.51
```

Up and down scrolling conventions and right and left shifting conventions are supported in the Message Statistics screen.

To update the display with the last available values from the CONTROL-O monitor, type **REFRESH** in the COMMAND field and press **Enter**, or press **PF16**.

To return to the IOA Primary Option menu, press **PF03/PF15** (**END**).

Fields of the Message Statistics Screen

Table 43 Fields of the Message Statistics Screen (part 1 of 2)

Field	Description
The following general information is displayed:	
Date and Time fields	Date and time from which the current statistics accumulation began. This is the top line of the screen.
SMFID	SMF ID of the computer for which the statistics are accumulated (under the SCROLL===> field).
The following information is shown for each displayed message or command:	
OPTION	Allows entry of line options next to a message or command.
ID	■ For messages, the message code ■ For commands, the command text, such as S for S OPER1
	Note: Message or command IDs may have been redefined through a DO SET %%$STATID statement in the rule definition.
TYP	Indicates whether the current line describes a message or a command. Valid values are: ■ M — message ■ C — command
	Note: When an operator command is issued, MVS internally issues a message with the command text. This message is intercepted by CONTROL-O and written to the Statistics file. Therefore, operator commands appear twice in the Statistics screen, the first time with type C, and the second time with type M.
COUNT	Number of times the message or command has been intercepted by CONTROL-O (from the start of accumulation). The format of this field is discussed in "COUNT Field, HANDLED Field and SUPPRESSED Field Formats" immediately below this table.
HANDLED	Number of message or command occurrences for which at least one rule has been triggered by CONTROL-O. The format of this field is discussed in "COUNT Field, HANDLED Field and SUPPRESSED Field Formats" immediately below this table.
SUPPRESSED	Number of message or command occurrences which have been suppressed by CONTROL-O. The format of this field is discussed in "COUNT Field, HANDLED Field and SUPPRESSED Field Formats" immediately below this table.

Table 43 Fields of the Message Statistics Screen (part 2 of 2)

Field	Description
TEXT	Text of the first occurrence of the message or command after the creation of the Statistics file. When the text length exceeds the text field length, the RIGHT command (**PF11/PF23**) can be used to shift more text into view, or the WRAP command can be used to "wrap" (continue) the text display in the following lines. For messages or commands which have been locally reset (by the RESET option, the REDATE command can be used to alternate between display of the message text and display of the reset date and time. The RESET command is discussed in "CANCEL and RESET Commands" on page 76.
The following summary information is shown for all displayed messages and commands:	
MSG	Total number of message occurrences (sum of the COUNT fields for all displayed messages).
CMD	Total number of command occurrences (sum of the COUNT fields for all displayed commands).
HANDLED	Total number of messages / commands handled by CONTROL-O (sum of all HANDLED fields).
SUPPRESSED	Total number of messages / commands suppressed by CONTROL-O (sum of all SUPPRESSED fields).

COUNT Field, HANDLED Field and SUPPRESSED Field Formats

The format for the COUNT, HANDLED, and SUPPRESSED fields, in both detail and summary lines, is as follows:

- Values up to 999,999 appear in standard numeric format *nnn,nnn*.
- Larger values are indicated by a K or M, as shown in Table 44.

Table 44 Format of the COUNT, HANDLED and SUPPRESSED Fields

Value	Description
nnn,nnnK	Values are rounded to the nearest thousand. *nnn,nnn* represents the number of thousands.
nnn,nnnM	Values larger than *nnn,nnnK* are rounded to the nearest million. *nnn,nnn* represents the number of millions.

An asterisk following a COUNT value (for example, 2,984*) indicates that the statistics for that particular message or command have been locally reset using the RESET option (discussed in "R (RESET)" on page 132). Asterisks following COUNT values disappear after global resets. (Global reset of the entire Message Statistics facility is performed by the operator, and is discussed in the CONTROL-O chapter of the *INCONTROL for z/OS Administrator Guide*.

Commands of the Message Statistics Screen

The following commands can be specified in the COMMAND field of the Message Statistics screen:

Table 45 Commands of the Message Statistics Screen

Command	Description
REDATE	The REDATE command (**PF14**) alternates between display of message text and display of the reset date and time, in the TEXT field of messages which have been locally reset.
WRAP	The WRAP command modifies the display so that TEXT field information is alternately wrapped or not wrapped around to the next lines. Text that is not wrapped around to the next line can be viewed by using the RIGHT command (**PF11/PF23**) if necessary.
REFRESH	The REFRESH command (**PF16**) refreshes the display with the most currently available statistics.
	Note: Changes requested of the CONTROL-O monitor (such as EXCLUDE and RESET, which are described later in this chapter) are not reflected after a REFRESH until the CONTROL-O monitor has processed the request. For more information on EXCLUDE, see "X (EXCLUDE)" on page 132. For more information on RESET, see "R (RESET)" on page 132.
SORT	The SORT command (**PF04/PF16**) alternately switches the sort order of the displayed messages or commands using the following formats: ■ SORT ON COUNT — Sort according to the value in the COUNT field. The highest value is displayed first. Default. ■ SORT ON ID — Sort alphabetically according to the value in the ID field.
SHOW	The SHOW command (**PF02/PF14**) opens the Show Option window, which is used to specify Show criteria, that is, to determine which records are shown in the Message Statistics screen.

Show Option Window

The Show Option window is shown in Figure 31. It enables you to specify criteria to determine which messages and commands are included in the statistics display. To open the window, type **SHOW** in the COMMAND field of the Message Statistics screen, or press **PF02/PF14**. Make the desired changes in the Show Option window, and press **Enter**.

Figure 31 Message and Statistics Screen Show Option Window

```
------------- CONTROL-O MESSAGE STATISTICS FROM 12/12/00 11:12:51 ---------(OM)
COMMAND ===>                      +-----------------------------------------+
MSG  659,035  CMD    1,714  HAN   |       PLEASE SELECT SHOW OPTION          |
O ID        TYP    COUNT   HAND   |                                         |
  $HASP000   M    26,347    26,   |  MSGID                                  |
  $HASP317   M    19,556    19,   |  TEXT                                   |
  $HASP250   M    17,091    17,   |                                         |
  ICH7001I   M    17,004    17,   |  COUNT FROM           TO                |
  $HASP100   M    16,568    16,   |                                         |
  $HASP373   M    12,995    12,   |  COMMANDS        Y | MESSAGES          Y |
  $HASP395   M    12,992    12,   |  SHOWN           N | EXCLUDED          Y |
  IEF403I    M    12,991    12,   |    ------------------------------------  |
  IEF404I    M    12,990    12,   |  HANDLED         N | NOT HANDLED       N |
  $HASP309   M    12,802    12,   |  SUPPRESSED      N | NOT SUPPRESSED    N |
  IEF125I    M     3,430     3,   |                                         |
  IEF667I    M     3,421     3,   +-----------------------------------------+
  IEF126I    M     3,284     3,
  IEF234E    M     2,725     2,725         0  IEF234E K 481,994631,PVT,T15MALL
  IEF233A    M     2,499     2,499         0  IEF233A M 480,015537,,PRGPL27A,C
  $HASP688   M     1,683     1,683       906  $HASP688 T92PRNTS OUTGRP=1.1.1
  $HASP608   M     1,527         0         0  $HASP608 T02KPL91 EXECUTING A PR
  IEC705I    M     1,525     1,525         0  IEC705I TAPE ON 480,014901,SL,62
  IEE600I    M     1,504     1,504     1,009  IEE600I REPLY TO 72 IS; NOHOLD
OPTIONS:  S SHOW  X EXCLUDE  R RESET                                   14.29.51
```

The selection criteria that are available are shown in Table 41.

NOTE

Selection criteria marked with the symbol ^{P} act on a prefix basis.

Table 46 Show Option Selection Criteria (part 1 of 2)

Criteria	Description
MSGID[P]	Includes only messages and commands with the indicated IDs. Masking characters * and ? are supported. Up to three values can be specified.
TEXT[P]	Includes only messages and commands which match a specified string. The * (asterisk) and ? (question mark) masking characters are supported. If both MSGID and TEXT values are specified, only messages that meet criteria for both are included.
COUNT FROM/TO	Includes only messages and commands whose COUNT values are within a specified range. FROM and TO values specify lower and upper limits, respectively. An unspecified value indicates no limit.
MESSAGES	Whether to display messages. Valid values are: ■ Y (Yes) — Messages are displayed. ■ N (No) — Messages are displayed.
COMMANDS	Whether to display commands. Valid values are: ■ Y (Yes) — Commands are displayed. ■ N (No) — Commands are not displayed.
EXCLUDED	Whether to display messages and commands for which the X (Exclude) option has been specified. Valid values are: ■ Y (Yes) — Messages and commands for which the X (Exclude) option has been specified are displayed. ■ N (No) — Messages and commands for which the X (Exclude) option has been specified are not displayed.
SHOWN	Whether to display messages and commands for which the X (Exclude) option has not been specified. Valid values are: ■ Y (Yes) — Non-excluded messages and commands (that is, messages and commands for which the X (Exclude) option has not been specified) are displayed. ■ N (No) — Non-excluded messages and commands (that is, messages and commands for which the X (Exclude) option has not been specified) are not displayed.
HANDLED	Whether to display messages and commands with a non-zero HANDLED field. Valid values are: ■ Y (Yes) — Messages and commands with a non-zero HANDLED field are displayed. ■ N (No) — Messages and commands whose HANDLED field is non-zero are not displayed.

Table 46 Show Option Selection Criteria (part 2 of 2)

Criteria	Description
NOT HANDLED	Whether to display messages and commands with a zero HANDLED field. Valid values are: ■ Y (Yes) — Messages and commands with a zero HANDLED field are displayed. ■ N (No) — Messages and commands with a zero HANDLED field are not displayed.
SUPPRESSED	Whether to display messages and commands with a non-zero SUPPRESSED field. Valid values are: ■ Y (Yes) — Messages and commands with a non-zero SUPPRESSED field are displayed. ■ N (No) — Messages and commands with a non-zero SUPPRESSED field are not displayed.
NOT SUPPRESSED	Whether to display messages and commands with a zero SUPPRESSED field. Valid values are: ■ Y (Yes) — Messages and commands with a zero SUPPRESSED field are displayed. ■ N (No) — Messages and commands with a zero SUPPRESSED field are not displayed.

Options of the Message Statistics Screen

The following options, listed at the bottom of the screen, can be applied to any statistics line.

NOTE

Options applied by a user to a specific message or command, such as Reset, Exclude or Show, affect the statistics for that message or command for all users — not only for the user's own display.

Table 47 Options of the Message Statistics Screen

Option	Description
R (RESET)	Requests local reset — the reset of the counts for a specific message/command back to zero. This option displays the text *** R E S E T *** in place of the statistics. The statistics are reset the next time the CONTROL-O monitor checks statistics. Performing a RESET does not refresh the display; specify REFRESH in the COMMAND field to display the most current statistics after a RESET.
X (EXCLUDE)	Excludes individual messages and commands from the displayed statistics.
S (SHOW)	Restores previously excluded messages and commands into the displayed statistics.

Rule Status Screen

The Rule Status screen displays the statuses of rules loaded into memory by CONTROL-O. Selection criteria for rules can be specified in the Show Option window, which is discussed in "Rule Status Screen" on page 132. The Rule Status screen is also used to hold, delete, free, cancel or change the operation mode of rules.

To enter the Rule Status screen, select the OS option in the IOA Primary Option menu.

Up and down scrolling conventions are supported on the Rule Status screen.

To return to the IOA Primary Option menu, press **PF03/PF15** (**END**).

Two predefined display types (described below) are available for the Rule Status screen.

Changing Display Types

While in the Rule Status screen, the display type can be changed using the DISPLAY command. The format of the command is

```
DISPLAY x
```

In this command, *x* is the identifying letter for the desired type. DISPLAY can be abbreviated to DI.

Example

DI A displays the All Fields display type.

Valid predefined display types are:

- D – Default display type
- A – All Fields display type

Your INCONTROL administrator can also define additional site-specific display types.

Display Type D (Default)

Figure 32 shows an example of the Default display type of the Rule Status screen.

Figure 32 Rule Status Screen Display Type D (Default)

```
---------------------------- CONTROL-O RULE STATUS ----------<D>-----------(OS)
COMMAND ===>                                                   SCROLL===> CRSR
RULES:   584   MSG   481   CMD    64   EVN    39   ACTIVATED   569   SMFID FDSF
O RULE       TYP ---- DESCRIPTION ---- ACTIVATED --------- STATUS -------- UP
  IRA200E     M  AUX. STORAGE SHORTAG         7  EXECUTING - KSL
  IEF126I     M  SUPPRESS TSO LOGOFF      4,639  ACTIVE
  IFB060E     M  LOGREC 90% FULL             29  ACTIVE
  IEE366I     M  NO SMF DATA SET AVAI       34   ACTIVE
  IEF450I     M  LOG ALL ABEND MSG        1,270  ACTIVE
  IEF238D     M  JOB WAITING FOR UNIT        35  ACTIVE
  IEF433D     M  REPLY HOLD OR NOHOLD        35  ACTIVE
  IEF863I     M  DS NOT BALANCED MSG         96  EXECUTING - TSO
  ICH7001I    M  SUPPRESS RACF MSG       12,615  ACTIVE
  $HASP375    M  TEST - EXCEEDED LINE         2  HELD
  NOT BAL     S  APPL NOT BALANCED MS         4  WAIT ACTIVATION
  SHUTSYS     C  FAST SHUT-SYSTEM CMD        78  ACTIVE
  $PJ*        C  CONTROL JES PURGE CM        17  ACTIVE
  CICS-UP     E  CICS PRODUCTION IS U       407  WAIT ACTIVATION
  NIGHT-S     E  NIGHT SHIFT EVENT          183  WAIT ACTIVATION
  DAY-S       E  DAY SHIFT EVENT            184  WAIT ACTIVATION
  R1?T*       R  CONTROL RJE JOBS         9,202  ACTIVE
  P*          D  HANDLE NOT-CATLGD 2         21  ACTIVE
  PRD*        D  TRIGGER ON DS CATALO        58  WAIT ACTIVATION
OPTIONS:  ? WHY  H HOLD  D DEL   F FREE  M MODE  C CANCEL  R RESUME  17.04.29
```

Table 48 describes the fields of the Default display type of the Rule Status screen.

Table 48 Fields of Display Type D (Default) (part 1 of 3)

Field	Description
The following general information is displayed:	
<D>	Indicates Default display type.

Table 48 Fields of Display Type D (Default) (part 2 of 3)

Field	Description
Monitor status indicator	Indicates whether the CONTROL-O monitor is up or down.
SMFID	SMF ID of the computer for which the statuses are shown.
The following information is shown for each rule in the Default display type:	
OPTION	Allows entry of line options to be applied to a particular rule activation.
RULE	Rule name — the name that appears in the first ON statement in the rule definition
TYPE	Rule type. Valid values are: ■ 4 — OMEGAEXP (OMEGAMON exception interface) ■ 5 — SYSOUT (interception of message text) ■ B — SMS (data set name allocation) ■ C — Command ■ D — DSNEVENT (setting of data set disposition at deallocation time) ■ E — Event ■ M — Message ■ P — CONTROL-M/Links for Windows NT message ■ R — JOBARRIVAL (arrival of job on the JES spool) ■ S — String ■ V — MAINVIEW Alarm ■ X — JOBEND (completion of the job) ■ Z — Step (termination of a specified step in a specific job)
DESCRIPTION	First twenty characters from the first line of the DESCRIPTION field in the rule definition.
ACTIVATED	Counter indicating the number of times a rule was activated (triggered).
	Note: The format of this field is discussed in detail in "Display Type A (All Fields)," which follows this table.
STATUS	Rule status. Valid values are: ■ EXECUTING — WAITRESP – the rule is executing and waiting for a response to a command issued in command-response mode ■ EXECUTING — KSL – that the rule is executing and waiting for completion of a KSL script ■ EXECUTING — TSO – means that the rule is executing and waiting for completion of a TSO command, CLIST, or REXX procedure ■ EXECUTING — WAIT – means that the rule is executing and waiting for completion of an event ■ EXECUTING — ASKOPER – means that the rule is executing and waiting for an operator reply ■ ACTIVE means that all prerequisite and time conditions have been met; the rule can be triggered ■ WAIT — ACTIVATION means that the rule is not activated; it is waiting for prerequisite and/or time conditions to be met ■ HELD means that the rule has been placed in HELD status by line option. It cannot be triggered until freed. ■ SUSPEND means that the rule is suspended because it reached its THRESHOLD. The rule cannot be triggered until the RESUME line command is executed.

Table 48 Fields of Display Type D (Default) (part 3 of 3)

Field	Description
The following summary information is shown for all displayed rules (that is, active rules as filtered by the Show criteria):	
RULES	Total number of rules included in the display.
MSG	Combined total of message, string, and CMEM rules included in the display.
CMD	Total number of command rules included in the display.
EVN	Total number of event rules included in the display.
ACTIVATED	Total number of displayed rules that have been activated (triggered) at least once in the display.

Display Type A (All Fields)

Figure 33 is an example of the All Fields display type for the Rule Status screen. In this display type, all possible status fields are displayed for each rule. This display type is requested by typing **DISPLAY A** (abbreviated **DI A**) in the COMMAND field of the screen.

Figure 33 Rule Status Screen Display Type A (All Fields)

```
---------------------------- CONTROL-O RULE STATUS ------------<A>---------(OS)
COMMAND ===>                                                   SCROLL===> CRSR
RULES:    450  MSG    378  CMD     17  EVN      3  ACTIVATED     22  SMFID OS35
O RULE       TYP --- DESCRIPTION ----  ACTIVATED ---------- STATUS ------  UP
  $HASP493    M  JES2 - MARK THAT JES         0  ACTIVE
   LIBRARY:  CTOP.PROD.RULES                                TABLE:    STARTCTO
   LAST ORDERED:   08/08/00 16:48:26   MODE:    PROD  PROD  PRIORITY:
   LAST TRIGGERED: **/**/** **:**:**   RUNTSEC: :
   GROUP:                              OWNER:   M22        CONTINUE SEARCH: Y
   CREATED BY: UNKNOWN  AT  **/**/** **:**:** VERSION:  **.**
   UPDATED BY: UNKNOWN  AT  **/**/** **:**:** RELEASE:  PRE V6.0.
   THRESHOLD           CTO VALUE 000001000 CURRENT 000000000 MAX 000000000

  $*          C  STATS FOR JES2 CMDS        247  ACTIVE
   LIBRARY:  CTOP.PROD.RULES                                TABLE:    STATS
   LAST ORDERED:   08/08/00 16:48:26   MODE:    PROD  PROD  PRIORITY:
   LAST TRIGGERED: 09/08/00 11:00:09   RUNTSEC: :
   GROUP:                              OWNER:   M24A       CONTINUE SEARCH: Y
   CREATED BY: UNKNOWN  AT  **/**/** **:**:** VERSION:  **.**
   UPDATED BY: UNKNOWN  AT  **/**/** **:**:** RELEASE:  PRE V6.0.
   THRESHOLD           CTO VALUE 000001000 CURRENT 000000000 MAX 000000004

  $*          M  STATS FOR JES2 CMDS/     8,434  ACTIVE
OPTIONS:  ? WHY  H HOLD  D DEL   F FREE  M MODE  C CANCEL  R RESUME  17.04.29
```

Table 49 shows the fields of the All Fields display type for the Rule Status screen.

Table 49 Fields of Display Type A (All Fields) (part 1 of 3)

Field	Description
The following general information is displayed:	
<A>	Indicates the All Fields display type.
Monitor status indicator	Indicates whether the CONTROL-O monitor is up or down.
SMFID	SMF ID of the computer for which the statuses are shown.
The following information is shown for each rule displayed in the All Fields display type:	
OPTION	Allows entry of line options to be applied to a particular rule activation.
RULE	Rule name — the name that appears in the first ON statement in the rule definition.
TYPE	Rule type. Valid values are: ■ M — Message ■ C — Command ■ E — Event ■ 4 — OMEGAEXP (OMEGAMON exception interface) ■ S — String ■ P — CONTROL-M/Links for Windows NT message ■ R — JOBARRIVAL (arrival of job on the JES spool) ■ X — JOBEND (completion of the job) ■ D — DSNEVENT (setting of data set disposition at deallocation time) ■ Z — Step (termination of a specified step in a specific job) ■ B — SMS (data set name allocation) ■ 5 — SYSOUT (interception of message text)
DESCRIPTION	First 20 characters from the first line of the DESCRIPTION field in the rule definition.
ACTIVATED	Total number of displayed rules that have been triggered at least once. For more information, see "ACTIVATED" later in this table.

Table 49 Fields of Display Type A (All Fields) (part 2 of 3)

Field	Description
STATUS	Rule status. Valid values are: ■ EXECUTING — WAITRESP means that the rule is executing and waiting for a response to a command issued in command-response mode. ■ EXECUTING — KSL means that the rule is executing and waiting for completion of a KSL script. ■ EXECUTING — TSO means that the rule is executing and waiting for completion of a TSO command, CLIST, or REXX procedure. ■ EXECUTING — WAIT means that the rule is executing and waiting for completion of an event. ■ EXECUTING — ASKOPER means that the rule is executing and waiting for an operator reply. ■ ACTIVE means that all prerequisite and time conditions have been met; the rule can be triggered. ■ WAIT — ACTIVATION means that the rule is not activated. It is waiting for prerequisite or time conditions to be met. ■ HELD means that the rule has been placed in HELD status by a line option. It cannot be triggered until freed. ■ SUSPEND means that the rule is suspended because it reached its THRESHOLD. The rule cannot be triggered until line command RESUME is executed.
LIBRARY	Name of library containing the rule member.
MEMBER	Name of member containing the rule.
LAST ORDERED	Date and time when the rule was last ordered.
MODE	Rule operation mode (PROD, LOG, TEST). MODE displays two fields. The first field is the current MODE. The second field is the MODE that is defined in the rule.
PRIORITY	Internal CONTROL-O rule scanning priority.
LAST TRIGGERED	Date and time when the rule was last triggered.
RUNTSEC	Type of runtime security checks to be performed on the rule.
GROUP	Group name of the rule.
OWNER	Owner of the rule as defined in the rule definition.

Table 49 Fields of Display Type A (All Fields) (part 3 of 3)

Field	Description
CONTINUE SEARCH	Whether to continue the search for additional rules meeting the selection criteria. Valid values are: ■ Y (Yes) — Continue the search for additional rules meeting the selection criteria. ■ N (No) — Do not continue the search for additional rules meeting the selection criteria.
CREATED BY	Identity of the user that created the rule.
AT	Date and time the rule was created.
VERSION	Version of the Rule Definition screen with which the rule was created.
UPDATED BY	Identity of the user who last updated the rule.
AT	Date and time the rule was last updated.
RELEASE	CONTROL-O release under which the rule was created.
THRESHOLD	Maximum number of times the rule can be triggered before subsequent triggerings are suspended. This value is defined with the rule.
CTO VALUE	The default rule threshold of CONTROL-O.
CURRENT	Number of times the rule has been triggered in the current interval.
MAX	Number of times the rule threshold has been reached.
The following summary information is shown for all displayed rule statuses (that is, active rules as filtered by the Show criteria):	
RULES	Total number of rules displayed.
MSG	Total of message, string, ON RULE, ON JOBARRIVAL, ON JOBEND, ON DSNEVENT, and ON STEP rules displayed.
CMD	Total number of command rules and CTOPCMSG rules displayed.
EVN	Total number of event rules displayed.
ACTIVATED	Total number of displayed rules that have been triggered at least once. The format for the ACTIVATED field in detail lines is as follows: ■ Values up to 999,999 appear in standard numeric format *nnn,nnn*. ■ Larger values are indicated by a K or M, as follows: — *nnn,nnnK* — Values are rounded to the nearest thousand. nnn,nnn represents the number of thousands. — *nnn,nnnM* — Values larger than *nnn,nnn*K are rounded to the nearest million. *nnn,nnn* represents the number of millions.

Commands of the Rule Status Screen

The following commands can be specified in the COMMAND field of the Rule Status screen.

Table 50 Commands of the Rule Status Screen

Command	Description
SORT	The SORT command (**PF04/PF16**) alternately changes the sort order of the displayed messages/commands between the following: ■ SORT ON PRIORITY — Sort status display in order of rule priority — highest value first. Default. ■ SORT ON SCHEDULING ORDER — Sort status display according to rule scheduling order — earliest first.
SHOW	The SHOW command (**PF02/PF14**) opens the Show Option window which is used to specify criteria that determine which rules will appear in the Rule Status screen.
DISPLAY	The DISPLAY command changes the display type. The command syntax is `DISPLAY` *x* (abbreviated `DI` *x*). In this command, *x* is the identifying letter of the desired type.

Show Option Window

Figure 34 is an example of the Show Option window, which enables you to specify criteria to determine which active rules are included in the status display. To open the window, type **SHOW** in the COMMAND field of the Rule Status screen, or press **PF02/PF14**. Change criteria by making the desired changes and pressing **Enter**.

Figure 34 Rule Status Screen Show Option Window

```
---------------------------- CONTROL-O RULE STATUS ------------<D>---------(OS)
COMMAND ===>      +-------------------------------------------------------------+
RULES:    450  MSG|                PLEASE SELECT SHOW OPTION                    |
O RULE       TYP -|  RULE                                                       |
  CMEMJOBA    R  S|  GROUP                                                      |
  JOBEND      X  S|                                                             |
  CMEMJOB     D  S|  LIBRARY                                                    |
  $HASP493    M  J|  TABLE                                                      |
  CT0139I     M  C|         ====  STATUS   ====                                 |
  CT0621I     M  C|  ACTIVE Y EXECUTING Y WAIT ACTIVE Y HELD Y SUSPEND  Y       |
  CT0623I     M  C|         ==== RULE TYPE ====                                 |
  COSCLEAR    E  I|   MSG STR COM EVN DSN INT JOB RUL STP OMG PCM MVI SMS SYS  |
  COSINI      C  C|    Y   Y   Y   Y   Y   Y   Y   Y   Y   Y   Y   Y   Y   Y    |
  COSCMD*     C  E|  PRIORITY  FROM    TO      CONTINUE SEARCH  YES Y NO Y     |
  COSTERM     C  T|                                                             |
  COSBOUNZ    C  B|  ACTIVATION#  FROM               TO                         |
  COSUP       C  S|                                                             |
  COSDOWN     C  S|  OWNER               MODE:  PROD Y   TEST Y   LOG Y         |
  COSOBJ *    C  S+-------------------------------------------------------------+
  COSCUP *    C  SYNTAX SUGARING FOR          0  ACTIVE
  COSCDOWN *  C  SYNTAX SUGARING FOR          0  ACTIVE
  OPTIONS:  ? WHY  H HOLD  D DEL  F FREE  M MODE  C CANCEL  R RESUME     11.17.01
```

NOTE

Selection criteria marked with the symbol ^{P} act on a prefix basis.

Table 51 shows the criteria that can be specified in the Rule Status screen Show Options window.

Table 51 Rule Status Screen Show Option Window Criteria (part 1 of 3)

Criteria	Description
RULE^{P}	Includes only rules having the indicated name (prefix). A maximum of five values can be specified.
GROUP^{P}	Includes only rules belonging to the specified group (prefix). A maximum of four values can be specified.
LIBRARY^{P}	Includes only rules whose members are found in the specified library (prefix).
TABLE^{P}	Includes only rules found in the specified table (prefix). A maximum of five values can be specified.

Table 51 Rule Status Screen Show Option Window Criteria (part 2 of 3)

Criteria	Description
STATUS	The STATUS fields in the Show Option window are ■ ACTIVE ■ EXECUTING ■ WAIT ■ ACTIVATION ■ HELD ■ SUSPEND. Valid values for each of these STATUS fields are: ■ Y (Yes) — Includes rules with the indicated status. ■ N (No) — Excludes rules with the indicated status.
RULE TYPE	The type of the rule. Valid RULE TYPEs are: ■ MSG — Message ■ STR — String ■ COM — Command ■ EVN — Event ■ DSN — Data set event ■ INT — JOBARRIVAL ■ JOB — JOBEND ■ RUL — Rule ■ STP — Step ■ OMG — OMEGAEXP ■ PCM — CTOPCMSG ■ MVI — MAINVIEW Alarm ■ SMS — Storage Management System ■ SYS — SYSOUT Valid values for each of these RULE TYPEs are: ■ Y (Yes) — includes rules of the indicated type ■ N (No) — excludes rules of the indicated type
PRIORITY FROM/TO	Includes rules whose priority is within the specified range. A FROM or TO value can be specified without specifying both values. In this parameter, 0 ≠ blank.

Table 51 Rule Status Screen Show Option Window Criteria (part 3 of 3)

Criteria	Description
CONTINUE SEARCH YES / NO	For both CONTINUE SEARCH YES and CONTINUE SEARCH NO, you can specify **Y** or **N** in the Show Option window. The effect is as follows: ■ CONTINUE SEARCH YES: — Y (Yes) — includes rules with a CONTINUE SEARCH value of YES — N (No) — excludes rules with a CONTINUE SEARCH value of YES ■ CONTINUE SEARCH NO: — Y (Yes) — includes rules with a CONTINUE SEARCH value of NO — N (No) — excludes rules with a CONTINUE SEARCH value of NO
ACTIVATION# FROM / TO	Includes rules with a number of activations (that is, with a value in the ACTIVATED field) that is within the specified range. A FROM or TO value can be specified without specifying both values.
OWNER[P]	Includes rules belonging to the specified owner.
MODE	MODE fields in the Show Option window are: ■ PROD ■ TEST ■ LOG You can specify **Y** or **N** in each of the MODE fields. The effect is as follows: ■ Y (Yes) — includes rules in the indicated mode ■ N (No) — excludes rules in the indicated mode

Options of the Rule Status Screen

Table 52 shows the options that can be applied to the rule status line of any rule that is not currently active (that is, any rule that has EXECUTING status). These options are listed at the bottom of the Rule Status screen.

Table 52 Options of the Rule Status Screen

Option	Description
? (WHY)	Displays the Why screen, which indicates why the rule is in WAIT ACTIVATION status. This status is discussed in "Why Screen" immediately below this table.
H (HOLD)	Holds the rule (places the rule in HELD status). The rule will not execute unless freed by the FREE option. In some cases the HOLD request may be rejected by the CONTROL-O monitor. A rule that is executing cannot be held.
D (DELETE)	Deletes the rule from the active environment. A rule must be placed in HELD status before it can be deleted.
F (FREE)	Frees a held rule.
M (MODE)	Changes the current MODE of the rule (from TEST to LOG, from LOG to PROD, and from PROD to LOG).
R (RESUME)	Changes the status of a rule from SUSPEND (that is, the rule has reached its threshold) to ACTIVE, so that the rule is eligible for triggering.
The following option is valid only for rules that are currently active, that is, those that have EXECUTING status:	
C (CANCEL)	Cancels the execution of the rule. If the rule is executing a DO TSO or a DO KSL, the TSO command or KSL script is also canceled.

Why Screen

Figure 35 shows the Why screen, which is displayed when **?** (WHY) is entered on the Rule Status screen. The Why screen shows reasons for the WAIT ACTIVATION status.

Figure 35 Why Screen

```
------------------------- CICSP    IS WAITING FOR: --------------------(OS.?)
COMMAND ===>                                                 SCROLL====> CRSR

        TIME LIMIT        FROM   0900            UNTIL
        CONDITION        DAILY-PROD              ODATE    0203
====== >>>>>>>>>>>>>>>>>>>      END OF "WHY" LIST     <<<<<<<<<<<<<<<<<<< ======

PRESS END PFK TO RETURN TO STATUS SCREEN                              10.46.20
```

Scrolling conventions are supported if the displayed list is longer than one screen.

To return to the Rule Status screen, press **PF03/PF15** (**END**).

Automation Log Screen

The Automation Log screen displays the stream of messages and commands captured by CONTROL-O, as well as CONTROL-O internal messages and traces of rules executing with MODE set to LOG.

In a Sysplex environment, this screen can also be used to view the MVS Operlog.

The messages are displayed together with all the additional information which is relevant to the automation process

Selection criteria for display can be specified either in the Show Option window, which is described in “Show Option Window” on page 129, or with special commands such as ALL or TRACE. Either the current Automation Log or a backup Automation Log can be displayed.

To request the Automation Log facility, select **OL** (CONTROL-O Automation Log) in the IOA Primary Option menu.

Up and down scrolling conventions are supported on the Automation Log screen.

To return to the IOA Primary Option menu, press **PF03/PF15** (**END**).

The predefined display types (described below) are available for the Automation Log screen. The operator can control the amount of information displayed, and the format of the display, by choosing one of the available display types. Customized display types can also be defined.

Changing Display Types

While in the Automation Log screen, the display type can be changed using the DISPLAY command. The format of the command is `DISPLAY x`. In this command, *x* is the identifying letter for the desired type. `DISPLAY` can be abbreviated to `DI`.

NOTE

For a list of display types, enter **DISPLAY ?** to show the Display Options window. To select a display type in the window, type **S** (Select) in the Option field next to the ID. To exit the window without selecting a display type, press **PF03/PF15** (**END**).

Example

```
DI A
```

displays the All Fields display type.

Table 53 shows the valid All Fields display types.

Table 53 Valid All Fields Display Types

Type	Description
V	Zebra display type (alternate blue and white color stripes)
A	All Fields display type
B	Debug display type
D	Default display type
O	Operator display type
W	Display for Terminal Type 5

Display Type D (Default)

Figure 36 shows an example of the Default display type (indicated by <D> in the top line of the screen) for the Automation Log screen.

Figure 36 Automation Log Screen Default Display Type (D)

```
-------------< D >------------- AUTOMATION LOG  ---------------------------(OL)
COMMAND ===>                                                   SCROLL===> CRSR
SHOW LIMIT ON ==>                                          DATE 020200 - 020200
DATE   TIME   JOBNAME  ------------------- M E S S A G E ----------------------
020200 144714 CONSOLE   D T
020200 144714 CONSOLE   D T
020200 144714 CONSOLE   D T
020200 144714 CONSOLE   IEE136I LOCAL: TIME=14.47.14 DATE=2000.157  GMT: TIME=
020200 144721 RESOLVE   AMTRP1I FOLLOWING REPLYS OUTSTANDING FOR   5 MINUTES
020200 144721 RESOLVE   AMTRP2I NETVIEW  *12 DSI802A CNM01    REPLY WITH VALID
020200 144751 TSO       LOGON
020200 144751 TSO       LOGON
020200 144756           626 ICH408I USER(M06C    ) GROUP(        ) NAME(???
020200 144756           626   LOGON/JOB INITIATION - USER AT TERMINAL
020200 144759 M06C      627 ICH408I USER(M06C    ) GROUP(        ) NAME(???
020200 144759 M06C      627   LOGON/JOB INITIATION - USER AT TERMINAL L3042
020200 144759 JES2      $HASP100 M06C     ON TSOINRDR
020200 144759 M06C      $HASP373 M06C     STARTED
020200 144800 M06C      IEF125I M06C - LOGGED ON - TIME=14.48.00
020200 144814 CONSOLE   D T
020200 144814 CONSOLE   D T
020200 144814 CONSOLE   D T
020200 144814 CONSOLE   IEE136I LOCAL: TIME=14.48.14 DATE=2000.157  GMT: TIME=
CMDS: SHOW, SHPF, ALL, LIMIT, LOCATE, TRACE, WRAP, SWAP                14.48.54
```

Table 54 shows the fields of the Default display type, with explanations of each field.

Table 54 Fields of Default Display Type (D)

Field	Description
The following general information is displayed:	
<D>	Indicates the Default display type.
SHOW LIMIT ON field name	Indicates that a search limit has been set through the SHOW command for a record field such as ID, NAME JOBID, ROUTE, DESC, or CONID. For more information on these fields, see “Fields in the All Fields (A) Display Type” on page 187. For information about the SHOW command, see “Show Option Window” on page 129. If a search limit has not been set, the field is blank.
DATE (fromdate, todate)	Range of dates, in standard 6-digit format, of the displayed records.
The following information is shown for each line of the Automation Log displayed in the Default display type:	
DATE	Record creation date.
TIME	Record creation time.
JOBNAME	Name of the job, started task, or TSO user that issued the message or command. For a command entered on the console, the name of the console address space is also displayed.
MESSAGE	Text of the message or command.

Display Type V (Zebra)

The Zebra display type (indicated by <V> in the top line of the screen) is the same as the D display type, except that the displayed lines alternate between blue and white for easier reading. For more information, see "Display Type D (Default)" on page 133.

Display Type O (Operator Display)

Figure 37 is an example of the Operator display type (indicated by <O> in the top line of the screen) for the Automation Log screen.

Figure 37 Automation Log Screen Operator Display Type (O)

```
-------------< O >------------ AUTOMATION LOG  ---------------------------(OL)
COMMAND ===>                                                  SCROLL===> CRSR
SHOW LIMIT ON ==>                                          DATE 020200 - 020200
TIME   JOBNAME  T-JOBID ------------------ M E S S A G E ----------------------
144714 CONSOLE  S 00000  D T
144714 CONSOLE  S 00000  D T
144714 CONSOLE  S 00000  D T
144714 CONSOLE  S 00000  IEE136I LOCAL: TIME=14.47.14 DATE=2000.157  GMT: TIME
144721 RESOLVE  S 09268  AMTRP1I FOLLOWING REPLYS OUTSTANDING FOR   5 MINUTES
144721 RESOLVE  S 09268  AMTRP2I NETVIEW  *12 DSI802A CNM01    REPLY WITH VALI
144751 TSO      S 09295  LOGON
144751 TSO      S 09295  LOGON
144756          T 00000  626 ICH408I USER(M06C    ) GROUP(        ) NAME(???
144756          T 00000  626   LOGON/JOB INITIATION - USER AT TERMINAL
144759 M06C     T 00000  627 ICH408I USER(M06C    ) GROUP(        ) NAME(???
144759 M06C     T 00000  627   LOGON/JOB INITIATION - USER AT TERMINAL L3042
144759 JES2     T 14699  $HASP100 M06C     ON TSOINRDR
144759 M06C     T 14699  $HASP373 M06C     STARTED
144800 M06C     T 14699  IEF125I M06C - LOGGED ON - TIME=14.48.00
144814 CONSOLE  S 00000  D T
144814 CONSOLE  S 00000  D T
144814 CONSOLE  S 00000  D T
144814 CONSOLE  S 00000  IEE136I LOCAL: TIME=14.48.14 DATE=2000.157  GMT: TIME
COMMANDS: ALL , LIMIT , LOCATE , SHOW , SHPF , SWAP , TRACE , WRAP     11.23.24
```

Table 55 Fields of Display Type Operator (O) (part 1 of 2)

Field	Description
The following general information is displayed:	
<O>	Operator display type.
SHOW LIMIT ON field name	Search limit set through the SHOW command for a record field such as ID, NAME JOBID, ROUTE, DESC, or CONID. For more information on these fields, see "Fields in the All Fields (A) Display Type" on page 187. For information about the SHOW command, see "Show Option Window" on page 129.
DATE (fromdate, todate)	Range of dates, in standard 6-digit format, of the displayed records.

Table 55 Fields of Display Type Operator (O) (part 2 of 2)

Field	Description
The following information is shown for each line of the Automation Log displayed in the Operator display type:	
TIME	Record creation time.
JOBNAME	Name of the job, started task or TSO user that issued the message or command. For a command entered on the console, the name of the console address space is also displayed.
JOBID	Identifier of the job that issued the message or the command.
MESSAGE	Text of the message or command.

Display Type A (All Fields)

Figure 38 is an example of the All Fields display type (indicated by <A> in the top line of the screen) for the Automation Log screen.

Figure 38 Automation Log Screen All Fields Display Type (A)

```
-----------------------------  AUTOMATION LOG  --------------< A >--------(OL)
COMMAND ===>                                                  SCROLL===> CRSR
SHOW LIMIT ON ==>                                       DATE 030601 - 030601
DATE   TIME   JOBNAME  ------------------ M E S S A G E----------------------
030601 092546 *MASTER*  958 (STATUS CONNECTION LOGSTREAM STRUCTURE)
  JOBSTEP             PROCSTEP          JOBID   00000    ASID    00001 JTYPE S
  ID       ASA101I    TYPE     M        MULTILN M        USERID  +MASTER+
  SYSTEM   OS35       SMFID    OS35     CONSOLE OS33MST1 CONID   003
  HANDLED  Y          SUPPRESS N        CTO     N        RULESEC NONE IOADMIN
  REC.TYPE S          J3FLG    F        SPEC             ENVIR.  000
  REPLY    0000       HCID  958         DESC    0800     MCSF    C050
  ROUTE    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  WQE INFO VRSN 00    CHAR1    FLG1-3 00 00 00    RFLGS 000000 PRTY 00
  WQE INFO XIF  00    SUPB  00 BENIP  00 MISC  00 SEL   000000
030601 092546 *MASTER*  958 WOULD BE CORRECT.
  JOBSTEP             PROCSTEP          JOBID   00000    ASID    00001 JTYPE S
  ID       ASA101I    TYPE     M        MULTILN M        USERID  +MASTER+
  SYSTEM   OS35       SMFID    OS35     CONSOLE OS33MST1 CONID   003
  HANDLED  Y          SUPPRESS N        CTO     N        RULESEC NONE IOADMIN
  REC.TYPE S          J3FLG    F        SPEC             ENVIR.  000
  REPLY    0000       HCID  958         DESC    0800     MCSF    C050
  ROUTE    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  WQE INFO VRSN 00    CHAR1    FLG1-3 00 00 00    RFLGS 000000 PRTY 00
  WQE INFO XIF  00    SUPB  00 BENIP  00 MISC  00 SEL   000000
030601 092546 *MASTER*  958 DETECTING MODULE IS IXGP1PAR
  JOBSTEP             PROCSTEP          JOBID   00000    ASID    00001 JTYPE S
  ID       ASA101I    TYPE     M        MULTILN L        USERID  +MASTER+
  SYSTEM   OS35       SMFID    OS35     CONSOLE OS33MST1 CONID   003
  HANDLED  Y          SUPPRESS N        CTO     N        RULESEC NONE IOADMIN
  REC.TYPE S          J3FLG              SPEC             ENVIR.  000
  REPLY    0000       HCID  958         DESC    0800     MCSF    C050
  ROUTE    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  WQE INFO VRSN 00    CHAR1    FLG1-3 00 00 00    RFLGS 000000 PRTY 00
  WQE INFO XIF  00    SUPB  00 BENIP  00 MISC  00 SEL   000000
030601 092546 O52TROLO  CTO21CI M2S FILE IOA QNAME IOAR524  DSN=CTMP.V524.CTM2
  JOBSTEP  MONITOR    PROCSTEP O52TROLO JOBID   07233    ASID    00166 JTYPE S
  ID       CTO21CI    TYPE     M        MULTILN R        USERID  STCUSER
  SYSTEM   OS35       SMFID    OS35     CONSOLE INTERNAL CONID   000
  HANDLED  Y          SUPPRESS N        CTO     Y        RULESEC NONE IOADMIN
  REC.TYPE S          J3FLG    F        SPEC             ENVIR.  000
  REPLY    0000       HCID              DESC    0000     MCSF    C000
  ROUTE    80 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
COMMANDS: ALL , LIMIT , LOCATE , SHOW , SHPF , SWAP , TRACE , WRAP     10.30.47
```

Table 56 shows the fields of the A Display type, with explanations of each.

Table 56 Fields of Display Type A (All Fields) (part 1 of 4)

Field	Description
The following general information is displayed:	
<A>	All Fields display type indicator.
SHOW LIMIT ON *field_name*	Search limit set through the SHOW command for a record field such as ID, NAME JOBID, ROUTE, DESC, or CONID. These fields are described in this table. For information about the SHOW command, see "Show Option Window" on page 129.

Table 56 Fields of Display Type A (All Fields) (part 2 of 4)

Field	Description
DATE (*fromdate, todate*)	Range of dates, in standard 6-digit format, of the displayed records.
The following information is shown for each line of the Automation Log displayed in the All Fields Display type:	
DATE	Record creation date.
TIME	Record creation time.
JOBNAME	Name of the job, started task, or TSO user that issued the message or command.
MESSAGE	Text of the message or command.
JOBSTEP	Step of the job, started task, or TSO user that issued the message or command.
PROCSTEP	Procedure step of the job, started task, or TSO user that issued the message or command.
JOBID	Identifier of the job, started task, or TSO user that issued the message or command.
ASID	Address space ID of the job, started task, or TSO user that issued the message or command.
JTYPE	Type of job from which the message or command was issued. Valid values are: ■ S — started task ■ T — TSO ■ J — job
ID	ID (that is, the first word) of the message or command.
	Note: When the Dealias feature is active, the ID field of command type records will contain the full format name of the command, even if it was entered in its alias form. The Dealias feature does not affect message type records. For more information on the Dealias feature, see "Dealias Feature" on page 440 and see Appendix C, "List of Commands for Which Dealiasing Is Supported." **Example:** If the **D A** MVS command was specified and the Dealias feature is active, the ID field contains the value DISPLAY (not D which was entered as the first word of the command).
TYPE	Record type. Valid values are: ■ M — message ■ C — command
MULTILN	WTO (Write To Operator) flag. Valid values are: ■ R — regular (one line) WTO ■ F — first line of a multi-line WTO ■ M — middle line of a multi-line WTO ■ L — last line of a multi-line WTO
USERID	ID of the address space that created the event.
SYSTEM	Name of the system (that is, the MVS image) from which the message originated.
SMFID	SMF ID of the system in which the message or command was issued.

Table 56 Fields of Display Type A (All Fields) (part 3 of 4)

Field	Description
CONSOLE	Name of the console on which the message was displayed.
CONID	Decimal value of the console ID number.
HANDLED	Indicates whether or not the record was handled by a CONTROL-O rule. Valid values are: ■ Y — The record was handled by a CONTROL-O rule. ■ N — The record was not handled by a CONTROL-O rule.
SUPPRESS	Indicates whether or not the record was suppressed by a CONTROL-O rule. Valid values are: ■ Y — The record was suppressed by a CONTROL-O rule. ■ N — The record was not suppressed by a CONTROL-O rule.
CTO	Indicates whether or not the record was created internally by CONTROL-O. Valid values are: ■ Y — The record was created by CONTROL-O. ■ N — The record was not created by CONTROL-O.
RULSEC	Includes the type of security that was triggered for the event by the final rule, and the USERID value of the owner of either the rule, or of the job, started task, or TSO user (depending on the setup of the security environment). Valid values include: ■ **** — Unknown type of runtime security (the log is from before version 6.0.00). ■ NONE — No runtime security for the event, or no rule was triggered. ■ OWNER — Runtime security used the OWNER rule. ■ TRIGGER — Runtime security used the USERID rule address space. For more information on the OWNER parameter, refer to "OWNER: General Parameter" on page 491.
REC_TYPE	Record Type. Valid values are: ■ S — Syslog record. ■ L — Internal trace record from a rule running in LOG mode. ■ W — SHOUT message or a message that also appears in the IOA Log.
J3FLG	JES3 flag (for JES3 sites or Sysplex environment). Valid values are: ■ F — The message was issued at the current computer. ■ R — The message originated from a local processor and was reissued at the global processor.
SPEC	Special character assigned by MVS as the first non-blank character in the message ('+', '@', or '*').

Table 56 Fields of Display Type A (All Fields) (part 4 of 4)

Field	Description
ENVIR	Environment under which the message was received. Valid values are: ■ 0 — The message was detected by CONTROL-O. All MVS WTOs and commands belong to this category. ■ 1 — CICS message detected by CICS CONTROL-O interface ■ 2 — IMS message detected by IMS CONTROL-O interface ■ 3 — JES3 command detected by Exit IATUX18 ■ 4 — JES3 message detected by Exit IATUX31 ■ 5 — JES2 command detected by JES2 Exit 5 ■ 6 — Data set event or step completion event detected by CMEM ■ 7 — Message detected by CONTROL-D Exit 18 ■ 8 — Event detected by CONTROL-O Extended Access Method (XAM) interface ■ 9 — Exception detected by CONTROL-O OMEGAMON exception interface ■ 11 — Event detected by CONTROL-O COSMOS ■ 12 — Event detected by CONTROL-O communication function interface
REPLY	Reply ID for WTOR messages or for replies to WTOR messages For all other messages and commands, the field is blank.
HCID	Hardcopy ID for messages Used to identify the various lines of a given WTO multi-line message. The various lines of a multi-line message share the same hardcopy ID. On the display the hardcopy ID precedes the various lines of the message.
DESC	Hexadecimal value of the 2-byte descriptor.
MCSF	Hexadecimal value of the two bytes of MCS flags.
ROUTE	Hexadecimal value of the 16-byte route code.
WQE INFO	Two lines of information taken from the WQE message block. Relevant only to WTO or WTOR messages.

NOTE

Data formerly displayed in the X.ROUTE field is now included in the ROUTE field. The X.ROUTE field is no longer included in this screen. Prior to CONTROL-O version 5.1.4, the ROUTE field displayed a 2-byte route code.

Display Type B (Debug)

Figure 39 is an example of the Debug display type (indicated by <B> in the top line of the screen) for the Automation Log screen.

Figure 39 Automation Log Screen Debug Display Type (B)

```
FuLTER:                        -> AUTOMATION LOG SMF=OS35 <--------< B >-----(OL)
 COMMAND ===>                                                   SCROLL===> CRSR
 SHOW/SEARCH ON =>                                         DATE 110401 - 110401
 DATE   TIME   JOBNAME   ------------------ M E S S A G E ----------------------
 110401 090655 E4WGATE   CTWG91W OPEN ACB FAILED. APPLID=ECSLU01A ACBERFLG=58
    JOBSTEP  GATEWAY    PROCSTEP E4WGATE  JOBID   14333    ASID    00071 JTYPE S
    ID       CTWG91W    TYPE     M        MULTILN R
    SYSTEM   OS35       SMFID    OS35     CONSOLE INTERNAL CONID   000
    HANDLED  Y          SUPPRESS N        CTO     N        RULESEC NONE IOADMIN
    REC.TYPE S          J3FLG    F        SPEC             ENVIR.  000
    REPLY    0000       HCID              DESC    0000     MCSF    C000
    ROUTE    80 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
    WRAP IOA 0265       W.EXT 0265        RBA  00221E      EV.COUNT 144328

 110401 090655 E4WGATE   CTWG74I PROBABLE CAUSE: ACB HAS ALREADY BEEN OPENED
    JOBSTEP  GATEWAY    PROCSTEP E4WGATE  JOBID   14333    ASID    00071 JTYPE S
    ID       CTWG74I    TYPE     M        MULTILN R
    SYSTEM   OS35       SMFID    OS35     CONSOLE INTERNAL CONID   000
    HANDLED  Y          SUPPRESS N        CTO     N        RULESEC NONE IOADMIN
    REC.TYPE S          J3FLG    F        SPEC             ENVIR.  000
    REPLY    0000       HCID              DESC    0000     MCSF    C000
    ROUTE    80 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
    WRAP IOA 0265       W.EXT 0265        RBA  00221F      EV.COUNT 144329
 COMMANDS: ALL  LIMIT  LOCATE  SHOW  SHPF  SWAP  TRACE  WRAP  AUTO  '/' 09.08.28
```

The Debug display type is intended for use in solving problems that cannot be solved without contacting Customer Support. In this case, a list of the Automation Log using this display type should be sent to your BMC Software Customer Support.

Fields in the Debug (B) Display Type

The B display type displays most of the fields shown in the A display type, together with several additional fields with contents that can be of use to Customer Support. For more information, refer to “Table 56Fields of Display Type A (All Fields)” on page 149.

The additional fields for use by Customer Support are

- WRAP.IOA
- W.EXT
- RBA
- EV.COUNT

Commands of the Automation Log Screen

In addition to the DISPLAY (DI) command explained on page 132, the following commands can be specified in the COMMAND field of the Automation Log screen.

Table 57 Commands of the Automation Log Screen (part 1 of 6)

Command	Description
SHOW	Activates the specified screen filter, opens the Automation Log Show Screen window, or opens the Display Filters window, depending on the format of the command. For more information, see "Filtering the Automation Log Screen Display" on page 161. Valid formats are: ■ SHOW *filter_name* EDIT — opens the Automation Log Show Screen window for the specified SHOW filter ■ SHOW *filter_name* — activates the specified SHOW filter ■ SHOW (**PF02/PF14**) — opens the Automation Log Show Screen window for the active SHOW filter ■ SHOW ? — opens the Display Filters window This window lists all available SHOW filters.
	Note: The reserved filter name DEFAULT can be used to activate or edit the default SHOW filter for the status screen. Only records that conform to the selection criteria specified in the filter are displayed in the Automation Log screen.
SEARCH	Activates the specified screen filter, opens the Automation Log Search Screen window, or opens the Display Filters window, depending on the format of the command. For more information on filtering the Automation Log Screen, see "Filtering the Automation Log Screen Display" on page 161. Valid formats are: ■ SEARCH *filter_name* EDIT — opens the Automation Log Search Screen window for the specified search filter ■ SEARCH *filter_name* — activates the specified SEARCH filter ■ SEARCH — opens the Automation Log Search Screen window for the active SEARCH filter ■ SEARCH ? — opens the Display Filters window This window lists all available SEARCH filters
	Note: The reserved filter name DEFAULT can be used to activate or edit the default SEARCH filter for the status screen. Only records that conform to the selection criteria specified in the filter are displayed in the Automation Log screen.

Table 57 Commands of the Automation Log Screen (part 2 of 6)

Command	Description
ALL [*job_name*]	If *job_name* is not specified, the command resets all fields in the Show Option window to their default values, and resets all fields in the Search Option window to blanks. As a result, all Automation Log records are displayed. IF *job_name* is specified, where *job_name* is a name, mask, or prefix for job name selection, the command resets all fields in the Show Option window to default values, and resets all fields in the Search Option window to blanks, and then selects for display only those records with a parent task name that conforms to the specified job name. For example, ALL PROD* means that only messages and commands originating from jobs with names beginning with PROD are displayed.
AUTO	The AUTO command automatically refreshes the screen after a specified interval. When the command is issued with no parameter, the default interval time will be the value set for the INTERVAL parameter in CTOPARM. For more information, see "AutoRefresh Mode" on page 77.
LIMIT	The LIMIT command limits the Automation Log search to a specified number of records. The format of the command is `LIMIT nnn`. In this command, *nnn* is the number of records. If *nnn* is not specified, the limit is set (or reset) to 10,000 records. If the search limit is reached and insufficient records that fit the SHOW criteria or the FIND criteria have been selected, the Search Limit window is opened and you can choose to stop or continue the search. For more information, see "Search Limit Window" on page 174.

Table 57 Commands of the Automation Log Screen (part 3 of 6)

<table>
<tr><th>Command</th><th>Description</th></tr>
<tr><td>LOCATE</td><td>The LOCATE command (abbreviated LO) locates the first Automation Log record with a creation time that matches the specified time. That record becomes the first record in the display.

The format of the command is <code>LOCATE hhmmss</code>. In this command

■ hh are hours
■ mm are minutes
■ ss are seconds

hhmmss can be specified fully (6 digits) or partially (for example, hhmm, hmm, hh, or h). CONTROL-O deciphers the number specified by breaking it into groups of two digits from right to left.

Examples:
<table>
<tr><th>Command</th><th>Explanation</th></tr>
<tr><td><code>LO 114045</code></td><td>The Automation Log display starts from records produced at or after 11:40 a.m. and 45 seconds.</td></tr>
<tr><td><code>LO 123000/</code>
<code>LO 1230</code></td><td>The Automation Log display starts from records produced at or after 12:30 p.m.</td></tr>
<tr><td><code>LO 100000/</code>
<code>LO 1000/</code>
<code>LO 10</code></td><td>The Automation Log display starts from records produced at or after 10:00 a.m.</td></tr>
<tr><td><code>LO 10000/</code>
<code>LO 100/</code>

<code>LO 01/</code>
<code>LO 1</code></td><td>The Automation Log display starts from records produced at or after 1:00 a.m.</td></tr>
</table>
If no specific time is entered, the first record displayed is the first record of the current day, for which the creation time is 0.</td></tr>
<tr><td>TRACE</td><td>The TRACE command (abbreviated T) alternately hides or displays the trace of CONTROL-O rules while displaying the rest of the Automation Log.</td></tr>
<tr><td>TRACE ONLY</td><td>The TRACE ONLY command (abbreviated T ON) displays only trace records. To reset the switch so that all records of the Automation Log are displayed, specify the TRACE (T) command following T ON.</td></tr>
<tr><td>WRAP</td><td>The WRAP command causes the message text field information to be alternately wrapped or not wrapped to the next lines. Text which is not wrapped can be viewed by using the scroll right PFKey (PF11/PF23).</td></tr>
</table>

Table 57 Commands of the Automation Log Screen (part 4 of 6)

Command	Description
SWAP	The SWAP command is used to view one of the following: ■ a previous version of the Automation Log (DSN) on the current system that was backed up using the CTOALOCP utility ■ the default operational Automation Log of another system, where the IOA installation on the specified system is the same as the IOA installation for the current system This is valid only in a shared DASD environment, where the Automation Log file from different systems is accessible. Valid formats are: ■ SWAP — displays the Swap Option window, which is shown in Figure 40 on page 159 This window is used to specify the Automation Log to be viewed. In the Swap Option window, enter one of the following: — the name of the Automation Log (DSN) on the current system you want to view — the SMF ID for the default operational Automation Log you want to view (from 1 through 4 characters only) — a blank value to view the default operational Automation Log for the current system ■ SWAP DSN=*dsn_name* — displays the Automation Log specified *dsn_name* is a valid Automation Log (DSN) name. ■ SWAP SMF=*smf_id* — displays the default operational Automation Log of the SMF ID specified *smf_id* is a valid SMF ID.
OPER	The OPER command displays the MVS Operlog. This command is valid only when working in a Sysplex environment. Messages in the Operlog are displayed in the same format as the CONTROL-O Automation log, and most commands and display types available in the Automation log are available while displaying the Operlog messages. For more information, see "MVS Operlog Display" on page 176.

Table 57 Commands of the Automation Log Screen (part 5 of 6)

Command	Description
/ MVSCMD	The / command, or the MVSCMD command, which is the alias for the / command, enable the operator to issue MVS operator commands, or VM commands if MVS is operating under VM, from non-console terminals. Valid formats are: ■ / *or* MVSCMD — Displays a window which allows you to enter the MVS or VM command. ■ / *mvs_command* or MVSCMD *mvs_command* — *mvs_command* is the text of the MVS or VM command to be issued. There is a space between the MVSCMD command and the command text. ■ / / — Displays the Operator's Menu screen that includes a list of preset operator commands. This screen is also accessible using the OPERATOR option in the CONTROL-O Automation Options Facility (OA) screen. For more information, see "The OPERATOR Option" on page 193. To issue the MVS or VM command, enter command / or MVSCMD at the command prompt. The window shown in Figure 41 on page 160 is displayed.
	Do one of the following: ■ If you entered the / command or the MVSCMD command without the accompanying command text, specify the MVS or VM command in the CMD field of the window. Beginning with the first CMD field line, you can specify up to 44 characters in each of the two lines, as necessary. Press **Enter**. The command is executed, and the Operator Command screen, containing the results of the command execution, is displayed. The Operator Command screen is shown in Figure 42 on page 160. ■ If you entered the / command or the MVSCMD command with the accompanying command text, the text appears in the CMD field. Press **Enter**. The command is executed, and the Operator Command screen, containing the results of the command execution, is displayed. The Operator Command screen is shown in Figure 42 on page 160. For information on using the Operator Command screen, refer to "The OPERATOR Option" on page 193.

Table 57 Commands of the Automation Log Screen (part 6 of 6)

Command	Description
	Note: The / command or MVSCMD command uses the EMCS console to issue the MVS or VM command under your user ID. Another console may already be active under your user ID because you did one of the following: ■ You issued another MVS or VM command from SDSF under the same user ID. ■ You have previously activated a console using the Automation Opts (OA) CONSOLE option. In either case, the console response may not be displayed in the Operator Command screen. In all cases, however, the response is displayed in the Automation Log screen.

Figure 40 Automation Log Screen SWAP Option Window

```
FILTER:            ----------> AUTOMATION LOG SMF=OS35 <--------< D >------(OL)
COMMAND ===>                                                     SCROLL===> CRSR
SHOW LIMIT ON ==>                                           DATE 120900 - 120900
DATE   TIME   JOBNAME   ----------------- M E S S A G E ---------------------
120900 151928 A60AS     -A60AS    JOB SERVICE TOTALS        1589       03.63
120900 151928 INIT      ICH70001I M26C     LAST ACCESS AT 14:38:27 ON TUESDAY,
120900 151928 A60AS     $HASP395 A60AS    ENDED
120900 151929 Essssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssss+
120900 151929 x                                                                |
120900 151929 x   DSN or SMF s>                                                |
120900 151929 x                                                                |
120900 151929 Dssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssss+
120900 151930 N86       -                                            CPU (TOTAL)
120900 151930 N86       -JOBNAME  STEPNAME PROCSTEP    RC    I/O HH:MM:SS.TH
120900 151931 N86       -N86      NONCAT2  CONTROLR    00    157       00.15
120900 151931 N86       -N86      STEP1                00      0       00.02
120900 151931 N86       IEF404I N86 - ENDED - TIME=15.19.31
120900 151931 N86       -
120900 151931 N86       -N86      JOB SERVICE TOTALS        157       00.17
120900 151931 N86       $HASP395 N86      ENDED
120900 151931 A60GATEW  -                                            CPU (TOTAL)
120900 151931 A60GATEW  -JOBNAME  STEPNAME PROCSTEP    RC    I/O HH:MM:SS.TH
120900 151931 A60GATEW  -A60GATEW IOAGATE  GATEWAY     00   1866       02.97
COMMANDS: ALL  LIMIT  LOCATE  SHOW  SHPF  SWAP  TRACE  WRAP  AUTO  '/' 15.21.08
```

Figure 41 Automation Log Screen MVS Command Window

```
FILTER:            ------------- AUTOMATION LOG  --------------< D >-------(OL)
COMMAND ===>                                                        L===> CRSR
SHOW LIMIT ON ==>                                        DATE 140800 - 140800
DATE   TIME   JOBNAME   ----------------- M E S S A G E ----------------------
140800 162223 M60TROLM  CTM262W 0009 UNSUCCESSFUL ATTEMPTS TO READ JOB DATA BY
140800 162224 V51GATE   ECAPUT: USER N16      ASSIGNED TO ASID 01. SIID 162439
140800 162224 D51AS     CTDS15I USER N16      LOGGED IN
140800 162228 D51   +-------------------------------------------------------+
140800 162229 K26   |                                                       |
140800 162231 D51   |  CMD -->                                              |
140800 162232 M52   |      -->                                              |
140800 162232 M52   |                                                       |
140800 162232 M52   +-------------------------------------------------------+
140800 162232 M60TROLM  CTM262W 0012 UNSUCCESSFUL ATTEMPTS TO READ JOB DATA BY
140800 162234 M52       IEA631I  OPERATOR M52      NOW INACTIVE, SYSTEM=OS35
140800 162235 M60TROLM  CTMD50S READING JOB DATA BY IEFSSREQ FAILED 0013 TIMES
140800 162236 N03COMP   STEP LINKEDIT FOR  FRECMC   RC <= 0 .... OK      SYS=V
140800 162237 N03COMP   +EXT3MSG: CCID=BG0063   FUNCTION=GENERATE ELEMENT=FREC
140800 162237 N03COMP   +EXT3MSG:     ENVIRONMENT=IOA500   V504     IOA      L
140800 162238 D51AS     CTDS16I USER N16      LOGGED OUT. USED CPU TIME     0.
140800 162239 M52       IEA630I  OPERATOR M52      NOW ACTIVE,   SYSTEM=OS35
140800 162239 M52
140800 162239 M52       IEE305I          COMMAND INVALID
COMMANDS: ALL  LIMIT  LOCATE  SHOW  SHPF  SMF  SWAP  TRACE  WRAP  AUTO 16.22.42
```

Figure 42 Operator Command Screen

```
---------< D >---------  CONTROL-O - Operator Command --------------------(OA)
COMMAND ===>                                                 SCROLL===> HALF
                          CONSOLE RESPONSE
---> D T
IEE136I LOCAL: TIME=08.48.25 DATE=2000.022  GMT: TIME=06.48.25 DATE=2000.022
====== >>>>>>>>>>>>>>>>   NO MORE ENTRIES IN THE LIST     <<<<<<<<<<<<<<<< ======

CMDS: SHPF, REFRESH(ENTER-KEY)                                      08.52.42
```

Filtering the Automation Log Screen Display

Screen filters can be used to filter the Automation Log screen display. A filter consists of a set of record selection criteria (selection fields and their values). Only records that conform to the selection criteria specified in the filter are displayed on the screen. The INCONTROL administrator can predefine filters and place them in the General profile.

There are two types of filters for the Automation Log screen: SHOW and SEARCH. You can use these filters together to display a specific set of records.

From the Automation Log screen, you can do any of the following:

- activate an existing filter using the SHOW or SEARCH command
- display the list of all available filters using the Display Filters window
- define multiple filters for the screen using the Automation Log Show Screen and Automation Log Search Screen windows

  User-defined filters belong to, are assigned names by, and can only be activated by, the user who defined them. They are stored in the User profile.

A predefined default SHOW filter, named DEFAULT, is provided for the Automation Log screen. Site-defined defaults determine whether the last filter used or the DEFAULT filter is activated when you reenter the Automation Log screen.

NOTE

Filtering begins with the first entry currently displayed in the screen and continues downward.

Activating an Existing Filter in the Automation Log screen

When you know the name of the filter, you can use either the SHOW or SEARCH command to activate an existing SHOW or SEARCH filter, respectively. To do this, specify the SHOW or SEARCH command in the COMMAND field as follows:

SHOW *name*

or

SEARCH *name*

In these commands, *name* is the name of the filter to be activated.

To activate the DEFAULT filter, specify DEFAULT as the name of the filter.

Display Filters Window

When you do not know the name of a filter, you can activate a filter from the list of available filters by opening the Display Filters window. This window displays the list of all available filters, which includes global filters that are available to all users, as well as user-defined filters that are only available to the individual user. You can activate a filter from the Display Filters window, or switch to the Automation Log Show Screen window or Automation Log Search Screen window, where you can edit or define a filter.

To enter the Display Filters window, type `SHOW ?` or `SEARCH ?` in the COMMAND field of the Automation Log screen and press **Enter**.

Figure 43 Automation Log Screen Display Filters Window

```
FILTER:            ------------- AUTOMATION LOG  --------------< D >-------(OL)
COMMAND ===>                                                   SCROLL===> CRSR
SHOW LIMIT ON ==>                                         DATE 290200 - 290200
DATE   TIME   JOBNAME   ------------------ M E S S A G E ----------------------
290200 141922 CONSOLE   141                                 THE DUMP
290200 141922 CONSOLE   141         81 R 19.55.16 OS35     *81 DSI802A CNM01
29020+-----------------------------------+                 NCCF SYSTEMOPERATO
29020|          DISPLAY FILTERS          |9.55.13 OS35     *80 ISTEXC200 -DYN
29020| CMD ==>           SCROLL==> CRSR  |                 ENTERED
29020|  O NAME     DESCRIPTION           | IN BROADCAST DATA SET FOR MAIL
29020|    CONSOLE  JNAME=CONSOLE         |
29020|    NOSTC    NO STARTED TASKS      |
29020|    CONSOL1                        |3 IS;U
29020|    CICS     CICS ONLY             |60,FD3286,SL,NOCOMP,FD3286,LOAD1,IOA
29020| =========>>> BOTTOM <<<========== |                        CPU (TOTAL)
29020|                                   | PROCSTEP    RC    I/O HH:MM:SS.TH
29020|                                   | C           04   2112       03.83
29020|                                   | LINK1       04     54       00.10
29020|                                   |RUN MODE CHANGED TO  N O R M A L DU
29020|                                   |             00    969       00.52
29020|                                   | LINK2       08    884       00.42
29020|  OPTIONS  S  SELECT  E  EDIT      | ENDED - TIME=14.19.43
29020+-----------------------------------+
COMMANDS: ALL  LIMIT  LOCATE  SHOW  SHPF  SWAP  TRACE  WRAP  AUTO      15.20.06
```

Fields of the Display Filters Window

The Display Filters window contains the following fields:

Table 58 Fields of the Display Filters Window

Field	Description
NAME	Name of the filter as it appears in the General or User profile.
DESCRIPTION	Description of the filter.

Options of the Display Filters Window

To request one of the following options, type the option in the OPT field to the left of the filter name and press **Enter**.

Table 59 Options of the Display Filters Window

Option	Description
S (SELECT)	Filters which entries are displayed in the Automation Log Screen according to the criteria specified in the selected filter.
E (EDIT)	Opens the Screen Filter window, where the filter criteria are displayed. You can modify the filter criteria.

Exiting the Automation Log Screen Filter Window

You can activate an edited filter with or without saving changes, depending on the value you specify in the SAVE field, as follows:

- To activate and save the filter, specify **Y** (Yes) in the SAVE field and press **Enter**. Changes to the filter are permanently saved, the filter is activated, and the window is closed.

- To activate the filter without saving it, specify **N** (No) in the SAVE field and press **Enter**. Changes are only kept in memory only, and the window is closed.

- To cancel changes made in the Automation Log Show Screen and the Automation Log Search Screen, use the RESET command (**PF04/PF16**). The changes are canceled regardless of the value specified in the Save field, the window is closed, and the filter that was previously in effect is restored.

By default, using the END command (**PF03/PF15**) in the window works like pressing **Enter**. However, the default can be modified so that END works like RESET.

Automation Log Show Screen and Automation Log Search Screen Windows

The Automation Log Show Screen and Automation Log Search Screen windows in the Automation Log screen enable you to create or modify a filter.

- To access the currently active filter for editing in either of these windows, open the appropriate window using the SHOW or SEARCH command in the COMMAND field, as follows:

  ```
  SHOW (PF02/PF14)
  ```

  or

```
SEARCH
```

- To access any other filter for editing, open the appropriate window using the SHOW or SEARCH command in the COMMAND field, as follows:

  SHOW *name* EDIT

  or

  SEARCH *name* EDIT

  In these commands, *name* is the name of the filter to be displayed in the window.

- To create a new filter, specify the name of the new filter. To create a new filter from an existing filter, call up the existing filter in the Automation Log Show Screen window or Automation Log Search Screen window and edit it as desired, then enter a new name and description in the FILTER and DESC fields.

For more information about the Automation Log Show Screen window, see the following topic, "Automation Log Show Screen Window." For more information about the Automation Log Search Screen window, see page 171.

Automation Log Show Screen Window

Figure 44 Automation Log Show Screen Window

```
FILTER: +-----------------  AUTOMATION LOG SHOW SCREEN ---------------------(OL)
COMMAND | FILTER CICS       SAVE Y (Y/N)  DESC: CICS ONLY                     |
SHOW LI | ID                                                                  |
DATE    | JNAME cics*                                                         |
290200  | JOBID                                                               |
290200  | SYSTEM                                                              |
290200  | USERID                                                              |
290200  | CONSOLE                                                             |
290200  | CONID                                                               |
290200  | MCSF                                                                |
290200  | DESC                                                                |
290200  | ROUTE                                                ROUTE FFFF Y   |
290200  | TSO STC JOB MVS CICS IMS MSG CMD LOG TRACE SHOUT SMS SYSOUT OMG     |
290200  |  Y   Y   Y   Y   Y    Y   Y   Y   Y   Y     Y     Y   Y      Y      |
290200  | ENVIRONMENT                                                         |
290200  | SUPPRESSED     Y   |   NOT SUPPRESSED   Y                           |
290200  | HANDLED        Y   |   NOT HANDLED      Y                           |
290200  | REISSUED       Y   |   NOT REISSUED     Y                           |
290200  | REPLY  CONTROLO  MULTILINE                                          |
290200  | ONLY     ONLY      ONLY                                             |
290200  |   N        N         N                                              |
290200  +---------------------------------------------------------------------+
290200 143323 CONSOLE   798                                    PGN=005  DMN=
COMMANDS: ALL  LIMIT  LOCATE  SHOW  SHPF  SWAP  TRACE  WRAP  AUTO      15.19.19
```

The Automation Log Show Screen window contains the fields shown in Table 60.

Table 60 Fields of the Automation Log Show Screen Window

Field	Description
FILTER	The user-assigned filter name. The name specified in the Filter field can be modified. If the filter has unsaved changes in memory, an asterisk (*) appears to the right of the filter name. For more information see "Exiting the Automation Log Screen Filter Window" on page 163.
SAVE	Whether to save modifications to the filter when closing the window. Valid values are: ■ Y (Yes) ■ N (No)
DESC	The user-assigned description of the filter. This description can be modified.

The fields in Table 61 define the selection criteria to be applied to the screen. Specify the appropriate selection criteria.

Table 61 Selection Criteria of the Automation Log Show Screen Window (part 1 of 7)

Criteria	Description
ID	Includes only records selected according to the ID field (the first word of the message or the command). Up to four masks can be specified. **Examples** ■ **ID IST* DFH*** — Displays only VTAM and CICS messages. ■ **ID F MODIFY** — Displays only MODIFY commands. When the Dealias feature is active, records of type C (Command) are selected after the command has been dealiased while records of type M (Message) are selected by matching their ID value to that of the ID field in the SHOW OPTION window. For further information on the Dealias feature, see "Dealias Feature" on page 440, and Appendix C, "List of Commands for Which Dealiasing Is Supported." **Example 1** **E** is specified in the ID field of the SHOW OPTION window. The following records are selected: ■ E commands ■ RESET commands ■ Messages whose first word is E

Table 61 Selection Criteria of the Automation Log Show Screen Window (part 2 of 7)

Criteria	Description
ID (continued)	**Example 2** **RESET** is specified in the ID field of the SHOW OPTION window. The following records are selected: ■ E commands ■ RESET commands ■ Messages whose first word is RESET
JNAME	Includes only records selected according to the JOBNAME field. Up to four masks can be specified. **Example** **JNAME M88* M23** displays only records whose job name is M23 or starts with M88.
JOBID	Includes only records selected according to the JOBID field. Only one value can be specified.
	Note: In order to select a job whose job ID is longer than five digits, specify the last five digits of the job ID.
	Example 1 **JOBID 234** displays only the records whose job ID is, or ends with, 00234. **Example 2** **JOBID 23456** displays only the records whose job ID is, or ends with, 23456 (such as 0123456).
SYSTEM	Includes only records selected according to the SYSTEM field. Up to four system names or masks can be specified. Each system name can be a maximum of eight characters in length. **Example** **SYSTEM SYSA*** displays only records whose system name is SYSA or is prefixed by SYSA.
USERID	Includes only records selected according to the USERID field. Up to four user IDs or masks can be specified. Each user ID can be a maximum of eight characters in length. **Example** **User ID N25*** displays only records where the user ID is N25 or is prefixed by N25.
CONSOLE	Includes only records selected according to the CONSOLE field. Up to four console IDs or masks can be specified. Each console ID can be a maximum of eight characters in length. **Example** **CONSOLE N25*** displays only records whose console ID is N25 or is prefixed by N25.

Table 61 Selection Criteria of the Automation Log Show Screen Window (part 3 of 7)

Criteria	Description
CONID	Includes only records which have the specified console ID. Up to three values can be specified. **Example** **CONID 10** displays records intended for the console with the ID 10.
MCSF	Includes only records selected according to the MCS flags field. Up to three values can be entered. **Example** **MCSF 13** displays WTO messages with the MCS flag 13.
DESC	Includes only WTO messages with the specified descriptor codes. Up to three values can be specified. **Example** **DESC 1 8 16** displays messages with a descriptor code of 1, 8, or 16.
ROUTE	Includes only WTO messages coming from the specified route codes. Up to eight values can be specified. **Example** **ROUTE 1 90** displays messages with a route code of 1 or 90.
	Note: Messages that are sent to all route codes may not be displayed, depending on the value specified in the ROUTE FFFF field (described in this table).
ROUTE FFFF	Indicates whether messages sent to all routes should be displayed, in addition to the messages sent to the routes specified in the ROUTE field (described in this table).

TSO
STC
JOB
	Selection is based on the JTYPE field. Valid values for each of these fields are:
	
	■ Y (Yes) — Select the record for display if the selection field name matches the JTYPE field.
	■ N (No) — Omit the record from display if the selection field name matches the JTYPE field.
	
	Insert the value Y into at least one of these fields.
	
	Example
	`TSC STC JOB`
	`Y N N`
	displays only TSO users related records.

Table 61 Selection Criteria of the Automation Log Show Screen Window (part 4 of 7)

Criteria	Description

MVS
CICS
IMS
	Selection is based on the ENVIR field. Valid values for each of these fields are:
	
	■ Y (Yes) — Select the record for display if the selection field name matches the ENVIR (Environment) field.
	■ N (No) — Omit the record from display if the selection field name matches the ENVIR (Environment) field.
	
	Insert the value Y into at least one of these fields.
	
	Example
	`MVS CICS IMS`
	`N Y N`
	shows only records intercepted by the CICS interface.

	Note: CICS and IMS messages are not written to the Syslog. They are intercepted by the CONTROL-O interface and written to the Automation Log file.
MSG CMD	Selection is based on the TYPE field. Valid values for each of these fields are: ■ Y (Yes) — Select the record for display if the selection field name matches the TYPE field. ■ N (No) — Omit the record from display if the selection field name matches the TYPE field. Insert the value Y into at least one of these fields. **Example** MSG CMD N Y causes commands (and not messages) to be displayed.

LOG
TRACE
SHOUT
	Selection is based on the REC.TYPE field. Valid values for each of these fields are:
	
	■ Y (Yes) — Select the record for display if the selection field name matches the REC.TYPE field.
	■ N (No) — Omit the record from display if the selection field name matches the REC.TYPE field.
	
	Insert the value Y into at least one of these fields.
	
	Example
	`LOG TRACE SHOUT`
	`Y N N`
	displays only Syslog (Type S) records.

Table 61 Selection Criteria of the Automation Log Show Screen Window (part 5 of 7)

Criteria	Description
SMS SYSOUT OMG	Selection is based on the ENVIR field. Valid values are: ■ Y (Yes) — Select the record for display if the selection field name matches the ENVIR (Environment) field. ■ N (No) — Omit the record from display if the selection field name matches the ENVIR (Environment) field. Insert the value Y into at least one of these fields. **Example** SMS SYSOUT OMG N Y Y Shows only records intercepted by the SYSOUT and OMEGAMON interfaces.
ENVIRONMENT	Selection is based on the ENVIR field. Only messages and commands from the specified environments are displayed. Up to nine environment IDs can be specified. If no value is specified in this field, messages and commands from all environments are displayed.
SUPPRESSED NOT SUPPRESSED	Selection is based on the SUPPRESS field. Valid values for each of these fields are: ■ Y (Yes) — Select the record for display if the selection field name matches the SUPPRESS field. ■ N (No) — Omit the record from display if the selection field name matches the SUPPRESS field. Insert the value Y into at least one of these fields. **Example** `SUPPRESSED Y NOT SUPPRESSED N` displays only records about suppressed messages and commands.
HANDLED / NOT HANDLED	Selection is based on the HANDLED field. Valid values for each of these fields are: ■ Y (Yes) — Select the record for display if the selection field name matches the HANDLED field. ■ N (No) — Omit the record from display if the selection field name matches the HANDLED field. Insert the value Y into at least one of these fields. **Example** `HANDLED Y NOT HANDLED N` displays only records of HANDLED messages and commands.

Table 61 Selection Criteria of the Automation Log Show Screen Window (part 6 of 7)

Criteria	Description
REISSUED / NOT REISSUED	Selection is based on the J3FLG field. Valid values for each of these fields are: ■ Y (Yes) — Select the record for display if the selection field name matches the J3FLG field. ■ N (No) — Omit the record from display if the selection field name matches the J3FLG field. Insert the value Y into at least one of these fields. **Example** `REISSUED Y NOT REISSUED N` displays JES3 or Sysplex reissued messages. This option is useful when it is necessary to sort out the locally issued messages from the reissued ones out of the global processor Automation Log.
REPLY ONLY	Selection is based on the REPLY field. Valid values are: ■ Y (Yes) — Select records for display if the records have non-zero REPLY IDs. ■ N (No) — Record selection is not dependent on the REPLY field. **Example** `REPLY ONLY Y` displays only the WTOR message records and the commands that answer them.
CONTROLO ONLY	Selection is based on the CTO field. Valid values for this field are: ■ Y (Yes) — Select the record for display if Y is specified in the CTO field of the record. ■ N (No) — Record selection is not dependent on the CTO field. **Example** `CONTROLO ONLY Y` displays only records of messages and commands issued by CONTROL-O.

Table 61 Selection Criteria of the Automation Log Show Screen Window (part 7 of 7)

Criteria	Description
MULTILINE ONLY	Selection is based on the MULTILN field. Valid values for this field are: ■ Y (Yes) — Select the record for display if the MULTILN field of the record is equal to F, M, or L. ■ N (No) — Record selection is not dependent on the MULTILN field. **Example** `MULTILINE ONLY Y` displays only records of multi-line WTO Messages.

Automation Log Search Screen Window

Figure 45 shows the Automation Log Search Screen Window.

Figure 45 Automation Log Search Screen Window

```
FILTER:                      -> AUTOMATION LOG SMF=OS35 <--------< D >-----(OL)
COMMAND ===>                                                   SCROLL===> CRSR
SHOW/SEARCH ON => SEARCH                                  DATE 080701 - 080701
DATE   TIME   JOBNAME   ------------------ M E S S A G E ----------------------
080701 122933 I03       V 075,CONSOLE
080701 +------------  AUTOMATION LOG SEARCH SCREEN --------------(OL)+
080701 | FILTER CICS       SAVE   (Y/N)  DESC: CICS ONLY             |
080701 |                                                             |ECIFICAT
080701 |  Logical   Character Range  Character             Boolean   |
080701 |  Operator                   String                Operator  |
080701 |            From      To                                     |
080701 |  --------  -----     -----  --------------------  --------  |ECIFICAT
080701 |  EQ        001       128    CONSOLE               OR        | ARE NON
080701 |  EQ        001       003    CTO                             |OLE CTOP
080701 |                                                             | ARE NON
080701 |                                                             |
080701 |                                                             |OLE CTOP
080701 |                                                             |TROL-O S
080701 +------------------------------------------------------------ +TROL-O S
080701 123025 CONSOLE   CTO282I TEST NUMERO 3 DE MESSAGES POUR     CONTROL-O S
080701 123025 CONSOLE   CTO282I TEST NUMERO 4 DE MESSAGES POUR     CONTROL-O S
080701 123025 CONSOLE   CTO282I TEST NUMERO 5 DE MESSAGES POUR     CONTROL-O S
080701 123025 CONSOLE   CTO282I TEST NUMERO 21 DE MESSAGES POUR     CONTROL-O
080701 123025 CONSOLE   CTO282I TEST NUMERO 22 DE MESSAGES POUR     CONTROL-O
080701 123025 CONSOLE   CTO282I TEST NUMERO 23 DE MESSAGES POUR     CONTROL-O
080701 123026 CONSOLE   CTO282I TEST NUMERO 24 DE MESSAGES POUR     CONTROL-O
080701 123026 CONSOLE   CTO282I TEST NUMERO 25 DE MESSAGES POUR     CONTROL-O
COMMANDS: ALL  LIMIT  LOCATE  SHOW  SHPF  SWAP  TRACE  WRAP  AUTO  '/' 18.47.07
```

The Automation Log Search Screen window contains the fields shown in Table 62.

Table 62 Fields of the Automation Log Search Screen Window

Field	Description
FILTER	The user-assigned name of the filter. The name specified in this field can be modified. If the filter has unsaved changes in memory, an asterisk (*) appears to the right of the filter name. For more information, see "Exiting the Automation Log Screen Filter Window" on page 163.
SAVE (Y / N)	Whether to save modifications to the filter when closing the window. Valid values are: ■ Y (Yes) ■ N (No)
DESC.	The user-assigned description of the filter. This description can be modified.

The following fields define the logical (Boolean) relations to be applied to the screen. Up to five logical relations can be specified. Only records that match all relations are displayed.

Table 63 Logical relations of the Automation Log Search Screen Window

Field	Description
Logical Operator	Defines the current logical relation. Valid values are ■ EQ — equal to ■ NE — not equal to ■ LT — less than ■ GT — greater than ■ LE — less than or equal to ■ GE — greater than or equal to
Character Range From To	The range of positions for the first argument of the logical relation. For more information, see "Character Range Interpretation" on page 172. ■ From — first position ■ To — last position
Character String	Second argument of the logical relation. From 1 through 20 characters.
Boolean Operator	Boolean value that connects the current logical relation with the next one. Valid values are ■ AND ■ OR

Character Range Interpretation

The character range values defined by the From and To fields vary depending on the logical operator they are used with, as follows.

- For logical operators LT, GT, LE, and GE, the From and To values specify the exact first and last positions of the substring that is the first member of a logical relation.

  For example, to display only messages from the $HASP200 and $HASP400 interval, use the following logical relations:

```
Logical   Character Range  Character           Boolean
Operator                   String              Operator
          From      To
--------  -----     -----  --------------------  --------
LT        001       008    $HASP400               AND
GT        001       008    $HASP200
```

- For logical operators EQ and NE, the From and To values limit the search to a substring within a string.

  For example, to display all strings that contain the substring “$HASP,” use the following logical relation:

```
EQ        001       128    $HASP
```

Swap Option Window

The SWAP Option window is used to swap between different versions of the Automation Log (that is, between the currently displayed log and a previous log that was backed up using the CTOALOCP utility).

Entering **SWAP** in the COMMAND field of the Automation Log screen opens the Swap Option window, which is shown in Figure 46.

Figure 46 Swap Option Window

```
-------------< D >------------- AUTOMATION LOG  ---------------------------(OL)
COMMAND ===>                                                  SCROLL===> CRSR
SHOW LIMIT ON ==>                                         DATE 020200 - 020200
DATE   TIME   JOBNAME  ------------------- M E S S A G E ----------------------
020200 144714 CONSOLE   D T
020200 144714 CONSOLE   D T
020200 144714 CONSOLE   D T
020200 144714 CON   +-------------------------------------------------------+
020200 144721 RES   |                                                       |
020200 144721 RES   |  DSN -->                                              |
020200 144751 TSO   |                                                       |
020200 144751 TSO   +-------------------------------------------------------+
020200 144756           626 ICH408I USER(MO6C    ) GROUP(        ) NAME(???
020200 144756           626   LOGON/JOB INITIATION - USER AT TERMINAL
020200 144759 MO6C      627 ICH408I USER(MO6C    ) GROUP(        ) NAME(???
020200 144759 MO6C      627   LOGON/JOB INITIATION - USER AT TERMINAL L3042
020200 144759 JES2      $HASP100 MO6C     ON TSOINRDR
020200 144759 MO6C      $HASP373 MO6C     STARTED
020200 144800 MO6C      IEF125I MO6C - LOGGED ON - TIME=14.48.00
020200 144814 CONSOLE   D T
020200 144814 CONSOLE   D T
020200 144814 CONSOLE   D T
020200 144814 CONSOLE   IEE136I LOCAL: TIME=14.48.14 DATE=2000.157  GMT: TIME=
CMDS: SHOW, SHPF, ALL, LIMIT, LOCATE, TRACE, WRAP, SWAP                15.46.16
```

Type the name of an Automation Log data set in the DSN field and press **Enter** to request the change and close the window. The specified data set is displayed.

NOTE

Specified Automation Log data sets must have been created by the CTOALOCP utility.

If the DSN field is left blank, the default operational Automation Log is displayed.

Search Limit Window

The Search Limit Window is opened automatically when a specified maximum number of records have been searched, and the number of records that match the selection criteria does not fill the screen. This maximum number of records can be specified with the LIMIT command. If a LIMIT is not specified, the default value is 1000 records.

Figure 47 Search Limit Window

```
-------------< D >------------- AUTOMATION LOG  ---------------------------(OL)
COMMAND ===>                                                  SCROLL===> CRSR
SHOW LIMIT ON ==>                                          DATE 020200 - 020200
DATE   TIME   JOBNAME  ------------------- M E S S A G E ----------------------
020200 122727 M81A      +CTD160I CONTROL-D RECIPIENT TREE LOADED -    127 RECI
020200 122735 TSO       LOGON
020200 122735 TSO       LOGON
020200 122737           771 ICH408I USER(M35A    ) GROUP(        ) NAME(???
020200 122737           771   LOGON/JOB INITIATION - USER AT TERMINAL
020200 122738 M35A      772 ICH408I USER(M35A    ) GROUP(        ) NAME(???
020200 122738 M35A      772   LOGON/JOB INITIATION - USER AT TERMINAL LX034
020200 122739 JES2      $HASP1 +---------------------------------------------+
020200 122739 M70A      D U,,, |                                             |
020200 122739 M70A      D U,,, |   NUMBER OF SEARCHED RECORDS:   001000      |
020200 122739 *MASTER*  775 IE |   NUMBER OF SELECTED RECORDS:   000010      |
020200 122739 *MASTER*  775 UN |                                             |
020200 122739 *MASTER*  775 46 |   PLEASE SELECT ONE OF THE FOLLOWING:       |
020200 122740 M35A      $HASP3 |                                             |
020200 122740 TSO       LOGON  |   1 - STOP SEARCH IMMEDIATELY               |
020200 122740 TSO       LOGON  |   2 - ASK AGAIN AFTER 000002 RECORDS        |
020200 122740 M35A      IEF125 |   3 - UNCONDITIONAL SEARCH                  |
020200 122741           779 IC |                                             |
020200 122741           779    +---------------------------------------------+
CMDS: SHOW, SHPF, ALL, LIMIT, LOCATE, TRACE, WRAP, SWAP                12.28.12
```

The window displays the number of records searched and the number of records that match the selection criteria for display.

To perform a search, select one of the following choices and press **Enter**:

`3 - UNCONDITIONAL SEARCH`

performs an uninterrupted search of all records.

The search is stopped immediately when you select Option 1.

`2 - ASK AGAIN AFTER` *number* `RECORDS`

searches the specified number of records, and then pauses.

- Continue the search by pressing **Enter**.
- Stop the search by selecting Option 1 (Stop Search Immediately).

If any records are found, the records are displayed.

When you first choose Option 2, you can change the search limit by changing the value in the **Number of Records** field.

NOTE

If you change the value of **Number of Records** to 999999, the Search Limit window will not open when you reenter the Automation Log Screen. To see the Search Limit window again, use LIMIT to specify a number lower than 999999.

During the search, the following information is displayed at the bottom of the window:

- the number of searched records
  Lists the cumulative number of records searched. For example, if you perform three searches with a specified number of 10, the figure displayed is 30.

- the number of selected records
  Lists the cumulative number of records selected that match the search criteria for display.

MVS Operlog Display

The MVS Operlog is a log that contains the system logs of all computers in a Sysplex environment. The Operlog is an optional feature in a Sysplex environment.

When operating with the Operlog active in a Sysplex environment, the OS/39O Operlog can be viewed by issuing the OPER command from the Automation Log screen.

The screen shown in Figure 48 is displayed when the OPER command is issued from the Default display of the Automation Log screen.

Figure 48 MVS Operlog Display

```
-----------------------------      OPERLOG     --------------< D >--------(OL)
COMMAND ===>                                                  SCROLL===> CRSR
SHOW LIMIT ON ==>                                         DATE 060600 - 060600
DATE   TIME   JOBNAME   ------------------ M E S S A G E  ---------------------
060600 103317 JES2      $HASP250 M80A PURGED -- (JOB KEY WAS AF9E8C1E)
060600 103317 JES2      $HASP250 M80 PURGED -- (JOB KEY WAS AF9F0955)
060600 103317 M80       $CT3879,OUTGRP=1.1.1
060600 103317 JES2      $HASP608 M80A     AWAITING PURGE            PRIO  1 AN
060600 103317 JES2      $HASP250 M80A PURGED -- (JOB KEY WAS AF9FC7E6)
060600 103317 M80       $CT3878,OUTGRP=2.1.1
060600 103317 JES2      $HASP608 M80      AWAITING PURGE            PRIO  1 AN
060600 103317 JES2      $HASP250 M80 PURGED -- (JOB KEY WAS AF9FC7E5)
060600 103744 RESOLVE   AMTSM2I SMF DATA SETS FULL-SMF NOT RECORDING, RUN SMF
060600 103744 RESOLVE   AMTSQ3I TOTAL ECSA 9680K, CURRENTLY USED 8312K ( 86%)
060600 103811 M80A      IEA995I SYMPTOM DUMP OUTPUT
060600 103811 M80A      SYSTEM COMPLETION CODE=0C4  REASON CODE=00000011
060600 103811 M80A       TIME=10.38.11  SEQ=00185  CPU=0000  ASID=003D
060600 103811 M80A       PSW AT TIME OF ERROR  078D2000   85AD87AE  ILC 4  INT
060600 103811 M80A         ACTIVE LOAD MODULE           ADDRESS=05AD6188  OFFS
060600 103811 M80A         NAME=IOATDRV
060600 103811 M80A         DATA AT PSW  05AD87A8 - 60004780  A0D2BFFF  6040478
060600 103811 M80A         GPR  0-3  000010A8  05B52CE8  05B68339  05B68778
060600 103811 M80A         GPR  4-7  05B68FFC  00000000  000C44C8  00000000
COMMANDS: ALL , LIMIT , LOCATE , SHOW , SHPF , SWAP , TRACE , WRAP     12.13.57
```

The Operlog screen contains many of the same fields as the Automation Log screen.

Most commands and display types that are available in the Automation Log screen are also available in the Operlog screen. However, the Debug display type and the TRACE, TRACE ONLY, SEARCH, and SWAP commands are not relevant for the Operlog screen.

For a description of the field commands and display types of this screen, see the description of the Automation Log screen on the preceding pages.

To exit the Operlog screen and return to the Automation Log screen, press **PF03/PF15 (END)**.

Automation Options Facility

The CONTROL-O Automation Options facility provides a set of operator productivity tools that facilitate operation of the system and access to automation data. The facility allows selection of functions that display, modify or act upon IOA components or system components.

To display the Automation Options menu, which is shown in Figure 49, type **OA** on the IOA Primary Option menu and press **Enter**.

Figure 49 Automation Options Menu

```
-----------------------  CONTROL-O AUTOMATION OPTIONS  -------< D >--------(OA)
COMMAND ===>                                                   SCROLL===> CRSR
O OPTION                          DESCRIPTION
  COMMAND   Enter Console Command
  CONSOLE   Display Contents of MVS Consoles
  ENQINFO   Display Enqueue Information
  GLOBALS   Display CONTROL-O Global AutoEdit Variables
  OPERATOR  Operator Commands and Responses
  SAMPLES   Examples of Automation Options Implementation
  SERVERS   CONTROL-O Servers Status Screen
  SUBSYS    List MVS Subsystems
====== >>>>>>>>>>>>>>>>    NO MORE ENTRIES IN THE LIST    <<<<<<<<<<<<<<<< ======

SELECT AN OPTION AND PRESS ENTER                                     15.36.53
```

A list of automation options is displayed. Select an option by specifying **S** (Select) to the left of the desired option and pressing **Enter**.

Options supplied with the product are described in the following pages. Additional options can be added by the customer, and the hierarchy of screens can be customized. For a full description on how to add and modify options, see the *INCONTROL for z/OS Administrator Guide*.

NOTE

The SAMPLES option is not described in the following pages. It contains a series of sample automation options that demonstrate how customized automation options can be used to activate other facilities.

To return to the IOA Primary Option menu, press **PF03/PF15** (**END**).

The COMMAND Option

The COMMAND option enables the operator to issue MVS operator commands, or VM commands if MVS is operating under VM, from non-console terminals.

To issue such a command from any terminal under which CONTROL-O is active, specify S (Select) to the left of the COMMAND option in the Automation Options menu and press **Enter**. The window shown in Figure 50 is opened.

Figure 50 Automation Options OPTION Command Window

```
--------< D >--------  CONTROL-O - AUTOMATION OPTIONS  -------------------(OA)
COMMAND ===>                                                SCROLL===> CRSR
O OPTION                     DESCRIPTION
S COMMAND    Enter Console Command
  CONSOLE    Display Contents of MVS Console
  ENQ +-------------------------------------------------------------------+
  GLO |                                                                   |
  OPE |                      Please Enter Parameters                      |
  SAM |                                                                   |
  SER |   Command       ===>                                              |
  SUB |                 ===>                                              |
===== |                                                                   |===
      +-------------------------------------------------------------------+
Select an OPTION and press ENTER                                   17.07.45
```

Specify the desired MVS or VM command in the COMMAND field of the window. Beginning with the first COMMAND field line, you can specify up to 44 characters in each of the two lines, as necessary.

Press **Enter**. The command is executed, and the Operator Command screen, containing the results, is displayed.

Operator Command Screen

The Operator Command screen is displayed after specifying an MVS or VM command using the COMMAND option in the Automation Options facility. The screen displays the results of the specified MVS or VM command.

Figure 51 Operator Command Screen

```
---------< D >---------  CONTROL-O - Operator Command --------------------(OA)
COMMAND ===>                                                SCROLL===> HALF
                          CONSOLE RESPONSE
   ---> D T
IEE136I LOCAL: TIME=08.48.25 DATE=2000.022  GMT: TIME=06.48.25 DATE=2000.022
====== >>>>>>>>>>>>>>>>   NO MORE ENTRIES IN THE LIST     <<<<<<<<<<<<<<<< ======

CMDS: SHPF, REFRESH(ENTER-KEY)                                    08.52.42
```

The following information is displayed on the screen:

- The command, as entered, is displayed on the first one or two lines.
- The console response, as it would appear had the operator specified the command from the console, is displayed on subsequent lines.

NOTE

After the command has been entered, CONTROL-O waits a preset length of time before displaying the console response. If the console response is relatively slow, or the output relatively large, a partial response may be displayed at first. In this case, refresh the screen using the REFRESH command (**PF04/PF16** or **Enter**) periodically until the complete console response has been displayed.

The CONSOLE Option

The CONSOLE option displays an image of an MVS console on the screen. The console be selected by console ID or by console name (in MVS/SP4).

To display a console image on the screen, type **S** (Select) to the left of the CONSOLE option in the Automation Options menu and press **Enter**. The window shown in Figure 52 is opened.

Figure 52 Automation Options CONSOLE Option Window

```
--------< D >--------  CONTROL-O - AUTOMATION OPTIONS  -------------------(OA)
COMMAND ===>                                                SCROLL===> CRSR
O OPTION                     DESCRIPTION
  COMMAND    Enter Console Command
S CONSOLE    Display Contents of MVS Console
  ENQ +-------------------------------------------------------------------+
  GLO |                                                                   |
  OPE |                      Please Enter Parameters                      |
  SAM |                                                                   |
  SER |   Console ID   ===>  01                                           |
  SUB |   Console Name ===>                                               |
===== |                                                                   |===
      +-------------------------------------------------------------------+


Select an OPTION and press ENTER                                   06.55.37
```

Specify the console with the image that should be displayed by typing either a console ID or a console name (but not both) in the window and pressing **Enter**. The default is Console ID=01. The Console Display screen is displayed.

Console Display Screen

The Console Display screen displays the image of the console selected through the CONSOLE option in the Automation Options facility. Since the screen displays the same image as the console, only one display type is defined, namely the D (Default) display type.

The Console Display screen is shown in Figure 53.

Figure 53 Console Display Screen

```
--------< D >--------  CONTROL-O CONSOLE Display       -------------------(OA)
COMMAND ===>                                                SCROLL===> HALF
                                  Console Lines
         @STC20411 *38 DSI802A CNM01    REPLY WITH VALID NCCF SYSTEM OPERATOR
         @ COMMAND
         @JOB20501 *45 IEC301A S JOB N01ANSKL,STEP SORT    ,DDNAME SORTOUT
         @JOB20528 *IEF233A M 460,FD1466,,FD1466,COPY,CTT.INSTCTT
        - JOB20538  IEF404I M56FREP - ENDED - TIME=12.21.41
        - JOB20545  $HASP373 M56FREP  STARTED - INIT  2 - CLASS A - SYS ESA1
          JOB20161  $HASP608 M23ASREP AWAITING PURGE            PRIO  1 ANY
          TSU19909  $HASP608 M23A     AWAITING PURGE            PRIO  1 ANY
          JOB20213  $HASP608 M23ASREP AWAITING PURGE            PRIO  1 ANY
          JOB20214  $HASP608 M23ASREP AWAITING PURGE            PRIO  1 ANY
          JOB20282  $HASP608 M23TSCBT AWAITING PURGE            PRIO  1 ANY
          JOB20318  $HASP608 M23COPYX AWAITING PURGE            PRIO  1 ANY
          JOB20321  $HASP608 M23AEX   AWAITING PURGE            PRIO  1 ANY
          JOB20413  $HASP608 M23XCTB  AWAITING HARDCOPY         PRIO  1 ANY
          JOB20413  $HASP608 M23XCTB  AWAITING HARDCOPY         PRIO  1 ANY
          JOB20405  $HASP608 M23COPYX AWAITING PURGE            PRIO  1 ANY
                    IKJ574I   NO SPACE IN BROADCAST DATA SET FOR MAIL
      00  JOB20524  MIM1038 M78ASMNR CONTENTION WITH M78B OWNS SHR  ON ESA
          JOB20524  MIM1039 M78ASMNR NEEDS EXCL SYSDSN   CTMW.WORKD.SIMOAJF
         @JOB20524 *MIM1040 M78ASMNR WAITING FOR RESOURCES FOR 6 MINUTES
CMDS: SHPF, REFRESH, AUTO                                           12.22.12
```

The ENQINFO Option — Enqueue Information

The ENQINFO option is used to display ENQ (Enqueue) information, that is, information on who is holding a resource and who is waiting for a resource. You can specify selection criteria to limit the type and amount of ENQ information displayed.

Type **S** (Select) to the left of the ENQINFO option on the Automation Options menu and press **Enter**. The window shown in Figure 54 is opened. It contains selection criteria.

Figure 54 Automation Options ENQINFO Option Window

```
--------< D >--------  CONTROL-O - AUTOMATION OPTIONS  -------------------(OA)
COMMAND ===>                                                 SCROLL===> CRSR
 O OPTION                     DESCRIPTION
   COMMAND    Enter Console Command
   CONSOLE    Display Contents of MVS Console
 S ENQ +-------------------------------------------------------------------+
   GLO |                                                                   |
   OPE |                     Please Enter Parameters                       |
   SAM |                                                                   |
   SER |   Request        ==> CONFLICT                                     |
   SUB |   Scope          ==> ALL                                          |
 ===== |   Qname (Major)  ==>                                              |===
       |   Rname (Minor)  ==>                                              |
       |   Rname cont.    ==>                                              |
       |   Jobname        ==>                                              |
       |   Timing (Y/N)   ==> N                                            |
       |                                                                   |
       +-------------------------------------------------------------------+




Select an OPTION and press ENTER                                   07.27.14
```

Initial values are specified for the fields that are mandatory. The selection criteria can be changed by specifying new values and pressing **Enter**.

Available selection criteria are shown in Table 64.

Table 64 Selection Criteria of the ENQINFO Option Window (part 1 of 2)

Criteria	Description
Request	ENQ request. Mandatory. Valid values are: ■ CONFLICT — ENQ conflicts are selected, that is, jobs holding resources for which other jobs are waiting. Default. ■ WAITER — Jobs waiting for resources are selected. ■ OWNER — Jobs that own resources are selected. ■ LOCK — Deadlocked jobs (that is, where one job holds resources for which another job is waiting) are selected. ■ ALL — All ENQ entries are selected.
Scope	Scope of ENQ entries selected. Mandatory. Valid values are: ■ STEP — STEP level ■ SYSTEM — SYSTEM level ■ SYSTEMS — SYSTEMS level ■ ALL — ENQ entries of all three levels above are selected. Default.
Qname	Queue name or mask (major name of the resource), such as, SYSDSN or SYSVSAM. Initially set to blanks. Optional.

Table 64 Selection Criteria of the ENQINFO Option Window (part 2 of 2)

Criteria	Description
Rname	Resource name or mask (minor name of the resource). Initially set to blanks. Optional. The length of Rname is determined as follows: ■ If the name is between two single quotation marks, the length is the number of characters between the quotation marks (including leading and trailing blanks). ■ If the name is not between quotation marks, the actual length is the number of characters, from the first position in the Rname field (including blanks, if any) to the last non-blank character in the field.
Rname cont	Rname can be continued to a total of 88 characters.
Jobname	Job name or mask which issued the ENQ. Initially set to blanks. Optional.
Timing (Y / N)	Determines whether or not the time jobs wait for a resource is calculated. Mandatory. Valid values are: ■ N (No) — Time is not calculated. Default. ■ Y (Yes) — Time is calculated.
	Note: The calculated time is the time a job waits for a resource, from first invocation of the ENQ Information screen until its latest REFRESH.

Change parameters, if desired, and press **Enter** to close the window. The ENQ Information screen is displayed.

ENQ Information Screen

The ENQ Information screen displays the selected enqueue information.

Up and down scrolling conventions are supported.

Two predefined display types (described in the following paragraphs) are available for the ENQ Information screen.

Changing Display Types

While in the ENQ Information screen, the display type can be changed using the DISPLAY command. The format of the command is `DISPLAY x`. In this command, *x* is the identifying letter for the desired type. DISPLAY can be abbreviated to DI.

NOTE

For a list of display types, enter **DISPLAY ?** to show the Display Options window. To select a display type in the window, type **S** (Select) in the Option field next to the ID. To exit the window without selecting a display type, press **PF03/PF15** (**END**).

Example

`DI A` displays the All Fields display type.

Valid predefined display types are

- D — Default display type
- A — All Fields display type

Display Type D (Default)

Figure 55 ENQINFO Option Display Type D (Default)

```
------< D >-------  CONTROL-O - ENQ Information - Option=S ---------------(OA)
COMMAND ===>                                                 SCROLL===> CRSR
    O JOBNAME STA TYP SCOPE   QNAME    RNAME
      M56FCMP  O   E  SYSTEM  SYSDSN   CTW.TEST.FD1211.SRC
      M56FCMP  O   E  SYSTEM  SYSDSN   CTDW.WORKD.PRMUSR
      SMS      O   S  SYSTEM  SYSDSN   SYS1.DFSMS.ACDS
      W3PGATE  O   S  SYSTEM  SYSDSN   IOAP.TEST.NSN
      I4ZSMON  O   E  SYSTEMS IOAZ410  DEVICE.460
      M06C     O   S  SYSTEM  SYSDSN   CTDW.WORKD.ATF
      M56FCMP  O   E  SYSTEM  SYSDSN   M31.UNDEL100.ASM
      M4WTROLM O   S  SYSTEM  SYSDSN   CTMW.WORKD.CKP
      M06C     O   S  SYSTEM  SYSDSN   CTMW.WORKD.CKP
      M56FCMP  O   E  SYSTEM  SYSDSN   CTT.TLMSAG.EARL
      EDDTROLD O   S  SYSTEM  SYSDSN   EDD.TEST.COM
      EDDPRINT O   S  SYSTEM  SYSDSN   EDD.TEST.COM
      LLA      O   S  SYSTEM  SYSDSN   SYS2.LINKLIB
      M06C     O   S  SYSTEM  SYSDSN   IOAW.WORKI.MSG
      M56FCMP  O   E  SYSTEM  SYSDSN   M54.VSAM.FILE1
      M56FCMP  O   E  SYSTEM  SYSDSN   CTOW.WORKO.GLB.CPUESA1
      M00      O   S  SYSTEM  SYSDSN   SYS2.EXEC
      M42B     O   S  SYSTEM  SYSDSN   SYS2.EXEC
      M80      O   S  SYSTEM  SYSDSN   SYS2.EXEC
      N38      O   S  SYSTEM  SYSDSN   SYS2.EXEC
CMDS: SHPF, REFRESH                                                15.52.05
```

Fields in the Default (D) Display Type

The information shown in Table 65 is displayed.

Table 65 Fields of the ENQ Information Screen Display Type D (Default)

Field	Description
<D>	Indicates the Default display type.
O (OPTION)	For future use.
JOBNAME	Name of the job that issued the ENQ.
STATUS	Status of the job. Valid values are: ■ O — The job owns the resource. ■ W — The job is waiting for the resource. An R (RESERVE) character appearing next to the status indicates a RESERVE condition on the disk.
TYPE	Resource type. Valid values are: ■ E — Exclusive ■ S — Shared
SCOPE	Scope of the ENQ entry. Mandatory. Valid values are: ■ STEPS — STEP level ■ SYSTEM — SYSTEM level ■ SYSTEMS — SYSTEMS level ■ ALL — ENQ entries of all three levels above are selected. Default.
QNAME	Resource major name.
RENAME	First 44 characters of the resource name.

Display Type A (All Fields)

Figure 56 shows an example of the All Fields display type for the ENQ Information screen. This display type is requested by typing the DISPLAY A command (abbreviated DI A) in the COMMAND field of the screen.

Figure 56 Example of the ENQ Information All Fields Display Type (A)

```
------< A >-------  CONTROL-O - ENQ Information - Option=S ---------------(OA)
COMMAND ===>                                                  SCROLL===> CRSR
     O JOBNAME  QNAME    RNAME
       M19     SPFEDIT  M19A.ISPF.ISPPROF                           ISREDRT
           STATUS   O  ASID  0194 TYPE     E             SCOPE     SYSTEMS
           RANGE    L             SYSNAME  ESA1          WAIT TIME 00000000
           HELD BY

       M19     SPFEDIT  M19A.ISPF.ISPPROF                           ISREDIT
           STATUS   O  ASID  0194 TYPE     E             SCOPE     SYSTEMS
           RANGE    L             SYSNAME  ESA1          WAIT TIME 00000000
           HELD BY

       M19     SPFEDIT  CTO.WORK.SRC                                CTOTAOP
           STATUS   O  ASID  0072 TYPE     E             SCOPE     SYSTEMS
           RANGE    L             SYSNAME  ESA1          WAIT TIME 00000000
           HELD BY

       M19     SPFEDIT  CTO.WORK.SRC                                CTOTCSE
           STATUS   O  ASID  0072 TYPE     E             SCOPE     SYSTEMS
           RANGE    L             SYSNAME  ESA1          WAIT TIME 00000000
           HELD BY

CMDS: SHPF, REFRESH                                                 15.55.58
```

Fields in the All Fields (A) Display Type

The information shown in Table 66 is displayed.

Table 66 Fields of the ENQ Information Screen Display Type A (All Fields) (part 1 of 2)

Field	Description
<A>	Indicates the All Fields display type.
O (OPTION)	For future use.
JOBNAME	Name of the job that issued the ENQ.
QNAME	Resource major name.
RNAME	First 44 characters of the resource name.
STATUS	Status of the job. Valid values are: ■ O — Job owns the resource ■ W — Job is waiting for the resource An R (RESERVE) character appearing next to the status indicates a RESERVE condition on the disk.
ASID	Address space ID of the job that issued the ENQ.
TYPE	Resource type. Valid values are: ■ E — Exclusive ■ S — Shared

Table 66 Fields of the ENQ Information Screen Display Type A (All Fields) (part 2 of 2)

Field	Description
SCOPE	Scope of the ENQ entry. Mandatory. Valid values are: ■ STEP — STEP level ■ SYSTEM — SYSTEM level ■ SYSTEMS — SYSTEMS level ■ ALL — ENQ entries of all three levels above are selected. Default.
RANGE	Range of the ENQ entry. Valid values are: ■ L — Local request ■ G — Global request
SYSNAME	Name of the system associated with the ENQ entry.
WAIT TIME	Time, in seconds, that the job has been waiting for a resource, from first invocation of the ENQ Information screen to its most recent refresh. Exiting and reentering the screen resets this field.
HELD BY	Names of up to six jobs which own the resource for which the job is waiting.

Commands of the ENQ Information Screen

Table 67 Commands of the ENQ Information Screen

Command	Description
SHPF	The SHPF command shows the current PFKey assignments.
REFRESH	The REFRESH command (**PF04/PF16**) refreshes the screen. In addition to providing new ENQ information, this command is very useful because it allows display of job waiting time, calculated as a time difference between the current refresh and the first invocation of the ENQ Information screen.
AUTO	The AUTO command periodically refreshes the screen automatically after a specified interval. For more information, see "AutoRefresh Mode" on page 77.

The GLOBALS Option

The GLOBALS option displays the values of CONTROL-O Global AutoEdit variables. Variables can be selected for display by either their individual name or mask, or by pool name or mask.

To select variables for display, type **S** (Select) to the left of the GLOBALS option in the Automation Options menu and press **Enter**. The window shown in Figure 57 is opened.

Figure 57 Automation Options GLOBALS Option Window

```
--------< D >--------  CONTROL-O - AUTOMATION OPTIONS  -------------------(OA)
COMMAND ===>                                                SCROLL===> CRSR
O OPTION                     DESCRIPTION
  COMMAND    Enter Console Command
  CONSOLE    Display Contents of MVS Console
  ENQ +-------------------------------------------------------------------+
S GLO |                                                                   |
  OPE |                      Please Enter Parameters                      |
  SAM |                                                                   |
  SER |   VARIABLE MASK ===> *                                            |
  SUB |   POOLID        ===> $GLOBAL                                      |
===== |   SYSTEM NAME   ===> CURRENT                                      |===
      +-------------------------------------------------------------------+









Select an OPTION and press ENTER                                   08.20.50
```

The window contains the required fields shown in Table 68. Default values are displayed.

Table 68 Fields of the GLOBALS Option Window

Field	Description
VARIABLE MASK	Name of Global variable or mask that determines the group of Global variables to be displayed. Default: * (display all Global variables).
POOLID	Name or mask of the members that contains the Global variables to be displayed. Default: $GLOBAL.
SYSTEM NAME	Name of the system within the Sysplex from which XAE TYPE 1 Database AutoEdit Variables are displayed. Default: CURRENT (system on which the user is currently logged). This field is valid only when displaying TYPE 1 XAE databases. For other AutoEdit Variables, (including XAE TYPE 2 Databases), where the SYSTEM NAME is not CURRENT, databases that are not TYPE 1 will not be displayed.

For more information about the XAE facility, see “Using an XAE AutoEdit Variable Database” on page 571.

Change the default values, if desired, and press **Enter**. The Globals Display screen is displayed.

Globals Display Screen

The Globals Display screen displays the values of CONTROL-O Global AutoEdit variables selected through the GLOBALS option in the Automation Options facility. Two predefined display types (described in the following sections) are available for the Globals Display screen.

Changing Display Types

While in the Globals Display screen, the display type can be changed using the DISPLAY command. The format of the command is

```
DISPLAY x
```

In this command, *x* is the identifying letter for the desired type. DISPLAY can be abbreviated to DI.

NOTE

For a list of display types, enter **DISPLAY ?** to show the Display Options window. To select a display type in the window, type **S** (Select) in the Option field next to the ID. To exit the window without selecting a display type, press **PF03/PF15** (**END**).

Example

`DI A` displays the ALL FIELDS display type.

Valid predefined display types are

- D — Default display type
- A — All Fields display type

Display Type D (Default)

Figure 58 is an example of the Default display type for the Globals Display screen.

Figure 58 Example of the GLOBALS Option Default Display Type (D)

```
-----------< D >-------  CONTROL-O - Global Variables  -------------------(OA)
COMMAND ===>                                                SCROLL===> HALF
      NAME                          VALUE
      USER_RULER                    ----+----1
      STATUS_CICS                   ACTIVE   123418 000406
      INIT_NUM                      20
      STATUS_IDMS                   ACTIVE
      SMFID_IDMS                    SYS2
      CTO_RELOAD_DONE               000406
      ABEND_COUNT                   2
      CICS_NAME                     CICSTEST
      USER_RULER2                   ----+----1----+----2----+----3----+----4----+-
      DTAPE_TIME                    141723 000410
      DEVNAME_3400                  TAPE
      DEVNAME_3490                  CART
      DEVNAME_348S                  CART
      RESNAME_TAPE                  TAPE
      RESNAME_CART                  CART
      DEV_1                         TAPE
      DEV_2                         CART
      DEV_O_TAPE                    0
      DEV_T_TAPE                    0
      DEV_O_CART                    0
CMDS: SHPF, REFRESH                                                 10.08.08
```

Fields in the Default (D) Display Type

The fields in the GLOBALS option Default display type (D) are shown in Table 69.

Table 69 Fields of the GLOBALS Option Display Type D (Default)

Field	Description
<D>	Indicates the Default display type.
Name	Name of the Global variable.
Value	Value of the Global variable.

Display Type A (All Fields)

Figure 59 shows an example of the All Fields display type for the Globals Display screen. This display type is requested by typing the DISPLAY A command (abbreviated DI A) in the COMMAND field of the screen.

Figure 59 Example of the GLOBALS Option Display Type A (All Fields)

```
   -----------< A >-------  CONTROL-O - Global Variables  -------------------(OA)
  COMMAND ===>                                                  SCROLL===> HALF
    NAME                          POOLID   VALUE
    USER_RULER1                   $GLOBAL  ----+----1
    STATUS_CICS                   $GLOBAL  ACTIVE   123418 000606
    INIT_NUM                      $GLOBAL  20
    STATUS_IDMS                   $GLOBAL  ACTIVE
    SMFID_IDMS                    $GLOBAL  SYS2
    CTO_RELOAD_DONE               $GLOBAL  000606
    ABEND_COUNT                   $GLOBAL  2
    CICS_NAME                     $GLOBAL  CICSTEST
    USER_RULER2                  $GLOBAL  ----+----1----+----2----+----3----+----4--
--+-
    DTAPE_TIME                    DEVICES  141723 000606
    DEVNAME_3400                  DEVICES  TAPE
    DEVNAME_3490                  DEVICES  CART
    DEVNAME_348S                  DEVICES  CART
    RESNAME_TAPE                  DEVICES  TAPE
    RESNAME_CART                  DEVICES  CART
    DEV_1                         DEVICES  TAPE
    DEV_2                         DEVICES  CART
    DEV_O_TAPE                    DEVICES  0
    DEV_T_TAPE                    DEVICES  0
  CMDS: SHPF, REFRESH                                                  10.28.57
```

Fields in the All Fields (A) Display Type

The fields of the Globals display screen are shown in Table 70.

Table 70 Fields of the GLOBALS Option Display Type A (All Fields)

Field	Description
<A>	Indicates the All Fields display type.
Name	Name of the Global variable.
Poolid	Name of the member that contains the Global variable.
Value	Value of the Global variable.

Commands of the Globals Display Screen

The commands of the Globals display screen are shown in Table 71.

Table 71 Commands of the GLOBALS Option Display Screen

Command	Description
SHPF	The SHPF command shows the current PFKey assignments.
REFRESH	The REFRESH command (**PF04/PF16**) refreshes the screen.
AUTO	The AUTO command periodically refreshes the screen automatically after a specified interval. For more information, see "AutoRefresh Mode" on page 77.

The OPERATOR Option

The OPERATOR option displays a submenu of preset operator commands. Upon selection of a preset command, the Operator Command screen is displayed with the results of the preset command. For more information on the Operator Command screen, see “The COMMAND Option” on page 178.

The SAMPLES Option

The SAMPLES option contains a series of sample automation options that demonstrate how customized automation options can be used to activate other facilities.

The SERVERS Option

The SERVERS option displays the statuses of all or selected CONTROL-O servers. CONTROL-O servers are started tasks that facilitate DO TSO and DO KSL requests issued by CONTROL-O rules. For more information about CONTROL-O servers, see Chapter 5, “CONTROL-O Servers.”

To display the status of servers, type **S** (Select) to the left of the SERVERS option in the Automation Options menu and press **Enter**. The window illustrated in Figure 60 is opened.

Figure 60 Automation Options SERVERS Option Window

```
--------< D >--------  CONTROL-O - AUTOMATION OPTIONS  -------------------(OA)
COMMAND ===>                                                SCROLL===> CRSR
O OPTION                     DESCRIPTION
  COMMAND    Enter Console Command
  CONSOLE    Display Contents of MVS Console
  ENQ +-------------------------------------------------------------------+
  GLO |                                                                   |
  OPE |                      Please Enter Parameters                      |
  SAM |                                                                   |
S SER |   SERVER ID     ===> ALL                                          |
  SUB |   SERVER TYPE   ===>                                              |
 =====|                                                                     |==
      +-------------------------------------------------------------------+
SELECT AN OPTION AND PRESS ENTER                                     11.17.06
```

The window contains the fields shown in Table 72:

Table 72 Fields of the SERVERS Option Window

Field	Description
SERVER ID	Name or mask of the servers whose status should be displayed. The value ALL displays the statuses of all servers, and is the default.
SERVER TYPE	Server type. Valid types are: ■ S — Special ■ G — General ■ I — Immediate
Change the defaults, if desired, and press **Enter**. The Server Status screen is displayed.	

Server Status Screen

The Server Status screen displays the statuses of CONTROL-O servers selected through the SERVERS option in the Automation Options facility. Two predefined display types (described below) of the Server Status screen are available. Up and down scrolling conventions are supported on the Server Status screen. To return to the Automation Options menu, press **PF03/PF15** (**END**).

Changing Display Types

While in the Server Status screen, the display type can be changed using the DISPLAY command. The format of the command is

```
DISPLAY x
```

In this command, *x* is the identifying letter for the desired type. DISPLAY can be abbreviated to DI.

NOTE

For a list of display types, enter **DISPLAY ?** to show the Display Options window. To select a display type in the window, type **S** (Select) in the Option field next to the ID. To exit the window without selecting a display type, press **PF03/PF15** (**END**).

Example

```
DI A
```

displays the All Fields display type.

Valid predefined display types are:

- D — Default display type
- A — All Fields display type

Display Type D (Default)

Figure 61 is an example of the Default display type for the Server Status screen.

Figure 61 Server Status Display Type D (Default)

```
------< D >---------------  CONTROL-O SERVERS STATUS  ----------------(OA.S)
COMMAND ===>                                                  SCROLL===>
    O SERVER   STCID   TYP QLN STIME - STATUS -----------------
      CICSP01           S  000 124820  DOWN
      CICST01           S  000 124820  DOWN
      IMS01             S  000 124820  DOWN
      IMS02             S      124820  DOWN
      IOA01             S  000 124820  DOWN
      GENRL01           G  000 124820  DOWN
      GENRL02           G      124820  DOWN
      GENRL03           G      124820  DOWN
      IMMED01           I      124820  DOWN
      IMMED02           I      124820  DOWN
      IMMED03           I      124820  DOWN
      IMMED04           I      124820  DOWN
      IMMED05           I      124820  DOWN
====== >>>>>>>>>>>>>>>>   NO MORE ENTRIES IN THE LIST     <<<<<<<<<<<<<<<< =====




OPTIONS: S  START  P  STOP  C  CANCEL F  FORCE  T  TERMINATE          13.44.47
```

Fields in the Default (D) Display Type

The fields in the Default (D) display type are shown in Table 73.

Table 73 Fields of the Server Status Screen Default Display Type (D) (part 1 of 2)

Field	Description
The following general information is displayed:	
<D>	Indicates the Default display type.
The following information is displayed for each server in the Default display type:	
O (Option)	Allows entry of line options to be applied to a particular server.
SERVER	The server name.
STCID	ID of the started task associated with the server. This field is displayed only for active servers.

Table 73 Fields of the Server Status Screen Default Display Type (D) (part 2 of 2)

Field	Description
TYPE	The server type. Valid values are: ■ S — Special ■ G — General ■ I — Immediate
QLN (Queue Length)	Length of the request queue associated with the server. For Special servers, this field is displayed only for the first server associated with each of the preset environments. Since all General servers share the same queue, QUEUE LENGTH is displayed only for the first General server.
STIME	Time of the last server status change.
SERVER STATUS	Status of the server. Valid values are: ■ DOWN — The server is not active but is started implicitly upon arrival of the first request for it. ■ STARTING — CONTROL-O issued an operator start command for the server, which is not yet up. ■ UP — The server is up and waiting for requests to be processed. ■ TERMINATING — The server is in the process of shutdown. ■ STOPPED — The server was stopped using the STOP or FORCE command. The server will restart only when explicitly started by a START command. ■ ENDED WITH ERROR — The server has terminated because of an internal error.
The following information is displayed only for servers in EXECUTING status:	
REQUEST	TSO or KSL command, as specified in the DO statement that is executing in the server.

Display Type A (All Fields)

Below is an example of the All Fields display type for the Server Status screen. This display type is requested by specifying the DISPLAY A command (abbreviated DI A) in the COMMAND field of the screen.

Figure 62 Server Status Screen All Fields Display Type (A)

```
------<A>-------------------CONTROL-O SERVERS STATUS------------------(OA.S)
COMMAND ===>                                                  SCROLL ===> HALF
 O SERVER   STCID   TYP QLN STIME  TOUT -------------- STATUS ----------------
   CICSP01           S  000 191028       DOWN
   CICST01           S  020 191040       STOPPED
                            190125 0400  KOA: HGAJ USER 1
                            190130 0400  KOA: HGAJ USER 4
   IMS01             S  000 191136       DOWN
   IMS02             S      191102       DOWN
   GENRL01  STC11900 G  001 191134 0010  EXECUTING
                                         TSO: LISTC LVL(M24)
                            191120       TSO: LISTC LVL(M06)
   GENRL02  STC11921 G      191123 0120* EXECUTING
                                         TSO: CALL 'USER.LOADLIB(TEST1)'
   IMMED01           I      161814       DOWN
   IMMED02           I      161814       DOWN
====== >>>>>>>>>>>>>>>   NO MORE ENTRIES IN THE LIST     <<<<<<<<<<<<<<< =====




OPTIONS: S  START  P  STOP  C  CANCEL F  FORCE  T  TERMINATE         19.16.32
```

Fields in the All Fields (A) Display Type

The fields in the All Fields (A) display type are shown in Table 74.

Table 74 Fields of the Server Status Screen All FIelds Display Type (A) (part 1 of 2)

Field	Description
The following general information is displayed:	
<A>	Indicates the All Fields display type.
The following information is displayed for each server displayed in the All Fields display type:	
O (Option)	Allows entry of line options to be applied to a particular server.
SERVER	Server name.
STCID	ID of the started task associated with the server. This field is displayed only for active servers.
TYPE	Server type. Valid values are: ■ S — Special ■ G — General ■ I — Immediate

Table 74 Fields of the Server Status Screen All FIelds Display Type (A) (part 2 of 2)

Field	Description
QLN (Queue Length)	Length of the request queue associated with the server. For Special servers, this field is displayed only for the first server associated with each of the preset environments. Since all General servers share the same queue, QLN is displayed only for the first General server.
STIME	Time of the last server status change.
SERVER STATUS	Status of the server. Valid values are: ■ DOWN — The server is not active but is started implicitly upon arrival of the first request for it. ■ STARTING — CONTROL-O issued an operator start command for the server, which is not yet up. ■ UP — The server is up and waiting for requests to be processed. ■ TERMINATING — The server is in the process of shutdown. ■ STOPPED — The server was stopped using the STOP or FORCE command. The server will restart only when explicitly started by a START command. ■ ENDED WITH ERROR — The server has terminated because of an internal error.
The following information is displayed only for servers in EXECUTING status:	
TOUT	The TIMEOUT parameter, as specified in the executing DO statement. When the time specified in the TIMEOUT parameter has been exceeded, an asterisk (*) is appended to the time-out value.
REQUEST	TSO or KSL command, as specified in the DO statement that is executing in the server.
The following information is displayed for servers which have requests queued to them:	
NEXT	First (next) request in the server's queue.
QTIME	Time the next request was queued for execution.
NEXT-2	Second (second next) request in the server's queue.
QTIME-2	Time the second next request was queued for execution.
QUEUE TIMEOUT	Queue time-out threshold of the associated request queue. This parameter is displayed only for the first request in the server's queue.

Options of the Server Status Screen

Table 75 describes the valid options, listed at the bottom of the screen, that can be applied to any server status line.

Table 75 Options of the Server Status Screen

Option	Description
START	(S) Starts the server.
CANCEL	(C) Cancels the command executing in the server.
STOP	(P) Stops the server.
FORCE	(F) Acts as both CANCEL and STOP: The executing request is canceled and the server is stopped.
TERM	(T) Stops the server, allowing it to be restarted implicitly.

The SUBSYS Option

The SUBSYS option displays status and other information about all or selected operational MVS subsystems.

Subsystems (as defined in IBM systems) are groups of routines that act as extension of the operating system. Communication with these routines is established through specialized interface services designated as the Subsystem interface.

To obtain information about subsystems, type **S** (Select) to the left of the SUBSYS option in the Automation Options menu. The window shown in Figure 63 is opened.

Figure 63 Automation Options SUBSYS Option Window

```
--------< D >--------  CONTROL-O - AUTOMATION OPTIONS  -------------------(OA)
COMMAND ===>                                                  SCROLL===> CRSR
 O OPTION                     DESCRIPTION
   COMMAND    Enter Console Command
   CONSOLE    Display Contents of MVS Console
   ENQ +-------------------------------------------------------------------+
   GLO |                                                                   |
   OPE |                      Please Enter Parameters                      |
   SAM |                                                                   |
   SER |   SUBSYS. NAME  ===> ALL                                          |
 S SUB |                                                                   |
===== +-------------------------------------------------------------------+===

SELECT AN OPTION AND PRESS ENTER                                    14.50.34
```

The window contains the following field:

SUBSYS. NAME — the name of the subsystem with the status to be displayed (from 1 through 4 characters). The value ALL displays the statuses of all subsystems, and is the default.

Change the default, if desired, and press **Enter**. The Subsystem Display screen is displayed.

Subsystems Display Screen

The Subsystems Display screen displays status and other information about the subsystems selected through the SUBSYS option in the Automation Options facility. Two predefined display types of the Subsystems Display screen are available. These are described in the following paragraphs. Up and down scrolling conventions are supported on the Subsystems Display screen. To return to the Automation Options menu, press **PF03/PF15** (**END**).

Changing Display Types

While in the Subsystems Display screen, the display type can be changed using the DISPLAY command. The format of the command is:

```
DISPLAY x
```

In this command, *x* is the identifying letter for the desired type. DISPLAY can be abbreviated to DI.

NOTE

For a list of display types, enter **DISPLAY ?** to show the Display Options window. To select a display type in the window, type **S** (Select) in the Option field next to the ID. To exit the window without selecting a display type, press **PF03/PF15** (**END**).

Example

```
DI A
```

displays the All Fields display type

Valid predefined display types are:

- D — Default display type
- A — All Fields display type

Display Type D (Default)

Figure 64 shows an example of the Default display type for the Subsystems Display screen.

Figure 64 Automation Options SUBSYS Option Default Display Type (D)

```
--------------------  CONTROL-O SUBSYSTEMS DISPLAY    -------< D >-------(OA)
COMMAND ===>                                                 SCROLL===> CRSR
     SUBSYSTEM-NAME   STATUS   SSCT-ADDRESS   SSVT-ADDRESS
        O21P          ACTIVE     00CFF4A0       00D40AD4
        JES2          ACTIVE     00D6C898       00D3E658
        MSTR          ACTIVE     00D638A8       00D63790
        SMS           ACTIVE     00D6C010       00D404C0
        BLSR          ACTIVE     00D6C870       00D63EF0
        FDR           INACT      00D6C848       00000000
        PDSM          ACTIVE     00D63678       00D6ACE8
        PLD           INACT      00D63650       00000000
        GOSM          INACT      00D63628       00000000
        IRLM          INACT      00D63750       00000000
        JRLM          INACT      00D63728       00000000
        JESD          INACT      00D63700       00000000
        JESX          INACT      00D63DC8       00000000
        JESY          INACT      00D63DA0       00000000
        NETV          ACTIVE     00D63D78       00FBC168
        CNMP          INACT      00D63D50       00000000
        TSSO          INACT      00D63D28       00000000
        GPSM          ACTIVE     00D63D00       00D8A358
        PROD          ACTIVE     00D63CD8       00D405CC
        PRD4          INACT      00D63CB0       00000000
CMDS: SHPF, REFRESH, AUTO                                        15.05.54
```

Fields in the Default (D) Display Type

The fields in the Default (D) display type are shown in Table 76.

Table 76 Fields of the SUBSYS Option Default Display Type (D)

Field	Description
<D>	Indicates Default display type.
SUBSYSTEM	Subsystem identification (1 to 4 character string).
STATUS	Subsystem status. Valid values are: ■ ACTIVE — The subsystem status is active ■ INACT — The subsystem status is inactive
SSCT ADDRESS	Address of the Subsystems Control table.
SSVT ADDRESS	Address of the Subsystems Vector table.

Display Type A (All Fields)

Figure 65 shows an example of the All Fields display type for the Subsystems Display screen. This display type is requested by specifying the DISPLAY A command (abbreviated DI A) in the COMMAND field of the screen.

Figure 65 SUBSYS Options All FIelds Display Type (A)

```
--------< A >--------  CONTROL-O SUBSYSTEMS DISPLAY    -------------------(OA)
COMMAND ===>                                                 SCROLL===> CRSR
     SUBSYSTEM-NAME   STATUS   SSCT-ADDRESS   SSVT-ADDRESS
        O21P          ACTIVE     00CFF4A0      00D40AD4
        ACTIVE FUNCTIONS         07-AL   09-WT   10-CM   14-DM   16-DA
                                 17-DA   18-DA   19-DA   38-CI   39-AG
        JES2          ACTIVE     00D6C898      00D3E658
        ACTIVE FUNCTIONS         01-SO   02-CS   03-CS   04-ET   05-JS
                                 06-AL   07-AL   08-EN   09-CT   10-CM
                                 11-US   12-JT   13-RQ   16-DA   17-DA
                                 18-DA   19-DA   20-RR   21-RR   53-
                                 64-     70-     71-     75-
        MSTR          ACTIVE     00D638A8   7  00D63790
        ACTIVE FUNCTIONS         04-ET   05-JS   06-AL   08-EN   09-WT
                                 10-CM   12-JT   14-DM   15-VS   32-CF
                                 33-WT   48-     50-     63-     68-
                                 72-     73-
        SMS           ACTIVE     00D6C010      00D404C0
        ACTIVE FUNCTIONS         08-EN   15-VS   55-
CMDS: SHPF, REFRESH, AUTO                                          15.25.30
```

Fields in the All Fields (A) Display Type

The fields in the All Fields (A) display type are shown in Table 77.

Table 77 Fields of SUBSYS Option All Fields Display Type (A)

Field	Description
<A>	Indicates All Fields display type.
SUBSYSTEM-NAME	Subsystem identification (1 to 4 character string).
STATUS	Subsystem status. Valid values are: ■ ACTIVE — The subsystem status is active. ■ INACT — Subsystem status is inactive.
SSCT ADDRESS	Address of the Subsystems Control table.
SSVT ADDRESS	Address of the Subsystems Vector table.
ACTIVE FUNCTIONS	Function code and SSOB extension ID. For a list of the codes and their descriptions, see the IBM manual *MVS Using the Subsystem Interface*.

Commands of the Subsystems Display Screen

The commands that are available in the Subsystems Display screen are shown in Table 78.

Table 78 Commands of the SUBSYS Display Screen

Command	Description
SHPF	The SHPF command shows the current PFKey assignments.
REFRESH	The REFRESH command (**PF04/PF16**) refreshes the screen.
AUTO	The AUTO command periodically refreshes the screen automatically after a specified interval. For more information, see "AutoRefresh Mode" on page 77.

KOA Recording

The KOA Recorder facility, which is available under IOA TSO and IOA cross memory, makes it easy to create KOA scripts. The KOA Recorder generates a script by automatically recording your keystrokes and saving the keystrokes in a file. This eliminates the need to write scripts manually and reduces the chance of error. You can edit the file as necessary.

Scripts generated by the KOA Recorder can be submitted in the same way as manually created scripts, that is, by using batch procedure IOARKOA.

For more information on the KOA Recorder, see to the *KeyStroke Language (KSL) User Guide.*

IOA Variables Database Facility

The IOA Variables Database facility, which is also available to CONTROL-M if CMEM is installed, is composed of a series of screens that enable you to view, create and modify the types of AutoEdit variable databases shown in Table 79, as assigned by the system administrator.

Table 79 IOA Variables Databases

Database	Description
Global	Includes user-defined AutoEdit global variables that are shared by all rules, and CONTROL-M jobs if CMEM is installed, on the same computer.
XAE global	Includes user-defined AutoEdit XAE global variables that are shared by all rules, and CONTROL-M jobs, if CMEM is installed, over a Sysplex.

NOTE

In addition to global and XAE global, user-defined AutoEdit variables can also be defined as local. Local variables are used by only one rule (or CONTROL-M job, if CMEM is installed) running on one computer. The IOA Variable Database facility does not deal with local variables. For more information on user-defined AutoEdit variables and the XAE facility, see Chapter 4, "AutoEdit Facility."

Certain screens and features of the IOA Variable Database facility are relevant to CONTROL-O but not to CONTROL-M. If CMEM is installed, and you only want to use the IOA Variable Database facility as it relates to the CONTROL-M environment, refer to the description of the IOA Variable Database facility in the *CONTROL-M for z/OS User Guide*.

All information in AutoEdit variable databases is stored in the files described in Table 80.

Table 80 AutoEdit Variable Database Files

File	Description
Variable Database Definition File	Information about each variable database.
Variable Database Column File	Information about all column names in all variable databases. The column names represent variable names to be used within the database.
Variable Database Variables File	Information about all variables in all variable databases. This file stores the actual values for the variables.

These files are managed by the IOA Access method. The number of database variables that can be defined is limited only by the size of these files. The IOA Access method is described in detail in the IOA chapter of the *INCONTROL for z/OS Administrator Guide*.

To enter the Variable Database facility, select Option IV in the IOA Primary Option menu. The IOA Variables Facility Entry Panel is displayed.

Entry Panel

The entry panel shown in Figure 66 is displayed when you specify Option IV in the IOA Primary Option menu.

Figure 66 IOA Variable Database Entry Panel

```
----------------------- IOA Variables - ENTRY PANEL  ----------------------(IV)
COMMAND ===>



SPECIFY DATABASE NAME

DATABASE ===>                 (Blank for Database selection list)





MODE     ===>                 (Blank or ADMIN for Administration mode)









USE THE COMMAND "SHPF" TO SEE PFK ASSIGNMENT                          16.21.43
```

- To display the list of all variable databases, press **Enter**. The Database List screen is displayed.

- To display the list of variables in a specific variable database, type the database name in the **DATABASE** field and press **Enter**. The Values of Database screen for the specified database is displayed. An asterisk (*) can be used as a mask character in the **DATABASE** field of this screen.

NOTE

CONTROL-O can have multiple variable databases; CONTROL-M can only use the IOAVAR database.

- **To enter the IOA Variables Database facility as a regular user**, leave the **MODE** field blank. In this case, you will be able to view the variables in the databases, but you will not be able to perform administration functions.

- **To enter the IOA Variables Database facility with full administrator functionality,** type **ADMIN** in the **MODE** field.

NOTE

The additional functions available in administration mode are described in the *INCONTROL for z/OS Administrator Guide*.

The List of Databases Screen

The List of Databases screen displays a list of the variable databases currently defined. This screen can be entered using the IOA Variables Facility Entry Panel or when returning from the Column List screen.

NOTE

For a variable database to be loaded into memory, the database must be listed in the DAGLBLST DD statement of the CONTROL-O monitor. For more information, see the description of Global AutoEdit variables in the CONTROL-O chapter of the *INCONTROL for z/OS Administrator Guide*.

The List of Databases screen is shown in Figure 67.

Figure 67 List of Databases Screen

```
LIST OF DATABASES -----  IOA VARIABLES IN USE  ------------------------------(IV)
COMMAND ===>                                                 SCROLL===> CRSR
OPT NAME                 DESCRIPTION
    ACCTING              ACCOUNTING DEPT VARIABLES
    COSALLMT             COSMOS - METHODS DATABASE
    COSALLPR             COSMOS - PREREQUISITES DATABASE
    COSIMGOB             COSMOS - SYSIMAGE OBJECTS
    COSIMGSD             COSMOS - VTAM OBJECTS SOURCE
    COSIMGSR             COSMOS - VTAM OBJECTS SOURCE
    COSMOSPR             COSMOS - PREREQUISITES DATABASE
    COSSTCOB             COSMOS - STC RUNNING OBJECTS
    COSSTCSD             COSMOS - STC OBJECTS SOURCE
    INVENTRY             INVENTORY RELATED VARIABLES
    PAYROLL              PAYROLL VARIABLES
===== >>>>>>>>>>>>>>>>>>>>>>>>  NO MORE DATABASES  <<<<<<<<<<<<<<<<<<<<<<<< =====




OPTIONS:  V VIEW VARS                                            08.15.55
```

A short description is displayed for each database. This description can be specified either when creating a new database, or through the U (Update) option described in the following section.

Options of the Database List Screen

To request an option, type the option in the OPT field to the left of the database name, and press **Enter**. The following option is available for all users:

V (VIEW VARS) — View Variables, that is, display the variables of the database in the Values of Database screen.

NOTE

Only the V option is intended for all users. The remaining options, I (Insert), U (Update), and S (Select), are intended for INCONTROL administrators only, and are described in the *INCONTROL for z/OS Administrator Guide*.

The Values of Database Screen

The Values of Database screen displays all columns and variables in the current (selected) database.

The column names listed in this screen represent variable names (also known as database attributes) used in the variable database. The variables listed in the Values of Database screen represent actual variable values. Variable values are loaded into memory automatically at CONTROL-O startup.

To enter this screen, type **V** (View Variables) for the database you want to view in the Database List screen. The variables in the selected database are displayed.

NOTE

For a description of the screen that is displayed if you are viewing the IOAVAR database, see "The Values of Database Screen for the IOAVAR Database" on page 208.

Figure 68 Values of Database Screen

```
VALUES OF DATABASE: COSSTCSD                                          (IV.V)
COMMAND ===>                                                 SCROLL===> CRSR
     ROW       CPU       OBJECT    DESIRED   ATIPL     NOTIPL    MODE      CLASS

     00001000  ALL       JES2      DOWN      UP        DOWN      FREE      BASE
     00002000  ALL       VTAM      DOWN      UP        DOWN      FREE      COMM
     00003000  ALL       CICP      DOWN      UP        DOWN      FREE      DC
     00004000  ALL       CICT      DOWN      UP        DOWN      FREE      DC
     00005000  ALL       TCP       DOWN      UP        DOWN      FREE      COMM
     00006000  ALL       IDMS      DOWN      UP        DOWN      FREE      DB
     00007000  ALL       IMS       DOWN      UP        DOWN      FREE      DB
     00008000  ALL       NETV      DOWN      UP        DOWN      FREE      COMM
     00009000  ALL       OMON      DOWN      UP        DOWN      FREE      IOA
     00010000  ALL       CTM       DOWN      UP        DOWN      FREE      IOA
     00011000  ALL       CTD       DOWN      UP        DOWN      FREE      IOA
     00012000  ALL       ADAB      DOWN      UP        DOWN      FREE      DB
     00013000  ALL       DB2T      DOWN      UP        DOWN      FREE      DB2
     00014000  ALL       DB2P      DOWN      UP        DOWN      FREE      DB2
======== >>>>>>>>>>>>>>> NO MORE ROWS FOR THIS DATABASE <<<<<<<<<<<<<< ========


OPTIONS:  Z ZOOM     I INSERT   D DELETE   R REPEAT                    09.19.41
```

Standard up and down scrolling conventions are supported in this screen.

Use the scrolling PFKeys to scroll the variable database LEFT (**PF10/PF22**) and RIGHT (**PF11/PF23**).

Row Numbers in a Variable Database

Rows in a variable database are numbered according to the following rules:

- Row numbers in a variable database are initially incremented by 1000.
- When a new row is inserted, it is assigned an intermediate number incremented by 100.
- Rows inserted between row numbers with a hundreds value are assigned numbers incremented by ten.
- Rows inserted between row numbers with a tens value are assigned numbers incremented by one.

For example, a row inserted immediately after row 2000 is assigned a number of 2100.

A maximum of 999 rows can be inserted between two original rows in a variable database. Row numbers can be refreshed, that is, assigned new numbers incremented by 1000, in the following way:

1. Unload the IOA Variable Database Variables file using the IOAVARUL job in the IOA JCL library. This job invokes the IOADUL utility.
2. Reload the file using the IOAVARLD job in the IOA JCL library. This job runs the IOADLD utility with the RENUM parameter specified.

   For more information about the IOADUL and IOADLD utilities, see the *INCONTROL for z/OS Utilities Guide*.

The Values of Database Screen for the IOAVAR Database

If you are viewing the IOAVAR database, the display is different from the screen you normally would see for other variable databases.

To enter this screen, type **V** (View Variables) for the IOAVAR database in the Database List screen. The variables in the selected database are displayed, as shown in Figure 69.

Figure 69 Values of Database Screen

```
VALUES OF DATABASE: IOAVAR                                                (IV.V)
 COMMAND ===>                                                 SCROLL===> CRSR
 ROW       VARNAME                                   VALUE

 00022889 %%\M\ACCTS\BCKP\PDTAPE_0001_1            045673
 00023866 %%\M\ACCTS\BCKP\PDTAPE_0001_2            1045683
 00024902 %%\M\ACCTS\BCKP\PDTAPE_0001_3            045677
 00025863 %%\M\ACCTS\BCKP\PDTAPE_0001_4            043433
 00026943 %%\M\ACCTS\BCKP\PDTAPE_0001_5            045543
 00027792 %%\M\ACCTS\BCKP\PDTAPE_0001_6            045556
 00028972 %%\M\ACCTS\BCKP\PDTAPE_0001_7            045666
 00029831 %%\M\ACCTS\EMPLY\EMP_00123_SCHOOL        STATE UNIVERSITY OF NEW YORK A
 00030765 %%\M\OPER\KPL\SPACE_TYPE_5               TRK
 00031985 %%\M\SYS\DBLG\NAME_OF_COMPUTER_1         A
 00032972 %%\M\SYS\DBLG\NAME_OF_COMPUTER_2         D
 00033769 %%\M\SYS\DBLG\NAME_OF_COMPUTER_3         K
 00034919 %%\M\SYS\DBLG\NAME_OF_COMPUTER_4         W
 00035955 %%\M\OPER\GRPBKP\GENERATION_NUMBER_A     001
 00036932 %%\M\OPER\GRPBKP\GENERATION_NUMBER_B     001
 00037778 %%\M\OPER\GRPBKP\GENERATION_NUMBER_C     003
 00038808 %%\M\OPER\GRPBKP\GENERATION_NUMBER_D     002
 ======== >>>>>>>>>>>>>>> NO MORE ROWS FOR THIS DATABASE <<<<<<<<<<<<<< ========

 OPTIONS:  Z ZOOM     I INSERT   D DELETE   R REPEAT                    09.19.41
```

Each line in the screen represents a variable in the database. Variables and their values are loaded into memory automatically at CONTROL-O or CMEM Monitor startup.

The Values of Database screen displays the information shown in Table 81 about the variables in the IOAVAR database.

Table 81 Fields of the Values of Database Screen

Field	Description
ROW	Each variable is assigned its own row in the database. This column displays the row number of the variable.
VARNAME	The variable path and name, in the following format: `%%\M\app_name\grp_name\job_name\var_name` In this format, ■ %% is a constant that indicates that the string is a variable ■ M is a mandatory constant that indicates that the string is a CONTROL-M variable ■ the levels in the variable path are represented by the following variables — *app_name* is optional and is the CONTROL-M application where *var_name* resides, is optional and — *grp_name* is optional and is the CONTROL-M group within *app_name* where *var_name* resides — *job_name* is optional and is the CONTROL-M job within *group_name* where *var_name* resides ■ *var_name* is mandatory and is the variable name All levels in the path within the VARNAME string are separated by \ (backslash) characters. Up to 30 characters of VARNAME are displayed. If the value of VARNAME is longer, the full variable path and name can be viewed in the Variable Zoom screen, which is described in "Variable Database Zoom Screen" on page 211.
VALUE	Value of the variable. Up to 30 characters of the value are displayed. If the value of VALUE is longer, the full value can be viewed in the Variable Zoom screen, which is described in "Variable Database Zoom Screen" on page 211.

Standard up and down scrolling conventions are supported in this screen.

Use the scrolling PFKeys to scroll LEFT (**PF10/PF22**) and RIGHT (**PF11/PF23**) in the Values of Database screen.

Options of the Values of Database Screen

Table 82 describes the options, listed at the bottom of the Values of Database screen, that can be applied to any row in the screen. Type an option in the first (leftmost) column of the screen (first character of the row number) and press **Enter**.

Table 82 Options of the Values of Database Screen

Option	Description
Z (ZOOM)	Show the variables in the row in a format which displays the entire content of each variable. Variables can be edited in this display as well. For more information, see "Variable Database Zoom Screen" immediately below.
I (INSERT)	Insert a new row in the variable database.
D (DELETE)	Delete the row for which this option is specified.
R (REPEAT)	Insert a new row which is identical to the one for which this option is specified.

Variable Database Zoom Screen

The value of each variable can be up to 140 characters in length, but only the first eight characters of each variable value are displayed. The Variable Database Zoom screen enables display of the full variable value. To display the full variable value, type **Z** (Zoom) next to the desired row in the Display screen. The Zoom screen, shown in Figure 70, is displayed.

Figure 70 Variable Database Zoom Screen

```
VALUES OF DATABASE: COSALLMT ROW:  87932454                        (IV.V.Z)
COMMAND ===>                                                  SCROLL===> CRSR
     O NAME      VALUE
     U DESIRED   UP
     U CURRENT   UNKNOWN
     U DESIRED
     U OBJDB     COSVTMOB
     U ACTCLASS
     U METCLASS
     U METHOD    COSMET13
======== >>>>>>>>>>>>>>>>> NO MORE COLUMNS IN THIS ROW <<<<<<<<<<<<<<<<< ========









OPTIONS:  A ADDITIONAL INFORMATION                                  08.31.07
```

Display Types of the Variable Database Zoom Screen

Table 83 shows the predefined display types that are available for the Variable Database Zoom screen:

Table 83 Display Types of the Variable Database Zoom Screen

Type	Description
D (Default display type)	Includes the first 64 characters of the value of each variable in the selected database row. A second line containing the remainder of the variable value (up to 76 characters) can be displayed using the A (Additional Information) option.
B (Blank Line display type)	Displays the second line for all variables, regardless of whether or not it contains additional information.

Changing Display Types

While in the Variable Database Zoom screen, the display type can be changed using the DISPLAY command. The format of the command is

```
DISPLAY x
```

In this command, *x* is the identifying letter for the desired type.

DISPLAY can be abbreviated to DI.

NOTE

For a list of display types, enter **DISPLAY ?** to show the Display Options window. To select a display type in the window, type **S** (Select) in the Option field next to the ID. To exit the window without selecting a display type, press **PF03/PF15** (**END**).

Example

```
DI B
```

displays the Blank Line display type

The Default display of the Variable Database Zoom screen includes the first 64 characters of the value of each variable in the selected database row.

Zoom Screen Option

The following option is available in the Variable Database Zoom screen:

A (Additional Information) – Display a second line for the selected variable. The second line contains the remainder (up to 76 characters) of the value of the selected variable.

To exit the Variable Database Zoom screen without implementing any changes, type **CAN** (cancel) in the COMMAND line and press **Enter**.

To enable changes to a variable database loaded in memory to be immediately accessible by CONTROL-O rules, the modified database must be reloaded by use of the following operator command:

```
F CONTROLO,LOADGLOBAL=dbname
```

NOTE

Variables in a variable database can also be updated or modified using DO SET statements in CONTROL-O rules, or through SETOGLB statements in a KSL or KOA script. For more information, see "DO SET: Automated Console Action Parameter" on page 380. For more information on KSL and KOA, refer to the *KeyStroke Language User Guide.*

Use the following operator command to save changes made to a variable database in memory:

```
F CONTROLO,WRITEGLOBAL=dbname
```

Uppercasing and lowercasing of variables' values

While in the Variable Database Zoom Screen, uppercase or lowercase mode can be set using the CAPS command. Format of the command is:

```
CAPS [{ON | OFF}]
```

In this command:

- CAPS ON – Forces all user entries to be saved and displayed in uppercase characters, regardless of the case in which they were entered. Default.
- CAPS OFF – Enables certain user entries to be saved and displayed in lowercase characters.
- CAPS – Indicates whether CAPS ON or CAPS OFF mode is active.

NOTE

Name of variables do not support lowercase characters.

Condition and Resource Handling Facility

Options 4 and 7 in the IOA Primary Option menu are directly related to the handling of IOA conditions and CONTROL-M resources. The screens displayed by these options are discussed on the following pages.

IOA Conditions/Resources Screen

The IOA Conditions / Resources screen, which is shown in Figure 71, is accessed through Option 4 of the IOA Primary Option menu. It displays information from the IOA Conditions file, which contains the list of all existing prerequisite conditions, and the CONTROL-M Resources file, which contains the list of Quantitative resources and Control resources. The IOA Conditions / Resources screen enables the user to

- view IOA prerequisite conditions
- view CONTROL-M Quantitative resources
- add or delete prerequisite conditions or resources (or both conditions and resources)
- change the available quantity of CONTROL-M Quantitative resources

For a description of prerequisite conditions, see "Prerequisite Condition Concepts" on page 51.

NOTE

Prior to version 6.0.00 a single file, the IOA Conditions / Resources file, contained all IOA conditions and all Control and Quantitative resources. As of version 6.0.00, the IOA Conditions / Resources file has been replaced by the following two files:

- the IOA Conditions file, containing all IOA conditions
- the CONTROL-M Resources file, containing all Control and Quantitative resources

To enter the IOA Conditions / Resources screen, select Option 4 on the IOA Primary Option menu. Figure 71 shows the screen that is displayed.

Figure 71 IOA Conditions/Resources Screen

```
------------------------- IOA CONDITIONS/RESOURCES ------------------------(4)
COMMAND ===>                                                 SCROLL ===> CRSR
PREFIX  ===>                 COND Y CONTROL Y RES Y STAT Y      DATE 0606 - 0606
OPT TYPE      CONDITION/RESOURCE    IOAID  USE QUANTITY  MAX  *P   RBA    DATE
    CONTROL   CONTROLM               01     E                     (00000)
    RESOURCE  TAPEP                         B    0003    0003
    RESOURCE  CPU1                          B    0098    0100
    RESOURCE  CPU2                          B    0197    0200
    RESOURCE  TAPEP                  01     U    0002            (00091)
    RESOURCE  CPU1                   01     U    0002            (00091)
    RESOURCE  CPU2                   01     U    0003            (00092)
    RESOURCE  TAPEP                  01     R    0002          1 (00093)
    COND      BR-BRIVPCC-ENDED-OK                                        0909
    COND      BR-BRCC0001-ENDED-OK                                       0909
    COND      BR-BRCC0002-ENDED-OK                                       0909
    COND      BR-BRCC0003-ENDED-OK                                       0909
    COND      BR-BRCCIND-ENDED-OK                                        0909
    COND      BR-BRUPDT02-ENDED-OK                                       0909
    COND      BR-BRREP001-ENDED-OK                                       0909
    COND      BR-BRREP002-ENDED-OK                                       0909
    COND      GL-GLINP001-ENDED-OK                                       0909
    COND      EBD-APPL-STARTED                                           0909
    COND      CICS-PROD-IS-UP                                            STAT
OPTIONS:  D DELETE  C CHANGE            COMMANDS: ADD                 14.07.08
```

To return to the IOA Primary Option menu press **PF03/PF15** (**END**).

Fields of the IOA Conditions/Resources Screen

Table 84 shows the information displayed in each screen line.

Table 84 Fields of the IOA Conditions/Resources Screen (part 1 of 2)

Field	Description
OPT	Option to be activated on the condition or resource.
TYPE	Type of condition or resource. Valid values are: ■ COND — Prerequisite condition ■ CONTROL — Control resource ■ RESOURCE — Quantitative resource
	Note: CONTROL and RESOURCE are available only at sites where CONTROL-M is active.
CONDITION / RESOURCE	Name of the condition or resource
DATE	Original date reference of a prerequisite condition, in the format *mmdd* or *ddmm*, depending on the site standard or the STAT value.
When CONTROL-M is active at your site, information is displayed in the following fields:	

Table 84 Fields of the IOA Conditions/Resources Screen (part 2 of 2)

Field	Description	
USE	Resource usage indicator for Control or Quantitative resources. Valid values depend on the type of resource. For Control resources, valid values are: ■ E — Resource is being used in Exclusive mode. ■ S — Resource is being used in Shared mode. For Quantitative resources, valid values are: ■ B — Line indicates the initial definition for the resource ■ U — Line indicates an instance of resource usage ■ R — Line indicates an unfulfilled critical path request (that is, a request with an *-type priority) for the resource	
QUANTITY	Quantity of a Quantitative resource. What the quantity represents depends on the value in the USE indicator, as follows:	
	Use	**Quantity**
	B	Quantity available. If the maximum quantity is more than 1 but only 1 is available, 0001 is displayed in pink (on color terminals). If the maximum quantity is more than 1 but none is available, 0000 is displayed in red (on color terminals).
	U	Quantity in use by the particular process.
	R	Quantity requested by the particular process, but unfulfilled.
MAX	Maximum available quantity of a Quantitative resource.	
*P	Priority of the job requesting a CONTROL-M resource using *-type priority. For more information, see "PRIORITY: Runtime Scheduling Parameter" on page 493.	
RBA	Internal CONTROL-M ID (relative byte address) of the job currently holding a CONTROL-M resource. An RBA value of 000000 indicates that the resource was added manually.	
	Note: To determine which job is using a particular resource, specify the RBA of the resource when specifying the RBAL command in the Active Environment screen. For more information, see the RBAL command in the online facilities chapter of the *CONTROL-M for OS-390 and z/OS User Guide*.	
IOAID	ID of the installation that is using the particular Control or Quantitative resource. This value is significant when multiple IOA installations share the same resources.	

Specifying Retrieval Criteria

The user can control the type and amount of information displayed in the screen by specifying retrieval criteria.

Table 85 IOA Conditions/Resources Retrieval Criteria

Criteria	Description
PREFIX *prefix*	Limits the display to conditions and resources with the specified prefix. The default value is blank (no limit). To display only those conditions and resources containing a specific string, specify the string preceded by an * (Asterisk) character. **Example:** If *OK is specified, the following would be included in the display: UPDATE-ENDED-OK OK-RUN OK
COND	Determines whether prerequisite conditions are displayed. Valid values are: ■ Y (Yes) — Display prerequisite conditions. Default. ■ N (No) — Do not display prerequisite conditions.
DATE *from – to*	Limits the display of prerequisite conditions to the specified date range. Valid values are: ■ *from* — earliest date in the date range, in *mmdd* or *ddmm* format (depending on the site standard) The default value is three days prior to the current date. This default can be modified in the Profile member by the INCONTROL administrator. ■ *to* — Latest date in the date range, in *mmdd* or *ddmm* format (depending on the site standard) The default value is the current date.
STAT	Determines whether or not prerequisite conditions with a date value of STAT are displayed. This applies only if COND is set to Y. Valid values are: ■ Y (Yes) — Include prerequisite conditions with a date value of STAT. Default. ■ N (No) — Do not include prerequisite conditions with a date value of STAT.
At sites where CONTROL-M is active, the following criteria can also be used:	
CONTROL	Determines whether or not Control resources are displayed. Valid values are: ■ Y (Yes) — Display Control resources. Default. ■ N (No) — Do not display Control resources.
RES	Determines whether or not Quantitative resources are displayed. Valid values are: ■ Y (Yes) — Display Quantitative resources. Default. ■ N (No) — Do not display Quantitative resources.

Adding Conditions and Resources – The ADD Command

The ADD command adds conditions to the IOA Conditions file and adds resources to the CONTROL-M Resources file. Type this command in the COMMAND field, and press **Enter**. The format of the command is:

ADD *type*

In this command, *type* is one of the following:

- COND – Add a prerequisite condition
  Special care must be taken when adding prerequisite conditions, because added conditions can trigger job submission.

- RESOURCE / RES – (Where CONTROL-M is active) Add a Quantitative resource
  Only authorized personnel should add Quantitative resources.

- CONTROLCON – (Where CONTROL-M is active) Add a Control resource
  A Control resource entry may be added manually even if a job is holding the resource. Only authorized personnel should add Control resources.

When the ADD command is entered, an appropriate window is opened. The window shown in Figure 72 opens when ADD COND is entered.

Figure 72 IOA Conditions/Resources COND Window

```
-------------------------- IOA CONDITIONS/RESOURCES ------------------------(4)
COMMAN +-------------------------------------------------------+  L ===> CRSR
PREFIX |     PLEASE FILL IN COND NAME, DATE AND PRESS ENTER      |  0606 - 0606
OPT TY |                                                         |  BA    DATE
    CO |     NAME ===>                        DDMM ===>          |   00)
    RE |                                                         |
    RE +-------------------------------------------------------+
    RE
    RESOURCE  TAPEP                  01    U    0002           (00091)
    RESOURCE  CPU1                   01    U    0002           (00091)
    RESOURCE  CPU2                   01    U    0003           (00092)
    RESOURCE  TAPEP                  01    R    0002         1 (00093)
    COND      BR-BRIVPCC-ENDED-OK                                     0606
    COND      BR-BRCC0001-ENDED-OK                                    0606
    COND      BR-BRCC0002-ENDED-OK                                    0606
    COND      BR-BRCC0003-ENDED-OK                                    0606
    COND      BR-BRCCIND-ENDED-OK                                     0606
    COND      BR-BRUPDT02-ENDED-OK                                    0606
    COND      BR-BRREP001-ENDED-OK                                    0606
    COND      BR-BRREP002-ENDED-OK                                    0606
    COND      GL-GLINP001-ENDED-OK                                    0606
    COND      EBD-APPL-STARTED                                        0606
    COND      CICS-PROD-IS-UP                                         STAT
OPTIONS:  D DELETE  C CHANGE            COMMANDS: ADD               14.07.08
```

Fill in the window fields as described in Table 86 according to the specified ADD command.

Table 86 IOA Conditions/Resources ADD Command Formats

Format	Description
ADD COND	Enter the name of the prerequisite condition. The current working date is displayed as the default date. This date can be modified.
ADD RESOURCE or ADD RES	Available only where CONTROL-M is active. Enter the name of the Quantitative resource and the quantity to be added. Available only where CONTROL-M is active.
ADD CONTROL or ADD CON	Enter the name of the Control resource and the control type (E – Exclusive; S – Shared). Available only where CONTROL-M is active.
	Note: If a Control resource is manually added with a type of E (Exclusive), no jobs in WAIT SCHEDULE status that require this resource are submitted. If a Control resource is manually added with a type of S (Shared), no jobs in WAIT SCHEDULE status that require exclusive access to this resource are submitted.

After filling in the window, press **Enter** to add the condition or resource.

NOTE

If a Control resource is manually added with TYPE set to E (Exclusive), no jobs in WAIT SCHEDULE status which require this resource are submitted.

If a Control resource is manually added with TYPE set to S (Shared), no jobs in WAIT SCHEDULE status which require exclusive access to this resource are submitted.

To close the window without adding the condition or resource, press the **RESET** key (**PF04/PF16**).

Options of the IOA Conditions/Resources Screen

Table 87 shows the options that can be specified for conditions and resources by typing the option in the OPT field to the left of the resource or condition name and pressing **Enter**.

Table 87 Options of the IOA Conditions/Resources Screen

Option	Description
D (DELETE)	Delete a condition or resource from the list. The event is recorded in the IOA Log file.
C (CHANGE)	Change the maximum available quantity of a Quantitative resource. The event is recorded in the IOA Log file.
	Note: C (CHANGE) is available only at sites where CONTROL-M is active.

These options are discussed in detail in the following topics.

Deleting Conditions and Resources — The DELETE Option

To delete conditions or resources, type **D** (Delete) in the OPT field to the left of the conditions and resources being deleted and press **Enter**.

A confirmation window may be displayed, depending on User profile customization.

- By default, conditions and resources are deleted without confirmation from the user.
- The User profile can be customized to display a confirmation window with an arrow pointing to a delete request (beginning with the first request).

Figure 73 shows the IOA Conditions and Resources DELETE Option confirmation window.

Figure 73 IOA Conditions/Resources DELETE Option Confirmation Window

```
------------------------- IOA CONDITIONS/RESOURCES ------------------------(4)
COMMAND ===>                                                 SCROLL ===> CRSR
PREFIX  ===>                COND Y CONTROL Y RES Y STAT Y    DATE 0606 - 0606
OPT TYPE      CONDITION/RESOURCE    DATE  USE QUANTITY  MAX  *P   RBA    IOAID
    COND      SALARY-PRSL01A-OK     0606
    COND      SALARY-PRSL002-OK     0606              +----------------------+
    COND      SALARY-PRSL003-OK     0606              |  CONFIRM             |
 D  COND      CBT-TAPE-ARRIVED      0606     <---------|  ASK FOR EACH ONE Y  |
 D  COND      KPL-PRKPL03-OK        0606              +----------------------+
    COND      KPL-PRKPL04-OK        0606
======== >>>>>>>>>>>>>>>> B O T T O M   O F   L I S T <<<<<<<<<<<<<<<< ========



OPTIONS:  D DELETE  C CHANGE            COMMANDS: ADD                14.07.08
```

If a confirmation window is displayed, fill in the options as shown in Table 88 and press **Enter**:

Table 88 IOA Conditions/Resources DELETE Option Confirmation Window Options

Field	Description
CONFIRM	Whether to process the delete request. Valid values are: ■ Y (Yes) — Process the request. ■ N (No) — Cancel the request.
ASK FOR EACH ONE	This line is displayed only if more than one deletion is requested. It determines whether or not individual confirmation is required for each DELETE request. Valid values are: ■ Y (Yes) — Individual confirmation is required for each DELETE request. The specified CONFIRM value (Y or N) applies only to the current order or request. ■ N (No) — Individual confirmation is not required for each DELETE request. The specified CONFIRM operation is applied to all DELETE requests. If CONFIRM is Y, all DELETE requests are processed; if CONFIRM is N, no DELETE request is processed.

Changing the Quantity of a Resource — The CHANGE Option (Available only if CONTROL-M is active)

To request a change to the maximum available quantity of a resource, type **C** (Change) in the OPT field to the left of the resource and press **Enter**. Figure 74 shows the window that is opened.

Figure 74 IOA Conditions/Resources CHANGE Option Window

```
------------------------- IOA CONDITIONS/RESOURCES ------------------------(4)
COMMAN +-------------------------------------------------------+  L ===> CRSR
PREFIX |  PLEASE FILL IN QUANT RES NAME, COUNT AND PRESS ENTER   |  0606 - 0606
OPT TY |                                                         |  BA    DATE
    CO |  NAME ===> TAPEP                    COUNT ===>          |  000)
 C  RE |                                                         |
    RE +-------------------------------------------------------+
    RE
    RESOURCE  TAPEP                   01    U    0002            (00091)
    RESOURCE  CPU1                    01    U    0002            (00091)
    RESOURCE  CPU2                    01    U    0003            (00092)
    RESOURCE  TAPEP                   01    R    0002          1 (00093)
    COND      BR-BRIVPCC-ENDED-OK                                        0606
    COND      BR-BRCC0001-ENDED-OK                                       0606
    COND      BR-BRCC0002-ENDED-OK                                       0606
    COND      BR-BRCC0003-ENDED-OK                                       0606
    COND      BR-BRCCIND-ENDED-OK                                        0606
    COND      BR-BRUPDT02-ENDED-OK                                       0606
    COND      BR-BRREP001-ENDED-OK                                       0606
    COND      BR-BRREP002-ENDED-OK                                       0606
    COND      GL-GLINP001-ENDED-OK                                       0606
    COND      EBD-APPL-STARTED                                           0606
    COND      CICS-PROD-IS-UP                                            STAT
OPTIONS: D DELETE   C CHANGE            COMMANDS: ADD                14.07.08
```

The value in the **NAME** field in the window is protected and cannot be changed.

The COUNT parameter consists of the following values:

- sign
- quantity

Fill in these values, as shown in Table 89 and press **Enter.**

Table 89 COUNT Parameter Values

Value	Description
sign	1-character sign that indicates how the quantity value is to be used. Valid values are: ■ + (Plus) – Add the selected quantity to the current maximum available quantity to give a new maximum available quantity. ■ - (Minus) – Subtract the selected quantity from the current maximum available quantity to give a new maximum available quantity. ■ ' ' (Blank) – Set the maximum available quantity to the selected quantity.
quantity	4-digit 2quantity to be used to adjust the maximum quantity of the resource according to the specified sign. Leading zeros are required.

IOA Manual Conditions Screen

The IOA Manual Conditions screen, which is shown in Figure 75, displays a list of prerequisite conditions that must be confirmed manually by operations personnel.

The list of manual conditions is created by the IOALDNRS utility, which is described in the *INCONTROL for z/OS Utilities Guide*. This utility is intended for use at sites where CONTROL-M or CONTROL-D or both are installed.

The utility scans the jobs in the CONTROL-M Active Jobs file, and the missions in the CONTROL-D Active Missions file, for all conditions requested in IN statements that

- are not resolved by an OUT statement
- are not resolved by ON PGMST or DO COND statements
- do not exist in the IOA Conditions file

The utility automatically places the conditions conforming to these criteria into the IOA Manual Conditions file. This file is used as a checklist for manual operations that operations personnel are expected to perform.

To enter the IOA Manual Conditions screen, select Option 7 on the IOA Primary Option menu.

Figure 75 IOA Manual Conditions Screen

```
-------------------------- IOA MANUAL CONDITIONS --------------------------(7)
COMMAND ===>                                                 SCROLL ===> CRSR
PREFIX  ===>                 PENDING Y  ADDED Y  STAT Y      DATE 0606 - 0606
OPT TYPE      CONDITION                                 DATE  ADDED
    COND      USR-GOT-TAX-TAPE                          0606
    COND      DBA-RUN-UPDATE                            0606    Y
    COND      OP-EXTERNAL-TAPE-OK                       0606    Y
    COND      USR-GOT-BANK-TAPE                         0606
    COND      OP-SHUT-THE-SYSTEM                        0606
    COND      DBA-START-MPMXXX                          0606
    COND      USR-GOT-SALARY-TAPE                       0606    Y
    COND      OP-COMMUNICATION-DOWN                     0606
======== >>>>>>>>>>>>>>>> B O T T O M   O F   L I S T <<<<<<<<<<<<<<<< ========




OPTIONS: A ADD TO COND/RES LIST (SCREEN 4) E ERASE       COMMANDS: NEW 18.33.47
```

To exit the IOA Manual Conditions screen, press **END** (**PF03/PF15**).

Fields of the IOA Manual Conditions Screen

The information displayed on each screen line is shown in Table 90.

Table 90 Fields of the IOA Manual Conditions Screen

Field	Description
OPT	Option to be activated on the condition.
TYPE	Type of condition, meaning COND for prerequisite condition.
CONDITION	Condition name.
DATE	Date reference of prerequisite condition. The format is either mmdd or ddmm depending on the site standard, or the date value STAT.
ADDED	Indicates whether the condition has been manually added to the IOA Conditions file. Valid values are: ■ N (No) – Condition has not been added. ■ Y (Yes) – Condition has been added.

Specifying Retrieval Criteria

You can control the type and amount of information displayed in the screen by specifying the retrieval criteria shown in Table 91.

Table 91 Retrieval Criteria for the IOA Manual Conditions Screen

Criteria	Description
PREFIX *prefix*	Limits the display to conditions with the selected prefix. Default: Blank (no limit). To display only those conditions containing a specific string, enter the string preceded by an * (asterisk) character. **Example**: If *OK is entered, the following conditions are included in the display: UPDATE-ENDED-OK OK-RUN OK
PENDING	Determines whether conditions not yet added are displayed. Valid values are: ■ Y (Yes) – Display pending conditions. ■ N (No) – Do not display pending conditions.
ADDED	Determines whether added conditions are displayed. Valid values are: ■ Y (Yes) – Display added conditions. ■ N (No) – Do not display added conditions.
STAT	Determines whether prerequisite conditions with a date value of STAT are displayed. Valid values are: ■ Y (Yes) – Display prerequisite conditions with a date value of STAT. ■ N (No) – Do not display prerequisite conditions with a date value of STAT.
DATE *from – to*	Limits the display of prerequisite conditions to the selected date range. Valid values are: ■ *from* – Earliest date in the date range, in mmdd or ddmm format (depending on the site standard). The default value is three days before the current date. ■ *to* – Latest date in the date range, in mmdd or ddmm format (depending on the site standard). The default value is the current date.

Adding a New Prerequisite Condition – NEW COND Command

To add a prerequisite condition to the IOA Manual Conditions file, type NEW COND in the COMMAND field and press **Enter**. The window shown in Figure 76 is opened.

Figure 76 IOA Manual Conditions Screen NEW COND Window

```
--------------------------- IOA MANUAL CONDITIONS --------------------------(7)
COMMAN +-------------------------------------------------------+  L ===> CRSR
PREFIX |     PLEASE FILL COND NAME AND DATE AND PRESS ENTER      | 0606 - 0606
OPT TY |                                                        |
    CO |     NAME ===>                       MMDD ===>          |
    CO |                                                        |
    CO +-------------------------------------------------------+
    CO
    COND      OP-SHUT-THE-SYSTEM                        0606
    COND      DBA-START-MPMXXX                          0606
    COND      USR-GOT-SALARY-TAPE                       0606    Y
    COND      OP-COMMUNICATION-DOWN                     0606
======== >>>>>>>>>>>>>>>> B O T T O M   O F   L I S T <<<<<<<<<<<<<<<< ========

OPTIONS: A ADD TO COND/RES LIST (SCREEN 4) E ERASE       COMMANDS: NEW 18.33.47
```

In the NAME field of the window, type the name of the condition to be added. If the condition has a date other than the current working date, enter the date in the date field of the window, in the format DDMM or MMDD, depending on the site standard.

- To add the condition, press **Enter**.
- To close the window without adding the condition, press **RESET** (**PF04/PF16**).

NOTE

Adding a new condition to the IOA Manual Conditions file does not affect the IOA Conditions file.

Options of the IOA Manual Conditions Screen

To add a condition to the IOA Conditions file, or to erase a condition from the IOA Manual Conditions file, type the appropriate option in the OPT field to the left of the condition name and press **Enter**. Valid options are shown in Table 92.

Table 92 Options of the IOA Manual Conditions Screen

Option	Description
A (ADD)	Add the condition to the IOA Conditions file (Screen 4), and mark it "Added" (Y) in the IOA Manual Conditions file. The event is recorded in the IOA Log file.
E (ERASE)	Erase (Delete) a condition from the IOA Manual Conditions file. This does not affect the IOA Conditions file. This option is discussed in more detail in "Erasing (Deleting) Conditions" immediately below.

Erasing (Deleting) Conditions

To erase prerequisite conditions, type **E** in the **OPT** field to the left of the condition names being erased and press **Enter**.

A confirmation window may be displayed, depending on user profile customization:

- By default, conditions are deleted without confirmation from the user.
- If, however, the user profile member has been customized accordingly, the confirmation window shown in Figure 77 is displayed, with an arrow pointing to an ERASE request (beginning with the first request).

Figure 77 IOA Manual Conditions Screen ERASE Confirmation Window

```
--------------------------- IOA MANUAL CONDITIONS --------------------------(7)
COMMAND ===>                                                SCROLL ===> CRSR
PREFIX  ===>                 PENDING Y  ADDED Y  STAT Y     DATE 0401 - 0701
OPT TYPE      CONDITION                                 +-----------------------+
 E  COND      USR-GOT-TAX-TAPE              <----------|  CONFIRM     (Y/N)    |
    COND      DBA-RUN-UPDATE                            +-----------------------+
    COND      OP-EXTERNAL-TAPE-OK                        0606    Y
    COND      USR-GOT-BANK-TAPE                          0606
    COND      OP-SHUT-THE-SYSTEM                         0606
    COND      DBA-START-MPMXXX                           0606
    COND      USR-GOT-SALARY-TAPE                        0606    Y
    COND      OP-COMMUNICATION-DOWN                      0606
======== >>>>>>>>>>>>>>>> B O T T O M   O F   L I S T <<<<<<<<<<<<<<<< ========
OPTIONS: A ADD TO COND/RES LIST (SCREEN 4) E ERASE       COMMANDS: NEW 11.30.02
```

If a confirmation window is displayed, fill in the window as shown in Table 93 and press **Enter**:

Table 93 Fields of the IOA Manual Conditions Screen ERASE Confirmation Window

Field	Description
CONFIRM	Indicates whether to process the erase (delete) request. Valid values are: ■ Y (Yes) – Process the request. ■ N (No) – Cancel the request.
ASK FOR EACH ONE	This line is displayed only if more than one erase is requested. It determines whether individual confirmation is required for each erase request. Valid values are: ■ Y (Yes) – Individual confirmation is required for each erase request. The selected CONFIRM value applies only to the current order or request. ■ N (No) – Individual confirmation is not required for each erase request. The selected CONFIRM value is applied to all erase requests. If CONFIRM is set to Y, all erase requests are processed; if CONFIRM is set to N, no erase request are processed.

IOA Log Facility

The IOA Log facility places automatically generated messages, which record every significant event in the life of a job, rule, or mission, in the IOA Log file. Significant events recorded in the IOA Log file include normal processing occurrences, such as job submitted, as well as error conditions encountered during processing, such as job abends. Shout facility notifications and user remarks may also be recorded in the IOA Log file.

IOA Log Screen

Figure 78 shows the IOA Log screen, which enables you to view the information contained in the Log file. To enter the IOA Log screen, select Option 5 in the IOA Primary Option menu. Upon entry, the screen displays the most recent messages currently in the IOA Log file.

Figure 78 IOA Log Screen

```
FILTER:            ---------------- IOA LOG  -------------------------------(5)
COMMAND ===>                                                   SCROLL===> CRSR
SHOW LIMIT ON ==>                                         DATE 060601 - 060601
DATE   TIME   ODATE  USERID   CODE    -------- M E S S A G E ------------------
060601 092144 060601 M22      SPY254I JOB CT085955 CT085955/01835 SCANNED
060601 092144 060601 M22      SEL208I JOB CT085955 CT085955/01835 ENDED "OK"
060601 092150 060601 M22      SPY254I JOB CT085956 CT085956/01836 SCANNED
060601 092150 060601 M22      SEL208I JOB CT085956 CT085956/01836 ENDED "OK"
060601 092156 060601 IVP      SPY254I JOB BRIVPCC  BRIVPCC /01843 SCANNED
060601 092157 060601 IVP      SEL208I JOB BRIVPCC  BRIVPCC /01843 ENDED "OK"
060601 092157 060601 DBA      CTM659I FREE OF TASK BRCC0001 ODATE 060601
                                      PERFORMED
060601 092201 060601 M22      SPY281I JOB INTR0004 INTR0004/04371 START
                                      98253.1316 STOP 98253.1316 CPU 0MIN
                                      00.04SEC SRB 0MIN 00.00SEC 0.19
060601 092201 060601 M22      SPY254I JOB INTR0004 INTR0004/04371 SCANNED
060601 092201 060601 M22      SEL206W JOB INTR0004 INTR0004/04371 ABENDED CC
                                      SB37 STEP STEP01
060601 092201 060601 M22      SEL219I JOB INTR0004 INTR0004/04371 ENDED "NOT
                                      OK"
060601 092208 060601 IVP      SEL203I JOB BRCC0001 ELIGIBLE FOR RUN
060601 092208 060601 IVP      SUB133I JOB BRCC0001 BRCC0002/01958 SUBMITTED
060601 092208 060601 IVP      SEL203I JOB BRCC0002 ELIGIBLE FOR RUN
CMDS: SHOW, GROUP, CATEGORY, SHPF                                     09.43.00
```

To return to the IOA Primary Option menu, press **END** (**PF03/PF15**).

Fields of the IOA Log Screen

Table 94 shows the fields of the IOA Log screen.

Table 94 Fields of the IOA Log Screen (part 1 of 2)

Field	Description
SHOW LIMIT ON	Identifies which selection criteria other than yes or no were entered in the IOA Log Show Screen window (USERID, MEM/MIS, JOBNAME, CATEGORY, GROUP). For more information, see "Filtering the IOA Log Screen Display" on page 231.
DATE	Date on which the message was issued.
TIME	Time at which the message was issued.
ODATE	Original scheduling date of the job associated with the message. The format is mmddyy, ddmmyy or yymmdd, depending on the site standard.
	Note: When the display type is set to RBA display using the DISPLAY command, the Relative Byte Address (RBA) of the message within the IOA Log file is displayed instead of the ODATE. For more information on changing the screen display, see "Changing IOA Log Screen Display Types" on page 230.
USERID	User ID of the job issuing the message, or user ID of the user writing to the log.
CODE	IOA message code.

Table 94 Fields of the IOA Log Screen (part 2 of 2)

Field	Description
MESSAGE	Text of the message. If the message is longer than the space available on the screen, the message is split and continues on the following line. Messages relating to a job have the following format: `tasktype memname jobname/jobid message`
fromdate – todate	Log information displayed in the screen can be limited to a specified date range in mmddyy, ddmmyy or yymmdd format, depending on the site standard. If the DATE or the ODATE value for a message is in the range selected, the message is included in the IOA Log display. Valid values are: ■ *fromdate* – earliest date in the date range ■ *todate* – latest date in the date range

Commands of the IOA Log Screen

The commands shown in Table 95 can be entered in the COMMAND field.

Table 95 Commands of the IOA Log Screen (part 1 of 2)

Command	Description
SHOW	The SHOW command activates the specified screen filter, opens the IOA Log Show Screen window, or opens the Display Filters window, depending on the format of the command. For more information on filtering the IOA Log Screen, see "Filtering the IOA Log Screen Display" on page 231. Valid formats are: ■ SHOW *name* – activates the specified filter ■ SHOW ? – opens the Display Filters window, which lists all available filters ■ SHOW (**PF02/PF14**) – opens the IOA Log Show Screen window for the currently active filter, and allows editing of that filter ■ SHOW *name* EDIT – opens the IOA Log Show Screen window for the specified filter, and allows editing of that filter
	Note: The reserved filter name DEFAULT can be used to activate or edit the default filter for the status screen. For example, SHOW DEFAULT EDIT opens the IOA Log Show Screen window for the default filter. Only jobs conforming to the selection criteria specified in the filter are displayed in the IOA Log screen. For more information, see "Filtering the IOA Log Screen Display" on page 231.

Table 95 Commands of the IOA Log Screen (part 2 of 2)

Command	Description
GROUP	The GROUP Command alternately displays or hides the GROUP name (if any) that is associated with the relevant job, mission or rule definition. When displayed, the name of the group appears after the job, mission or rule status.
CATEGORY	The CATEGORY command, which is only available at sites where CONTROL-M is active, alternately displays and hides the CATEGORY of the relevant CONTROL-D mission. This command applies to CONTROL-D generated messages only. When displayed, the name of the category appears after the mission status.

Changing IOA Log Screen Display Types

While in the IOA Log screen, the display type can be changed through the DISPLAY command. The format of the command is:

```
DISPLAY x
```

In this command, *x* is a 1-character code that identifies the desired display type. DISPLAY can be abbreviated DI.

NOTE

For a list of display types, enter **DISPLAY ?** to show the Display Options window. To select a display type in the window, type **S** in the Option field next to the ID. To exit the window without selecting a display type, press the **END** key (**PF03/PF15**).

Example

```
DI B
```

displays the No Reverse display

Valid predefined displays are shown in Table 96.

Table 96 IOA Log Screen Predefined Display Types

Display	Description
A	Show RBA (Relative Byte Address) display (displays the RBA of the message within the IOA Log file in place of the ODATE)
D	Default display
B	No Reverse display (display is in No Reverse mode)

Filtering the IOA Log Screen Display

Screen filters can be used to filter the IOA Log screen display.

A filter consists of a set of record selection criteria (selection fields and their values). Only records that conform to the selection criteria specified in the filter are displayed on the screen.

The INCONTROL administrator can predefine filters and place them in the General profile.

Each user can activate an existing filter in the IOA Log screen by entering the SHOW command in the COMMAND line of the IOA Log screen.

Each user can define multiple filters for the screen, through the IOA Log Show Screen window, which is described in "Fields of the IOA Log Show Screen Window" on page 233. User-defined filters belong to, are assigned names by, and can only be activated by, the user who defined them. They are stored in the user profile.

You can see the list of all available filters by opening the Display Filters window.

A predefined default filter (DEFAULT) is defined for the IOA Log screen. Site-defined defaults determine whether the last filter used or the DEFAULT filter is activated upon reentry to the IOA Log screen.

Activating an existing filter in the IOA Log screen

The SHOW command can be used to activate an existing filter when you know the name of the filter.

- To activate an existing filter in the IOA Log screen, enter the SHOW command in the COMMAND field, as follows:

  `SHOW name`

  In this command, *name* is the name of the filter to be activated.

- To activate the DEFAULT filter, use DEFAULT as the name of the filter.

Display Filters Window

When you do not know the name of a filter, you can still activate a filter from the list of available filters by opening the Display Filters window. This window displays the list of all available filters. These include Global filters that are available to all users, as well as user-defined filters that are only available to the individual user. You can activate a filter from the Display Filters window, or switch to the IOA Log Show Screen window, where you can edit or define a filter.

To enter the Display Filters window, type SHOW ? in the COMMAND field of the IOA Log screen and press **Enter**. The screen shown in Figure 79 opens.

Figure 79 IOA Log Screen Display Filters Window

```
FILTER:  DEFAULT    ---------------- IOA LOG  ------------------------------(5)
COMMAND ===>                                                   SCROLL===> CRSR
SHOW LIMIT ON ==>                                          DATE 060601 - 060601
DATE   TIME   ODATE  USERID   CODE    ------ M E S S A G E --------------------
060601 092144 060601 M22      SPY254I JOB CT085955 CT085955/01835 SCANNED
060601 092144 060601 M22      SEL208I JOB CT085955 CT085955/01835 ENDED "OK"
0 +-----------------------------------+ B CT085956 CT085956/01836 SCANNED
0 |          DISPLAY FILTERS          | B CT085956 CT085956/01836 ENDED "OK"
0 | CMD ==>           SCROLL==> CRSR  | B BRIVPCC  BRIVPCC /01843 SCANNED
0 |  O NAME     DESCRIPTION           | B BRIVPCC  BRIVPCC /01843 ENDED "OK"
0 |    CONFIRM                        | EE OF TASK BRCC0001 ODATE 080800
  |    DEL                            | RFORMED
0 |    END                            | B INTR0004 INTR0004/04371 START
  |    ENDNOTOK                       | 253.1316 STOP 98253.1316 CPU 0MIN
  |    ENDOK                          | .04SEC SRB 0MIN 00.00SEC 0.19
0 |    EXEC                           | B INTR0004 INTR0004/04371 SCANNED
0 |    LATE                           | B INTR0004 INTR0004/04371 ABENDED CC
  |    WAIT                           | 37 STEP STEP01
0 |    ECSALL                         | B INTR0004 INTR0004/04371 ENDED "NOT
  | =========>>> BOTTOM <<<========== | "
0 |                                   | B BRCC0001 ELIGIBLE FOR RUN
0 |  OPTIONS  S  SELECT  E  EDIT      | B BRCC0001 BRCC0002/01958 SUBMITTED
0 +-----------------------------------+ B BRCC0002 ELIGIBLE FOR RUN
CMDS: SHOW, GROUP, CATEGORY, SHPF                                     09.43.00
```

Fields of Display Filters Window

The Display Filters window contains the fields shown in Table 97.

Table 97 Fields of the Display Filters Window

Field	Description
NAME	Name of the filter as it appears in the General or user profile.
DESCRIPTION	Description of the filter.

Options of the Display Filters Window

Table 98 shows the options available in the Display Filters window. To request one of these options, type the option in the OPT field to the left of the filter name and press **Enter**.

Table 98 Options of the Display Filters Window

Option	Description
S (SELECT)	Filters the entries that are displayed in the Automation Log Screen according to the criteria specified in the selected filter.
E (EDIT)	Opens the IOA Log Show Screen window, where the filter criteria are displayed. You can modify the filter criteria.

IOA Log Show Screen Window

The IOA Log Show Screen window in the IOA Log screen enables you to create or modify a filter.

- To open an existing filter for editing, enter the following command:

  SHOW *filtername* EDIT

  where *filtername* is the name of the filter to be displayed in the IOA Log Show Screen window.

- To edit the currently active filter, it is not necessary to enter the name of the filter or the EDIT keyword. Enter the SHOW command in the COMMAND field, or press **PF02/PF14**. The IOA Log Show Screen window shown in Figure 80 is displayed.

Figure 80 IOA Log Show Screen Window

```
FILTER:          +-------------------- IOA LOG SHOW SCREEN -------------------(5)
COMMAND ===>     |  FILTER            SAVE   (Y/N)  DESC:                      |
DATE   TIME      |                                                             |
060600 21354     |                                                             |
                 |  CO+CMEM: GENERAL  SHOUT JOBS    GENERAL W PIPE W JOB W     |
060600 22040     |             Y        Y    Y                                |
060600 22040     |                                                             |
060600 22040     |                                                             |
                 |                                                             |
060600 22040     |                                                             |
060600 22040     |                                                             |
060600 22040     |  CODE                                                       |
                 |  URGENCY:      REGULAR Y   URGENT Y   VERY-URGENT Y         |
060600 23034     |                                                             |
060600 23040     |                                                             |
060600 23040     |                                                             |
060600 23040     |                                                             |
                 |  USERID       N54A                                          |
060600 23040     |  MEM/MIS      MIGDASD                                       |
060600 23040     |  JOBNAME                                                    |
060600 23040     |  CATEGORY                                                   |
                 |  GROUP                                                      |
CMDS: SHOW,      +-------------------------------------------------------------+
```

- To create a new filter, open any existing filter and enter a new name and description in the FILTER and DESC fields, as described in the following topic, "Fields of the IOA Log Show Screen Window".

Fields of the IOA Log Show Screen Window

Table 99 shows the fields contained in the IOA Log Show Screen window.

Table 99 Fields of the IOA Log Show Screen Window

Field	Description
FILTER	User-assigned name of the filter. The name specified in the FILTER field can be modified. If changes to a filter have not been saved, an asterisk is displayed to the right of the filter name. For more information, see "Closing the IOA Log Show Screen Window" on page 236.
SAVE (Y / N)	Whether to save modifications to the filter upon closing the window.
DESC	User-defined description of the filter. The description entered here appears next to the name in the Displaying Filters window.

NOTE

The INCONTROL administrator can limit which installed INCONTROL products and options each user may access. However, because all INCONTROL products and the messages they issue are integrated, it may be important for users to see the messages of products and options to which they have no access. Therefore, the types of messages for all INCONTROL products are listed in the IOA Log Show Screen window, and by default, the messages of all installed products are listed in the IOA Log screen.

Fields that define the selection criteria to be applied to the screen are described in Table 100. Fill in the selection criteria as necessary.

The selection criteria marked with the symbol ^{P} act on a prefix basis. For example, specifying **D4** in the USERID field causes the retrieval of all user IDs that start with D4.

Table 100 IOA Log Show Screen Window Selection Criteria (part 1 of 2)

Criteria	Description
CO *message type*	To limit the type of log messages displayed, type Y (Yes) or N (No) under the desired message type. The available types are: ■ GENERAL – general messages about CONTROL-O operations ■ SHOUT – messages issued by CONTROL-O rules through a DO SHOUT statement ■ JOBS – error message during the execution of a rule
USERID^{P}	Show only messages of the specified user IDs. Up to five different user IDs can be specified.
Note: The MEM / MIS, JOBNAME, and GROUP selection criteria only affect the display of messages related to a job. Messages not related to a job are not affected by these selection criteria, and they are displayed unless suppressed by other selection criteria.	
MEM / MIS^{P}	Limit displayed CONTROL-M job messages to the specified member names. Up to five different member names can be specified. Messages not related to a job are not affected by this show limit.

Table 100 IOA Log Show Screen Window Selection Criteria (part 2 of 2)

Criteria	Description
JOBNAME[P]	Limit displayed job messages to the specified job names. Up to five different job names can be specified. Messages not related to a job are not affected by this show limit.
CATEGORY	CONTROL-D category. This selection field is not relevant to CONTROL-O and does not filter CONTROL-O records in the IOA Log file.
GROUP[P]	Limit displayed job messages to the specified groups. Up to four different groups can be specified. Messages not related to a job are not affected by this show limit.

IOA Log Show Screen window (at Sites Where Multiple IOA Products Are Active)

The IOA Log Show Screen window displays different selection criteria depending on which INCONTROL products are operational at your site.

The IOA Log Show Screen window at sites where all INCONTROL products are active is illustrated in Figure 81.

Figure 81 IOA Log Show Screen Window at Sites where Multiple INCONTROL Products are Active

```
FILTER: DEFA   +-------------------- IOA LOG SHOW SCREEN -------------------(5)
COMMAND ===>   |  FILTER            SAVE   (Y/N)                              |
SHOW LIMIT O   |  CM     : D JOB M JOB   SHOUT USER GENERAL D INT M INT STAT  |
DATE   TIME    |             Y    Y        Y     Y     Y      N     N    N    |
060800 21354   |  CO+CMEM: GENERAL  SHOUT JOBS      GENERAL W PIPE W JOB W    |
               |             Y        Y    Y                                 |
060601 22040   |  CD+CV  : SBSYS REP MIS SHOUT USER GENERAL DAILY MONIT STAT  |
060601 22040   |             Y    Y   Y    Y     Y     Y      N     N    N    |
060601 22040   |  CB     : RUNTIME SHOUT DAILY GENERAL STATISTICS             |
               |             Y       Y     Y      Y        Y                |
060601 22040   |  CT     : GENERAL SHOUT      REAL-TIME UTILITIES             |
060601 22040   |             Y       Y            Y        Y                  |
060601 22040   |  CODE                                                        |
               |  URGENCY:      REGULAR Y   URGENT Y   VERY-URGENT Y          |
060601 23034   |  TASK TYPE     CM: JOB CYC EMR STC CST EST ECJ ECS WRN GRP   |
060601 23040   |                     Y   Y   Y   Y   Y   Y   Y   Y   Y   Y    |
060601 23040   |                CD: REP PRT BKP/MIG RST EMR NOEMR CYC NOCYC   |
060601 23040   |                     Y   Y     Y     Y   Y    Y    Y    Y     |
               |  USERID        N54A                                          |
060601 23040   |  MEM/MIS       MIGDASD                                       |
060601 23040   |  JOBNAME                                                     |
060601 23040   |  CATEGORY                                                    |
               |  GROUP                                                       |
CMDS: SHOW,    +--------------------------------------------------------------+
```

The CONTROL-O selection criteria are described in Table 100 on page 234. For descriptions of the selection options for other INCONTROL products, see the user guides of the respective products.

NOTE

The INCONTROL administrator can limit which installed INCONTROL products and options each user can access. However, because all INCONTROL products and the messages they issue are integrated, it may be important for users to see the messages of products and options to which they have no access. Therefore, the types of messages for all INCONTROL products are listed in the IOA Log Show Screen window, and by default, the messages of all installed products are listed in the IOA Log screen.

Closing the IOA Log Show Screen Window

You can activate an edited filter with or without saving changes, depending on the value you type in the **SAVE** field, as follows:

- To activate and save the filter, type **Y** (Yes) in the **SAVE** field. Changes to the filter are permanently saved.
- To activate the filter without saving it, type **N** (No) in the **SAVE** field. Changes are kept in memory only, but are not saved.

After entering a value in the **SAVE** field, press one of the keys described in Table 101.

Table 101 IOA Log Show Screen window - Closing Values

Key	Description
Enter	Filtering begins with the first message currently displayed in the screen and continues downward.
PF07 (UP)	Filtering begins with the first message in the IOA Log file and continues downward.
PF08 (DOWN)	Filtering begins with the last message in the IOA Log file and continues upward.

The window is closed and the filter is activated as defined or modified.

To cancel changes made in the IOA Log Show Screen window, press **RESET** (**PF10/PF22**). The changes are canceled regardless of the value entered in the **SAVE** field, the window is closed, and the filter that was previously in effect is restored.

By default, pressing **END** (**PF03/PF15**) in the window works like pressing **Enter**. However, the default can be modified so that pressing **END** works like pressing **RESET**.

IOA Calendar Facility

The IOA Calendar facility enables you to create, view, or modify calendar definitions.

Calendars simplify the scheduling of INCONTROL product jobs, missions, rules, and so on. When a particular schedule is used in many job scheduling, mission, or rule definitions, a calendar can be defined for that schedule, and the name of that calendar can be specified in all the job, mission, or rule definitions that use that particular schedule.

For example, calendars may be defined to handle the normal scheduling needs for workdays, holidays, weekends, beginning of month, end of month, and so on. Exception calendars may also be created.

A calendar definition consists of parameters that specify when scheduling occurs.

Calendar definitions are stored in members. A member usually contains multiple calendar definitions, as follows:

- A member contains the calendars required for a specific type of scheduling need. For example, the WORKDAYS calendar member may contain the calendar definitions for normal workday scheduling.

- Each calendar definition in that member defines the schedule for a given year. For example, the WORKDAYS calendar member may contain calendar definitions 2001, 2002, and 2003. Each of those definitions contains the normal workday schedule for the corresponding year.

The IOA Calendar facility also enables the definition of varied work periods throughout the year, in special calendars called periodic calendars.

A calendar definition needs to be created only once. Once defined, the definition is saved and used as necessary for scheduling. Calendar definitions can be modified or deleted as required.

Any number of calendar members can be defined. Calendar members are stored in calendar libraries (partitioned data sets). Generally one calendar library is defined at time of installation, and referenced by the DACAL DD statement.

NOTE

The IOA Calendar facility does not support members that have been compressed using the ISPF PACK option.

Accessing the IOA Calendar Facility

The IOA Calendar facility contains the screens described in Table 102.

Table 102 IOA Calendar Facility Screens

Screen	Description
IOA Calendar Facility entry panel	Enables specification of parameters that determine which records are displayed in subsequent screens.
Calendar List screen	Displays the list of calendar members in the selected calendar library.
Year List screen	Displays the list of years for which there is a calendar definition in the selected calendar member.
Calendar Definition screen	Displays the parameters of the selected calendar for the selected year. This is the main screen of the facility.

To enter the Calendar facility, select Option 8 in the IOA Primary Option menu. The Calendar facility entry panel is displayed.

Depending on the values entered in the entry panel, you can bypass the Calendar List screen, or the Year List screen, or both.

Entry Panel

Figure 82 shows the entry panel that is displayed on entering the IOA Calendar facility by means of Option 8 in the IOA Primary Option menu.

Figure 82 IOA Calendar Facility – Entry Panel

```
-------------------- IOA CALENDAR FACILITY - ENTRY PANEL -----------------(8)
COMMAND ===>



SPECIFY LIBRARY, CALENDAR, YEAR

   LIBRARY  ===> IOA.PROD.CAL
   CALENDAR ===>                 (Blank for calendar selection list)
   YEAR     ===>                 (Blank for year selection list)









USE THE COMMAND "SHPF" TO SEE PFK ASSIGNMENT                          10.58.42
```

Fields of the Entry Panel

Fill in the fields shown in Table 103 and press **Enter**.

Table 103 Fields of the IOA Calendar Facility Entry Panel

Field	Description
LIBRARY	Name of the desired calendar library. Mandatory. If you make an entry in this field without filling in the CALENDAR field, the list of calendars in the selected library is displayed in the Calendar List screen. If you make an entry in this field, you can restrict the list of calendars that are displayed by entering in the CALENDAR field part of a Calendar name together with a mask character or characters (? and *).
CALENDAR	Name of the desired calendar member. Optional. If an entry is made in this field without filling in the **YEAR** field, the list of years in the selected calendar member is displayed in the Year List screen.
YEAR	Year of the desired calendar definition. Optional. This field can be used only if a CALENDAR value is also entered. If specified, the calendar definition is displayed in the Calendar Definition screen.

NOTE

If you use the selection list fields, their values are not erased until you exit the entry panel by pressing **END** (**PF03**/**PF15**).

Calendar List Screen

The Calendar List screen displays a list of calendars (members) in the selected library. This screen can be entered directly from the entry panel or upon exiting the Year List screen.

By default, only calendar names are listed in the screen. However, if the default has been modified at time of installation, statistical information is displayed for each calendar name, as shown in Figure 83.

Figure 83 Calendar List Screen

```
CALENDARS IN LIB IOA.PROD.CAL                                  ------------(8.D)
COMMAND ===>                                                     SCROLL===> CRSR
OPT  NAME ------------ VV.MM  CREATED     CHANGED     SIZE  INIT   MOD   ID
     BANKDAYS          01.00 02/01/28 01/06/29 09:50   104   104     0 IOAPROD
     DAYSOFF           01.00 02/01/28 01/06/29 09:50    30    30     0 IOAPROD
     HOLIDAYS          01.00 02/01/28 01/06/29 09:50    15    15     0 IOAPROD
     PERIOD10          01.00 02/01/28 01/06/29 09:50    45    45     0 IOAPROD
     SACAYCLN          01.01 02/01/28 01/11/29 17:43    26    26     0 L3051
     SPMONCLN          01.01 02/01/29 01/11/30 15:00   117   104     0 M16A
     SPWEKCLN          01.01 02/01/29 01/11/30 15:10   117   104     0 M16A
     STOCKDAY          01.00 02/01/30 01/06/31 09:50    45    45     0 IOAPROD
     WORKDAYS          01.01 02/01/30 01/11/31 17:43    26    26     0 L3051
======= >>>>>>>>>>>>>>>>  NO MORE CALENDARS IN LIBRARY  <<<<<<<<<<<<<<<< ======

OPTIONS:  S SELECT   B BROWSE   D DELETE                                13.54.14
```

To return to the entry panel, press **END** (**PF03/PF15**).

Options of the Calendar List Screen

To request one of the options shown in Table 104, type the option in the **OPT** field to the left of the calendar names, and press **Enter**.

Table 104 Options of the Calendar List Screen

Option	Description
S (SELECT)	Display the list of years for the calendar for any purpose, including editing or modification. Only one calendar can be selected at a time.
B (BROWSE)	Display the list of years for the calendar for browsing. Only one calendar can be selected at a time.
D (DELETE)	Delete the calendar (member) from the library. Multiple calendars can be selected.

Year List Screen

Figure 84 shows the Year List screen, which displays the list of years for which a specified calendar is defined. This screen can be entered directly through the entry panel or the Calendar List screen, or upon returning from the Year Definition screen.

NOTE

If the S (Select) option was entered in the Calendar List screen for a calendar that is currently in use (selected) by another user, either the Year List screen is not displayed and the Calendar List screen remains displayed (the default), or the Year list screen is displayed in Browse mode (if a user profile definition overrides the default). In either case, an appropriate message is displayed.

If a calendar description was defined in the Calendar Definition screen, the definition is displayed to the right of the year.

Figure 84 Year List Screen

```
LIST OF YEARS IN IOA.PROD.CAL                                CALENDAR WORKDAYS
COMMAND ===>                                                   SCROLL===> CRSR
OPT  YEAR ------------------ DESCRIPTION -------------------------------------
     2001           REGULAR WORKING DAYS IN 2001
     2002           REGULAR WORKING DAYS IN 2002
     2003           REGULAR WORKING DAYS IN 2003
     2004           REGULAR WORKING DAYS IN 2004
     2005           REGULAR WORKING DAYS IN 2005
======= >>>>>>>>>>>>>>>>>  NO MORE YEARS IN CALENDAR     <<<<<<<<<<<<<<<<< =====



OPTIONS: S SELECT   D DELETE   I INSERT  W INSERT BY WEEK DAYS  C COPY 08.52.54
```

To return to the Calendar List screen press **END** (**PF03/PF15**).

Format of the Year List Screen

Next to each year in the Year list, certain information can be displayed. The type and format of this information depends on whether the screen is displayed in DESC format or in STAT format, as follows:

- In DESC format, the description of the year, taken from the DESC field of the calendar definition, is displayed. Default.
- In STAT format, the ISPF statistical information for the calendar definition is displayed.

To change formats, use the DESC or STAT commands, described in Table 105.

Commands of the Year List Screen

Table 105 shows the commands that can be entered in the COMMAND field of the Year List screen.

Table 105 Commands of the Year List Screen

Command	Description
DESC	The DESC command displays the calendar description next to the year. The description is taken from the **DESCRIPTION** field in the calendar definition.
STAT	The STAT command displays the following ISPF-like statistical information about the calendar next to the year: ■ version and modification numbers ■ creation date ■ last modification date ■ user ID

Options of the Year List Screen

To request one of the options shown in Table 106, type the option in the **OPT** field to the left of the year and press **Enter**.

NOTE

If the Year List screen is displayed in Browse mode, the D (Delete), I (Insert), and W (Insert By Week Days) options are not available.

Table 106 Options of the Year List Screen

Option	Description
S (SELECT)	Display the calendar definition for the specific year. Parameters can be edited and updated only if the Calendar Definition screen is not displayed in Browse mode. If the Calendar Definition screen is displayed in Browse mode, the screen can only be browsed and parameters cannot be modified.
D (DELETE)	Delete the calendar definition for the specified year.
I (INSERT)	Insert a new year in the Year List screen and display the Calendar Definition screen with a predefined year definition for editing. The predefined calendar definition is defined with the same dates as the year next to which the I (Insert) request was specified. For more information, see "Inserting a New Year" on page 243.
W (INSERT BY WEEK DAYS)	Insert a new year in the Year List screen and display the Calendar Definition screen for editing a predefined year definition. The predefined year definition is defined with the same days of the week as the year next to which the W (Insert by Week Days) request was specified. For more information, see "Inserting a New Year" immediately below.
C (COPY)	Copy the year to another calendar, as described in "Copying Years to Another Calendar" on page 244. Multiple years can be selected.

Inserting a New Year

All calendar definitions identified in the same Year List usually have the same fixed scheduling pattern. Often, this scheduling pattern is based either on dates within a month or on days of the week within the month. For example:

- A QUARTERLY calendar might always indicate scheduling for the last day of March, June, September and December, that is, a scheduling pattern based on dates.

- A WEEKEND calendar might always indicate scheduling all Saturdays and Sundays in each month, that is, a scheduling pattern based on days of the week.

This scheduling pattern also applies to new calendar definitions resulting from the insertion of a new year in the Year List screen.

When a year is inserted in the Year List, the IOA Calendar facility automatically generates a predefined calendar definition for the new year, based on the scheduling pattern of the calendar by which the insert request was specified. This frees the user from having to manually define the new calendar. This automatically generated calendar definition can be displayed and modified.

NOTE

The Year list must be kept in ascending order without missing years, for example, 2001, 2002, 2003, 2004, 2005. Each new year must be added at the end of the list.

In calendar definitions, a defined scheduling date is described by both the date (month and day) and the day of the week. Because a particular date falls on a different day of the week in different years, it is necessary to indicate whether the scheduling pattern is based on the date or on the days of the week. This is indicated by the specified insert option.

- To define the calendar with the same scheduling dates (although corresponding days of the week may vary, for example, the QUARTERLY calendar described above), type **I** (INSERT).
- To define the calendar so that scheduling takes place on the same weekdays as in the previous calendar (although the corresponding dates may vary, for example, calendar WEEKEND described above), type **W** (INSERT BY WEEK DAYS).
- If the scheduling pattern is mixed, for example, if the HOLIDAYS calendar always indicates scheduling on both January 1 and the first Monday in September, specify the more appropriate option and correct the new calendar definition manually.

Copying Years to Another Calendar

Years currently displayed in the Year List screen can be copied to another calendar. To copy the desired years, type **C** (COPY) next to each desired year in the screen and press **Enter**. The window shown in Figure 85 is displayed:

Figure 85 Calendar List Screen Copy Window

```
LIST OF YEARS IN: IOA.PROD.CAL                                CALENDAR: CALEN1
COMMAND ===>                                                   SCROLL===> CRSR
OPT  YEAR -------- DESCRIPTION ------------------------------------------------
     2001          REGULAR WORKING DAYS IN 2001
 C   2002          REGULAR WORKING DAYS IN 2002
     2003          REGULAR WORKING DAYS IN 2003
     2004          REGULAR WORKING DAYS IN 2004
              +-------------------------------------------------------+
              |                                                       |
              |   SPECIFY DESTINATION LIBRARY,CALENDAR AND RULE NAME  |
              |                                                       |
              |  LIBRARY :  IOA.PROD.CAL                              |
              |  CALENDAR:                                            |
              |  YEAR    :  2005                                      |
              |                                                       |
              |  PRESS END/RESET TO CANCEL     ENTER TO PERFORM THE COPY |
              +-------------------------------------------------------+

OPTIONS: S SELECT   D DELETE   I INSERT  W INSERT BY WEEK DAYS  C COPY 15.37.39
```

Table 107 shows the fields contained in this window. Some fields contain default values that can be modified.

Table 107 Fields of the Calendar List Screen Copy Window

Field	Description
LIBRARY	Library containing the calendar into which the years must be copied. Must be an existing library. The default is the current library.
CALENDAR	Name of the calendar into which the year must be copied.
	Note: A year can only be copied to another calendar. It cannot be copied to its own calendar, even if the year is renamed. If the selected calendar does not exist in the Calendar List, the calendar is created when the request is performed.
YEAR	Name of the year to be copied. If multiple years are selected, the window is initially displayed with the first selected year. As each request is performed or canceled, the next requested year name appears.

- To perform a request, press **Enter**.
- To cancel a request, press **END** (**PF03/PF15**) or **RESET** (**PF04/PF16**).

Calendar Definition Screen

Figure 86 shows the Calendar Definition screen, which is used to define, display and modify dates in a calendar for a specific year. This screen can be entered directly from the entry panel or from the Year List screen.

Figure 86 Calendar Definition Screen

```
-------------------------- IOA CALENDAR - WEEKDAYS ----------------------(8.Y)
COMMAND ===>                                                 SCROLL===> CRSR
YEAR 2002        REGULAR WORKDAYS IN 2002

-----S-------------S-------------S-------------S-------------S-------------S---
         1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8 9 + 1
01         Y Y Y     Y Y Y Y Y     Y Y Y Y Y     Y Y Y Y Y     Y Y Y Y
-----S-------------S-------------S-------------S-------------S-------------S---
               1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8
02             Y     Y Y Y Y Y     Y Y Y Y Y     Y Y Y Y Y     Y Y Y Y
-----S-------------S-------------S-------------S-------------S-------------S---
               1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8 9 + 1
03             Y     Y Y Y Y Y     Y Y Y Y Y     Y Y Y Y Y     Y Y Y Y Y
-----S-------------S-------------S-------------S-------------S-------------S---
       1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8 9 +
04     Y Y Y Y Y     Y Y Y Y Y     Y Y Y Y Y     Y Y Y Y Y     Y Y
-----S-------------S-------------S-------------S-------------S-------------S---
           1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8 9 + 1
05         Y Y Y     Y Y Y Y Y     Y Y Y Y Y     Y Y Y Y Y     Y Y Y Y Y
-----S-------------S-------------S-------------S-------------S-------------S---
                 1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8 9 +
06                 Y Y Y Y Y     Y Y Y Y Y     Y Y Y Y Y     Y Y Y Y Y
-----S-------------S-------------S-------------S-------------S-------------S---
TYPE  Y  IN ALL THE EXECUTION DAYS                                     14.37.10
```

Fields of the Calendar Definition Screen

Table 108 shows the fields of the Calendar Definition screen.

Table 108 Fields of the Calendar Definition Screen (part 1 of 2)

Field	Description
YEAR	Year of the calendar. This value can be modified. When modified, the values indicated for each date in each month (described below) are shifted to the appropriate day of the week.
Description	User-supplied, free text description of the calendar. Optional.

Table 108 Fields of the Calendar Definition Screen (part 2 of 2)

Field	Description
Month and dates	Each month of the year (01 through 12) of the calendar consists of the following: ■ Separator line. Sunday (or Saturday, according to the default at your site) is marked “S”. ■ Month label (01 through 12) ■ Date label for the day of the month ■ Updatable field for defining execution dates Valid values are: — Y (Yes) – Select the rule on that date. — N (No) or ' ' (Blank) – Do not select the rule for execution on that date. — + – For a relative calendar, select the closest next “date.” — - – For a relative calendar, select the closest previous “date.”
	Note: A relative calendar is a calendar used in a formula to create other calendars. It cannot be specified in a DCAL, WCAL, or CONFCAL field. For details, see the description of the IOABLCAL utility in the *INCONTROL for z/OS Utilities Guide.*

Periodic Calendars

Some rules must be scheduled periodically, according to schedules that are not easily expressed in terms of fixed days and dates within months. In these cases, monthly, or even yearly, scheduling definition is awkward.

For example:

- A payroll rule needs to be scheduled every other Wednesday.

  — In some months, the rule may be scheduled on the first, third, and even fifth Wednesday in the month. In other months, it may be scheduled on the second and fourth Wednesday in the month.

  — In some years, the rule may be scheduled beginning on the first Wednesday of the year. In other years, it may be scheduled beginning on the second Wednesday of the year.

- A rule must be scheduled every 25 days, regardless of date. Such a rule is scheduled on different dates each month and each year.

The IOA Calendar facility provides special calendars, called periodic calendars, to allow specification of these scheduling requirements. These periodic calendars are very flexible.

To designate a calendar as periodic, you must type the reserved string ==PERIODIC== in the first 12 positions of the description field. Any text can be entered in the rest of the description field. This is illustrated in Figure 87.

Figure 87 Use of the Reserved String "==PERIODIC=="

```
COMMAND ===>
SCROLL===> CRSR
YEAR 2002  -  ==PERIODIC== GENERAL WORKDAY CALENDAR
```

The following are characteristics of periodic calendars:

- In a periodic calendar, days are not marked using the letters Y (Yes) or N (No). Instead, a period identifier is used to mark working days in a period. A period identifier can be any letter from A to Z (except Y and N), any number from 0 to 9, or any other printable sign. If you need more characters, use characters falling within the hexadecimal range 4A through F9. All working days within the same period must be marked using the same period identifier character so that different identifier characters indicate different periods. Days that are not marked are nonworking days because they do not belong to any period in this calendar.

- Identifiers from different periods can be interspersed throughout a periodic calendar.

- A periodic calendar can consist of smaller units that do not correspond to regular months, in that they can be longer or shorter than regular months.

- A periodic calendar can span a period, called a "logical year", which can be longer or shorter than one regular calendar year.

  When a periodic calendar spans parts of two regular calendar years, special considerations are likely to arise. For more information, see "Special Year-End Handling of Periodic Calendars" on page 250.

- A period can span any number of days, but no more than a preset number of days can elapse after the appearance of one identifier in a period until the appearance of the next matching identifier in the same period. After that period expires, the next matching identifier starts a new period.

  By default, this period is preset to 33 days. Once the length of the gap between matching identifiers exceeds 33 days, the period automatically closes.

NOTE

The length of the default period can be changed from 33 days by the INCONTROL administrator, using optional Wish WM2888.

For more information on the use of periodic calendars, see “DAYS: Basic Scheduling Parameter” on page 307 and “WDAYS: Basic Scheduling Parameter” on page 502.

Examples

The following are examples of periodic calendars:

Figure 88 Periodic Calendar – Example 1

```
-----S-------------S-------------S-------------S-------------S-------------S--
   1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8 9 + 1
12                         A         A   A B   A
-----S-------------S-------------S-------------S-------------S-------------S--
         1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8 9 + 1
01             B                                         B
-----S-------------S-------------S-------------S-------------S-------------S--
```

This example contains two periods, A and B.

- Period A starts on December 13 and ends on December 23. During this period, the defined working days are December 13, December 18, December 20, and December 23.
- Period B spans more than one calendar year. It starts on December 21 and ends on January 24. During this period, the defined working days are December 21, January 4, and January 24.

Figure 89 Periodic Calendar – Example 2

```
-----S-------------S-------------S-------------S-------------S-------------S----
               1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8 9 + 1
    03                         B             A         B         A
-----S-------------S-------------S----------0---S-------------S-------------S---
       1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8 9 +
   04                                                  B
-----S-------------S-------------S-------------S-------------S-------------S--
```

This example includes a period B that begins on March 9. The last marked working day of the period is March 21, which is followed by a 33-day gap. Assuming that Wish WM2888 has not been used to alter the default period of 33 days, period B automatically ends on April 23, and April 24 marks the beginning of a new period B. If no more B identifiers are added, this new B period ends on May 27.

Special Year-End Handling of Periodic Calendars

Rules, jobs, or missions may be improperly scheduled if a periodic calendar contains one or more periods that start in one year and continue into the next year, if both the following circumstances apply:

- The default gap between occurrences of matching identifiers has been changed from 33 days to a longer period

  and

- The first occurrence of the matching identifier in one logical year falls within the default gap that began at the last occurrence of the matching identifier in a prior logical year

In such cases, the period in the prior logical year overlaps the period in the later logical year, causing a scheduled rule not to run in the later logical year as expected.

To avoid this problem, remove logical years from periodic calendars as soon as they are no longer needed.

Example

- The FISCAL01 logical year extends from April 1, 2001 through March 31, 2002.
- The FISCAL01 logical year contains a period identified as Period A that has been defined to begin on December 28, 2001 and to continue through January 15, 2002.
- The FISCAL02 logical year extends from April 1, 2002 through March 31, 2003.
- The FISCAL02 logical year also contains a period identified as Period A, defined to begin on April 20, 2002 and continue through May 3, 2002.
- Rule X is scheduled for the seventh day of Period A in each logical year, through the rule definition `DAYS=D7PA`.

In a case where the default gap is 33 days, Rule X runs in January 2002, and again in April 2002, as expected.

In a case where the default gap is changed from 33 to a longer period, for example, 120 days, the first day of Period A in the FISCAL02 logical year occurs less than 120 days after the last appearance of Period A in the FISCAL01 logical year. As a result, what appears to be the seventh day in Period A in April 2002 is not recognized as such, because the “old” Period A overlaps the “new” Period A. Consequently, Rule X does not run again when the user may have expected it to run.

Deleting Calendars

To delete calendars, type **D** next to the calendar names in the Calendar List screen and press **Enter**.

The confirmation window shown in Figure 90 is displayed, in sequence, for each calendar selected for deletion.

Figure 90 Calendar List Screen Delete Confirmation Window

```
CALENDARS IN LIB IOA.PROD.CAL                                  ------------(8.D)
COMMAND ===>                +--------------------------+        SCROLL===> CRSR
OPT  NAME ---               |   CONFIRM DELETE OPTION  | E  INIT   MOD   ID
 D   BANKDAYS   <-----------|              (Y/N)       | 4   104     0 IOAPROD
     DAYSOFF                +--------------------------+ 0    30     0 IOAPROD
     HOLIDAYS          01.00 02/01/28 01/06/29 09:50    15    15     0 IOAPROD
     PERIOD10          01.00 02/01/28 01/06/29 09:50    45    45     0 IOAPROD
 D   SACAYCLN          01.01 02/01/28 01/11/29 17:43    26    26     0 L3051
     SPMONCLN          01.01 02/01/29 01/11/30 15:00   117   104     0 M16A
     SPWEKCLN          01.01 02/01/29 01/11/30 15:10   117   104     0 M16A
     STOCKDAY          01.00 02/01/30 01/06/31 09:50    45    45     0 IOAPROD
     WORKDAYS          01.01 02/01/30 01/11/31 17:43    26    26     0 L3051
======= >>>>>>>>>>>>>>>>  NO MORE CALENDARS IN LIBRARY  <<<<<<<<<<<<<<<< ======






OPTIONS: S SELECT   D DELETE   I INSERT  W INSERT BY WEEK DAYS  C COPY 13.54.14
```

To delete the calendar type **Y** (Yes) in the window.

To cancel the delete request, type **N** (No) in the window.

NOTE

If PDSMAN is operational at your site, $$$SPACE members are not deleted.

For each calendar deleted, a message is written to the IOA Log file.

Exiting the IOA Calendar Facility

When exiting the IOA Calendar facility, screens are exited in the following sequence:

1. Calendar Definition screen
2. Year List screen
3. Calendar List screen

NOTE

If the Calendar List screen was bypassed as you entered the IOA Calendar facility (that is, if you entered a CALENDAR value in the entry panel), the Calendar List screen is not displayed upon exiting the Year List screen; instead, the entry panel is displayed.

Calendar Facility Entry Panel

The commands and options available when exiting screens depend on the screen being exited and on whether changes have been made. If changes have been made, the selected exit options and commands determine whether the changes are saved. Exit options and commands are discussed below on a screen by screen basis.

Exiting the Calendar Definition Screen

Use any of the following commands, or press the corresponding PFKey, to exit the Calendar Definition screen:

Table 109 Commands for Exiting the Calendar Definition Screen

Command	Description
CANCEL	Cancel the changes made to the calendar definition and return to the Year List screen.
Note: The following exit commands retain changes to the calendar definition in memory. To permanently save the changes to disk, you must also request that the changes be saved when you exit the Year List screen.	
END (**PF03/PF15**) **Enter**	Keep changes to the calendar definition in memory and exit to the Year List screen.
NEXTYEAR (**PF11/PF23**)	Keep changes to the calendar definition in memory and display the next calendar definition in the Year List screen.
PREVYEAR (**PF10/PF22**)	Keep changes to the calendar definition in memory and display the previous calendar definition in the Year List screen.

Exiting the Year List Screen

Press **END** (**PF03/PF15**) to exit the Year List screen. If changes made to at least one calendar definition have been kept in memory or if any changes have been made to the Year List screen, the Exit Option window is displayed. This window is shown in Figure 91. For more information, see "Exiting the Calendar Definition Screen" on page 252.

Figure 91 Year List Screen Exit Option Window

```
LIST OF YEARS IN IOA.PROD.CAL                                CALENDAR WORKDAYS
COMMAN +-------------------------------------------------------+  ===> CRSR
OPT  N |                 PLEASE SELECT EXIT OPTION             |
     1 |                                                       |
     1 |     SAVE    CREATE                                    |
     1 |                                                       |
====== |     LIBRARY IOA.PROD.CAL                              |  << =====
       |     TABLE   WORKDAYS                                  |
       |                                                       |
       +-------------------------------------------------------+
OPTIONS: S SELECT   D DELETE   I INSERT  W INSERT BY WEEK DAYS  C COPY 08.53.50
```

Fill in the Exit Option window as follows:

The **LIBRARY** and **TABLE** (member) fields indicate the library and member in which the calendar definitions must be saved. The specified values can be modified, for example, to save the calendar definitions in a different member.

- To save all changes currently in memory and exit the Year List screen, type **Y** (Yes) after the word SAVE or CREATE, as follows:

  — Type **Y** after the word SAVE if a member with the same calendar name already exists in the specified library.

  — Type **Y** after the word CREATE if a member with the same calendar name does not exist in the specified library.

NOTE

If you create a new calendar member, the member name does not appear in the Calendar List screen upon exiting the Year List screen; it first appears when you reenter the Calendar List screen from the entry panel.

- To cancel changes currently in memory and exit the Year List screen, type **N** (No) after the word SAVE or CREATE.

- To close the Exit Option window and remain in the Year List screen (with the changes remaining in memory), press **RESET** (**PF04/PF16**).

Exiting the Calendar List Screen

Press **END** (**PF03/PF15**) to exit the Calendar List screen.

Exiting the Entry Panel

Press **END** (**PF03/PF15**) to exit the entry panel.

Utilities Under ISPF

Several IOA facilities can only be activated under ISPF. To activate these facilities, select Option 6 on the IOA Primary Option menu (under ISPF) or invoke the IOAUTIL CLIST from the TSO Command Processor. The IOA Online Utilities menu, which is described in the following section, "IOA Online Utilities Menu," is displayed.

NOTE

The INCONTROL administrator can remove user authority to access Option 6 on the IOA Primary Option menu. In this case, the IOA Online Utilities menu is not displayed.

IOA Online Utilities Menu

Depending on the INCONTROL products that are available at your site, different online utility options are displayed in the On-line Utilities menu. Figure 92 shows the IOA On-line Utilities menu that is displayed when all applicable INCONTROL products are active.

Figure 92 IOA Online Utilities Menu when all INCONTROL Products are Installed

```
------------------------------ ON-LINE UTILITIES ------------------------------
                                                          USERID   - N06
                                                          TIME     - 13:40
                                                          TERMINAL - 3278

   D1  DECOLLATING          - Schedule a Report Decollating Mission
   D2  PRINT                - Schedule a Printing Mission
   D3  BACKUP/MIGRATION     - Schedule a Backup/Migration Mission
   D4  RESTORE              - Schedule a Restore Mission
   I1  PREREQ CONDITION     - Add/Check/Delete a Prerequisite Condition
   M1  JOB ORDER ISSUE      - Issue a Job Order
   M2  AUTOEDIT SIMUL       - Perform an AutoEdit Simulation
   M3  SIMUL/TAPE PULL      - Prepare Simulation/Tape Pull List Job
   M4  PARAM PROMPTING      - Parameter Prompting Facilities
   M5  QUICK SCHEDULE       - Quick Schedule Definition
   M6  USER INTERFACE       - End-User Job Order Interface
   R1  CTM/RESTART SIM      - CONTROL-M/Restart Simulation
   R2  DATASET CLEANUP      - CONTROL-M/Restart Dataset Cleanup
   R3  JOB DATASET LIST     - Prepare a Job Dataset List
   R4  STANDALONE           - CONTROL-M/Restart Standalone
   T1  CONTROL-M/Tape SIMUL - Simulate CONTROL-M/Tape Rules
   X   EXIT                 - Exit This Menu

 OPTION  ===>
```

NOTE

If DOCU/TEXT has also been installed at your site, an additional utility, Option U1, is displayed in the Online Utilities menu.

To access an available utility, type the desired option number in the OPTION field and press **Enter**.

Option I1, which is also available when CONTROL-O is installed as a standalone product, is described on the following pages. For the descriptions of other utilities on the menu, see the user guides of the relevant products.

Online utilities utilize standard ISPF profile capabilities.

Quick transfer to a utility can be performed by specifying **=*opt*** from another utility screen, or **=6.*opt*** from a non-utility screen, such as Log screen, where *opt* is the option in the Online Utilities menu.

I1: Add/Check/Delete a Prerequisite Condition

This utility adds prerequisite conditions to, checks the existence of prerequisite conditions in, and deletes prerequisite conditions from, the IOA Conditions file.

The Prerequisite Condition Utility screen, shown in Figure 93, can be displayed in the following ways:

- Select Option I1 in the Online Utilities menu.
- Invoke the IOACCND CLIST from the TSO Command Processor screen.

Figure 93 Prerequisite Condition Utility Screen

```
-----------------------  PREREQUISITE CONDITION UTILITY  --------------------
COMMAND ===>



  FUNCTION                ===> ADD                  (ADD/CHECK/DELETE)

  CONDITION NAME          ===> SALARY_RPT_OK

  Enter either date or STAT:

  CONDITION DATE          ===> STAT                 (DDMM OR STAT)


  ENTER YES TO CONTINUE   ===> YES
```

To activate the utility, fill in the fields shown in Table 110 and press **Enter**:

Table 110 Prerequisite Condition Utility Screen Fields (part 1 of 2)

Field	Description
FUNCTION	Function to be performed. Valid values are: ■ ADD – Add the specified condition to the IOA Conditions file. ■ CHECK – Check if the specified condition exists in the IOA Conditions file. ■ DELETE – Delete the specified condition from the IOA Conditions file.
CONDITION NAME	Name of the prerequisite condition (1 through 39 characters) to be added, checked, or deleted. If CONDITION NAME values contain the special characters ampersand (&) or apostrophe (‘), they must be repeated in order to appear on the screen.

Table 110 Prerequisite Condition Utility Screen Fields (part 2 of 2)

Field	Description
CONDITION DATE	4-character date associated with the specified condition. Valid values are: ■ *date* – a valid date in date in *mmdd* or *ddmm* format, depending on the site standard ■ STAT – static This is the value assigned to conditions that are not date-dependent, such as DATABASE-OK
ENTER YES TO CONTINUE	Confirmation field to prevent the unintentional addition or deletion of a condition. When blank, the operation is not performed. Type **YES** to add, check or delete the condition.

To exit the screen without activating the utility, press **PF03/PF15**.

Chapter 3

Rule Parameters

This chapter contains the following topics:

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DO KSL: Automated Console Action Parameter 365
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DO SET: Automated Console Action Parameter 380
DO SHOUT: Automated Console Action Parameter 387
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DO SMSMSG: Automated Console Action Parameter 394
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ON JOBARRIV: Message / Event Selection Parameter 456
ON JOBEND: Message / Event Selection Parameter 459
ON MESSAGE: Message / Event Selection Parameter 462
ON MVALARM: Message / Event Selection Parameter 468
ON OMEGAEXP: Message / Event Selection Parameter 471
ON RULE: Message / Event Selection Parameter 473

ON SMS: Message / Event Selection Parameter 475
ON STEP: Message / Event Selection Parameter 478
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PRIORITY: Runtime Scheduling Parameter 493
RUNTSEC: General Parameter 495
THRESHOLD: Runtime Scheduling Parameter 498
TIME: Runtime Scheduling Parameter 500
WDAYS: Basic Scheduling Parameter 502

Overview

The selection criteria and instructions defined in each CONTROL-O rule are called rule parameters. This chapter is comprised of detailed descriptions of all the rule definition parameters and their specific uses. Rule parameters are defined in the Rule Definition screen, which is shown in Figure 94, the main screen of the Rule Definition facility.

Figure 94 Rule Definition Screen

```
RL: $HASP100   LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
  ON MESSAGE  = $HASP100
     JNAME PROD*    JTYPE J       SMFID        SYSTEM
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED       TIMES IN      MINUTES                        And/Or/Not
  OWNER SYS3     GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION JES2 JOB ON RDR MESSAGE SUPPRESSION
  DESCRIPTION
  ==============================================================================
  /* SUPPRESS THE MESSAGE
  DO DISPLAY  = SUPPRESS Y ROUTE     DESC    CONSOLEID    CONSOLE
  SYSTEM
  ==============================================================================
                     D O   O P T I O N S
   ASKOPER  - Ask operator              COMMAND  - Issue operator command
   COND     - Add/delete IOA conditions CTD REQ  - O/F CONTROL-D mission
   CTOPCMSG - Message to CTO/Server
   DISPLAY  - Message control
   DOM      - Delete operator message   FORCEJOB - Order job under CONTROL-M
   KSL      - Activate a KOA script     RESOURCE - Change IOA resources
   RULE     - Call another rule         SET      - Set CONTROL-O variable
   SHOUT    - Notification facility     SMSCLASS - Set a new SMS class
   SMSMSG   - Issue message by SMS ACS  STOPJOB  - Stop next job steps
   SYSREQ   - System request            TSO      - Activate TSO command
   WAIT     - Completion of events      >        - Open a new DO line
   /* -PF16 - Add comment line          />       - Comment/Uncomment "DO"
   IF / ELSE / ENDIF / ENDMSG / WHILE / ENDWHILE  - Logical instructions
   EXIT / RETURN / TERMINAT                       - End Process Instructions
  ==============================================================================
  DAYS                                                            DCAL
 AND/OR
  WDAYS   ALL                                                     WCAL
  MONTHS  1- Y 2- Y 3- Y 4- Y 5- Y 6- Y 7- Y 8- Y 9- Y 10- Y 11- Y 12- Y
  DATES
  CONFCAL          SHIFT
  ENVIRONMENT SMFID      SYSTEM
  ==============================================================================
  IN
  TIME FROM      UNTIL           INTERVAL      PRIORITY     CONTINUE SEARCH Y
======= >>>>>>>>>>>>>>> END OF RULE DEFINITION PARAMETERS <<<<<<<<<<<<<<< =====
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 06.44.34
```

BMC Software recommends that all CONTROL-O users read the description of the Online Rule Definition facility in "Rule Definition Facility" on page 85 before reading this chapter.

All parameter definitions are stored as members in standard user libraries. The CONTROL-O term for a member of this type is “table.” Each table is composed of parameters for a number of different rules, all of which usually relate to the same subject. Maintenance of tables in the library and management of rules in each table is performed using the Online Rule Definition facility.

Rule definition parameters fall into the following basic categories:

- Message / Event Selection Parameters – selection conditions (see the ON MESSAGE parameter in Figure 94). Mandatory.
- General Parameters – general information (see the parameters from OWNER through DESCRIPTION in Figure 94). Optional.
- Automated Console Action Parameters – actions to be performed (see DO OPTIONS in Figure 94). Mandatory.
- Basic Scheduling Parameters – dates to activate CONTROL-O environment and rules (see the parameters from DAYS through ENVIRONMENT in Figure 94). Optional.
- Runtime Scheduling Parameters – runtime conditions (see the IN and TIME parameters in Figure 94). Optional.

The following pages contain a quick summary of the parameters in each of these categories. Following this summary is a series of sample rules that demonstrate how basic tasks are accomplished.

The last (and largest) portion of this chapter contains detailed descriptions of all rule definition parameters (in alphabetical order).

Message/Event Selection Parameters – Summary

Message / Event Selection parameters (ON parameters) specify conditions under which actions are to be performed by CONTROL-O. Valid ON parameters are shown in Table 112.

Table 111 Message/Event Selection Parameters (ON Parameters) (part 1 of 2)

Parameter	Description
ON COMMAND	Specify a command that triggers execution of the rule when it appears.
ON CTOPCMSG	Specify the message issued by CONTROL-M / Links for Windows NT that triggers execution of the rule when it appears.
ON DSNEVENT	Specify a data set disposition event as a selection criteria for the execution of a rule.

Table 111 Message/Event Selection Parameters (ON Parameters) (part 2 of 2)

Parameter	Description
ON EVENT	Indicate that a rule is triggered by runtime conditions only, as designated in its Runtime Scheduling parameters.
ON JOBARRIV	Specify the name of jobs that trigger the execution of a rule when they arrive on the spool.
ON JOBEND	Specify the name of jobs that trigger the execution of a rule when they end on the spool.
ON MESSAGE	Specify the message that triggers execution of a rule when it is detected.
ON MVALARM	Monitor and detect problems, and issue an alarm as necessary.
ON OMEGAEXP	Specify an OMEGAMON exception code that triggers execution of a rule when it is detected.
ON RULE	Indicate that the current rule should be performed only when invoked by a DO RULE statement in another CONTROL-O rule.
ON SMS	Specify the SMS data set allocation event that triggers a rule.
ON STEP	Specify the job steps that trigger a rule on their completion.
ON STRING	Specify the message text whose appearance triggers execution of a rule.
ON SYSOUT	Specifies the SYSOUT text that triggers a rule when it appears.

When you specify an ON parameter and press **Enter**, the subparameters for this ON parameter are displayed. The combination of an ON parameter and its subparameters is called an ON statement.

Multiple ON statements can be specified in a rule. The And / Or / Not conjunctional parameter is used to link two or more ON statements.

For a general explanation of message and event selection parameters, see "ON Statement: Message / Event Selection Parameter" on page 434.

General Parameters – Summary

General parameters are used to provide general information about the rule and to determine the mode in which the rule is processed.

Table 112 General Parameters (part 1 of 2)

Parameter	Description
OWNER	ID of the user requesting CONTROL-O services.
GROUP	Name of a group of rules.
MODE	CONTROL-O rule operation mode.

Table 112 General Parameters (part 2 of 2)

Parameter	Description
RUNTSEC	Type of runtime security checks to be performed by the rule.
DESCRIPTION	Free-text description of the rule definition.

Automated Console Action Parameters – Summary

Automated Console Action parameters specify actions to be performed by CONTROL-O. These actions are performed only after conditions specified in the Message/Event Selection parameters have been fulfilled. Note that the Boolean "IF" logic capabilities are provided using the DO IF, DO ELSE, or DO ENDIF statements. Repetition logic is provided using the DO WHILE or DO ENDWHILE statements.

The Automated Console Action parameters are shown in Table 113.

Table 113 Automated Console Action Parameters (part 1 of 2)

Parameter	Description
DO ASKOPER	Issue a WTOR (Write to Operator with Reply) message.
DO COMMAND	Issue a specified z/OS, VTAM, or subsystem operator command.
DO COND	Add/delete a prerequisite condition.
DO CTD REQ	Order or force a CONTROL-D report decollating mission.
DO CTOPCMSG	Issue a message to CONTROL-M/Links for Windows NT.
DO DISPLAY	Control the display of the message on the console, or control the execution of a command.
DO DOM	Delete a highlighted, unrollable message from the display.
DO ENDMSG	Delimit DO statements that are processed during message interception in command-response mode or for multi-line messages.
DO EXIT	Exit from a multi-line message block or a DO WHILE block.
DO FORCEJOB	Force a job order under CONTROL-M.
DO IF DO ELSE DO ENDIF	Provide Boolean "IF" logic capability allowing for alternative actions to be performed.
DO KSL	Perform a KeyStroke OpenAccess (KOA) script.
DO RESOURCE	Change the quantity of a Quantitative resource.
DO RETURN	Exit from a rule and return to the caller.
DO RULE	Invoke another rule from within the current rule.
DO SET	Assign a value to an AutoEdit variable.
DO SHOUT	Issue a message to a console, TSO user, ROSCOE user, IOA Log or Info/Management using the notification facility.
DO SMSCLASS	Set the SMS class name for a new data set.
DO SMSMSG	Define a message to be displayed in the job log for a new data set.

Table 113 Automated Console Action Parameters (part 2 of 2)

Parameter	Description
DO SNMP	Sends an SNMP trap message to specified recipients.
DO STOPJOB	Stop execution of the remaining steps of the job under which the rule is executing.
DO SYSREQ	Execute system programmer requests.
DO TERMINAT	Terminate the process of the triggering rule and any called rules, and continue to the next rule.
DO TSO	Perform a TSO command, CLIST or REXX procedure.
DO WAIT	Delay subsequent action until any of the specified events are completed.
DO WHILE DO ENDWHILE	Provides repetition (loop) logic capability so that other DO actions can be performed repetitively.

For a general explanation of automated console action parameters, see "DO statement: Automated Console Action Parameter" on page 318.

Basic Scheduling Parameters – Summary

CONTROL-O Basic Scheduling parameters specify on what dates a rule is to be ordered.

When a rule is ordered, it is placed in the active Rule list. Once ordered, a rule is activated only when its Runtime Scheduling criteria are fulfilled.

There are several different Basic Scheduling parameters (and subparameters), each allowing a different method of specifying a schedule for a rule. Each rule definition can use any one or several of these parameters, depending on scheduling requirements.

The Basic Scheduling parameters are shown in Table 114.

Table 114 Basic Scheduling Parameters

Parameter	Description
DAYS	Days of the month to order the rule.
WDAYS	Days of the week to order the rule.
MONTHS	Months to order the rule.
DATES	Specific dates in the year to order the rule.
CONFCAL	Name of a user-defined IOA calendar used for scheduling confirmation.
ENVIRONMENT	SMF ID or system name of the systems where the rule can be scheduled.

Each Basic Scheduling parameter is described in detail later in this chapter. The interrelationships between some of these parameters are described briefly below.

DAYS/DCAL WDAYS/WCAL

These parameters are all optional.

The DAYS parameter identifies the days of the month when the rule should be scheduled. For example, the first day of the month, third working day of the month, and so on. Several formats are available for specifying DAYS values.

The WDAYS parameter identifies days of the week when the rule should be scheduled. For example, the first day of the week, the second day of each week, and so on. Several formats are available for specifying WDAYS values.

A calendar name can be specified in the DCAL and/or WCAL fields. A calendar specifies days of the year on which a rule can be scheduled, known as working days. For more information on calendars and the IOA Calendar Facility, see "IOA Calendar Facility" on page 237.

When both the DAYS and DCAL parameters are specified, a date must satisfy both parameter specifications, to result in rule scheduling.

Similarly, when both WDAYS and WCAL are specified, a date must satisfy both parameter specifications, to result in rule scheduling.

When values for both DAYS (/DCAL) and WDAYS (/WCAL) are specified in the same rule definition, the resulting schedule is determined by the value specified in field AND/OR.

CONFCAL/SHIFT

A calendar specified in CONFCAL is not used for rule scheduling, but is used instead for validating a schedule date. Only rules that have satisfied all other specified basic scheduling criteria are checked against the CONFCAL calendar. If the day is a working day in the CONFCAL calendar, the rule is scheduled on that day. Otherwise, the rule is either shifted to (scheduled on) another day according to the value specified in the SHIFT parameter, or the rule is not scheduled (if no SHIFT value has been specified).

CONFCAL calendars are especially useful for handling holidays and other scheduling exceptions.

Defining a Schedule – Internal Scheduling Logic

When defining rule tables, it is useful to understand the IOA Scheduling facility logic that determines whether or not to order a rule on a specific day. This logic is described below.

1. SYSTEM and SMFID criteria (specified in the ENVIRONMENT statement) are checked. If these criteria are satisfied, the check continues with next step. If these criteria are not satisfied, the rule is not scheduled in the current system.

2. DAYS and DCAL parameters are checked independently and a first tentative scheduling date is chosen.

3. WDAYS and WCAL parameters are checked independently and a second tentative scheduling date is chosen.

4. A third tentative scheduling date is chosen based on the above two dates and the AND / OR value linking them.

   If DAYS / DCAL are not specified, this third temporary scheduling date is identical to the WDAYS / WCAL scheduling date. If WDAYS / WCAL are not specified, this third scheduling date is identical to the first scheduling date.

5. If CONFCAL / SHIFT are specified, this third scheduling date is adjusted according to the CONFCAL / SHIFT criteria.

6. The third scheduling decision (as adjusted, if necessary) becomes the final scheduling decision. The rule is scheduled if the final scheduling decision is compatible with the current working date.

ENVIRONMENT SMFID and SYSTEM

The SMFID and SYSTEM parameters determine the environments in which the rule can be scheduled. If no value is specified for either of these parameters, the rule can be scheduled on any system.

If values are specified for both SMFID and SYSTEM parameters these values have an OR relationship.

Runtime Scheduling Parameters – Summary

CONTROL-O Runtime Scheduling parameters determine when a rule in the active Rule list is activated. When a rule is activated, that is, when its Runtime Scheduling parameters are satisfied, CONTROL-O scans the environment for the occurrence of the messages or events specified in the ON statements of the rule. When the message and event criteria are satisfied, the rule is triggered, and the DO statements in the rule are performed. Only an activated rule can be a candidate for triggering.

NOTE

If the Runtime Scheduling parameters for an activated rule are no longer satisfied, the rule is deactivated, and cannot be triggered.

Runtime Scheduling parameters are also used to specify rule operation mode, rule priority, and optionally, a group of rules to which the rule belongs. The Runtime Scheduling parameters are shown in Table 115.

Table 115 Runtime Scheduling Parameters

Parameter	Description
IN	Prerequisite conditions for the rule.
TIME	Time limits (From, Until) for rule activation.
INTERVAL	The number of minutes to wait before the next activation of the rule.
PRIORITY	Internal CONTROL-O rule priority.
CONTINUE SEARCH	Search for additional rules that may specify the same message, or stop search when it is found.
THRESHOLD	Limits the number of times that a rule can be triggered in one CONTROL-O interval.

Support for ON DSNEVENT and ON STEP

A DSNEVENT occurs when a file is deallocated, on the happening of one of the following events:

- the dynamic deallocation of a file
- deallocation of a file on the termination of a job step
- deallocation of a file on the termination of a job

A STEP event occurs when a step ends.

To support the ON DSNEVENT and ON STEP parameters, CONTROL-O intercepts the messages written by JES2 or JES3 to JESYSMSG. JESYSMSG is the third SYSOUT of the job.

NOTE

CONTROL-O must be active before any tasks tracked by ON DSNEVENT or ON STEP rules begin; moreover, ON DSNEVENT and ON STEP rules only intercept data set events for jobs, started tasks, or TSO users that started after the rule was ordered.

The DSNEVENT process consists of the following parts:

1. When a job, or STC, or TSO user session starts, the system issues either the IEF403I message or the IEF125I message. CONTROL-O intercepts this message, and checks whether there is at least one ON DSNEVENT or ON STEP rule for the job. If there is at least one rule for the job, CONTROL-O creates the DSNEVENT environment in the address space.

NOTE

A job can only be handled by one CONTROL-O. Therefore, in an environment where more than one CONTROL-O can be active, for example, TEST and production, you must be accurate in defining the ON DSNEVENT.

The DSNEVENT environment for an address space remains intact when a new CONTROL-O instance is started while the previous CONTROL-O instance is still active.

2. CONTROL-O intercepts allocation, deallocation, and step termination messages, and determines whether there is at least one ON DSNEVENT or ON STEP event. If so, CONTROL-O determines

   - whether the DSNEVENT or STEP events fulfil the selection criteria in the rule
   - whether, in the case of a DSNEVENT, the file is a new file or already exists

NOTE

A DSNEVENT can be triggered only on the CONTROL-O/CMEM that runs on the same z/OS system on which the event occurs. Even a focal CONTROL-O or CMEM in a Sysplex environment is insufficient. This is because CONTROL-O or CMEM intercepts the messages written to JESYSMSG while they are being written, which can be done only on the same system where the event happens.

1. CONTROL-O triggers the rule according to the following principles:

   A. An ON STEP rule is always triggered when a STEP ends. However, a STEP is ignored when a rule is not executed due to one of the following:

      - a JCL error
      - failure to encounter a previous step condition code

B. An ON DSNEVENT can occur when a deallocation message is written, or when a step terminates. Whether it occurs depends on

- how the file is deallocated
- the setting of the STEPRC field in the DSNEVENT criteria, as follows:

— If the value of STEPRC is null, the rule is triggered at the time of deallocation.

— If the value of STEPRC is other than null, the rule is rechecked at the termination of the step to ascertain the STEPRC criteria.

C. Deallocation occurs when

- the file is dynamically deallocated
- the step ends, in the case of all allocated files in this step, whether the files were allocated by JCL or were dynamically allocated
- the job terminates, in the case of any file that was not released on step termination, for example, if DISP is set to PASS

For CONTROL-O actions to be triggered in this way, the following conditions must be satisfied:

- Either the IEF403I message or the IEF125I message must appear in the job log.
- The job, STC, or TSO user session must have its MSGLEVEL set to (x,1), to ensure that allocation, deallocation and step termination messages are written to the JESYSMSG. It is not sufficient for these messages to appear only in the system log or job log.
- At least one ON DSNEVENT or ON STEP rule must be ordered and ready before the job, STC, or TSO user session starts.

NOTE

If the value of ON DSNEVENT is * (asterisk), every job, STC, or TSO user session is within the DSNEVENT environment. BMC Software recommends that you do not use this type of DSNEVENT because of

- the overhead that results from CONTROL-O analyzing every message written to the JESYSMSG
- the CONTROL-O limitation that only one CONTROL-O can handle a DSNEVENT for a job

  In an environment where more than one CONTROL-O is active on the same system, this definition may cause the wrong CONTROL-O to trap the event.

Regular Allocation and Deallocation

In the case of regular files, meaning files not managed by SMS, CONTROL-O traps the following deallocation messages:

- IEF283I
- IEF285I
- IEF287I

SMS Support

In the case of SMS-managed data sets, CONTROL-O traps the IGD101I and IGD104I allocation and deallocation messages, and determines whether the file is new according to the following rules:

- If both messages are issued, the file is new.
- If the IGD101I message is not found, CONTROL-O treats the file as not new.

Generation Data Sets (GDG)

For CONTROL-O to support Generation Data Sets (GDG), the following messages must be found:

- IGD105I
- IGD107I
- IGD108I
- IGD17101

NOTE

The messages that are required by CONTROL-O for the purposes of this and the preceding sections are liable to be changed as a result of IBM changes in data set processing.

CONTROL-O Support for FTP

CONTROL-O actions can be triggered by the transfer of files by FTP products.

In order to enable CONTROL-O rules to be triggered by such file transfers, do the following:

1. Use one of the following methods to insert the expression `MSGLEVEL=(1,1)` in the STC of the FTP product:

   - Customize the JES*x*PARM member in the SYS1.PARMLIB library.
   - Modify the job statement in the PROCLIB library member that contains the procedure JCL for the STC of the FTP product.

2. Start the CONTROL-O monitor with at least one DSNEVENT rule that refers to the STC of the FTP product. You can use a dummy DSNEVENT rule that forces CONTROL-O to monitor the STC of the FTP product.

3. Start the FTP product.

4. Modify existing rules, or order new rules (or do both). Rules that have been modified or ordered before a file reaches the FTP server are applied to all files subsequently transferred by the FTP product.

CONTROL-O triggers rules when the requirements of an ON DSNEVENT statement are satisfied. If an FTP product fails to transmit a data set and issues a message relating to this failure, CONTROL-O cannot react to that message. However, you can use CONTROL-O rules to react to FTP product messages.

NOTE

Do not use the STEPRC subparameter in conjunction with the FTP* setting for ON DSNEVENT, because the same FTP procedure can serve many requests before being terminated.

CONTROL-O Support for IBM FTP

The IBM FTP process is executed under the OMVS address space, which is BPXAS. BPXAS address spaces do not usually write messages to the JESYSMSG.

In order to enable CONTROL-O DSNEVENT support for IBM FTP, the following occurs:

1. When the CONTROL-O monitor starts, it activates the OpenEdition interface for processes in the BPXAS. Having done this, CONTROL-O issues the following messages:

   ```
   CTO782I SUBSYSTEM REGISTERED WITH OPENEDITION INTERFACE

   CTO783I INITIALIZATION OF OPENEDITION ENVIRONMENT ENDED
   SUCCESSFULLY
   ```

When CONTROL-O initialization is complete, the CTO147I message is displayed. After this, CONTROL-O gets control every time that an OpenEdition process starts in the BPXAS address space.

2. When a new process starts in the BPXAS, the interface routine issues the CTO403I pseudo-message. This pseudo-message causes CONTROL-O to simulate IEF403I processing, which is described in "Support for ON DSNEVENT and ON STEP" on page 269.

3. Under z/OS, IBM FTP functions as a UNIX process running under z/OS. Therefore it follows the UNIX standard, one aspect of which is that the name of the job is set to the user ID of the person who issued the FTP request. This UNIX standard creates a problem, because the operator who writes the CONTROL-O rule must know at that stage which user will issue an FTP request.

   The solution to this problem is to use an `ON DSNEVENT FTP*` statement. The result is that any FTP process will trigger the rule.

NOTE

Do not use the STEPRC subparameter in conjunction with the FTP* setting for ON DSNEVENT, because the same FTP procedure can serve many requests before being terminated.

Working With CONTROL-O Rules

This section provides a series of sample rules that demonstrate how you can use CONTROL-O to automate tasks at your site. The rule definition parameters used in these rules are described in detail and are listed in alphabetical order following the sample rules.

The sample rules in this section are located in the TUTORIAL member of the CONTROL-O RULES library.

NOTE

Each screen shown in a sample rule contains only lines that are relevant to the sample being described. Irrelevant lines have been deleted, for easier readability.

Message Suppression

The example in Figure 95 demonstrates suppression of an MVS message.

Figure 95 Example of Message Suppression

```
ON MESSAGE  = IEA848I
   JNAME          JTYPE         SMFID        SYSTEM
   ROUTE          DESC          CONSOLEID    CONSOLE
   APPEARED       TIMES IN      MINUTES                        And/Or/Not
OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
THRESHOLD
DESCRIPTION SUPPRESSING A SIMPLE MESSAGE
DESCRIPTION Z/OS ABEND - NO DUMP PRODUCED FOR ABEND - SUPPRESSED
DESCRIPTION
==============================================================================
DO DISPLAY  = SUPPRESS Y ROUTE     DESC    CONSOLEID    CONSOLE
SYSTEM
```

Explanation

`ON MESSAGE  = IEA848I`

specifies the message that will trigger this rule

`DESCRIPTION`

a free text description of the operation performed by the rule

`DO DISPLAY = SUPPRESS Y`

This DO statement indicates that the message that triggered the rule should be suppressed.

Suppressing a Multi-line Message

The example in Figure 96 demonstrates suppression of a multi-line message. For more information about multi-line messages, see “ON MESSAGE: Message/Event Selection Parameter” on page 462.

Figure 96 Example of a Multi-Line Message

```
ON MESSAGE  = IEA995I
   JNAME          JTYPE         SMFID        SYSTEM
   ROUTE          DESC          CONSOLEID    CONSOLE
   APPEARED       TIMES IN      MINUTES                        And/Or/Not
OWNER IOAADMIN GROUP                           MODE PROD    RUNTSEC
THRESHOLD
DESCRIPTION SUPPRESSING A MULTI-LINE MESSAGE
DESCRIPTION Z/OS ABEND - SYMPTOM DUMP OUTPUT - SUPPRESSED
==============================================================================
DO DISPLAY  = SUPPRESS Y ROUTE     DESC    CONSOLEID    CONSOLE
SYSTEM
ENDMSG
```

Explanation

The ENDMSG parameter indicates that all DO statements that precede it should be executed for each line of the multi-line message.

The ENDMSG parameter is necessary even if no DO statements follow it. If the ENDMSG parameter is not included in this rule, only the last line of the multi-line message is suppressed.

Reacting to Specific Message Content

The example in Figure 97 demonstrates how a rule can be designed to react to a specific message with specific content.

Figure 97 Example of Reacting to Specific Message Content

```
ON MESSAGE  = IST093I
   JNAME          JTYPE         SMFID        SYSTEM
   ROUTE          DESC          CONSOLEID    CONSOLE
   APPEARED       TIMES IN      MINUTES                        And/Or/Not A
ON STRING   = TSOM                                           COL 009 - 012
   JNAME          JTYPE         SMFID        SYSTEM
   ROUTE          DESC          CONSOLEID    CONSOLE
   APPEARED       TIMES IN      MINUTES                        And/Or/Not
OWNER IOAADMIN GROUP                          MODE PROD    RUNTSEC
THRESHOLD
DESCRIPTION REACTING TO A SIMPLE MESSAGE
DESCRIPTION TSO VTAM NODE ACTIVE - START TSO
==============================================================================
DO COMMAND = S TSO
WAIT          CONSOLEID    CONSOLE          SYSTEM
WAITMODE     N
```

Explanation

This rule combines two ON statements to determine when the rule is triggered: The IST093I message is detected and the string “TSOM” is found in the text of the message.

```
And/Or/Not A
```

indicates that the rule will only be triggered when both ON statements are true. When the IST093I message is detected and the string “TSOM” is found in the text of the message, it indicates that the VTAM TSO node has been activated, and TSO can be started.

```
DO COMMAND=S TSO
```

This DO statement performs the command necessary to start TSO.

Replying to a WTOR Message

The example in Figure 98 demonstrates how a rule can be designed to respond to a WTOR (write to operator with reply) message.

Figure 98 Example of Replying to a WTOR Message

```
ON MESSAGE  = IEF235D
   JNAME          JTYPE         SMFID        SYSTEM
   ROUTE          DESC          CONSOLEID    CONSOLE
   APPEARED       TIMES IN      MINUTES                        And/Or/Not
OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
THRESHOLD
DESCRIPTION REPLYING TO A WTOR MESSAGE
DESCRIPTION JOBNAME COPY WAITING FOR VOLUMES
==============================================================================
DO COMMAND  = R %%$REPLY,NOHOLD
   WAIT        CONSOLEID    CONSOLE          SYSTEM
   WAITMODE   N
```

Explanation

The DO COMMAND statement is used to respond to a WTOR message. The following is specified in the DO COMMAND statement:

R *%%$REPLY,NOHOLD*

In this statement

- R is an indication that this is a reply to a WTOR message.
- *%%$REPLY* is the system variable containing the reply number for the WTOR message that triggered the rule.
- *NOHOLD* is the text of the reply to the WTOR message.

Storing a Reply Number for Later Use

The example in Figure 99 demonstrates how the reply number for a WTOR message can be saved for use at a later time (for example, by another rule).

Figure 99 Example of Storing a Reply Number for Later Use

```
ON MESSAGE  = DFS996I
   JNAME          JTYPE         SMFID        SYSTEM
   ROUTE          DESC          CONSOLEID    CONSOLE
   APPEARED       TIMES IN      MINUTES                        And/Or/Not
OWNER IOAADMIN GROUP                          MODE PROD    RUNTSEC
THRESHOLD
DESCRIPTION KEEPING THE REPLY NUMBER IN A GLOBAL AUTOEDIT VARIABLE
==============================================================================
DO SET      = %%IMS-REPLY = %%$REPLY                            GLOBAL  Y
```

Explanation

The %%$REPLY system variable contains the reply number of the WTOR message that triggered the rule. In this rule, the %%IMS-REPLY user-defined variable is used to store the reply number (by way of the DO SET statement) for use at a later time.

Notifying the System Programmer of a Problem

The example in Figure 100 demonstrates how CONTROL-O can be used to notify appropriate individuals that a specific type of problem was detected.

Figure 100 Example of Notifying the System Programmer of a Problem

```
ON MESSAGE  = IEE365I
   JNAME          JTYPE         SMFID        SYSTEM
   ROUTE          DESC          CONSOLEID    CONSOLE
   APPEARED       TIMES IN      MINUTES                        And/Or/Not
OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
THRESHOLD
DESCRIPTION NOTIFYING THE SYSTEM PROGRAMMER OF A PROBLEM
DESCRIPTION SMF DATASET OR SYS1.PARMLIB COULD NOT BE OPENED
DESCRIPTION INFORM THE SYSPROG TSO USER AND CTO-PC
DESCRIPTION
==========================================================================
DO SHOUT    = TO TSO-SYSPROG       URGENCY R SYSTEM           CTO282I
   MESSAGE %%$MSG
DO CTOPCMSG = PAGE %%$MSG
```

Explanation

When the IEE365I message, which indicates that the SMF data set or SYS1.PARMLIB could not be opened, is detected, this rule is triggered:

```
DO SHOUT=TO TSO-SYSPROG
```

This statement sends a message to the specified destination. In this example the message that triggered the rule, indicated by the %%$MSG AutoEdit System variable, is forwarded to the system programmer.

TSO-SYSPROG can refer to one or more destinations, depending on the definition of this destination in the IOA Dynamic Destination Table. For more information, see the description of the IOA dynamic destination table in the IOA administration chapter of the *INCONTROL for z/OS Administrator Guide*.

```
DO CTOPCMSG=PAGE %%$MSG
```

The message that triggered this rule is also forwarded to CONTROL-M/Links for Windows NT. CONTROL-M/Links for Windows NT can then forward the message to the system programmer, for example, by using a paging device.

Issue a Command at Regular Intervals

The example in Figure 101 demonstrates how a specified command can be issued at regular intervals within a specified time period.

Figure 101 Example of Issuing a Command at Regular Intervals

```
ON EVENT    = HOURLY
OWNER IOAADMIN GROUP                        MODE LOG     RUNTSEC
THRESHOLD
DESCRIPTION ISSUE A COMMAND ONCE EACH HOUR (BETWEEN 8.00-17.00)
==============================================================================
DO COMMAND  = D A,ALL
   WAIT        CONSOLEID    CONSOLE          SYSTEM
   WAITMODE   N
==============================================================================
IN
TIME FROM 0800 UNTIL 1700      INTERVAL 060  PRIORITY     CONTINUE SEARCH Y
```

Explanation

The Runtime scheduling criteria include the following statement, which limits execution of this rule to a specific time period, from 8am to 5pm.

```
TIME FROM 0800 UNTIL 1700      INTERVAL 060
```

The value specified for the INTERVAL subparameter indicates that this rule is triggered every sixty minutes during the time specified in the TIME parameter.

Execute a REXX Procedure in Response to a Job Abend

The example in Figure 102 demonstrates how a CONTROL-O rule can respond to a detected message by activating a REXX procedure.

Figure 102 Example of Executing a REXX Procedure in Response to a Job Abend

```
ON MESSAGE  = IEF450I
   JNAME          JTYPE         SMFID        SYSTEM
   ROUTE          DESC          CONSOLEID    CONSOLE
   APPEARED       TIMES IN      MINUTES                        And/Or/Not
OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
THRESHOLD
DESCRIPTION JOB ABENDED - EXECUTE A REXX PROCEDURE
DESCRIPTION PASS THE JOBNAME AS A PARAMETER TO IT
==========================================================================
DO TSO      = MYREXX %%$JOBNAME
   WAITMODE   Y                                      TIMEOUT         STOP Y
   INITPROC                SHARELOC N                IMMEDIATE N
IF       %%$TSORC NE 0
DO SHOUT    = TO OPER              URGENCY R SYSTEM           CTO282I
   MESSAGE PROBLEMS WHILE EXECUTING REXX PROCEDURE MYREXX
ENDIF
```

Explanation

The appearance of the IEF450I message activates this rule that in turn activates the REXX procedure. This procedure can be used, for example, to open a ticket in a problem management product (such as NETMAN or INFOMAN).

The %%$JOBNAME system variable contains the name of the job that issued the message that triggered the rule.

```
DO TSO=MYREXX %%$JOBNAME
```

This statement activates the MYREXX REXX procedure and passes the value of the %%$JOBNAME system variable as an argument.

An IF statement checks the %%$TSORC system variable, which contains the return code of the REXX procedure.

If the return code is not 0, meaning that the procedure did not end OK, the operator is informed by a SHOUT message.

Thresholds for Repetitive Messages

Some messages appear frequently and only indicate a problem if they appear with more than the usual frequency. The example in Figure 103 demonstrates the handling of a message for which the number of occurrences exceeds a specified threshold.

Figure 103 Example of Thresholds for Repetitive Messages

```
ON MESSAGE  = $HASP263
   JNAME PROD*    JTYPE J       SMFID        SYSTEM
   ROUTE          DESC          CONSOLEID    CONSOLE
   APPEARED 006   TIMES IN 0003 MINUTES                        And/Or/Not
OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
THRESHOLD
DESCRIPTION HANDLING A MESSAGE APPEARING REPETITIVELY
DESCRIPTION JES CHECKPOINT CONTENTION PROBLEM HANDLING
=============================================================================
DO SHOUT    = TO OPER2             URGENCY R SYSTEM           CTO282I
   MESSAGE JES CHECKPOINT CONTENTION PROBLEM - PLEASE CHECK
```

Explanation

The following threshold is specified in the ON MESSAGE statement:

```
APPEARED 006 TIMES IN 0003 MINUTES
```

This specification causes the rule to be triggered only when the specified message ($HASP263) is issued at least six times within a three minute time span.

The THRESHOLD parameter in the CTOPARM member also limits the number of times that a rule can be triggered in one interval.

If the THRESHOLD parameter of a rule is set to a value different from that set in the THRESHOLD parameter in the CTOPARM member, the value in the rule overrides the value set in CTOPARM.

If no value, or a value of 0, is set in the THRESHOLD parameter of a rule or the THRESHOLD parameter in CTOPARM, CONTROL-O does not limit the number of times that the rule can be triggered.

Designing a While Loop

The example in Figure 104 demonstrates the structure of a WHILE loop in a CONTROL-O rule.

Figure 104 WHILE Loop Structure

```
ON RULE     = LOOPRULE
```

```
OWNER IOAADMIN GROUP                          MODE PROD    RUNTSEC
THRESHOLD
DESCRIPTION SAMPLE LOOP STRUCTURE USING WHILE/ENDWHILE
==============================================================================
DO SET      = %%A = 0                                          GLOBAL  N
WHILE    %%A LE# 10
DO SET      = %%A = %%A %%$PLUS 1                              GLOBAL  N
DO SHOUT    = TO OPER              URGENCY R SYSTEM          CTO282I
   MESSAGE DURING LOOP NUMBER: %%A
ENDWHILE
```

Explanation

The loop in this rule is for demonstration purposes only. A DO SET statement is used to set a user-defined variable to zero.

```
WHILE    %%A LE# 10
```

This WHILE statement indicates that if the %%A user-defined variable is less than (LE#) 10, the following statements should be performed.

```
DO SET=%%A=%%A %%$PLUS 1
```

The %%A user-defined variable is incremented by one.

```
DO SHOUT=TO=OPER
 MESSAGE DURING LOOP NUMBER: %%A
```

A SHOUT message notifies the operator as to what loop number the rule is now executing.

```
ENDWHILE
```

marks the end of the WHILE loop

Track CICS Region Statuses Using Prerequisite Conditions

The example in Figure 105 demonstrates how CONTROL-O accesses a list of prerequisite conditions (stored in the IOA Conditions file) to indicate the status of various components, such as jobs, or started tasks, in the working environment.

Figure 105 Example of Tracking CICS Region Statuses Using Prerequisite Conditions

```
ON MESSAGE  = DFH1500
   JNAME CICS*    JTYPE J       SMFID        SYSTEM
   ROUTE          DESC          CONSOLEID    CONSOLE
   APPEARED       TIMES IN      MINUTES                        And/Or/Not A
ON STRING   = CONTROL IS BEING GIVEN TO CICS                  COL 022 - 051
   JNAME CICS*    JTYPE         SMFID        SYSTEM
   ROUTE          DESC          CONSOLEID    CONSOLE
   APPEARED     TIMES IN      MINUTES                        And/Or/Not
OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
THRESHOLD
DESCRIPTION KEEP TRACK OF CICS REGIONS STATUSES VIA AN IOA CONDITION
==============================================================================
DO COND     = CTO-%%$JOBNAME-UP    STAT +
```

Explanation

When the DFH1500 message is detected and contains the string specified in the ON STRING statement (CONTROL IS BEING GIVEN TO CICS), this rule is triggered.

The JNAME field is used to specify the name of the job or started task that issued the message. In this case the value specified in the JNAME fields in both ON statements (CICS*) indicates that the rule is triggered whenever the specified message is issued from a CICS job or started task (region).

The DO COND statement is used to set a condition indicating whether or not the CICS region is up. The %%$JOBNAME system variable resolves to the name of the CICS region that issued the message. If, for example, the CICS region name is CICSTEST, the condition set in the DO COND statement is as follows:

```
DO COND=CTO-CICSTEST-UP    STAT +
```

As a result of this DO COND statement, the CTO-CICSTEST-UP condition is added to the IOA Conditions file.

Using this rule (and other rules that remove conditions that are no longer true) CONTROL-O can track the status of different CICS regions, and IOA components (such as CONTROL-O rules and CONTROL-M jobs) can be activated based on whether a specific region is up or down.

Start Five Initiators and Inform CONTROL-M

The example in Figure 106 is designed to start a specified number of initiators at a specified time, and to add the appropriate number of initiators to the corresponding Quantitative resource in the CONTROL-M Resources file so that the initiators can be tracked by CONTROL-M.

Figure 106 Example of Starting Five Initiators and Informing CONTROL-M

```
ON EVENT    = INITS
OWNER IOAADMIN GROUP                          MODE LOG    RUNTSEC
THRESHOLD
DESCRIPTION START 5 INITIATORS AND INFORM CONTROL-M
==============================================================================
DO COMMAND  = $SI16-20
   WAIT        CONSOLEID    CONSOLE          SYSTEM
   WAITMODE   N
DO RESOURCE = INITIATORS           0005 +
==============================================================================
IN
TIME FROM 1800 UNTIL           INTERVAL      PRIORITY     CONTINUE SEARCH Y
```

Explanation

`TIME FROM 1800`

This statement indicates a specific time when the rule is triggered (6 pm).

`DO COMMAND=$SI16-20`

starts the new initiators (numbered from 16 through 20).

The DO RESOURCE statement is used to update the quantity of the specified resource (initiators) listed in the CONTROL-M Resources file. CONTROL-M monitors this file and is therefore informed of the new available initiators.

Forcing a CONTROL-M Job

The example in Figure 107 demonstrates how a CONTROL-M job can be run in response to the detection of a specific message.

Figure 107 Example of Forcing a CONTROL-M Job

```
ON MESSAGE  = $HASP050
   JNAME          JTYPE         SMFID        SYSTEM
   ROUTE          DESC          CONSOLEID    CONSOLE
   APPEARED       TIMES IN      MINUTES                        And/Or/Not
OWNER IOAADMIN GROUP                          MODE PROD    RUNTSEC
THRESHOLD
DESCRIPTION FORCE A CONTROL-M JOB IN RESPONSE TO A MESSAGE
DESCRIPTION JES2 - RESOURCE SHORTAGE
==============================================================================
DO FORCEJOB = TABLE   JES2JOBS     JOB SYSJES1              DATE  ODAT
            LIBRARY CTM.SCHEDULE
```

Explanation

When the $HASP050 message is detected this rule is triggered.

The DO FORCEJOB parameter forces CONTROL-M to run the specified job as a response to this message. The table where the job is found, the job name, and the library where the job is found are indicated in the subparameters of this statement. DO FORCEJOB can only be used if CONTROL-M is installed at your site.

Force a CONTROL-M Job and Pass a Variable to It

The example in Figure 108 demonstrates how a CONTROL-M job is forced and information is passed to the job using Global AutoEdit variables.

Figure 108 Example of Forcing a CONTROL-M Job and Passing a Variable to It

```
ON MESSAGE  = $HASP050
   JNAME          JTYPE         SMFID        SYSTEM
   ROUTE          DESC          CONSOLEID    CONSOLE
   APPEARED       TIMES IN      MINUTES                        And/Or/Not
OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
THRESHOLD
DESCRIPTION FORCE A CONTROL-M JOB WHILE PASSING IT A VARIABLE
DESCRIPTION THE VARIABLE IS ACCESSED BY CONTROL-M BY USING THE
DESCRIPTION %%LIBSYM AND %%MEMSYM CONTROL-M AutoEdit STATEMENTS
==========================================================================
/* GET INFORMATION TO BE PASSED TO THE JOB
DO SET      = %%MYPARM = %%$SMFID                                GLOBAL  Y
/* WRITE THE CONTENTS OF THE VARIABLE TO A MEMBER FOR LATER ACCESS BY
/* CONTROL-M. WAIT UNTIL MESSAGE CTO163I APPEARS
DO COMMAND  = F %%$CONTROLO,WRITEGLOBAL
   WAIT        CONSOLEID    CONSOLE          SYSTEM
   WAITMODE   Y             WAITRESP Y            TIMEOUT 0300 0001
   RESPMSG CTO163I
/* IF CTO163I APPEARS IN THE SPECIFIED TIME FRAME (5 MINUTES) FORCE A JOB
/* THE VARIABLE CAN BE ACCESSED BY CONTROL-M.
IF       %%$MSGID EQ CTO163I
DO FORCEJOB = TABLE   JES2JOBS     JOB SYSJES1              DATE  ODAT
             LIBRARY CTM.SCHEDULE
ENDIF
```

Explanation

```
DO SET=%%MYPARM=%%$SMFID                                GLOBAL Y
```

This statement stores the SMFID of the CPU that issued this message in the %%MYPARM user variable. A value of Y (Yes) in the GLOBAL field indicates that this variable is stored as a CONTROL-O Global variable.

```
DO COMMAND=F %%$CONTROLO,WRITEGLOBAL
 WAIT        CONSOLEID    CONSOLE          SYSTEM
 WAITMODE   Y WAITRESP Y TIMEOUT 0300 0001
 RESPMSG CTO163I
```

This operator command must be issued to ensure that the new Global variable is written in the Global member and is therefore accessible by CONTROL-M.

Y is specified in the WAITMODE field to indicate that execution of the rule should be postponed for the number of seconds specified in the TIMEOUT field or until the message specified in the RESPMSG field is detected.

The CTO163I message indicates a successful execution of a WRITEGLOBAL command. When this message is detected, the CONTROL-M job is able to access the Global variable defined in this rule (%%MYPARM).

```
IF       %%$MSGID EQ CTO163I
DO FORCEJOB=TABLE   JES2JOBS     JOB SYSJES1 DATE ODAT
 LIBRARY CTM.SCHEDULE
```

The %%$MSGID system variable contains the ID of the message most recently detected. If the ID stored in this variable indicates that the above command was successfully performed, the CONTROL-M job is forced.

NOTE

CONTROL-M accesses the %%MYPARM Global variable by specifying the dsname and member of the CONTROL-O Global variables data set through %%LIBSYM and %%MEMSYM CONTROL-M AutoEdit statements in the JCL of the job specified in the DO FORCEJOB statement (SYSJES1).

Extracting Information From a Multi-line Message

The example in Figure 109 demonstrates extraction of information from a multi-line message using System variables set during multi-line message processing. SHOUT statements are used to display information about the multi-line message that triggered the rule.

Figure 109 Example of Extracting Information from a Multi-Line Message

```
ON MESSAGE  = IEA995I
   JNAME CICS*    JTYPE J       SMFID        SYSTEM
   ROUTE          DESC          CONSOLEID    CONSOLE
   APPEARED       TIMES IN      MINUTES                        And/Or/Not
OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
THRESHOLD
DESCRIPTION GETTING INFORMATION FROM A MULTI-LINE MESSAGE
DESCRIPTION Z/OS ABEND - SYMPTOM DUMP OUTPUT MESSAGE
==============================================================================
/* ALL STATEMENTS PRECEEDING THE 'ENDMSG' ARE EXECUTED FOR EACH LINE
DO SHOUT    = TO OPER              URGENCY R SYSTEM           CT0282I
   MESSAGE PROCESSING LINE NUMBER %%$LINES
DO SHOUT    = TO OPER              URGENCY R SYSTEM           CT0282I
   MESSAGE THE LINE BEING PROCESSED IS %%$M*
DO SHOUT    = TO OPER              URGENCY R SYSTEM           CT0282I
   MESSAGE THE FIRST WORD OF THE LINE BEING PROCESSED IS %%$W1 %%$M*
ENDMSG
/* ALL STATEMENTS AFTER THE 'ENDMSG' ARE EXECUTED AFTER ALL THE LINES
/* OF THE MULTI-LINE MESSAGE ARE PROCESSED
DO SHOUT    = TO OPER              URGENCY R SYSTEM           CT0282I
   MESSAGE ALL THE LINES OF THE MESSAGE HAVE BEEN RECEIVED
DO SHOUT    = TO OPER              URGENCY R SYSTEM           CT0282I
   MESSAGE THE TOTAL NUMBER OF SECONDARY LINES IS %%$LINES
DO SHOUT    = TO OPER              URGENCY R SYSTEM           CT0282I
   MESSAGE THE MAJOR LINE IS %%$M0
DO SHOUT    = TO OPER              URGENCY R SYSTEM           CT0282I
   MESSAGE THE FIRST WORD OF THE MAJOR LINE IS %%$W1 %%$M0
DO SHOUT    = TO OPER              URGENCY R SYSTEM           CT0282I
   MESSAGE THE FIRST SECONDARY LINE IS %%$M1
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF              17.02.57
```

Explanation

It is unlikely that you would need to specify the number of SHOUT statements included in this rule. This rule is designed for demonstration purposes. Each SHOUT statement in this rule conveys different information about the multi-line message that triggered the rule.

Statements (in this case SHOUT statements) appearing before the ENDMSG parameter are performed for each line of the multi-line message. Statements appearing after (below) the ENDMSG parameter are performed only once, after all lines of the message have been processed.

System variables are used in this rule to refer to different parts of the message text (for example, %%W1 %%$M0), and to the position of a given line in the message (%%$LINES). For more information on the different System variables see “System Variables” on page 514.

Prevent the Starting of CICS When It Is Already Active

The example in Figure 110 demonstrates how a command can be suppressed when a specified condition is true.

Figure 110 Example of Preventing the Starting CICS when is it already Active

```
ON COMMAND  = START CICS
   JNAME          JTYPE         SMFID        SYSTEM       USERID
   ROUTE          DESC          CONSOLEID    CONSOLE
   APPEARED     TIMES IN      MINUTES                          And/Or/Not
OWNER IOAADMIN GROUP                         MODE LOG     RUNTSEC
THRESHOLD
DESCRIPTION CICS IS ACTIVE - PREVENT STARTING IT
==============================================================================
DO DISPLAY  = SUPPRESS Y ROUTE     DESC    CONSOLEID    CONSOLE
   SYSTEM
DO SHOUT    = TO OPER              URGENCY R SYSTEM           CTO282I
   MESSAGE CICS IS ACTIVE - START SUPPRESSED
===============================================================================
IN        CICS-UP              STAT
TIME FROM      UNTIL           INTERVAL      PRIORITY     CONTINUE SEARCH Y
```

Explanation

```
IN        CICS-UP
```

When the CICS-UP condition is present in the IOA Conditions file, the rule is activated, or ready to be triggered. This rule is triggered when the START CICS command is requested by the operator.

The following statement is used to suppress the requested command:

```
DO DISPLAY=SUPPRESS Y
```

The operator is then informed that the command was suppressed and is given the reason for suppression.

User-Defined Commands and Confirmation of a Command Request

The example in Figure 111 demonstrates how a rule is used to create user-defined operator commands. This example also demonstrates how a rule can ask for confirmation of a specified command.

Figure 111 Example of User-Defined Commands and Confirmation of a Command Request

```
ON COMMAND  = SHUTSYS
   JNAME          JTYPE         SMFID        SYSTEM       USERID
   ROUTE          DESC          CONSOLEID    CONSOLE
   APPEARED     TIMES IN      MINUTES                          And/Or/Not
OWNER IOAADMIN GROUP                         MODE LOG     RUNTSEC
THRESHOLD
DESCRIPTION REQUESTING OPERATOR CONFIRMATION
==============================================================================
DO DISPLAY  = SUPPRESS Y ROUTE     DESC    CONSOLEID    CONSOLE
   SYSTEM
DO ASKOPER  = ENTER "YES" TO CONFIRM SHUTSYS REQUEST, OTHER TO CANCEL
ROUTE       CONSOLEID    CONSOLE                          TIMEOUT 9999
IF       %%$RPLYTXT EQ YES
DO COND     = CTO-SHUTSYS-ISSUED   STAT +
ELSE
DO SHOUT    = TO OPER              URGENCY R SYSTEM           CTO282I
   MESSAGE SHUTSYS REQUEST WAS CANCELED BY OPERATOR REQUEST
ENDIF
```

Explanation

`ON COMMAND=SHUTSYS`

This statement can be used to define new operator commands. When the operator requests the command specified in an ON COMMAND statement (in our example: SHUTSYS), the rule is triggered.

`DO ASKOPER=...`

The operator is asked to confirm (or reject) the command using a WTOR message.

The %%$RPLYTXT System variable contains the operator's response to the DO ASKOPER message.

An IF condition is used to select the appropriate action dependent on the operator response (%%$RPLYTXT).

- If the operator confirmed the specified command, a condition is set (CTO-SHUTSYS-ISSUED). The addition of this condition then triggers another rule (through an IN CTO-SHUTSYS-ISSUED statement) or a set of rules that perform the relevant actions (such as, in this example, a system shutdown).

- If the operator rejected the command, a message is issued (using DO SHOUT) indicating that the command request was cancelled.

Issue a Command and Analyze the Response

The example in Figure 112 demonstrates how a rule can issue a command and analyze the results of the command request.

Figure 112 Example of Issuing a Command and Analyzing the Response

```
ON EVENT    = EVERY10
OWNER IOAADMIN GROUP                        MODE LOG     RUNTSEC
THRESHOLD
DESCRIPTION ISSUE A COMMAND AND GET ITS RESPONSE
==============================================================================
DO SET      = %%MYSTC = CICSTEST                                  GLOBAL  N
DO SET      = %%JSTAT = INACTIVE                                  GLOBAL  N
/* ALL STATEMENTS UP TO THE 'ENDMSG' ARE EXECUTED FOR EACH LINE
/* OF THE COMMAND'S RESPONSE
DO COMMAND  = D A,%%MYSTC
   WAIT        CONSOLEID    CONSOLE          SYSTEM
   WAITMODE   Y             WAITRESP Y            TIMEOUT
   RESPMSG
IF       %%$W2 %%$M* EQ %%MYSTC
DO SET      = %%JSTAT = ACTIVE                                    GLOBAL  N
ENDIF
DO DISPLAY  = SUPPRESS Y ROUTE     DESC    CONSOLEID    CONSOLE
   SYSTEM
ENDMSG
/* ALL STATEMENTS AFTER THE 'ENDMSG' ARE EXECUTED AFTER ALL THE
/* LINES OF THE COMMAND RESPONSE WERE PROCESSED
IF       %%JSTAT NE ACTIVE
DO SHOUT    = TO OPER              URGENCY R SYSTEM          CTO282I
   MESSAGE %%MYSTC IS NOT ACTIVE - CHECK WHY
ENDIF
==============================================================================
DAYS                                                            DCAL
                                                     AND/OR
WDAYS   ALL                                                     WCAL
MONTHS  1- Y 2- Y 3- Y 4- Y 5- Y 6- Y 7- Y 8- Y 9- Y 10- Y 11- Y 12- Y
DATES
CONFCAL          SHIFT
ENVIRONMENT SMFID      SYSTEM
==============================================================================
IN
TIME FROM      UNTIL           INTERVAL 010  PRIORITY     CONTINUE SEARCH Y
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF              17.02.57
```

Explanation

This rule checks the status of a specified job (CICSTEST) every ten minutes. If the job is not active, a message is sent to notify the operator of the problem. The rule works as follows:

```
ON EVENT...
```

Since ON EVENT is specified for the rule, the rule is triggered immediately when runtime criteria are met. The specified runtime criteria, a value of 010 specified for the INTERVAL parameter, indicates that the rule is triggered every ten minutes.

```
DO SET=%%MYSTC = CICSTEST
DO SET=%%JSTAT = INACTIVE
```

Two local variables are set using the above statements at the beginning of this rule:

- %%MYSTC – name of the job to be checked by this rule (CICSTEST)
- %%JSTAT – variable used to indicate job status
  Initially set to INACTIVE.

```
DO COMMAND=D A,%%MYSTC
```

The rule issues this command to obtain information on the job specified in the %%MYSTC variable (CICSTEST). If the name of the job is contained in the response to the command, it indicates that the specified job is active.

```
IF   %%$W2 %%$M* EQ %%MYSTC
DO SET=%%JSTAT = ACTIVE
```

This IF statement checks if the second word (%%$W2) in the current command response line (%%$M*) is the job name (%%MYSTC). If the second word in the current command response line is the job name (CICSTEST), the %%JSTAT variable is set to ACTIVE. Since the response to this command is usually more than one line, the ENDMSG parameter is specified to ensure that the IF statement is applied to each line of the command response.

```
IF   %%JSTAT NE ACTIVE
DO SHOUT =   = TO OPER              URGENCY R SYSTEM           CT0282I
 MESSAGE %%MYSTC IS NOT ACTIVE - CHECK WHY
```

When the last line of the command response is detected, this IF statement checks if the %%JSTAT user-defined variable now contains the value ACTIVE. If %%JSTAT does not contain the value ACTIVE, this indicates that the job name was not located in the command response and the operator is notified that the job is inactive.

NOTE

The %%MYSTC variable is used to contain the name of the job to be checked so that the rule can be used to check other jobs by changing only the specification of the job name in the statement at the beginning of the rule (`DO SET=%%MYSTC = `).

Execute a KOA Script in a Special Server

The example in Figure 113 shows how a KOA script is run in a Special server and used to check whether or not CICS is responding.

Figure 113 Example of Executing a KOA Script in a Special Server

```
RL: CHCKCICS   LIB CTO.PROD.RULES                              TABLE: CICS
COMMAND ===>                                                   SCROLL===> CRSR
+-----------------------------------------------------------------------------+
ON EVENT    = CHCKCICS
OWNER IOAADMIN  GROUP                          MODE LOG     RUNTSEC
THRESHOLD
DESCRIPTION EXECUTE A KOA SCRIPT TO CHECK WHETHER CICS IS RESPONDING
==============================================================================
DO KSL      = CICSKOA
   WAITMODE   Y                                       TIMEOUT         STOP Y
   INITPROC   CICSP1        SHARELOC N                IMMEDIATE N
IF       %%$KSLRC NE 0
DO SHOUT    = TO OPER              URGENCY R SYSTEM            CTO282I
   MESSAGE CICS PROD IS IN TROUBLE - PLEASE CHECK
ENDIF
==============================================================================
DAYS                                                          DCAL
 AND/OR
WDAYS   ALL                                                   WCAL
MONTHS  1- Y 2- Y 3- Y 4- Y 5- Y 6- Y 7- Y 8- Y 9- Y 10- Y 11- Y 12- Y
DATES
CONFCAL          SHIFT
ENVIRONMENT SMFID      SYSTEM
==============================================================================
IN
TIME FROM 0700 UNTIL 1800      INTERVAL 002  PRIORITY     CONTINUE SEARCH Y
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 06.44.34
```

Explanation

If it is important to you to know if CICS is responding at your site, a rule such as this one can help you track CICS response. This EVENT rule is triggered every two minutes (specified by the value set in the INTERVAL parameter) between the hours of 7 a.m. and 6 p.m. (specified by the FROM and TO parameters).

A KOA script is used to check whether or not CICS is responding:

```
DO KSL=CICSKOA
```

This statement activates the specified KOA script (CICSKOA).

```
INITPROC   CICP1
```

The INITPROC subparameter is used to specify a Special server where the KOA script should be run. Use of a Special server can reduce possible delays in script execution.

For more information about CONTROL-O servers, see Chapter 5, “CONTROL-O Servers,”.

An IF statement checks the %%$KSLRC System variable, which contains the return code of the KOA script.

If the return code is not 0 (meaning that the script did not end OK), the operator is informed by a SHOUT message.

Reacting to an Event in a Sysplex Environment

Messages are often sent to all members (systems) in the Sysplex environment. CONTROL-O can react to a message originating in any system in the Sysplex environment.

To trigger a rule that responds to a message that originated in another system (or an event that sends out a corresponding message), specify a SYSTEM value in the ON statement (valid for ON JOBARRIV, ON JOBEND, ON MESSAGE, and ON STRING).

NOTE

If the triggering message originated on another computer in the Sysplex the JTYPE subparameter is treated differently. Because reissued messages are handled by the CONSOLE address space, a rule on another computer will be triggered only if the value of the JTYPE subparameter is either blank (the default) or **S**.

Figure 114 Example of Reacting to an Event in a Sysplex Environment

```
ON JOBEND   = CICS    JTYPE S   SMFID      SYSTEM MVS1  And/Or/Not
OWNER N25     GROUP                        MODE PROD    RUNTSEC
THRESHOLD
DESCRIPTION
==============================================================================
IF       %%$REISSUED  EQ  N
DO SHOUT    = TO OPER              URGENCY R SYSTEM         CTO282I
   MESSAGE CICS ON %%$SYSTEMNM IS DOWN
ELSE
DO COMMAND  = S CICS
   WAIT        SYSTEM             CONSOLE          CONSOLEID
   WAITMODE   N
   ENDIF
```

Explanation

The above rule is triggered when the CICS job is ended in the MVS1 system.

The %%$REISSUED System variable is used to determine whether or not the CICS job ended in the current system.

- If the job was ended on the current system, a message is sent to the operator indicating that CICS was ended.

- If CICS was ended in another system, CICS is started in the current system.

Performing an Action on Another System

CONTROL-O DO statements that support communication can be sent to CONTROL-O on other systems. A CONTROL-O rule on one system can request that an action be performed by CONTROL-O on a remote system.

If both CONTROL-Os are active in the same Sysplex environment, the Sysplex communication function is used. If the CONTROL-Os are active on systems connected by VTAM or TCP, CONTROL-O will use IOAGATE for communication. For more information about IOAGATE, see the CONTROL-O Communication step in the CONTROL-O chapter of the *INCONTROL for z/OS Installation Guide.*

The target remote system can be specified as follows:

- For any DO statement that supports communication, the target remote system can be specified using the %%$COMMSYS reserved user-defined variable in a preceding DO SET statement.

  The following DO statements support communication (that is, this method applies to the following DO statements):

  — DO COMMAND
  — DO COND
  — DO DISPLAY
  — DO FORCEJOB
  — DO RESOURCE
  — DO RULE
  — DO SHOUT

- Several of the above DO statements have a SYSTEM subparameter. The target remote system can alternatively be specified in this subparameter. If a remote system is specified both through %%$COMMSYS in a preceding DO SET statement and through the SYSTEM subparameter, the specification in the SYSTEM subparameter takes precedence.

The following DO statements support communication by either %%$COMMSYS or the SYSTEM subparameter:

- DO COMMAND
- DO DISPLAY
- DO SHOUT

For information regarding %%$COMMSYS, see the description of the variable in "Reserved User-Defined Variables" on page 561.

Note the following regarding other DO statements:

- DO SET does not support communication. Therefore, the DO SET statement cannot be sent to CONTROL-O on another system, although it is used to identify the remote system (through %%$COMMSYS) for the DO statements mentioned above.

- For the DO RULE statement, only System variables are transferred to other systems.

Example 1

In the example in Figure 115, when CICS ends on its own system, CONTROL-O requests that a CONTROL-O installation on the MVS1 system issue a START CICS command to the MVS1 system.

Figure 115 Performing an Action on Another System – Example 1

```
ON JOBEND    = CICS       JTYPE S SMFID        SYSTEM                And/Or/Not
OWNER  N25      GROUP                              MODE PROD     RUNTSEC
THRESHOLD
DESCRIPTION
==============================================================================
DO COMMAND  = S CICS
   WAIT        CONSOLEID    CONSOLE          SYSTEM MVS1
   WAITMODE   Y             WAITRESP Y            TIMEOUT
   RESPMSG DFH*
```

Explanation

```
ON JOBEND=CICS
```

When CICS is ended

```
DO COMMAND=S CICS
 WAIT        CONSOLEID    CONSOLE          SYSTEM MVS1
```

start CICS on the MVS1 system.

```
 WAITMODE   Y              WAITRESP Y           TIMEOUT
 RESPMSG DFH*
```

Wait for messages prefixed by DFH.

In a Sysplex environment, CONTROL-O sends the S CICS command to the MVS1 system through the extended MCS console.

For a remote system connected by VTAM or TCP, the request is passed to the local IOAGATE that sends it to the remote IOAGATE. The remote IOAGATE then issues the command. This remote IOAGATE waits for the response messages (prefixed by DFH) and sends the messages back to the local IOAGATE.

Example 2

In the example in Figure 116, CONTROL-O requests that the FORCEJOB command be performed to start CICS through CONTROL-O on the SYSBKUP system.

Figure 116 Performing an Action on Another System – Example 2

```
ON JOBEND   = CICS     JTYPE S SMFID      SYSTEM              And/Or/Not
   OWNER CICSADMN GROUP                        MODE PROD    RUNTSEC
   THRESHOLD
   DESCRIPTION WHEN CICS ENDS - FORCEJOB ON THE CONTROL-M ON THE
   DESCRIPTION ALTERNATE SYSTEM TO START CICS.
   DESCRIPTION
   ==============================================================================
   DO SET      = %%$COMMSYS=SYSBKUP                              GLOBAL  N
   DO FORCEJOB = TABLE   CICS         JOB CICSALT              DATE  ODAT
                 LIBRARY CTM.PROD.SHEDULE
   DO
   ==============================================================================
```

Explanation

```
ON JOBEND=CICS
```

When CICS is ended

```
DO SET=%%$COMMSYS=SYSBKUP                                GLOBAL  N
```

sets %%$ COMMSYS to the name of the remote system

```
DO FORCEJOB=TABLE   CICS         JOB CICSALT              DATE  ODAT
 LIBRARY CTM.PROD.SHEDULE
```

CONTROL-O on the CICSADMN system requests that a CONTROL-O rule on the SYSBKUP system issue the FORCEJOB command for the CICSALT job.

Example 3

In the example in Figure 117, CONTROL-O on the CICSADMN system requests that the START CICS command be performed on the SYSBKUP system.

Figure 117 Performing an Action on Another System – Example 3

```
ON JOBEND    = CICS       JTYPE S SMFID        SYSTEM    And/Or/Not
   OWNER  CICSADMN      GROUP            MODE PROD     RUNTSEC
   THRESHOLD
   DESCRIPTION
   ==========================================================================
   DO SET      = %%$COMMSYS=%%SYSBKUP                              GLOBAL  N
   DO COMMAND  = S CICS
      WAIT        CONSOLEID    CONSOLE          SYSTEM
     WAITMODE   Y             WAITRESP Y            TIMEOUT
      RESPMSG DFH*
```

Explanation

```
ON JOBEND=CICS
```

When CICS is ended

```
DO SET=%%$COMMSYS=%%SYSBKUP                                GLOBAL  N
```

set %%$COMMSYS to the backup system previously named, using the %%SYSBKUP Global AutoEdit variable.

```
DO COMMAND=S CICS
 WAIT        CONSOLEID    CONSOLE          SYSTEM
```

Then, START CICS on the SYSBKUP system.

```
WAITMODE   N               WAITRESP              TIMEOUT
```

Do not wait for a response.

Displaying the Contents of an AutoEdit Variable Database

The example in Figure 118 shows how the TUTSHOUT rule displays the contents of the TUTORIAL AutoEdit variable database.

Figure 118 Displaying the Contents of an AutoEdit Variable Database

```
 ON EVENT    = TUTSHOUT
 OWNER M88A     GROUP                        MODE LOG     RUNTSEC
   THRESHOLD
 DESCRIPTION RULE TO SHOUT THE TUTORIAL DATABASE
 DESCRIPTION
=====================================================================
 DO SHOUT    = TO OPER            URGENCY R SYSTEM          CTO282I
 MESSAGE TUTSHOUT BEGUN
 /*            *-----------------------------------------------------
 /*            SET TUTORIAL AS THE DEFAULT DATABASE ACCESSED
 /*            *-----------------------------------------------------
 DO SET   = %%$GLOBAL = TUTORIAL                        GLOBAL  N
 /*          *-----------------------------------------------------
 /*          SHOUT THE DATABASE
 /*          *-----------------------------------------------------
 DO SET   = %%I = 0                                     GLOBAL  N
 DO SET    = %%X = %%$DBCOUNT                           GLOBAL  N
 WHILE    %%I LT# %%X
 DO SET   = %%I = %%I %%$PLUS 1                         GLOBAL  N
 DO SET   = %%$DBROW = %%I                              GLOBAL  N
 DO SHOUT = TO OPER              URGENCY R SYSTEM          CTO282I
 MESSAGE %%NAME %%TSOUSER %%TELEXT
 ENDWHILE
 DO
```

Explanation

Initialize a counter to the number of records in the TUTORIAL database:

```
DO SET=%%I = 0
DO SET=%%X = %%$DBCOUNT
```

For each record, use the DO SHOUT command to display the contents of each database column. The variable names in the MESSAGE line must match the database column names in the TUTORIAL database:

```
WHILE    %%I LT# %%X
.
.
DO SHOUT=TO OPER              URGENCY R SYSTEM          CTO282I
 MESSAGE %%NAME %%TSOUSER %%TELEXT
ENDWHILE
```

Parameter Descriptions

The following pages contain detailed descriptions of all parameters available in the CONTROL-O Rule Definition screen. Parameters are arranged in alphabetical order. Within each parameter, subparameters are arranged according to the order of the fields on the screen.

Each parameter begins on a new page, including:

- a brief explanation of the purpose of the parameter
- the format required for defining the parameter within an extract of the CONTROL-O screen
- general information explaining the parameter and its usage
- where applicable, some practical examples illustrating implementation of the parameter

For more information on the Rule Definition facility, see "Rule Definition Facility" on page 85.

CONFCAL: Basic Scheduling Parameter

Specifies the name of a calendar that is used to confirm whether a rule, which should be scheduled on a specific day (according to other scheduling criteria), is scheduled on that day, shifted to another day, or not scheduled at all.

For more information, see also "DAYS: Basic Scheduling Parameter" on page 307, and "WDAYS: Basic Scheduling Parameter" on page 502.

Figure 119 CONFCAL Parameter Format

```
DAYS                                                    DCAL
                                                        AND/OR
WDAYS                                                   WCAL
MONTHS  1-   2-   3-   4-   5-   6-   7-   8-   9-   10-  11-  12-
DATES
CONFCAL          SHIFT
ENVIRONMENT SMFID        SYSTEM
```

Optional. The CONFCAL subparameters are described in Table 116.

Table 116 CONFCAL Subparameters (part 1 of 2)

Subparameter	Description
CONFCAL	Valid calendar (member) name of 1 through 8 characters. A calendar specified in CONFCAL is not used for rule scheduling, but is used instead for validating schedule dates. Only rules to be scheduled on a day, based on other specified basic scheduling criteria, are checked against the CONFCAL calendar. If the day is a working day in the CONFCAL calendar, the rule is scheduled on that day. Otherwise, the SHIFT parameter determines whether the rule is shifted to (scheduled on) another day or not scheduled.

Table 116 CONFCAL Subparameters (part 2 of 2)

Subparameter	Description
SHIFT	When a rule fails confirmation for scheduling on a given day because the day is not a working day in the CONFCAL calendar, SHIFT determines if and when the rule is alternatively scheduled. Valid values are: ■ ' ' (blank) – No shifting occurs. The rule is not scheduled. Default. ■ > – The rule is scheduled on (shifted to) the next working day, according to the CONFCAL calendar. ■ < – The rule is scheduled on (shifted to) the previous working day, according to the CONFCAL calendar.

General Information

CONFCAL calendars are useful for handling holidays and other scheduling exceptions.

CONFCAL is optional. If not specified, rules are scheduled according to other basic scheduling criteria without confirmation.

CONFCAL should not contain the name of a periodic calendar. If it does, no day will pass the confirmation.

SHIFT cannot be specified unless CONFCAL is specified, and when CONFCAL is specified, SHIFT is optional (that is, a blank defaults to no shifting).

Example

This example is based on the following assumptions:

- The current month is September 2001.
- Working days are defined in calendar WORKDAYS, which contains the following working days (indicated by Y) for September 2001:

```
---S-------------S-------------S-------------S-------------S---
 1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8 9 +
 Y Y Y Y     Y Y Y Y Y     Y Y Y Y Y     Y Y Y Y Y
```

- Start of the week is defined as Monday. Weeks start on the following dates in September: 3rd, 10th, 17th, and 24th.

Schedule the rule on the 1st, 7th and 15th day of the month if they are both Saturdays and working days in WORKDAYS. If the day of the month (1st, 7th, 15th) is not a Saturday, do not schedule the rule. If the day of the month is a Saturday but is not a working day, schedule the rule on the next working day.

```
DAYS    - 1,7,15
AND/OR  - AND
WDAYS   - 6
CONFCAL - WORKDAYS
SHIFT   - >
```

The rule is scheduled on the days of the month indicated by an asterisk, as illustrated in Figure 120.

Figure 120 CONFCAL Parameter Example

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU
			*													*													

CONTINUE SEARCH: Runtime Scheduling Parameter

Determines whether a search for additional rules that meet the selection criteria will continue.

Figure 121 CONTINUE SEARCH Parameter Format

```
IN

TIME FROM      UNTIL      INTERVAL    PRIORITY    CONTINUE SEARCH
```

Mandatory. Valid values are shown in Table 117.

Table 117 CONTINUE SEARCH Values

Value	Description
Y (Yes)	After the Message/Event criteria have been fulfilled, and the DO actions are performed, CONTROL-O continues to search for additional rules that can be triggered by the message. Default.
N (No)	A search of remaining activated rules is not performed.

NOTE

The CONTINUE SEARCH parameter is ignored in rules that are triggered by an ON EVENT or ON RULE statement.

Example

Suppress the $HASP373 message and then search for other rules triggered by this message.

Figure 122 CONTINUE SEARCH Parameter Example

```
RL: $HASP373   LIB CTO.PROD.RULES                                TABLE: SAMPLE
COMMAND ===>                                                     SCROLL===> CRSR
 ------------------------------------------------------------------------------
  ON MESSAGE  = $HASP373
     JNAME          JTYPE         SMFID        SYSTEM
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED       TIMES IN      MINUTES                        And/Or/Not
  OWNER IAOADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION SUPPRESS JOB STARTED MESSAGE. CONTINUE SEARCH = Y
  DESCRIPTION ENABLES CONTROL-O TO SCAN OTHER RULES THAT MATCHE
  DESCRIPTION THE MESSAGE
  DESCRIPTION
==============================================================================
  DO DISPLAY  = SUPPRESS Y ROUTE     DESC    CONSOLEID    CONSOLE
     SYSTEM
  DO
==============================================================================
  DAYS                                                           DCAL
 AND/OR
  WDAYS   ALL                                                    WCAL
  MONTHS  1- Y 2- Y 3- Y 4- Y 5- Y 6- Y 7- Y 8- Y 9- Y 10- Y 11- Y 12- Y
  DATES
  CONFCAL          SHIFT
  ENVIRONMENT SMFID      SYSTEM
==============================================================================
  IN
  TIME FROM      UNTIL           INTERVAL      PRIORITY     CONTINUE SEARCH Y
FILL IN RULE DEFINITION. CMDS: EDIT , SHPF , SCHED , OPT               10.55.26
```

DATES: Basic Scheduling Parameter

Specifies dates, by month and day, when the rule is ordered.

Figure 123 DATES Parameter Format

```
DAYS                                                    DCAL
                                                        AND/OR
WDAYS                                                   WCAL
MONTHS  1-  2-  3-  4-  5-  6-  7-  8-  9-  10-  11-  12-
DATES
CONFCAL         SHIFT
ENVIRONMENT SMFID       SYSTEM
```

Optional. The DATES parameter specifies a valid 4-character date, in either mmdd or ddmm format, depending on site format.

A maximum of 12 dates can be specified.

General Information

The rule is ordered only on the dates specified in the dates list.

This parameter cannot be used with the MONTHS, DAYS and DCAL parameters.

To specify more than 12 dates for one rule, the dates should be defined in a calendar (not in the DATES parameter) and the calendar should be specified in the DCAL or WCAL parameter.

Example

Suppress certain commands on the first and last day of the year.

Figure 124 DATES Parameter Example

```
RL: START JO   LIB CTOW.WORKO.RULES                            TABLE: DATES
COMMAND ===>                                                   SCROLL===> CRSR
+-----------------------------------------------------------------------------+
  ON COMMAND  = START JOB01*
     JNAME          JTYPE         SMFID        SYSTEM       USERID
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED     TIMES IN      MINUTES                        And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION SUPPRESS SOME COMMANDS ON SPECIAL DAYS
  DESCRIPTION
  ==============================================================================
  DO DISPLAY  = SUPPRESS Y ROUTE     DESC    CONSOLEID    CONSOLE
     SYSTEM
  DO SHOUT    = TO OPER              URGENCY R SYSTEM           CTO282I
     MESSAGE COMMAND %%$CMD CANNOT BE EXECUTED TODAY
  DO
  ==============================================================================
  DAYS                                                           DCAL
 AND/OR
  WDAYS                                                          WCAL
  MONTHS  1- Y 2- Y 3- Y 4- Y 5- Y 6- Y 7- Y 8- Y 9- Y 10- Y 11- Y 12- Y
  DATES   0101 3112
  CONFCAL          SHIFT
  ENVIRONMENT SMFID      SYSTEM
  ==============================================================================
  IN
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 17.02.57
```

DAYS: Basic Scheduling Parameter

Specifies the days of the month when the rule should be scheduled for execution.

For more information, see also "WDAYS: Basic Scheduling Parameter" on page 502, and "CONFCAL: Basic Scheduling Parameter" on page 300.

Figure 125 DAYS Parameter Format

```
DAYS                                                    DCAL
                                                        AND/OR
WDAYS                                                   WCAL
MONTHS  1-  2-  3-  4-  5-  6-  7-  8-  9-  10-  11-  12-
DATES
CONFCAL         SHIFT
ENVIRONMENT SMFID       SYSTEM
```

Optional. The DAYS parameter specifies days of the month when the rule should be scheduled, provided other basic scheduling criteria are met. Values for DAYS can be specified by themselves, or they can be specified together with a calendar specified in the DCAL subparameter. DAYS and DCAL can also be specified together with WDAYS and WCAL, which are described under "WDAYS: Basic Scheduling Parameter" on page 502.

DAYS subparameters are shown in Table 118.

Table 118 DAYS Subparameters (part 1 of 2)

Subparameter	Description
DAYS	Days of the month when to schedule a rule. The months in which to order rules are specified in the MONTHS parameter, described on page 432. Various formats can be used to specify DAYS. For example, 3 means the 3rd day of the month, L3 means the 3rd day counting backwards from the end of the month, D1PA means the 1st day in period A. For information on these formats, see "Valid Formats for DAYS" on page 308.

Table 118 DAYS Subparameters (part 2 of 2)

Subparameter	Description
DCAL	Name of a calendar containing a predefined set of dates (referred to as working days) when a rule should be scheduled. The specified calendar name must be a valid member name of 1 through 8 characters.
	Note: A calendar specified in DCAL does not have to exist when defining rules. It must exist only when the rule is ordered.
AND/OR	Conjunctional parameters used to link the DAYS and WDAYS parameters when both are specified. ■ A (AND) – Both DAYS (/DCAL) and WDAYS (/WCAL) criteria must be met in order for a rule to be scheduled. ■ O (OR) – DAYS (/DCAL) or WDAYS (/WCAL) and criteria must be met in order for a rule to be scheduled. Default. If A (AND) is specified when either DAYS or WDAYS is specified (but not both), the missing DAYS or WDAYS value is automatically set to ALL.

Assuming all other basic scheduling criteria are met

- When DAYS are specified without DCAL, the rule is scheduled on the specified days (in the specified months).
- When DCAL is specified without DAYS, the rule is scheduled on all working days marked in the DCAL calendar.
- When DAYS and DCAL are both specified, scheduling depends on the how the working days defined in the calendar and the values and format of the DAYS parameter combine (described below).
- When both DAYS and WDAYS criteria are specified, scheduling depends on the AND/OR subparameter connecting them.

Valid Formats for DAYS

Valid formats for the DAYS parameter, and how they relate to DCAL, are described in the following paragraphs.

Non-periodic Scheduling Formats

In the non-periodic scheduling formats listed in Table 119

- *n* is an integer from 1 through 31
- multiple values can be specified (separated by commas) in any order
- a calendar name specified for DCAL should not designate a periodic calendar

Table 119 Non-Periodic Scheduling Formats

Format	Description
ALL	All days in the month. If ALL is specified, other DAYS values cannot be specified with it. If a DCAL calendar is not defined, schedule the rule on all days in the month. If a DCAL calendar is defined, schedule the rule only on the working days indicated in the calendar.
n,...	Specific days of the month. If a DCAL calendar is not defined, schedule the rule on the specified days. If a DCAL calendar is defined, schedule the rule only when a day is defined as a working day in both the DAYS and the DCAL parameters.
+*n*,...	Days of the month in addition to the working days specified in the DCAL calendar. DCAL is mandatory.
–*n*,...	Order the rule on all days except the *n*th day from the beginning of the month. DCAL is mandatory.
>*n*,...	Order the rule on the indicated day if it is a working day in the DCAL calendar; otherwise, order the rule on the next working day of the month that is not negated by a –*n* value in this parameter. This format is frequently used for holiday handling. DCAL is mandatory.
<*n*,...	Order the rule on the indicated day if it is a working day in the DCAL calendar; otherwise, order the rule on the last previous working day of the month that is not negated by a –*n* value in this parameter. This format is frequently used for holiday handling. DCAL is mandatory.
D*n*,...	Order the rule on the *n*th working day from the beginning of the month. DCAL is mandatory.
–D*n*,...	Order the rule on all working days except the *n*th working day from the beginning of the month. DCAL is mandatory.
L*n*,...	Order the rule on the *n*th day (or *n*th working day if DCAL is defined) counting backwards from the end of the month. DCAL is optional.
–L*n*,...	If DCAL is defined, order the rule on all working days except the *n*th working day counting backwards from the end of the month. If DCAL is not defined, order the rule on all days except the *n*th day, counting backwards from the end of the month. DCAL is optional.

Periodic Scheduling Formats

In the periodic scheduling formats listed in Table 120

- an * can be specified as the *i* value to represent all periods
- an * can be specified as the *n* value in format D*n*P*i* to represent all days
  * is not a valid *n* value in formats –D*n*P*i*, L*n*P*i*, and –L*n*P*i*.
- a period can span any number of days, but by default, no more than 33 days can elapse after the appearance of one identifier in a period until the appearance of the next matching identifier in the same period
  Once a gap of 33 days has been reached, the period automatically closes. The INCONTROL administrator can change the 33-day default.

The name of a periodic calendar must be specified in DCAL.

Table 120 Periodic Scheduling Formats

Format	Description
D*n*P*i*,...	Order the rule on the *n*th day of period *i* from the beginning of the period.
–D*n*P*i*,...	Order the rule on all periodic days of period *i* except the *n*th day of period *i* from the beginning of the period.
L*n*P*i*,...	Order the rule on the *n*th day of period *i* counting backwards from the last day of the period.
–L*n*P*i*,...	Order the rule on all periodic days of period *i* except the *n*th day of period *i* counting backwards from the last day of the period.

General Information

Negative values take precedence over positive values when determining whether or not a rule should be scheduled on a certain date. If a negative value (that is, format –n, –Dn, –Ln, –DnPi, or –LnPi) in either the DAYS or WDAYS field prevents a rule from being scheduled on a date, the rule will not be scheduled on that date even if a positive value (for example, Ln) would otherwise result in the rule being scheduled on that date.

A maximum of eight periodic values of the DnPi, –DnPi, LnPi, and –LnPi types can be designated in any desired order.

If periodic and non-periodic values are mixed when specifying the DAYS parameter, processing will depend on the calendar type specified in the DCAL parameter.

- If a non-periodic calendar is specified in the DCAL parameter, only non-periodic values in the DAYS parameter are processed; periodic values are ignored. In this case, negative periodic values (that is, –DnPi, –LnPi) are also ignored, and do not supersede other values.

- If a periodic calendar is specified in the DCAL parameter, all periodic values and the negative non-periodic value -n in the DAYS parameter are processed; all other non-periodic values are ignored.

The MONTHS parameter is ignored when periodic values are specified in the DAYS parameter.

The DAYS parameter cannot be used with the DATES parameter.

Examples

The examples for this parameter are based on the following assumptions:

- The current month is December 2001.
- Working days are defined in the WORKDAYS calendar, which contains the following working days (indicated by Y) for December 2001.

```
---S-------------S-------------S-------------S-------------S---
 1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8 9 + 1
     Y Y Y Y Y     Y Y Y Y Y     Y Y Y Y Y     Y   Y Y Y     Y
```

- WDAYS are defined as working days beginning on Monday.
- The PERIDAYS periodic calendar contains the following periodic definition for December 2001. These examples assume that all other days of this calendar are blank.

```
---S-------------S-------------S-------------S-------------S---
 1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8 9 + 1
     B C A A B     B C A A B     B C A A B     B C A A B     B
```

- Start of the week is defined as Monday. Weeks start on the following dates in December 2001: 3rd, 10th, 17th, 24th, and 31st.

At the end of each example, asterisks in a December 2001 calendar indicate the days when the rule is scheduled.

Example 1

Schedule the rule on the 17th day and the last day of the month.

```
DAYS     - 17,L01
```

The rule is scheduled on the days of the month indicated by an asterisk in Figure 126.

Figure 126 DAYS Parameter – Example 1

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO
																*														*

Example 2

Schedule the rule on all working days of the month except the 6th day of the month, and also schedule the rule on the 1st day of the month.

```
DAYS     - +1,-6
DCAL     - WORKDAYS
```

The rule is scheduled on the days of the month indicated by an asterisk in Figure 127.

Figure 127 DAYS Parameter – Example 2

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO
*		*	*	*		*			*	*	*	*	*			*	*	*	*	*			*		*	*	*			*

Example 3

Schedule the rule on all working days of the month except the first and last working days, and except the 17th day, of the month.

```
DAYS     - -D1,-17,-L1
DCAL     - WORKDAYS
```

The rule is scheduled on the days of the month indicated by an asterisk in Figure 128.

Figure 128 DAYS Parameter – Example 3

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO
			*	*	*	*			*	*	*	*	*				*	*	*	*			*		*	*	*			

Example 4

Schedule the rule on the 8th day of the month. If it is not a working day, schedule the rule on the closest preceding working day.

```
DAYS     - <8
DCAL     - WORKDAYS
```

The rule is scheduled on the days of the month indicated by an asterisk in Figure 129.

Figure 129 DAYS Parameter – Example 4

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO
						*																								

Example 5

Schedule the rule on the 1st day of period A, and on all days, except the 2nd day, of period B. Do not schedule the rule on the 5th day of the month.

```
DAYS     - -5,D1PA,-D2PB
DCAL     - PERIDAYS
```

The rule is scheduled on the days of the month indicated by an asterisk in Figure 130.

Figure 130 DAYS Parameter – Example 5

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO
		*							*				*			*				*			*				*			*

Example 6

Schedule the rule on each Monday and on the 1st day of the month.

```
DAYS     - 1
AND/OR   - OR
WDAYS    - 1
```

The rule is scheduled on the days of the month indicated by an asterisk in Figure 131.

Figure 131 DAYS Parameter – Example 6

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO
*		*							*							*							*							*

Example 7

Schedule the rule on the 3rd day of the month provided it is a Monday.

```
DAYS    - 3
AND/OR  - AND
WDAYS   - 1
```

The rule is scheduled on the days of the month indicated by an asterisk in Figure 132.

Figure 132 DAYS Parameter – Example 7

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO
		*																												

Example 8

Schedule the rule on the last Monday of the month.

```
DAYS    - L1,L2,L3,L4,L5,L6,L7
AND/OR  - AND
WDAYS   - 1
```

The rule is scheduled on the days of the month indicated by an asterisk in Figure 133.

Figure 133 DAYS Parameter – Example 8

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO
																														*

Example 9

Schedule the rule on the 1st, 7th and 15th days of the month if they are both Saturdays and working days. If the day of the month (1st, 7th, 15th) is not a Saturday, do not schedule the rule. If the day of the month is a Saturday, but it is not a working day, schedule the rule on the next working day.

```
DAYS    - 1,7,15
AND/OR  - AND
WDAYS   - 6
CONFCAL - WORKDAYS
SHIFT   - >
```

The rule is scheduled on the days of the month indicated by an asterisk in Figure 134.

Figure 134 DAYS Parameter – Example 9

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO
		*														*														

Example 10

Schedule the rule to run on the first Friday after the 15th of the month.

```
DAYS      16,17,18,19,20,21,22
AND/OR    AND
WDAYS     5
```

The rule is scheduled on the day of the month indicated by an asterisk in Figure 135.

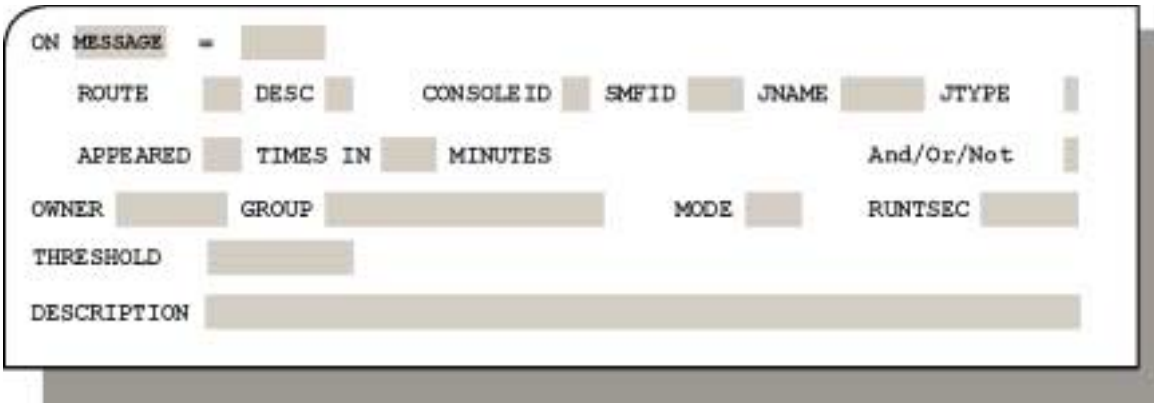
Figure 135 DAYS Parameter – Example 10

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO
																				*										

DESCRIPTION: General Parameter

Description of the rule definition (in free text).

Figure 136 DESCRIPTION Parameter Format



Optional. This parameter may consist of one or more lines of free text. After you have filled in one line, a new blank line is automatically displayed.

General Information

The DESCRIPTION parameter does not operate as a selection parameter. It serves as internal documentation to aid in the identification and description of individual rules.

The first line of the rule description appears as the description of the rule in the Rule List screen, and the first 20 characters of the description are displayed in the Rule Status screen. It is therefore advisable to place the most important information at the beginning of the rule description.

Text for the DESCRIPTION parameter can be specified in any language.

Example

Figure 137 DESCRIPTION Parameter Example

```
RL: SHUTSYS    LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
  ON COMMAND  = SHUTSYS
     JNAME          JTYPE         SMFID        SYSTEM       USERID
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED     TIMES IN      MINUTES                         And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION A NEW COMMAND TO SHUTDOWN THE SYSTEM
  DESCRIPTION
  ==============================================================================
  DO DISPLAY  = SUPPRESS Y ROUTE     DESC    CONSOLEID    CONSOLE
     SYSTEM
  DO COMMAND  = $PI
     WAIT        CONSOLEID    CONSOLE          SYSTEM
     WAITMODE   N
  DO COMMAND  = $PPRT
     WAIT        CONSOLEID    CONSOLE          SYSTEM
     WAITMODE   N
  DO SHOUT    = TO OPER2             URGENCY R SYSTEM           CTO282I
     MESSAGE SYSTEM IS BEING SHUT DOWN
  DO
  ==============================================================================
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF               18.46.46
```

DO statement: Automated Console Action Parameter

Actions taken when ON message or event criteria are satisfied.

Figure 138 DO Parameter Format

```
ON          =
OWNER       GROUP                MODE     RUNTSEC
THRESHOLD
DESCRIPTION
DO
```

Optional. Specify DO statements as follows:

- Type the action keyword (for example, COND) in the **DO** field and press **Enter**.
- In many cases, subparameter fields are displayed. Fill in the subparameters and press **Enter** again.

After entering a DO statement, another DO line is automatically displayed. Multiple DO statements can be specified.

NOTE

To prevent infinite loops and performance degradation, CONTROL-O performs no more than 10000 actions in a rule before terminating the rule.
When DO actions are defined in loops, for example, DO WHILE loops, CONTROL-O counts each iteration of each action.

Table 121 shows valid DO actions. Each is discussed individually later in this chapter.

Table 121 DO Actions

Action	Description
DO ASKOPER	Issue a WTOR (Write To Operator with Reply) message.
DO COMMAND	Issue a specified z/OS, VTAM, or subsystem operator command.
DO COND	Add or delete a prerequisite condition.
DO CTD REQ	Order or force a CONTROL-D report decollating mission.
DO CTOPCMSG	Issue a message to CONTROL-M/Links for Windows NT.
DO DISPLAY	Control the display of the message on the console, or control the execution of a command.
DO DOM	Delete a highlighted, unrollable message from the display.
DO ENDMSG	Delimit DO statements that are processed during message interception in command-response mode or for multi-line messages.
DO EXIT	Exit from a multi-line message block or a DO WHILE block.
DO FORCEJOB	Force a job order under CONTROL-M.
DO IF / DO ELSE / DO ENDIF	Provide Boolean “IF” logic capability allowing for alternative actions to be performed.
DO KSL	Perform a KeyStroke OpenAccess (KOA) script.
DO RESOURCE	Change the quantity of a Quantitative resource.
DO RETURN	Exit from a rule and return to the caller.
DO RULE	Invoke another rule from within the current rule.
DO SET	Assign a value to an AutoEdit variable.
DO SHOUT	Issue a message to a console, TSO user, ROSCOE user, IOA Log or Info/Management using the notification facility.
DO SMSCLASS	Set the SMS class name for a new data set.
DO SMSMSG	Define a message to be displayed in the job log for a new data set.
DO STOPJOB	Stop execution of the remaining steps of the job under which the rule is executing.
DO SYSREQ	Execute system programmer requests.
DO TERMINAT	Terminate the process of the triggering rule and any called rules, and continue to the next rule.
DO TSO	Perform a TSO command, CLIST or REXX procedure.
DO WAIT	Delay subsequent action until any of the specified events are completed.
DO WHILE / DO ENDWHILE	Provide repetition (loop) logic capability so that other DO actions can be performed repetitively.

General Information

DO statements specify actions to be performed when the rule is triggered.

DO statements can be performed repetitively, or conditionally, or both repetitively and conditionally, for example, by using DO IF or DO WHILE statements, which are described on page 360 and page 415 respectively.

Whenever a DO statement is specified, an empty DO statement is added after it. This allows specification of an unlimited number of DO statements.

To add an empty DO statement between two existing DO statements, type the > character over the first letter in the DO field of the earlier DO statement, and press **Enter**.

Example

```
DO >OMMAND
```

COMMAND is restored to its original value when **Enter** is pressed. In this example, the > character disappears.

To delete unwanted DO statements, either delete the DO action keyword and press **Enter** or specify the appropriate Line Editing commands in the Edit environment. For more information on the Edit environment, see Appendix A, “Editing Rule Definitions in the IOA Edit Environment.”

DO ASKOPER: Automated Console Action Parameter

Issues a WTOR (Write to Operator With Reply) message, and waits for the operator's reply.

Figure 139 DO ASKOPER Parameter Format

```
DESCRIPTION

=================================================================

DO ASKOPER  =

   ROUTE      CONSOLEID   CONSOLE                    TIMEOUT

DO
```

Optional. Type **ASKOPER** in the **DO** field and press **Enter**. The subparameters shown in Table 122 are displayed.

Table 122 DO ASKOPER Subparameters (part 1 of 2)

Subparameter	Description
message	Text of the message to be sent to the operator. AutoEdit variables can be included in the message. The maximum length for a message handled by a DO ASKOPER statement, after resolution of embedded AutoEdit variables, is 99 characters. If after resolution of AutoEdit variables the message is longer than 99 characters, the message is truncated and only the first 99 characters are sent to the specified location.
ROUTE	Routing code (from 1 through 128) by which to send the message. For information regarding routing codes, see Appendix B, "KOA VTAM Exception Codes." Mandatory. For additional information regarding routing and descriptor codes, see the IBM publication *Routing and Descriptor Codes, GC38-1102*.
CONSOLEID	2-character console ID where the message will be sent. Optional.

Table 122 DO ASKOPER Subparameters (part 2 of 2)

Subparameter	Description
CONSOLE	Name (not the ID) of the console where the message will be sent. A name of from 1 through 8 alphanumeric characters can be specified.
	Note: If no CONSOLE name is specified, and no value is specified for the CONSOLEID subparameter, the message is issued on the master console of the current system.
TIMEOUT	If specified, the number of seconds (maximum 9999) to wait for the reply to the message, before continuing rule execution. If not specified, the default is 60 seconds. Optional.

General Information

When the rule resumes execution after DO ASKOPER, the %%$ASKRC AutoEdit System variable indicates which event caused the end of the wait. Possible values for %%$ASKRC are shown in Table 123.

Table 123 Values passed to %%$ASKRC by DO ASKOPER Parameter

Value	Description
0	No DO ASKOPER was issued.
4	A reply was received.
522	The specified time-out limit has been reached.

NOTE

If a reply is received, the text of the reply and the reply number are contained in the %%$RPLYTXT, and %%$REPLY AutoEdit System variables, respectively.

Example

When the SHUTTSO command is issued, ask the operator if the shift supervisor has been notified about the pending shutdown. Repeat the question to the operator every 30 seconds until a reply is received (RC=4). Depending on the reply, either continue the shutdown or cancel it.

Figure 140 DO ASKOPER Parameter Example

```
RL: SHUTTSO    LIB CTO.PROD.RULES                                TABLE: TEST1
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
  ON COMMAND  = SHUTTSO
     JNAME          JTYPE         SMFID        SYSTEM       USERID
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED     TIMES IN      MINUTES                        And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION
  ==============================================================================
  DO DISPLAY  = SUPPRESS Y ROUTE     DESC    CONSOLEID    CONSOLE
     SYSTEM
  DO SHOUT    = TO OPER              URGENCY R SYSTEM           CTO282I
     MESSAGE TSO IS BEING SHUT DOWN. SHIFT SUPERVISOR MUST BE NOTIFIED.
  DO SET      = %%RC = 4                                            GLOBAL  N
  WHILE    %%RC NE# 0
  DO ASKOPER  = HAVE YOU NOTIFIED SHIFT SUPERVISOR ? REPLY 'YES' OR 'CANCEL'
       ROUTE      CONSOLEID    CONSOLE                           TIMEOUT 0030
  IF       (%%$ASKRC EQ# 4) AND ((%%$RPLYTXT EQ YES) OR (%%$RPLYTXT EQ CANCEL))
  DO SET      = %%RC = 0                                            GLOBAL  N
  ENDIF
  ENDWHILE
  IF       %%$RPLYTXT EQ YES
  DO COMMAND  = P TSO
     WAIT        CONSOLEID    CONSOLE          SYSTEM
     WAITMODE   N
  FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 18.46.46
```

DO COMMAND: Automated Console Action Parameter

Specifies an operator command to be issued.

Figure 141 DO COMMAND Parameter Format

```
=================================================================
DO COMMAND  =

   WAIT        CONSOLEID    CONSOLE        SYSTEM
   WAITMODE    N
DO COMMAND  =

   WAIT        CONSOLEID    CONSOLE        SYSTEM
   WAITMODE    Y            WAITRESP            TIMEOUT
   RESPMSG

DO
```

Optional. Type **COMMAND** in the **DO** field and press **Enter**. The subparameters shown in Table 124 are displayed:

Table 124 DO COMMAND Subparameters (part 1 of 2)

Subparameter	Description
command	Any valid z/OS, VTAM, or subsystem operator command. When z/OS operates under VM, VM/CP commands can also be entered. An AutoEdit expression can be specified in this field.
WAIT	The number of seconds to wait before CONTROL-O performs the DO COMMAND (0 through 9999). For more information, see "Issuing a Command" on page 326.
CONSOLEID	Console ID where the command should be directed.
CONSOLE	Name (not the ID) of the console where the command should be directed. A name of from 1 through 8 alphanumeric characters can be specified.

Table 124 DO COMMAND Subparameters (part 2 of 2)

Subparameter	Description
SYSTEM	Name of the system where the command should be directed. A name of from 1 through 8 alphanumeric characters can be specified. Mask characters (* and ?) are supported for this subparameter.
	Note: By default, the command is issued to the master console of the current system. ■ A different system can be specified by the SYSTEM subparameter (or by the %%$COMMSYS reserved user-defined variable in a preceding DO SET statement.) ■ A different console can be specified by the CONSOLE or CONSOLEID subparameter. If both a SYSTEM value and a %%$COMMSYS value are specified, the SYSTEM value is used.
WAITMODE	Whether to execute the rule in command-response mode, which is described in "Command-Response Mode" on page 326. Valid values are: ■ Y (Yes) – Wait for responses to the command. ■ N (No) – Do not wait for responses to the command. Default.
The following fields, which are described in detail in "General Information" on page 326, are displayed if WAITMODE is set to Y, and determine when to resume processing (with the next DO statement) after a wait:	
WAITRESP	Whether to use the subsystem console mechanism to intercept responses. Valid values are: ■ Y (Yes) – Use the subsystem console mechanism to intercept responses. ■ N (No) – Do not use the subsystem console mechanism to intercept responses. Default.
TIMEOUT	Maximum number of seconds to wait for responses. *value1* – Maximum number of seconds to wait for the first response. A value from 0 to 9999 can be specified. Default: 10 seconds. *value2* – Maximum number of seconds to wait after the first response has been intercepted. A value from 0 through 9999 can be specified. Default: 10 seconds.
RESPMSG	Message IDs to be intercepted as responses to the command. Up to five message IDs can be specified.

General Information

This parameter issues operator commands, and VM/CP commands if z/OS is operating under VM.

CONTROL-O AutoEdit variables embedded in the DO COMMAND parameter are automatically resolved (replaced) at time of rule activation. For more information about the AutoEdit facility, see Chapter 4, "AutoEdit Facility."

Issuing a Command

The manner in which a command is issued depends on the values of the RUNTSEC runtime scheduling parameter or the WAIT DO COMMAND subparameter.

If runtime security is active for a rule (the RUNTSEC subparameter set to OWNER or TRIGGER), the operator commands issued by a DO COMMAND will always be issued by the CONTROL-O monitor and not under the same address space of the command that triggered the rule.

If a WAIT value is not specified, the command is issued immediately under the same address space of the message or command that triggered the rule. If a WAIT value is specified, even a value of 0, the command is issued by the CONTROL-O monitor after the specified interval. However, the WAIT subparameter applies only to its DO COMMAND parameter, and any subsequent DO statements are performed immediately without regard to the WAIT value.

Command-Response Mode

A rule containing a DO COMMAND statement can be executed in command-response mode. In this mode, messages issued in response to an operator command can be intercepted by CONTROL-O in the same rule that issued the command, and additional actions can be taken depending on these messages.

CONTROL-O can intercept these messages by one or more of the following methods:

- using the z/OS subsystem console mechanism
- using the extended MCS console mechanism
- looking for specific message IDs

When the rule resumes execution after DO COMMAND, the %%$WAITRC system variable indicates the type of event that caused the end of the wait. Valid values for %%$WAITRC are shown in Table 125.

Table 125 Values passed to %%$WAITRC by DO COMMAND Parameter

Value	Description
0	No wait was issued.
12	One of the specified message IDs was detected.
522	The specified time-out limit was reached.

Specifying Command-Response Mode

A rule is placed in command-response mode by typing **Y** (Yes) in the WAITMODE field. The following subparameters determine the methods used by CONTROL-O to intercept messages:

- WAITRESP
  When Y (Yes) is specified, this parameter instructs CONTROL-O to utilize the z/OS subsystem console mechanism. CONTROL-O issues the command on a subsystem console and retrieves all messages issued to the same console in response. Since some products issue response messages without regard to the originating console, this parameter should be used only when the response messages are sent to the originating console. This parameter should not be used if there are no subsystem consoles defined to CONTROL-O.

  The CONSOLEID parameter of the DO COMMAND is ignored when using this method because CONTROL-O selects the console internally.

- RESPMSG *msgid1 msgid2...msgid5*
  This parameter instructs CONTROL-O to intercept only messages having the specified message IDs. Up to five message IDs can be specified.

  This parameter should be used without setting WAITRESP to Y if the response messages could be issued to a console other than the originating console, or if no subsystem consoles have been defined to CONTROL-O.

  This parameter should be specified together with WAITRESP set to Y when all response messages are issued to the originating console and it is desirable to limit message interception to a few (up to five) specified message IDs.

The WAITRESP and RESPMSG parameters can also be specified for VM/CP commands, if z/OS is operating under VM.

The TIMEOUT parameter indicates how long to wait for responses before continuing to the next DO statements. TIMEOUT values are optional.

Processing the Command Response

When a rule is executing in command-response mode, that is, when WAITMODE is set to Y in a DO COMMAND statement, CONTROL-O suspends rule execution until either the specified time-out is reached, or a last line (the last line of a multi-line message) is detected.

A command response can consist of a number of different combinations of messages:

- multiple regular, that is, not multi-line, messages
  No last line is supplied, and command-response mode will remain in effect until the specified time-out is reached.

- a single multi-line message
  The last line supplied in the command response is the actual last line of the response. Command-response mode is terminated when this last line is detected.

- multiple multi-line messages
  The command response will contain more that one last line. Command-response mode is terminated when the first last line is detected. To avoid termination of command-response mode, use a %%$MLLEND control statement to disable the search for the last line. For more information on the %%$MLLEND control statement, see Chapter 4, “AutoEdit Facility.”

Performing DO Statements in Command-Response Mode

It may be desirable to perform a set of DO statements each time an individual response message is intercepted. It may be desirable to accumulate all intercepted response messages and then perform a set of DO statements once. The exact way DO statements are performed is determined by their position relative to the DO ENDMSG statement:

- All DO statements preceding the ENDMSG statement are performed each time an individual message is intercepted. It should also be noted that within these DO statements, the current message can be referenced using the %%M* System variable.

- All DO statements following the ENDMSG statement are performed only once – after accumulation of all intercepted messages. It should also be noted that within these DO statements, individual messages within the accumulation can be referenced using the %%M*n* System variable.

- To avoid recursion, CONTROL-O does not intercept commands issued by a DO COMMAND statement unless the WAIT DO COMMAND subparameter is specified (that is, as long as it is not blank), or OWNER or TRIGGER has been specified for the RUNTSEC subparameter.

- When a command issued by CONTROL-O should trigger another ON COMMAND rule, a WAIT value should be specified for the DO COMMAND so that CONTROL-O can intercept the command. Even a value of 0 enables interception of the DO COMMAND by CONTROL-O.

Examples

Example 1

During IPL, when the $HASP479 message appears with a request for a reply, always answer **Y**. Notice the use of the string search within the message and the use of the %%REPLY AutoEdit variable (the reply number).

```
RL: $HASP479   LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
  ON MESSAGE  = $HASP479
     JNAME          JTYPE         SMFID        SYSTEM
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED       TIMES IN      MINUTES                          And/Or/Not A
  ON STRING   = REPLY                                            COL 065 - 090
     JNAME CICS*    JTYPE         SMFID        SYSTEM
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED     TIMES IN      MINUTES                          And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION REPLY TO MSG 'UNABLE TO OBTAIN CKPT LOCK'
  DESCRIPTION
  ===============================================================================
  DO COMMAND  = R %%REPLY,Y
     WAIT        CONSOLEID    CONSOLE          SYSTEM
     WAITMODE   N
  DO
  ===============================================================================
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                  14.35.47
```

Example 2

During IPL, when the IST020I message (VTAM INITIALIZATION COMPLETE) appears, start TSO and CICS.

```
RL: IST020I    LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
  ON MESSAGE  = IST020I
     JNAME          JTYPE         SMFID        SYSTEM
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED       TIMES IN      MINUTES                          And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION VTAM INITIALIZATION COMPLETE
  DESCRIPTION START TSO AND CICS REGIONS AFTER VTAM WAS INITIALIZED
  DESCRIPTION
  ===============================================================================
  DO COMMAND  = S TSO
     WAIT        CONSOLEID    CONSOLE          SYSTEM
     WAITMODE   N
  DO COMMAND  = S CICSPROD
     WAIT        CONSOLEID    CONSOLE          SYSTEM
      WAITMODE   N
  DO COMMAND  = S CICSTEST
     WAIT        CONSOLEID    CONSOLE          SYSTEM
     WAITMODE   N
  DO
  ===============================================================================
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                  14.38.00
```

Example 3

Check spool utilization periodically. Issue the $DSPL command and analyze the response. If spool utilization is greater than 60%, then add the SPOOL-OVERLOADED STAT condition. If spool utilization is less than 60%, then delete the SPOOL-OVERLOADED STAT condition.

```
RL: SPOOLCHK   LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
  ON EVENT    = SPOOLCHK
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION CHECK SPOOL UTILIZATION
  DESCRIPTION
  ===============================================================================
  DO COMMAND  = $DSPL
     WAIT        CONSOLEID    CONSOLE          SYSTEM
     WAITMODE   Y             WAITRESP Y            TIMEOUT
     RESPMSG
  ENDMSG
  DO SET      = %%A = %%$W2 %%$M1                                   GLOBAL  N
  IF       %%A GT# 60
  DO COND     = SPOOL-OVERLOADED     STAT +
  ELSE
  DO COND     = SPOOL-OVERLOADED     STAT -
  ENDIF
  DO
  ===============================================================================
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                  15.17.16
```

Example 4

Implement a user-defined command to check if a specific job is active. The rule issues the DA *jobname* z/OS operator command in command-response mode. The second word of the response message will contain the job name if the job is executing. After all response messages have been analyzed, the rule “shouts” the job status to the operator.

```
RL: CHKACT*    LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
  ON COMMAND  = CHKACT*
     JNAME          JTYPE         SMFID        SYSTEM       USERID
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED     TIMES IN      MINUTES                         And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION CHECK IF A SPECIFIC JOB IS ACTIVE
  DESCRIPTION
  ==============================================================================
  DO SET      = %%JSTAT = INACTIVE                                 GLOBAL  N
  DO COMMAND  = D A,%%V2
     WAIT        CONSOLEID    CONSOLE          SYSTEM
     WAITMODE   Y             WAITRESP Y            TIMEOUT
     RESPMSG
  IF       %%$W2 %%$M* EQ %%$V2
  DO SET      = %%JSTAT = ACTIVE                                   GLOBAL  N
  ENDIF
  DO DISPLAY  = SUPPRESS A ROUTE     DESC    CONSOLEID    CONSOLE
     SYSTEM
      NEWTEXT
  ENDMSG
  DO SHOUT    = TO OPER              URGENCY R SYSTEM          CTO282I
     MESSAGE JOB %%$V2 IS %%JSTAT
  DO
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 15.26.53
```

Example 5

Issue a MODIFY command to CICS to check system availability. Issue a warning message if CICS does not respond within a specified period.

```
RL: CHECK      LIB CTO.PROD.RULES                                TABLE: TEST1
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
  ON EVENT    = CHECK
  OWNER IOAADMIN GROUP                          MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION ISSUE A MODIFY COMMAND to CICS. ISSUE WARNING IF NO RESPONSE.
  DESCRIPTION
  ==============================================================================
  DO COMMAND  = F CICS,CEMT I
     WAIT        CONSOLEID    CONSOLE          SYSTEM
     WAITMODE   Y             WAITRESP Y            TIMEOUT 0240 0010
    RESPMSG MESSAGE1
  IF       %%$LINES EQ# 0
  DO SHOUT    = TO TSO-SYSMGR        URGENCY R SYSTEM                     CTO282I
     MESSAGE CICS DOES NOT REPLY TO COMMANDS
  ENDIF
  DO
=================================================================================
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                  15.17.16
```

DO COND: Automated Console Action Parameter

Specifies prerequisite conditions to be added or deleted.

Figure 142 DO COND Parameter Format

```
DESCRIPTION

=================================================================

DO COND    =

DO
```

Optional. Type **COND** in the **DO** field and press **Enter**. The subparameters shown in Table 126 are displayed.

Table 126 DO COND Subparameters (part 1 of 2)

Subparameter	Description
condition	Descriptive name of from 1 through 20 characters. Only trailing blanks are permitted.
dateref	4-character date reference. Optional. Valid values are: ■ *date* – a specific date in either mmdd or ddmm format, depending on the site standard ■ ODAT – resolves to the current installation working date. Default ■ DATE – resolves to the system date ■ PREV – resolves to the previously scheduled activation date of the rule, determined when the rule is ordered, or, for a forced rule, ODAT–1 ■ NEXT – resolves to the next scheduling activation date of the rule, determined when the rule is ordered, or, for a forced rule, ODAT+1 ■ STAT – indicates that the condition, such as IMS-ACTIVE, is not date dependent

Table 126 DO COND Subparameters (part 2 of 2)

Subparameter	Description
dateref (cotinued)	**Note:** Before STAT was introduced, the date 0101 was recommended to be used in conditions that were not date-dependent. Unlike 0101, STAT is not a date, and it operates differently. Always use STAT when defining conditions that are not date-dependent.
	■ %%xx – an AutoEdit symbol The symbol can be assigned by a DO SET command in the rule, or it can be a Global variable. ■ **** – all dates ■ $$$$ – all dates
	Note: The **** and $$$$ options are valid only for deleting prerequisite conditions.
condopt	Valid values are: ■ + — Add (create) the prerequisite condition. ■ - — Delete the prerequisite condition. ■ ? — Check the status of the condition.

General Information

When a DO COND statement is specified and the rule is activated, the designated prerequisite conditions are added or deleted from the IOA Conditions file according to the option specified.

A prerequisite condition can define any user-specified situation. The following are examples of prerequisite conditions:

```
IMS-ACTIVE
WEEKEND
SALARY-OK
```

Prerequisite conditions created or deleted using a DO COND statement can trigger (or stop) the activation of other rules, or the execution of processes in CONTROL-M, CONTROL-D and other environments.

CONTROL-O AutoEdit variables embedded in DO COND subparameters are resolved (replaced) at the time of rule activation. For more information about the AutoEdit facility, see Chapter 4, “AutoEdit Facility.”

NOTE

When ? is used in the CONDOPT field to check the status of the condition, a value of Y (Yes) or N (No) is returned to the %%$CONDSTAT AutoEdit variable.

A DO COND statement can be distributed to CONTROL-O on a remote system that is identified by the %%$COMMSYS reserved user-defined variable in a preceding DO SET statement. For more information, see the description of %%$COMMSYS in "Reserved User-Defined Variables" on page 561, and "Performing an Action on Another System" on page 294.

Examples

Example 1

When IMS startup is in process, notify CONTROL-M so jobs that depend on IMS being down will not be submitted.

```
RL: IEF403I    LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-----------------------------------------------------------------------------+
  ON MESSAGE  = IEF403I
     JNAME IMS1     JTYPE S       SMFID        SYSTEM
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED       TIMES IN      MINUTES                        And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION NOTIFY CONTROL-M THAT IMS IS NOT DOWN
  DESCRIPTION
  ==============================================================================
  DO COND     = IMS1-IS-DOWN         STAT -
  DO
  ==============================================================================
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                  12.33.38
```

Example 2

When IMS startup process is completed, notify CONTROL-M so that it can submit jobs that depend on IMS being active.

```
RL: DFS810A    LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
  ON MESSAGE  = DFS810A
     JNAME IMS1     JTYPE S       SMFID        SYSTEM
     ROUTE          DESC          CONSOLEID    CONSOLE
  APPEARED       TIMES IN      MINUTES                        And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION INDICATE IMS1 IS ACTIVE (KEEP REPLY NUMBER + SIGNAL CONTROL-M)
  DESCRIPTION
  ==========================================================================
  DO COND     = IMS1-IS-ACTIVE       STAT +
  DO SET      = %%IMS1_REPLY = %%REPLY                             GLOBAL  Y
  DO
  ==========================================================================
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 12.33.38
```

Example 3

When IMS shuts down, notify CONTROL-M so it can stop or start jobs that depend on IMS status.

```
RL: IEF494I    LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
  ON MESSAGE  = IEF494I
     JNAME IMS1     JTYPE S       SMFID        SYSTEM
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED       TIMES IN      MINUTES                         And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION NOTIFY CONTROL-M THAT IMS IS DOWN
  DESCRIPTION
  ==========================================================================
  DO COND     = IMS1-IS-DOWN         STAT  IMS1-IS-ACTIVE         STAT -
  DO
  ==========================================================================
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 12.33.38
```

Example 4

Check if IMS is down and SHOUT the answer.

```
RL: IEF494I    LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
 +-------------------------------------------------------------------------------+
 ON MESSAGE  = IEF494I
 JNAME IMS1     JTYPE S       SMFID        SYSTEM
 ROUTE          DESC          CONSOLEID    CONSOLE
 APPEARED       TIMES IN      MINUTES                        And/Or/Not
 OWNER IOAADMIN GROUP                          MODE PROD    RUNTSEC
 DESCRIPTION NOTIFY CONTROL-M THAT IMS IS DOWN
 DESCRIPTION
 ==============================================================================
 DO COND     = IMS1-IS-DOWN         STAT ?
 DO SHOUT    = TO OPER              URGENCY R SYSTEM          CTO282I
 MESSAGE CONDSTAT = %%$CONDSTAT
 DO
 ==============================================================================
 D O   O P T I O N S
 ASKOPER  - Ask operator               COMMAND  - Issue operator command
 COND     - Add/delete IOA conditions  CTOPCMSG - Message to CONTROL-O/Server
 DISPLAY  - Message control            DOM      - Delete operator message
 FORCEJOB - Order job under CONTROL-M  KSL      - Activate a KOA script
 RESOURCE - Change IOA resources       RULE     - Call another rule
 SET      - Set CONTROL-O variable     SHOUT    - Notification facility
 STOPJOB  - Stop next job steps        SYSREQ   - System request
 TSO      - Activate TSO command       WAIT     - Completion of events
 >        - Open a new DO line         /* -PF16 - Add comment line
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                  12.33.38
```

DO CTD REQ: Automated Console Action Parameter

Orders or forces all types of CONTROL-D missions.

Figure 143 DO CTD REQ Parameter Format

```
DESCRIPTION

=================================================================
DO CTDREQ  =  MISSION      CAT                DATE        FORCE

              LIBRARY

DO
```

Optional. Type **CTD REQ** in the **DO** field and press **Enter**. The subparameters shown in Table 127 are displayed.

Table 127 DO CTD REQ Subparameters

Subparameter	Description
mission	Name of a CONTROL-D report decollating mission table. Mandatory.
CAT	Report category. If this field is blank, all reports in the specified mission table are ordered or forced. Optional.
DATE	Scheduling date for the jobs. The date can be a specific date (in *mmddyy*, *ddmmyy* or *yymmdd* format, depending on the site standard), or it can have one of the following values: ■ *odate* – resolves to the CONTROL-D installation working date. Default. ■ DATE – resolves to the system date ■ *%%var* – AutoEdit symbol. The symbol can be assigned by a DO SET command in the rule, or it can be a Global variable.
FORCE	Indicates whether to force the request. Valid values are: ■ N–Do not force the request. Order the mission only if the values specified in the DATES field satisfy the mission scheduling criteria. Default. ■ Y–Force the request regardless of scheduling criteria.
LIBRARY	Name of the CONTROL-D mission library containing the specified table. Mandatory.

General Information

CONTROL-O AutoEdit variables embedded in the TABLE, CAT, DATE, and LIBRARY subparameters are automatically resolved (replaced) at the time of rule activation. For more information about the AutoEdit Facility, see Chapter 4, "AutoEdit Facility."

DO CTD REQ can schedule a report under CONTROL-D even if the date is not specified as a scheduling date in the mission's Basic Scheduling parameters. It is similar to the FORCE option in the CONTROL-D Job List screen and Category List screen.

- If the CONTROL-D monitor is active, the DO CTD REQ statement is executed by the CONTROL-D monitor.
- If the CONTROL-D monitor is not active, the DO CTD REQ statement is queued and is performed when the CONTROL-D monitor becomes active.
- If CONTROL-D is not installed, ordering a rule containing a DO CTD REQ statement fails with an error message.

A DO CTD REQ statement can be distributed to CONTROL-O on a remote system that is identified by the %%$COMMSYS reserved user-defined variable in a preceding DO SET statement. For more information, see the description of %%$COMMSYS under the topic "Reserved User-Defined Variables" on page 561, and "Performing an Action on Another System" on page 294.

Example

Request two CONTROL-D missions when CICS* jobs terminate:

- Force the first mission (MIS1) regardless of the ODAT.
- Order the second mission only if the ODAT is a valid scheduling date for the mission.

Figure 144 DO CTD REQ Parameter Example

```
RL: JOBEND     LIB CTO.PROD.RULES                              TABLE: JOB
COMMAND ===>                                                   SCROLL===>
ON JOBEND   = CICS*    JTYPE   SMFID      SYSTEM               And/Or/Not
OWNER N18B     GROUP                         MODE PROD    RUNTSEC
THRESHOLD
DESCRIPTION
==============================================================================
DO CTD REQ  = MISSION MIS1     CAT                      DATE ODAT   FORCE Y
              LIBRARY
DO CTD REQ  = MISSION MIS2     CAT                      DATE ODAT   FORCE N
             LIBRARY CTD.MISSIONS
DO
==============================================================================
DAYS                                                           DCAL
                                                                     AND/OR
WDAYS   ALL                                                    WCAL
MONTHS  1- Y 2- Y 3- Y 4- Y 5- Y 6- Y 7- Y 8- Y 9- Y 10- Y 11- Y 12- Y
DATES
CONFCAL          SHIFT
ENVIRONMENT SMFID      SYSTEM
==============================================================================
IN
TIME FROM      UNTIL           INTERVAL      PRIORITY     CONTINUE SEARCH Y
===== >>>>>>>>>>>>>>> END OF RULE DEFINITION PARAMETERS <<<<<<<<<<<<<<< ===
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 12.33.38
```

DO CTOPCMSG: Automated Console Action Parameter

Specifies a message to be sent to CONTROL-M/Links for Windows NT.

Figure 145 DO CTOPCMSG Parameter Format

```
DESCRIPTION

==========================================================

DO CTOPCMSG =

DO
```

Optional. Type **CTOPCMSG** in the **DO** field and press **Enter**. Type in the message text to be sent to CONTROL-M/Links for Windows NT to the right of the = prompt.

General Information

The message text specified in a DO CTOPCMSG statement is sent to CONTROL-M/Links for Windows NT. Syntax conventions of the message text are site-defined. The same syntax conventions should be used for both specifying the message in CONTROL-O, and interpreting the message in CONTROL-M/Links for Windows NT.

CONTROL-O AutoEdit variables embedded in the specified message text are automatically resolved at time of rule activation. For more information about the AutoEdit facility, see Chapter 4, “AutoEdit Facility.”

Example

If an I/O error is detected in MVSRES (Disk 230), notify the system programmer.

In this example, the convention used in defining the DO CTOPCMSG message text is

action destination information

Figure 146 DO CTOPCMSG Parameter Example

```
RL: IEA000I    LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
  ON MESSAGE  = IEA000I
     JNAME          JTYPE         SMFID        SYSTEM
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED       TIMES IN      MINUTES                        And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION NON-CORRECTABLE I/O ERROR ON MVSRES (UNIT=230)
  DESCRIPTION PAGE THE SYSTEM PROGRAMMER FOR ASSISTANCE
  DESCRIPTION
  ===============================================================================
  IF       %%$V2
  DO SHOUT    = TO OPER2             URGENCY R SYSTEM          CTO282I
     MESSAGE NON-CORRECTABLE I/O ERR ON MVSRES (UNIT=230). PAGE TECH-SUPPORT
  DO CTOPCMSG = PAGE  SYSPROG  DATA-CHECK ON MVSRES (UNIT 230)
  ENDIF
  DO
  ===============================================================================
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                  15.45.09
```

DO DISPLAY: Automated Console Action Parameter

Controls the display of the message on the console or suppresses commands issued from the console.

Figure 147 DO DISPLAY Parameter Format

```
DESCRIPTION
==================================================================
DO DISPLAY = SUPPRESS  ROUTE  DESC  CONSOLEID  CONSOLE

   SYSTEM

   NEWTEXT

DO
```

Optional. Type **DISPLAY** in the **DO** field and press **Enter**. The subparameters shown in Table 128 are displayed.

Table 128 DO DISPLAY Subparameters (part 1 of 2)

Subparameter	Description
SUPPRESS	Whether or not the message or command is suppressed. ■ Y (Yes) — For messages: The message is suppressed (eliminated from the console display but not from the SYSLOG). — For commands: Command execution is suppressed and the commands does not appear in the SYSLOG. ■ C (Console) – Command is suppressed, but the command does appear in the SYSLOG. ■ N (No) — For messages: The message is displayed. Default. — For commands: The command is executed. ■ A (All) — For messages: The message is suppressed from both the console and the SYSLOG. — For commands: Command execution is suppressed (similar to specifying “Y”).

Table 128 DO DISPLAY Subparameters (part 2 of 2)

Subparameter	Description
The following subparameters can be specified only if the SUPPRESS subparameter is set to N.	
ROUTE	A valid routing code, from 1 through 128. Changes the original message route code to the code specified in this field. Optional. For messages only.
DESC	A valid descriptor code, from 1 through 16. Changes the original message descriptor code to the code specified in this field, for example, to prevent message rolling. Optional. For messages only.
CONSOLEID	Redirects the message to the console ID specified in this field. Optional.
CONSOLE	Name (not the ID) of the console where the message or command should be directed. A name of from 1 through 8 alphanumeric characters can be specified.
SYSTEM	Name of the system where the message or command should be directed. A name of from 1 through 8 alphanumeric characters can be specified. Mask characters (* and ?) are supported for this subparameter.
Note: The ROUTE subparameter cannot be used with the CONSOLEID or CONSOLE subparameters. By default, the command or message is inherited by the console of the original command or message. ■ A different system can be specified by the SYSTEM subparameter (or by the %%$COMMSYS reserved user-defined variable in a preceding DO SET statement.) ■ A different console can be specified by the CONSOLE or CONSOLEID subparameter. If both a SYSTEM value and a %%$COMMSYS value are specified, the SYSTEM value is used.	
NEWTEXT	■ For messages only: New message text to be displayed on the console. Optional. ■ For commands: New command text. AutoEdit variables embedded in the text are automatically resolved at the time of rule activation.

General Information

The SUPPRESS subparameter allows suppression of messages that do not require operator intervention from the console and from the SYSLOG. This subparameter can also be used for operator command security – authorizing certain commands for certain environments.

Descriptor codes determine message display characteristics such as deletion, scrolling, highlighting or color. For additional information regarding routing and descriptor codes, refer to the IBM publication *Routing and Descriptor Codes, GC38-1102*.

The NEWTEXT subparameter permits modification of the text of a message, or command syntax, before it appears on the console. It is used, for example, to make a message more meaningful, to standardize installation messages, or to translate messages from English to another language. NEWTEXT also supports CONTROL-O AutoEdit variables. AutoEdit symbols embedded in NEWTEXT are dynamically edited at time of rule activation. This permits, for example, inclusion of data contained in the *n*th word of a message, or the job ID of the job issuing the message, or the reply ID from a reply question. For more information about the AutoEdit facility, see Chapter 4, “AutoEdit Facility.”

The ROUTE subparameter permits rerouting of messages to any number of consoles, using multiple DO DISPLAY statements.

Examples

Example 1

MESSAGE SUPPRESSION

Suppress the $HASP309 message.

```
RL: $HASP309   LIB CTO.PROD.RULES                          TABLE: JOB
COMMAND ===>                                               SCROLL===> CRSR
+-----------------------------------------------------------------------+
  ON MESSAGE  = $HASP309
     JNAME          JTYPE         SMFID        SYSTEM
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED       TIMES IN      MINUTES                       And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION SUPPRESS JES2 'INITIATOR INACTIVE' MESSAGE
  DESCRIPTION
  ==========================================================================
  DO DISPLAY  = SUPPRESS Y ROUTE     DESC    CONSOLEID    CONSOLE
     SYSTEM
  DO
  ==========================================================================
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                12.33.38
```

Example 2

COMMAND SUPPRESSION

Allow only certain commands to be issued from Console ID 10. Notice that a message indicating the suppression of the command is sent to the console issuing the command.

```
RL: *          LIB CTO.PROD.RULES                              TABLE: JOB
COMMAND ===>                                                   SCROLL===> CRSR
+-------------------------------------------------------------------------------+
  ON COMMAND  = *
     JNAME          JTYPE         SMFID        SYSTEM       USERID
     ROUTE          DESC          CONSOLEID 10 CONSOLE
     APPEARED     TIMES IN      MINUTES                          And/Or/Not N
  ON COMMAND  = $D*
     JNAME          JTYPE         SMFID        SYSTEM       USERID
     ROUTE          DESC          CONSOLEID 10 CONSOLE
     APPEARED     TIMES IN      MINUTES                          And/Or/Not N
  ON COMMAND  = D*
     JNAME          JTYPE         SMFID        SYSTEM       USERID
     ROUTE          DESC          CONSOLEID 10 CONSOLE
     APPEARED     TIMES IN      MINUTES                          And/Or/Not
  OWNER IOAADMIN GROUP                          MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION ON WEEKENDS, CONSOLEID 10 IS ONLY ALLOWED TO ISSUE DISPLAY
  DESCRIPTION COMMANDS.
  DESCRIPTION
  ==============================================================================
  DO DISPLAY  = SUPPRESS Y ROUTE     DESC    CONSOLEID    CONSOLE
     SYSTEM
  DO SHOUT    = TO OPER2-10          URGENCY U SYSTEM          CTO282I
     MESSAGE CONTROL-O - UNAUTHORIZED COMMAND - %%CMD
  DO
  ==============================================================================
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 12.33.38
```

Example 3

EDIT A MESSAGE

The standard mount message is reformatted. A copy of the original message is sent to Console ID 10, with the descriptor code 0 (rollable), for documentation purposes.

```
RL: IEC501A    LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
  ON MESSAGE  = IEC501A
     JNAME          JTYPE         SMFID        SYSTEM
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED       TIMES IN      MINUTES                        And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION CHANGE TAPE MOUNT MESSAGE
  DESCRIPTION
  ==============================================================================
  DO DISPLAY  = SUPPRESS N ROUTE     DESC    CONSOLEID    CONSOLE
     SYSTEM
     NEWTEXT >>>>>>>> MOUNT ON   %%V3     VOLSER  %%V4   <<<<<<<<<<
  DO DISPLAY  = SUPPRESS N ROUTE     DESC 00 CONSOLEID 10 CONSOLE
     SYSTEM
     NEWTEXT %%MSG
  DO
  ==============================================================================
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                  12.33.38
```

DO DOM: Automated Console Action Parameter

Specifies a message to be deleted from the display screen of the operator console. The DOM parameter can be used to delete Highlighted, Unrollable operator messages, or WTOR (Write to Operator with Reply) messages for which a response is no longer required. DOM is an abbreviation for “Delete Operator Message.”

Figure 148 DO DOM Parameter Format

```
DESCRIPTION

==========================================================

DO DOM     =

DO
```

Optional. Type **DOM** in the **DO** field and press **Enter**. Specify a message ID, or an AutoEdit symbol that resolves to a message ID, to the right of the = prompt. The format is:

DO DOM=*message_identification_number*

The following AutoEdit System variables can be used to specify the desired message identification number:

- %%$MDOMID – the message ID of the message that triggered the rule
- %%$LDOMID – the message ID of the last message issued or intercepted by CONTROL-O

General Information

Using the DO DOM statement, the CONTROL-O monitor can delete from the console Highlighted, Unrollable or WTOR messages issued by CONTROL-O or issued by other tasks in the system.

Each message is assigned a unique message ID that must be specified when deleting the message from the console. These message identifiers are made available to the rule through the %%$MDOMID and %%$LDOMID AutoEdit System variables.

DO statements that issue or intercept messages, such as DO SHOUT or DO COMMAND, result in the update of the %%$LDOMID variable. User-defined AutoEdit variables, specified in a DO SET statement, can be used to retain specific values of the %%$LDOMID variable for later use.

NOTE

CONTROL-O detects the specified message and triggers the appropriate rule before the message appears on your console. Highlighted, unrollable messages cannot be deleted before they are displayed. Therefore, it is recommended that you use the DO DOM statement in one of two ways:

- Insert a DO WAIT statement before the DO DOM statement, so that processing of the DO DOM statement is delayed until the message is displayed on the console, or
- Save the value of the %%$LDOMID variable in a Global variable, and reference this variable in another rule. This method may be preferable when you want to ensure that a specific action is taken before the message is deleted.

Example

Replace the text in the IEF233A message with alternative text, and suppress the original message. When the original message is deleted by the z/OS DOM mechanism, delete the modified message using a DO DOM statement.

Figure 149 DO DOM Parameter Example

```
RL: IEF233A    LIB CTO.PROD.RULES                              TABLE: JOB
COMMAND ===>                                                   SCROLL===> CRSR
+-----------------------------------------------------------------------------+
  ON MESSAGE  = IEF233A
     JNAME          JTYPE         SMFID        SYSTEM
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED       TIMES IN      MINUTES                          And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION TAPE MOUNT
  DESCRIPTION REPLACE IEF233A MSG WITH A MORE USER FRIENDLY MSG
  DESCRIPTION
  ==============================================================================
  DO DISPLAY  = SUPPRESS N ROUTE     DESC    CONSOLEID    CONSOLE
     SYSTEM
     NEWTEXT PLEASE MOUNT TAPE %%$V4 ON UNIT %%$V3
  DO SET      = %%NEWDOMID=%%$LDOMID                              GLOBAL  N
  DO WAIT     = REPLY                DOM Y             TIMEOUT 9999
     MESSAGE
  DO DOM      = %%NEWDOMID
  DO
  ============================================================================
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                16.47.17
```

DO ENDMSG: Automated Console Action Parameter

Delimits the DO statements processed when multi-line messages, or messages intercepted in command-response mode, are handled.

Figure 150 DO ENDMSG Parameter Format

```
DESCRIPTION
=================================================================
DO COMMAND. . .
   WAITMODE   Y
 .
 .
ENDMSG
 .
DO COMMAND. . .
 .
DO ENDMSG
```

Optional. Type **ENDMSG** in the **DO** field and press **Enter**. The word DO disappears from the screen, and only the word ENDMSG remains displayed on the line.

General Information

DO ENDMSG delimits the DO statements processed when multi-line messages, or messages intercepted in command-response mode, are handled.

When multi-line messages or responses are intercepted, the rule is triggered by each intercepted line. However, unless otherwise specified, through a DO ENDMSG statement, DO statements in the rule are not performed until the rule is triggered by the last line of the message or response.

When specific DO statements should be performed each time the rule is triggered by a line of the message or response, insert a DO ENDMSG statement as follows:

- DO statements that should be performed each time the rule is triggered by a line of the message or response should appear before the DO ENDMSG statement. The current message or response can be referenced using the %%$M* System variable.

- DO statements that should be performed only when the rule is triggered by the last line of the message or response should appear after the DO ENDMSG statement. Individual messages or responses within the accumulation can be referenced using the %%$Mn System variable.

For more information, see "DO COMMAND: Automated Console Action Parameter" on page 324.

Example

This rule implements a user-defined command to check if a specific job is active. The job name is extracted from the text of the user command, and the D A z/OS command is issued for this job in command-response mode. For each response message issued, DO statements between DO COMMAND and ENDMSG suppress the message, and check if the job name appearing in the message is the requested job. The DO SHOUT statement after ENDMSG informs the operator of the status of the job after all messages have been intercepted.

Figure 151 DO ENDMSG Parameter Example

```
RL: CHKACT*    LIB CTO.PROD.RULES                              TABLE: JOB
COMMAND ===>                                                   SCROLL===> CRSR
+-----------------------------------------------------------------------------+
  ON COMMAND  = CHKACT*
     JNAME          JTYPE         SMFID        SYSTEM       USERID
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED     TIMES IN      MINUTES                        And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION CHECK IF SPECIFIC JOB IS ACTIVE
  DESCRIPTION
  ============================================================================
  DO SET      = %%JNAME = %%$V2                                  GLOBAL  N
  DO SET      = %%JSTAT = INACTIVE                               GLOBAL  N
  DO COMMAND  = D A,%%JNAME
     WAIT        CONSOLEID    CONSOLE          SYSTEM
     WAITMODE   Y             WAITRESP Y            TIMEOUT
     RESPMSG
  IF       %%$W2 %%$M* EQ %%JNAME
  DO SET      = %%JSTAT = ACTIVE                                 GLOBAL  N
  ENDIF
  DO DISPLAY  = SUPPRESS A ROUTE     DESC    CONSOLEID    CONSOLE
     SYSTEM
  ENDMSG
  DO SHOUT    = TO OPER              URGENCY R SYSTEM            CTO282I
     MESSAGE JOB %%JNAME IS %%JSTAT
  DO
  ============================================================================
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 15.43.42
```

DO EXIT: Automated Console Action Parameter

Exits from a multi-line message block or from a DO WHILE block.

Figure 152 DO EXIT Parameter Format

```
DO  EXIT   =
DO
```

Optional. Type **EXIT** (or its abbreviation **EX**) in the **DO** field and press **Enter**. Type one of the values shown in **Table 129** to the right of the = prompt.

Table 129 DO EXIT Values

Value	Description
M (Message)	Exit the multi-line message processing block that is ended by the next ENDMSG.
W (While)	Exit the DO WHILE block.

General Information

DO EXIT facilitates exiting from a multi-line message block and from a DO WHILE block.

When DO EXIT is specified for a message, the remaining lines of the message are not processed. Instead, CONTROL-O passes to the first line following the ENDMSG.

When DO EXIT is specified for a DO WHILE block, processing of the DO WHILE block is ended and the rule will continue after the ENDWHILE.

Example

Continuously check if the system is idle. If the $HASP612, “SYSTEM IS IDLE,” message is issued in response to the $DA command, the message block is exited, and processing continues after ENDMSG. If a job is executing, one or more multi-line $HASP890 messages are issued that describe the executing job.

Figure 153 DO EXIT Parameter Example

```
ON EVENT    = IDLE
OWNER N18      GROUP                          MODE LOG     RUNTSEC
THRESHOLD
DESCRIPTION
==========================================================================
DO SET      = %%$MLLEND=NO                                        GLOBAL  N
DO COMMAND  = $DA
   WAIT        CONSOLEID    CONSOLE          SYSTEM
   WAITMODE   Y             WAITRESP Y            TIMEOUT
   RESPMSG $HASP890     $HASP612
IF       %%$MSGID EQ $HASP612
DO SHOUT    = TO OPER              URGENCY R SYSTEM           CTO282I
   MESSAGE SYSTEM IS IDLE
EXIT     MESSAGE
DO
ENDIF
ENDMSG
DO
==========================================================================
```

DO FORCEJOB: Automated Console Action Parameter

Forces jobs under CONTROL-M.

Figure 154 DO FORCEJOB Parameter Format

```
DESCRIPTION

=================================================================

DO FORCEJOB = TABLE        JOB                    DATE

              LIBRARY

DO
```

Optional. Type **FORCEJOB** in the **DO** field and press **Enter**. The subparameters shown in Table 130 are displayed:

Table 130 DOFORCEJOB Subparameters (part 1 of 2)

Subparameter	Description
TABLE	Name of CONTROL-M scheduling table. Mandatory.
JOB	Job name. If this field is blank, all jobs in the specified table are forced. Optional.

Table 130 DOFORCEJOB Subparameters (part 2 of 2)

Subparameter	Description
DATE	Scheduling date for the jobs. Valid values are: ■ *spec_date* – a specific date, in mmddyy, ddmmyy or yymmdd format, depending on the site standard ■ ODAT – resolves to the CONTROL-M installation working date. Default. ■ DATE – resolves to the system date ■ %%xx – an AutoEdit symbol. The symbol can be assigned by a DO SET command in the rule, or it can be a Global variable. ■ ? – check the status of the job in the CONTROL-M Active Jobs file for any date ■ ODAT? – check the status of the job in the CONTROL-M Active Jobs file for the current working date ■ DATE? – check the status of the job in the CONTROL-M Active Jobs file for the current system date
LIBRARY	Name of the CONTROL-M scheduling library containing the specified table. Mandatory.

General Information

CONTROL-O AutoEdit variables embedded in the TABLE, JOB, DATE, and LIBRARY subparameters are automatically resolved (replaced) at time of rule activation. For more information about the AutoEdit Facility, see Chapter 4, "AutoEdit Facility."

DO FORCEJOB schedules a job under CONTROL-M even if the date is not specified as a scheduling date in the Basic Scheduling parameters of the job. It is similar to the FORCE option in the CONTROL-M Table List screen.

If the CONTROL-M monitor is active, the DO FORCEJOB statement is executed by the CONTROL-M monitor.

If the CONTROL-M monitor is not active, the DO FORCEJOB statement is queued and is performed when the CONTROL-M monitor becomes active.

If CONTROL-M is not installed, ordering a rule containing a DO FORCEJOB statement fails with an error message.

DO FORCEJOB can also function similarly to the CONTROL-M CMEM facility. The purpose of the CMEM option in CONTROL-M is to permit CONTROL-M to control jobs that are not submitted by CONTROL-M, or to order new CONTROL-M tables, based on the appearance of a job on spool. The CONTROL-O DO FORCEJOB statement permits ordering of such jobs into CONTROL-M based on the appearance of a message.

CONTROL-O handles DO FORCEJOB statements differently for JOBARRIVAL events and messages, JOBEND events and messages, and all other messages. The differences in handling are explained below. For more information, see the discussion of ON SPOOL jobs in the CMEM chapter of the *CONTROL-M for z/OS User Guide*.

A DO FORCEJOB statement can be distributed to CONTROL-O on a remote system that is identified through the %%$COMMSYS reserved user-defined variable in a preceding DO SET statement. For more information, see the description of %%$COMMSYS in "Reserved User-Defined Variables" on page 561, and "Performing an Action on Another System" on page 294.

The DATE field

When either ?, DATE?, or ODAT? are used in the DATE field to check the status of the job, the values returned can be accessed by using the following variables:

- %%$CTMJGROUP
- %%$CTMJHLDSTAT
- %%$CTMJJOBID
- %%$CTMJJOBNAME
- %%$CTMJLIBRARY
- %%$CTMJMEMNAME
- %%$CTMJODATE
- %%$CTMJORDERID
- %%$CTMJOWNER
- %%$CTMJRBA
- %%$CTMJSTATUS
- %%$CTMJTABLE
- %%$CTMJTYPE
- %%$CTMLINE#
- %%$CTMLINES
- %%$CTMRC

For more information on these variables, see Chapter 4, "AutoEdit Facility."

NOTE

When ? is used in the DATE field, the rule uses an internal DO WAIT TIMEOUT 0 statement in order to force the rule to be processed under the CONTROL-O monitor. The CONTROL-O monitor is where all the relevant data required by the CONTROL-M interface is accessible.

JOBEND Rules or $HASP395/IEF404I Messages

DO FORCEJOB actions specified in a JOBEND Event rule or in a Message rule triggered by $HASP395 (under JES2) or IEF404I (under JES3) are executed only if the terminating job is not under CONTROL-M control. The JOBEND Event rule in this case will not cause a job to be put in WAIT SCHEDULE ON SPOOL state.

JOBARRIVAL Rules or $HASP100 or IAT6101 Messages

$HASP100 or IAT6101 messages indicate the appearance of a job on spool. The process for these messages is the same as the process for CONTROL-M CMEM JOBARRIVAL event. When $HASP100 or IAT6101 is indicated in the ON MESSAGE statement in a rule definition, CONTROL-O intercepts such messages as follows:

1. If the message was issued for a job submitted by CONTROL-M, the DO FORCEJOB is ignored.

2. If the message was not issued for a job submitted by CONTROL-M, CONTROL-M orders the requested table or job. CONTROL-M scans the ordered jobs looking for the job with a MEMNAME that matches the name of the job that triggered the ordering (the job name in the scheduling table can be a job name mask). If one is found, it will appear on the Status screen in WAIT SCHEDULE ON SPOOL state, and is assigned the job ID of the job that triggered the message. If a matching job name is not found, or if more than one job was ordered, the remaining jobs will appear in WAIT SCHEDULE state and CONTROL-M will process these jobs normally.

3. When all Runtime Scheduling criteria of the On Spool job are met, the job is released for execution (from JES held status) by an operator command issued from CONTROL-M. If the job is already running, CONTROL-M will start tracking it. CONTROL-M then controls the job as any other job. It reads the SYSOUT of the job when the job terminates, and analyzes execution results, adds and deletes conditions, performs SHOUTs, and so on. However, there are certain restrictions: Any attempt to rerun the job, either as a cyclic job, by a DO RERUN statement, or by a manual rerun request might fail if the JCL of the job is not found in the library specified in its MEMLIB parameter of the job order.

Other Messages and Events

Messages other than those produced by JOBEND and JOBARRIVAL rules are handled by CONTROL-O as follows:

- If the message was issued by a job submitted by CONTROL-M, or no job ID and job name appear in the message, the job (or table) is handled as usual, meaning, it is ordered and placed on the Active Jobs file.
- If the message was not issued by a job submitted by CONTROL-M, and the message contains a job ID and job name, the job or table is handled similarly to non-CONTROL-M jobs for $HASP100 messages (paragraph #2 above).
- For DSNEVENT or STEP events, the job or table is handled as usual, that is, it is ordered and placed on the Active Jobs file.

Examples

Example 1

Schedule an SMF cleaning job under CONTROL-M when the files are full. CONTROL-M makes sure that it is submitted according to the correct priority, and monitors its execution.

```
RL: IEE361I    LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
  ON MESSAGE  = IEE361I
     JNAME          JTYPE         SMFID        SYSTEM
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED       TIMES IN      MINUTES                        And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION SCHEDULE CLEAN SMF JOB UNDER CONTROL-M
  DESCRIPTION WHEN AN SMF FILE IS FULL
  DESCRIPTION
  ==============================================================================
  DO FORCEJOB = TABLE   SMF          JOB CLEANSMF                   DATE ODAT
                LIBRARY CTM.PROD.SCHEDULE
  DO
  ==============================================================================
  DAYS                                                             DCAL
 AND/OR
  WDAYS   ALL                                                      WCAL
  MONTHS  1- Y 2- Y 3- Y 4- Y 5- Y 6- Y 7- Y 8- Y 9- Y 10- Y 11- Y 12- Y
  DATES
  CONFCAL          SHIFT
  ENVIRONMENT SMFID      SYSTEM
  ==============================================================================
  IN
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                  12.33.38
```

Example 2

Order a CONTROL-M backup job for all manually submitted (backup) jobs whose name starts with B. CONTROL-M processes the job as an On Spool job.

```
RL: $HASP100 LIB   CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-----------------------------------------------------------------------------+
  ON MESSAGE  = $HASP100
     JNAME          JTYPE         SMFID        SYSTEM
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED       TIMES IN      MINUTES                        And/Or/Not
  OWNER SYS3      GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION FORCE ORDERING OF ON SPOOL BACKUP JOBS
  DESCRIPTION
  ==============================================================================
  DO FORCEJOB = TABLE   BACKUP        JOB BKPJOB                      DATE ODAT
                LIBRARY CTM.PROD.SCHEDULE
  DO
  ==============================================================================
  DAYS                                                            DCAL
                                                AND/OR
  WDAYS   ALL                                                     WCAL
  MONTHS  1- Y 2- Y 3- Y 4- Y 5- Y 6- Y 7- Y 8- Y 9- Y 10- Y 11- Y 12- Y
  DATES
  CONFCAL          SHIFT
  ENVIRONMENT SMFID      SYSTEM
  ==============================================================================
  IN
  TIME FROM     UNTIL           INTERVAL      PRIORITY     CONTINUE SEARCH Y
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                  12.33.38
```

DO IF / DO ELSE / DO ENDIF: Automated Console Action Parameter

DO IF, DO ELSE, and DO ENDIF statements provide CONTROL-O with Boolean "IF" logic capability. These statements permit branching based on different criteria. The examples at the end of this section demonstrate combination of these statements.

Figure 155 DO IF/DO ELSE/DO ENDIF Statements Format

```
IF

.
.
.
ELSE

.
.
.
DO ENDIF
```

Type **IF** in the **DO** field and press **Enter**. The word DO is replaced by the word IF on the screen. The same will occur when specifying ELSE and ENDIF in the **DO** fields.

Figure 156 shows the basic format of the IF/ ELSE/ ENDIF control statements.

Figure 156 IF/ ELSE/ ENDIF Statements Format

```
IF conditional-expresssion1 [{AND|OR} conditional-expression2]
 DO action
 DO action
      .
      .
      .
      .
  DO action
ELSE
  DO action
  DO action
      .
      .
      .
      .
ENDIF
```

The IF conditional expression has the following format:

```
IF operand operator operand
```

Valid logical operators are shown in Table 131.

Table 131 Logical Operators for IF Statement

Operator	Definition
EQ EQ#	is equal to
NE NE#	is not equal to
GT GT#	is greater than
GE GE#	is greater than or equal to
LT LT#	is less than
LE LE#	is less than or equal to

Valid Boolean operators are shown in Table 132.

Table 132 Boolean Operators for IF Statement

Operator	Definition
AND	both expressions must be true
OR	either expression must be true

Operators that end with the pound sign (#) are used for numerical comparisons, as opposed to string comparisons.

An operand can be any character string. It can also be composed of AutoEdit symbols. In such cases, it is resolved into a character string before the conditional expression is analyzed at execution time.

Whenever non-numeric comparison operators are specified, operands are compared as character strings from left to right. For example, in the expression

```
IF 91 GT 1000
```

91 is greater than 1000 (because 9 is greater than 1).

An operand cannot be resolved into nulls (as in CLISTs). If it is possible that an operand will resolve into nulls, place a character before the first and second operands.

In the following example, the character B is placed before the two operands:

```
IF B%%A GT B%%C
```

An IF expression must be terminated with an ENDIF statement. The ELSE statement is optional.

General Information

When the IF expression is true, commands between the IF expression and its ELSE statement, or its matching ENDIF statement when no ELSE statement is present, are resolved by CONTROL-O.

When the IF expression is not true, and an ELSE statement exists, only the statements after the ELSE statement are executed. If the ELSE clause does not exist, CONTROL-O stops processing the IF expression and continues executing the rule.

IF expressions can be nested, providing that the above rules are observed. Up to 100 nested IF statements are permitted.

When the rule is saved, logical checks are performed to verify the validity of the rule statements. For example, ENDMSG is not allowed in the IF-ENDIF block. If an error is deleted, an error message is issued upon exiting the rule, and the rule cannot be saved until the syntax is corrected.

NOTE

Rules defined prior to version 6.0.00 are checked for syntax only when CONTROL-O loads the rule. When a rule is rejected, an error message is issued to the monitor SYSPRINT and to the JOBLOG and IOA Log files.

SHOWNEST Command

To see the nesting levels of DO statements, relative to the nesting level of IF statements, type **SHOWNEST** (or **SH**) in the **COMMAND** field. Nesting levels are displayed to the left of each DO statement.

Issue the SHOWNEST command again to suppress the display of the nesting levels.

Examples

Example 1

Add a prerequisite condition only the first time a message is issued. Track the number of times the message is issued using the %%A Global variable.

```
RL: IEF450I    LIB CTO.PROD.RULES                        TABLE: JOB
COMMAND ===>                                          SCROLL===> CRSR
+-----------------------------------------------------------------+
  ON MESSAGE  = IEF450I
     JNAME JOBM43   JTYPE         SMFID        SYSTEM
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED       TIMES IN      MINUTES                 And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION JOB 'JOM43' ABENDED
  DESCRIPTION
  ================================================================
  IF       %%A EQ# 0
  DO COND     = JOBM43-ABENDED       ODAT +
  ENDIF
  DO SET    = %%A = %%A %%$PLUS 1                         GLOBAL  Y
  DO
  ================================================================
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF      12.33.38
```

Example 2

If a job belonging to an owner with a specified prefix abends, notify the owner, and increase the owner's abend counter by 1. If the owner has no abend counter, create one and set its value to 1.

```
RL: IEF450I    LIB CTO.PROD.RULES                        TABLE: JOB
COMMAND ===>                                          SCROLL===> CRSR
+-----------------------------------------------------------------+
  ON MESSAGE  = IEF450I
     JNAME          JTYPE         SMFID        SYSTEM
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED       TIMES IN      MINUTES                 And/Or/Not
  OWNER IOAADMIN  GROUP                        MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION JOB ABENDED - NOTIFY OWNER AND INCREASE ABENDS COUNTER
  DESCRIPTION
  ================================================================
  DO SET    = %%PREF = %%SUBSTR %%$JOBNAME 1 3            GLOBAL  N
  IF       %%OWNERID_%%PREF NE %%UNDEF
  DO SET    = %%OWNER = %%OWNERID_%%PREF                  GLOBAL  N
  DO SHOUT    = TO TSO-%%OWNER       URGENCY R SYSTEM       CTO282I
     MESSAGE %%MSG
  IF       %%ABENDS_%%OWNER NE %%$UNDEF
  DO SET   = %%ABENDS_%%OWNER = %%ABENDS_%%OWNER %%$PLUS 1 GLOBAL Y
  ELSE
  DO SET    = %%ABENDS_%%OWNER = 1                         GLOBAL  Y
  ENDIF
  ENDIF
  DO
  ================================================================
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF      18.50.28
```

Example 3

Send a message to the operator if the CICSTEST job abends in CPU1.

```
RL: IEF450I    LIB CTO.PROD.RULES                                TABLE: SAMPLE
COMMAND ===>                                                     SCROLL===> CRSR
-------------------------------------------------------------------------------
  ON MESSAGE  = IEF450I
     JNAME          JTYPE         SMFID        SYSTEM
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED       TIMES IN      MINUTES                        And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION INFORM THE CICS MANAGER IF CICSTEST ABENDED IN CPU1
  DESCRIPTION
  ==============================================================================
  IF       %%$SMFID EQ CPU1 AND %%$JOBNAME EQ CICSTEST
  DO SHOUT    = TO OPER              URGENCY R SYSTEM           CTO282I
     MESSAGE CICSTEST ABENDED IN CPU1
  ENDIF
  DO
  ==============================================================================
  DAYS                                                           DCAL
  AND/OR
  WDAYS   ALL                                                    WCAL
  MONTHS  1- Y 2- Y 3- Y 4- Y 5- Y 6- Y 7- Y 8- Y 9- Y 10- Y 11- Y 12- Y
  DATES
  CONFCAL          SHIFT
  ENVIRONMENT SMFID      SYSTEM
  ==============================================================================
FILL IN RULE DEFINITION. CMDS: EDIT , SHPF , SCHED , OPT               14.19.04
```

DO KSL: Automated Console Action Parameter

Specifies a KeyStroke OpenAccess (KOA) script to be executed.

Figure 157 DO KSL Parameter Format

```
DESCRIPTION
=================================================================
DO KSL      =

   WAITMODE                                  TIMEOUT        STOP

   INITPROC          SHARELOC                IMMEDIATE

DO
```

Optional. Type **KSL** in the **DO** field and press **Enter**. The subparameters shown in Table 133 are displayed.

Table 133 DO KSL Subparameters (part 1 of 2)

Subparameter	Description
scriptname	Name of the KeyStroke OpenAccess (KOA) script. Mandatory.
arguments	Arguments that are passed to the script. A maximum of nine arguments can be specified.
Note: Format of the *scriptname* and *argument* parameters is: `DO KSL = scriptname arg1 arg2 ... arg9` The *scriptname* and *argument* values are separated by spaces, not by tabs.	
WAITMODE	Whether or not to wait for completion of the script. Mandatory. Valid values are: ■ Y (Yes) — Wait for completion of the script. ■ N (No) — Do not wait for completion of the script.
TIMEOUT	*n* — Number of seconds (maximum 9999) to wait for the completion of the script. Valid only if STOP is Y. Default: 60 seconds. Mandatory.
STOP	Whether or not the KOA script should be stopped when time-out is reached. Valid values are: ■ Y (Yes) — Stop execution of the KOA script when time-out is reached. Default. ■ N (No) — Allow the KOA script to continue after time-out.
INITPROC	Name of a KOA script that handles the establishment, resetting, and termination of an environment (usually a VTAM session) for the KOA script specified in the DO KSL statement. Optional.

Table 133 DO KSL Subparameters (part 2 of 2)

Subparameter	Description
SHARELOC	Whether or not the KOA script specified in the DO statement should share Local and System AutoEdit variables with the calling rule. Mandatory. Valid values are: ■ Y (Yes) — Local and System variables are shared. Variables set by the rule are accessible to the KOA script and variables set by the KOA script are accessible to the calling rule after completion of the script. Variables are shared only if Y (Yes) is also specified in subparameter WAITMODE. ■ N (No) — Variables are not shared. Default.
IMMEDIATE	Whether or not the KOA script should be executed by an Immediate server (described in "Using a Preset Environment" in General Information). Mandatory. Valid values are: ■ Y (Yes) — Execute the KOA script in an Immediate server. ■ N (No) — Queue the KOA script to a Special or General server for execution (described in "Using a Preset Environment" in General Information). Default.

For information regarding KeyStroke OpenAccess (KOA) scripts, refer to the *KeyStroke Language (KSL) User Guide*.

General Information

CONTROL-O AutoEdit variables embedded in the DO KSL statement are automatically resolved (replaced) at time of rule activation. For more information on the AutoEdit facility, see Chapter 4, "AutoEdit Facility."

Wait Completion Mode

Execution of the DO statements following a DO KSL statement can be delayed until the KeyStroke OpenAccess (KOA) script has finished executing, thereby enabling checking of the completion code. This delay is achieved by specifying **Y** (Yes) for the WAITMODE subparameter, which places the rule in Wait (Completion) mode. The TIMEOUT subparameter can be used to specify how long (in seconds) to wait for completion of the script.

When rule execution is resumed, AutoEdit System variable %%KSLRC will contain either the completion code of the script, or the value 522, which means that the TIMEOUT limit was reached before completion of the script.

Wait mode can also be specified for a KSL script execution by specifying a `DO SET=%%WAITKSL = Y` statement before the DO KSL statement. Using this method, a TIMEOUT period can be specified through a `DO SET %%TIMEOUT = value` statement. This method is supported for historical reasons.

Using a Preset Environment

DO KSL statements are executed by CONTROL-O servers. Servers are started tasks that are managed automatically by CONTROL-O. You can define Immediate, Special, and General servers. These server types are discussed in detail in Chapter 5, "CONTROL-O Servers." However, when defining a DO KSL statement, bear in mind the following information:

- Immediate servers

  Immediate servers are useful for either

  — KOA scripts that need to be executed immediately, for example, those that need to bypass the wait queue of the server

  — KOA scripts that should not be executed by a Special or General server, for example, long running scripts that delay the running of other scripts waiting to be executed

  To request an Immediate server, type **Y** (Yes) in the **IMMEDIATE** subparameter.

- Special servers

  Special servers are useful when the same environment is used frequently for KOA scripts. This generally occurs when different KOA scripts (in the same or different rules) use the same VTAM application. Use of the same VTAM session by all these scripts improves performance considerably.

  To request a Special server, do the following:

  1. Type **N** (No) in the IMMEDIATE subparameter, or leave it blank.

  2. Enter the name of the KOA script that handles the preset environment in the INITPROC subparameter.

  3. Ensure that a Special server with the name specified in the INITPROC subparameter has been defined to CONTROL-O.

- General servers

General servers are useful when scripts infrequently use a specific environment and/or do not use a preset environment.

To request a General server, do the following:

1. Type **N** (No) in the IMMEDIATE subparameter, or leave it blank.

2. Ensure that the necessary environment is established by either the script specified in the DO KSL statement or by the script specified in the INITPROC subparameter.

3. Ensure that there is no Special server defined to CONTROL-O with the same name as the script specified in the INITPROC subparameter (if one was specified).

Whenever INITPROC is specified, CONTROL-O ensures that the indicated script is automatically invoked to maintain the preset environment, for example, to perform logon, reset and logoff actions.

Ensure that the script specified in the DO KSL statement does not perform any of the functions performed by the KOA script specified in INITPROC.

Examples of how to use DO KSL and INITPROC scripts are provided in the *Keystroke Language (KSL) User Guide.*

For information on how to define servers, see the *INCONTROL for z/OS Installation Guide*.

Example

Execute a KOA script in Wait mode after CICS is started. Check the completion code of the KOA script and proceed accordingly.

Figure 158 DO KSL Parameter Example

```
RL: DFH1500    LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------+
  ON MESSAGE  = DFH1500
     JNAME          JTYPE         SMFID        SYSTEM
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED       TIMES IN      MINUTES                        And/Or/Not A
  ON STRING   = CONTROL IS BEING GIVEN TO CICS                   COL     -
     JNAME CICS*    JTYPE         SMFID        SYSTEM
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED     TIMES IN      MINUTES                          And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION USE KOA SCRIPT TO PERFORM INITIAL TASKS AFTER CICS STARTUP
  DESCRIPTION
  ==========================================================================
  DO SET      = %%APPLID = %%$V2                                   GLOBAL  N
  DO KSL      = CICSINIT %%%V2
     WAITMODE   Y                                       TIMEOUT 9999    STOP Y
     INITPROC        SHARELOC Y                         IMMEDIATE Y
  IF       %%$KSLRC EQ# 0
  DO COND     = %%APPLID-RUNNING     STAT +
  ELSE
  DO SHOUT    = TO TSO-SYSMNGR       URGENCY R SYSTEM           CTO282I
     MESSAGE INITIALIZATION OF %%APPLID FAILED
  ENDIF
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 18.06.33
```

DO RESOURCE: Automated Console Action Parameter

Changes the quantity of a Quantitative resource.

Figure 159 DO RESOURCE Parameter Format

```
DESCRIPTION

==========================================================

DO RESOURCE =

DO
```

Optional. Type **RESOURCE** in the **DO** field and press **Enter**. The subparameters shown in Table 134 are displayed.

Table 134 DO RESOURCE Subparameters

Subparameter	Description
name	Name of the resource whose quantity is to be changed (1 through 20 characters). Only trailing blanks are allowed. Mandatory.
quantity	For each resource specified, an associated quantity is mandatory. The quantity must be a 4-digit number (0000 through 9999). To the right of the quantity, enter one of the following: ■ + – Increases the quantity by the specified amount. ■ – – Decreases the quantity by the specified amount. ■ ? – Check the status of the resource. ■ blank–Sets a new quantity for the resource.

General Information

This parameter is used to control the use of resources in the installation, such as tape drives, CPU, DB access. Upon rule activation, CONTROL-O can change the quantity of a Quantitative resource.

CONTROL-O AutoEdit variables embedded in the DO RESOURCE name subparameter are automatically resolved (replaced) at the time of rule activation. For more information about the AutoEdit facility, see Chapter 4, “AutoEdit Facility.”

- If the CONTROL-M monitor is active, the DO RESOURCE statement is executed by the CONTROL-M monitor.
- If the CONTROL-M monitor is not active, the DO RESOURCE statement is queued and is performed when the CONTROL-M monitor becomes active.
- If CONTROL-M is not installed, ordering a rule containing a DO RESOURCE statement fails with an error message.
- If the message that triggered the rule was issued from a job submitted by CONTROL-M, the request is passed to CONTROL-M. CONTROL-M performs checks to determine whether or not it has already allocated the resource to the job. If it has been allocated, the DO RESOURCE statement is ignored. This behavior allows CONTROL-O to work in synchronization with the CONTROL-M resource allocation algorithm, while at the same time adjusting the Quantitative resource (that is, the MAX RESOURCE counter) to external changes.

A DO RESOURCE statement can be distributed to CONTROL-O on a remote system that is identified by the %%$COMMSYS reserved user-defined variable in a preceding DO SET statement. For more information see the description of %%$COMMSYS in "Reserved User-Defined Variables" on page 561, and "Performing an Action on Another System" on page 294.

NOTE

When ? is used to check the status of the resource, a value is returned to the %%$CTMRC, %%$CTMRESMAX, %%$CTMRESCURR, and %%$CTMRESPRI AutoEdit variables. For more information on these AutoEdit variables, see Chapter 4, "AutoEdit Facility."

When ? is used in the QUANTITY field, the rule uses an internal `DO WAIT TIMEOUT 0` statement in order to force the rule to be processed under the CONTROL-O monitor. The CONTROL-O monitor is where all the relevant data required by the CONTROL-M interface is accessible.

Examples

Example 1

Notify the CONTROL-M monitor of changes in the quantity of available tape drives. CONTROL-M will adjust the amount of its Quantitative resources.

```
RL: IEC501I*   LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
 +-------------------------------------------------------------------------------+
 ON MESSAGE  = IEC501I*
 JNAME          JTYPE         SMFID        SYSTEM
 ROUTE          DESC          CONSOLEID    CONSOLE
 APPEARED       TIMES IN      MINUTES                        And/Or/Not
 OWNER IOAADMIN GROUP                          MODE PROD    RUNTSEC
 DESCRIPTION UPDATE RESOURCE QUANTITITES (MOUNT MESSAGE)
 DESCRIPTION
 ==============================================================================
 DO RESOURCE = TAPE               0001 -
 DO
 ============================================================================
 D O   O P T I O N S
 ASKOPER  - Ask operator               COMMAND  - Issue operator command
 COND     - Add/delete IOA conditions  CTOPCMSG - Message to CONTROL-O/Server
 DISPLAY  - Message control            DOM      - Delete operator message
 FORCEJOB - Order job under CONTROL-M  KSL      - Activate a KOA script
 RESOURCE - Change IOA resources       RULE     - Call another rule
 SET      - Set CONTROL-O variable     SHOUT    - Notification facility
 STOPJOB  - Stop next job steps        SYSREQ   - System request
 TSO      - Activate TSO command       WAIT     - Completion of events
 >        - Open a new DO line         /* -PF16 - Add comment line
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                  09.18.53
```

Example 2

Query the status of a resource in CONTROL-M.

```
RL: IEC501I*   LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-----------------------------------------------------------------------------+
__ ON MESSAGE  = CHECKRES
__    JNAME          JTYPE      SMFID        SYSTEM          USERID
__    ROUTE          DESC       CONSOLEID    CONSOLE
__    APPEARED       TIMES IN      MINUTES                       And/Or/Not
__ OWNER M88B     GROUP                          MODE LOG     RUNTSEC
__ THRESHOLD
__ DESCRIPTION CHECKS CONTROL-M FOR A RESOURCE
__ DESCRIPTION
__ ============================================================================
__ DO RESOURCE = MAURIKANTER          0008 ?
__ IF       %%$CTMRC EQ# 0
__ DO SHOUT    = TO OPER              URGENCY R SYSTEM          CTO282I
__    MESSAGE RESOURCE FOUND
__ DO SHOUT    = TO OPER              URGENCY R SYSTEM          CTO282I
__    MESSAGE %%$CTMRESMAX %%$CTMRESCURR %%$CTMRESPRI
__ ENDIF
__ IF       %%$CTMRC EQ# 4
__ DO SHOUT    = TO OPER              URGENCY R SYSTEM          CTO282I
__    MESSAGE RESOURCE NOT FOUND
__ ENDIF
__ IF       %%$CTMRC GT# 4
__ DO SHOUT    = TO OPER              URGENCY R SYSTEM          CTO282I
__    MESSAGE ERROR USING CONTROL-M INTERFACE - %%$CTMRC
__ ENDIF
__ DO
__ ============================================================================.
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 09.18.53
```

DO RETURN: Automated Console Action Parameter

Exit from the rule and return (up one level) to the caller, which is either a calling rule or CONTROL-O.

Figure 160 DO RETURN Parameter Format

```
DO  RETURN  =

DO
```

Optional. Type **RETURN** (or its abbreviation **RET**) in the **DO** field, and press **Enter**.

General Information

DO RETURN is used to end the processing of the current rule. When the current rule was called from another ON RULE type, control is returned to the calling rule. Otherwise, control is returned to CONTROL-O, which continues searching for additional rules.

Example

Check for the DSI530I Netview message. If the second word in the message is AAUTCNMI, set the status to UP and end the rule.

Figure 161 DO RETURN Parameter Example

```
RL: DFH1500    LIB CTO.PROD.RULES                                TABLE: JOB
  COMMAND ===>                                                    SCROLL===> CRSR
+-------------------------------------------------------------------------------+
ON MESSAGE  = DSI530I
   JNAME          JTYPE      SMFID        SYSTEM          USERID
   ROUTE          DESC       CONSOLEID    CONSOLE
   APPEARED       TIMES IN      MINUTES                        And/Or/Not
OWNER IOADMIN  GROUP                          MODE LOG     RUNTSEC
THRESHOLD
DESCRIPTION NLDM/NPDA IS ACTIVE
===============================================================================
IF       %%$V2 EQ  ''AAUTCNMI''
DO SET      = %%STATUS_NLDM = UP                                 GLOBAL  Y
RETURN
ENDIF
IF       %%$V2 EQ  ''BNJDSERV''
DO SET      = %%STATUS_NPDA = UP                                 GLOBAL  Y
ENDIF
DO
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                  09.18.53
```

DO RULE: Automated Console Action Parameter

Invokes another rule from within the current rule.

Figure 162 DO RULE Parameter Format

```
DO RULE    =                                          OWNER
   TABLE        LIBRARY
    SYSTEM       SHARELOC        TIMEOUT
DO
```

Optional. Type **RULE** (or its abbreviation **RU**) in the **DO** field and press **Enter**. The subparameters shown in Table 135 are displayed.

Table 135 DO RULE Subparameters (part 1 of 2)

Subparameters	Description
rulename + args	Name of the rule to be activated. A maximum of 8 characters can be specified.
	Note: The specified rule name, which is the name of the rule to be activated, must belong to a rule containing an ON RULE parameter and must match the rule name specified in that ON RULE parameter. Optional input and output arguments to be passed to the rule can be specified, following *rulename* and separated from it by a blank. Arguments must be valid AutoEdit expressions.
OWNER	Value of the OWNER field in the invoked rule. This subparameter is used for security purposes. Optional.
TABLE	Name of the CONTROL-O rule table where the invoked rule resides. When specified, ALL implies that the invoked rule may reside in any rule table. If a table name is not specified, the current rule table is assumed by default.
LIBRARY	Name of the CONTROL-O rule table library where the invoked rule resides. When specified, ALL implies that the invoked rule may reside in any rule table library. If a library name is not specified, the current rule table library is assumed by default.

Table 135 DO RULE Subparameters (part 2 of 2)

Subparameters	Description
SYSTEM	Name of the system where the command should be directed. A name of from 1 through 8 alphanumeric characters can be specified. Mask characters (* and ?) are supported for this subparameter.
	Note: By default, the command is issued to the master console of the current system. ■ A different system can be specified by the SYSTEM subparameter, or by the %%$COMMSYS reserved user-defined variable in a preceding DO SET statement. ■ A different console can be specified by the CONSOLE or CONSOLEID subparameter. If both a SYSTEM value and a %%$COMMSYS value are specified, the SYSTEM value is used.
SHARELOC	Whether local variables are shared. ■ Y (YES) – Local variables can be shared with the script by using XAM. ■ N (NO) – Local variables are not shared. Default.
TIMEOUT	The number of seconds (maximum 9999) to wait for the completion of the TSO command, CLIST or REXX procedure. Valid only if STOP is set to Y. Optional. Default: 60 seconds.

General Information

When a DO RULE statement is encountered during rule processing, CONTROL-O invokes the specified rule. When processing of the invoked rule is completed, processing continues sequentially from the point after the DO RULE statement in the initial (calling) rule.

When a DO RULE statement is executed, the rule is searched for among the rules in the active environment according to the specified rule name, table, library, and owner. If the rule is found but is not active (for example, if the runtime scheduling criteria are not satisfied), the “invoked” rule is not executed and the calling rule continues execution with the next DO statement.

While a called rule is active, both the called rule and the calling rule share the same AutoEdit System variable and Local variable environment. The calling rule can pass an argument string as input to the called rule. This argument string may contain AutoEdit expressions that are resolved at time of rule execution. The argument string may be accessed by the called rule through the %%$ARGS System variable. If a called rule calls another rule, the %%$ARGS values passed in the earlier call is overwritten by the %%$ARGS values passed by the later call. For more information about the AutoEdit facility, see Chapter 4, “AutoEdit Facility.”

A rule specified with an ON RULE statement can be invoked any number of times by DO RULE calls.

A called rule can invoke other rules through the DO RULE parameters. Nesting of DO RULE calls (for example, rule 1 calls rule 2, which calls rule 3, and so on), up to 20 deep, is supported. A rule can be called recursively.

A DO RULE statement can be distributed to CONTROL-O on a remote system that is identified by the %%$COMMSYS reserved user-defined variable in a preceding DO SET statement. For more information, see the description of %%$COMMSYS in "Reserved User-Defined Variables" on page 561, and "Performing an Action on Another System" on page 294.

When a DO RULE statement requests execution of a remote rule, CONTROL-O transfers the system AutoEdit variables. Local AUTOEDIT variables are not transferred to the remote CONTROL-O.

To exit a called rule, specify either DO RETURN or DO TERMINAT, as follows:

- To return up one level to the calling rule, specify DO RETURN.
- To exit all calling rules at all levels and return directly to CONTROL-O, specify DO TERMINAT.

Example

For each started task in the list, invoke the STOPSTC rule.

Figure 163 DO RULE Parameter Example

```
RL: SHUTSYS    LIB CTO.PROD.RULES                        TABLE: JOB
COMMAND ===>                                                   SCROLL===> CRSR
+-----------------------------------------------------------------------------
  ON COMMAND  = SHUTSYS
     JNAME          JTYPE         SMFID        SYSTEM       USERID
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED     TIMES IN      MINUTES                         And/Or/Not
  OWNER IOAADMIN GROUP                                 MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION SHUTDOWN - STOP A LIST OF STARTED TASKS (DO RULE EXAMPLE)
  DESCRIPTION THIS RULE ASSUMES THAT A LIST OF STARTED TASKS TO BE STOPPED
  DESCRIPTION IS DEFINED VIA GLOBAL VARIABLES %%STC_1, %%STC_N, AND THAT
  DESCRIPTION THE NUMBER OF STARTED TASKS IS DEFINED IN %%STC_NUMBER
  DESCRIPTION
  ==============================================================================
  /*
  /* FOR EACH STARTED TASK IN THE LIST, INVOKE RULE STOPSTC.
  /* PARAMETERS PASSED ARE THE STC NAME AND THE TIMEOUT VALUE.
  /*
  DO SET      = %%I = 1                                          GLOBAL  N
  WHILE    %%I LE# %%STC_NUMBER
  DO RULE     = STOPSTC %%STC_%%I 30                        OWNER  IOAADMIN
     TABLE               LIBRARY
  DO SET      = %%I = %%I %%%$PLUS 1                             GLOBAL  N
  ENDWHILE
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                13.18.04
```

DO SET: Automated Console Action Parameter

Assigns a value to an AutoEdit variable (or performs AutoEdit functions).

Figure 164 DO SET Parameter Format

```
DESCRIPTION

=================================================================

DO SET      =                                                GLOBAL

DO
```

Optional. Type **SET** in the **DO** field and press **Enter**. The subparameters shown in Table 136 are displayed.

Table 136 DO SET Subparameters

Subparameter	Description
equation	A valid statement specified to the right of the = prompt in one of the following formats: ■ *%%user_symbol=value* ■ *%%user_symbol=expression* In these statements, — *%%user-symbol* is a user-defined AutoEdit variable — *expression* is a combination of constants, CONTROL-O AutoEdit operators, functions, and Global or System variables that are resolved before assignment. ■ *%%autoedit_control_statemt*
GLOBAL	Valid values are: ■ Y (Yes)–The value specified is saved and can be accessed by other CONTROL-O rules, by successive activations of the same rule, or by the CONTROL-M AutoEdit facility. ■ N (No)–The value is set for the current activation of this rule only. Default.

General Information

To take full advantage of this parameter, a familiarity with CONTROL-O AutoEdit variables is essential. A complete description of the AutoEdit facility is contained in Chapter 4, "AutoEdit Facility," especially the section "Using the DO SET Statement" on page 569.

The DO SET parameter permits setting of values to variables (or symbols). These variables can then be referenced in other DO statements in the rule definition during rule activation.

Setting GLOBAL to N, the default, indicates that the DO SET variable assignment is applicable for local purposes only – that is, for the current activation of the rule.

Setting GLOBAL to Y saves the value for global use by other CONTROL-O rules, by subsequent activations of the same rule, and optionally for use by the CONTROL-M AutoEdit facility. Setting GLOBAL to Y is also used in an XAE database, which is discussed in the following topic.

Using XAE AutoEdit Variable Databases

XAE variable databases are Sysplex-wide AutoEdit variable databases). Like other AutoEdit variable databases, these are defined using the Variable Database Definition facility. The variables are resolved by AutoEdit expressions. Once variables are loaded by CONTROL-O into memory, the variables can be changed using DO SET, in exactly the same way as for standard databases. Global AutoEdit variables in an XAE database can be accessed by other rules across a Sysplex. For more information about the XAE variables, see "Using an XAE AutoEdit Variable Database" on page 571.

Using Global Variable Members

A primary usage of the Global variables is to set globally accessed flags, or counters, for example, the current IMS reply number.

When CONTROL-O is started, members of the Global AutoEdit library and AutoEdit variable databases where Global variables reside are loaded into memory. Any updates or additions to Global variables (by rules or KOA scripts) are kept in memory by CONTROL-O and are available to all other rules. For more information, see the CONTROL-O chapter in the *INCONTROL for z/OS Administrator Guide.*

By default, a Global AutoEdit variable is assigned to the $GLOBAL member. However, a Global AutoEdit variable can be assigned to a specific member by one of the methods described in the following paragraphs.

A Global AutoEdit variable can be assigned to a specific member by the statement

```
DO SET=%%member\variable GLOBAL = Y
```

A Global AutoEdit variable, or a set of Global AutoEdit variables, can be assigned to a specific member or variable database by first specifying the member or database by the statement

```
DO SET=%%$GLOBAL = member
```

followed by specification of a statement for each variable, in the format

```
DO SET=%%variable = value GLOBAL=Y
```

Each set variable with GLOBAL set to Y is assigned to the specified Global member.

When referencing a variable in the default Global member (usually $GLOBAL, if not specified otherwise), the member specification can be omitted and the variable is referenced as

%%variable

Using AutoEdit Variable Databases

Databases of Global variables can be defined using the Online Variable Database Definition facility. These databases are loaded together with the conventional Global variable members during startup of CONTROL-O.

To change the value of a variable in a variable database:

1. Specify the database as the current Global variable pool. For example

   ```
   DO SET=%%$GLOBAL = DBNAME GLOBAL  N
   ```

2. Specify the row in the database where the variable is located. For example

   ```
   DO SET=%%$DBROW = 3 GLOBAL  N
   ```

3. Specify the column in the specified row and the value for the variable in that column. For example

   ```
   DO SET=%%COLNAME = 57 GLOBAL  Y
   ```

The %%$DBCOUNT AutoEdit System variable, which indicates the number of rows in the current variable database, can be used to loop through the variables in a given column.

NOTE

AutoEdit Variable databases are not stored in partitioned data sets (PDS members), and therefore cannot be accessed by CONTROL-M (through the use of %%LIBSYM and %%MEMSYM control statements).

For complete rules on using AutoEdit variable databases, see Examples 4 and 5.

For more information on the Variable Database Definition facility, see "IOA Variables Database Facility" on page 203.

CONTROL-O Variable databases can be checkpointed using the WRITEGLOBAL operator command. For more information on this command, see the CONTROL-O chapter of the *INCONTROL for z/OS Administrator Guide*.

NOTE

Global variables become available to CONTROL-M only when a specific request is made to CONTROL-O using the operator command

```
F CONTROLO,WRITEGLOBAL{=membername}
```

This member can be accessed by CONTROL-M AutoEdit control statements such as %%LIBSYM and %%MEMSYM.

CONTROL-O AutoEdit variables assigned or embedded in a DO SET statement expression are resolved (replaced) during rule activation. The DO SET statement can also contain AutoEdit control statements such as %%$RESOLVE. CONTROL-O interprets all the AutoEdit statements sequentially.

NOTE

CONTROL-O ignores leading blanks when resolving or setting an AutoEdit variable. To force leading blanks, use the %%$BLANK*n* System variable.

Examples

Example 1

CONTROL-O can set a counter to log the number of occurrences of a certain type of abend.

```
DO SET=%%PRODABEND = %%PRODABEND %%$PLUS 1 GLOBAL Y
```

The following DO SHOUT statement issues a message to the log regarding the abends:

```
DO SHOUT=%%PRODABEND PRODUCTION ABENDS HAVE OCCURRED
```

Example 2

The STATUS Global variable can be set to UP in the IMS Global member using the following methods:

```
DO SET=%%IMS\STATUS=UP                GLOBAL Y
```

This DO SET statement is equivalent to the two following DO SET statements:

```
DO SET=%%$GLOBAL = IMS
DO SET=%%STATUS = UP                  GLOBAL Y
```

The following DO SHOUT statement issues a message to the log about the status of IMS applications:

```
DO SHOUT TO OPER TEXT IMS IS %%IMS\STATUS
```

Example 3A

Retain the IMS/DC reply number for future use by another rule.

```
RL: DFS810A    LIB CTO.PROD.RULES                              TABLE: JOB
COMMAND ===>                                                   SCROLL===> CRSR
+-----------------------------------------------------------------------------+
  ON MESSAGE  = DFS810A
     JNAME IMS1     JTYPE S       SMFID        SYSTEM
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED       TIMES IN      MINUTES                        And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION IDENTIFY IMS IS READY (KEEP REPLY NUMBER + SIGNAL CONTROL-M)
  DESCRIPTION
  ==============================================================================
  DO COND     = IMS1-IS-ACTIVE       STAT +
  DO SET      = %%IMS1_REPLY = %%REPLY                            GLOBAL  Y
  DO
  ==============================================================================
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 12.33.38
```

The following example shows how this retained reply number is used.

Example 3B

Use the IMS/DC reply number to issue an IMS command when needed.

```
RL: DFSxxxx    LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
  ON MESSAGE  = DFSxxxx
     JNAME IMS1     JTYPE S       SMFID        SYSTEM
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED       TIMES IN      MINUTES                        And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION
  ==============================================================================
  DO COMMAND  = %%IMS1_REPLY  /STA DBD
     WAIT        CONSOLEID    CONSOLE          SYSTEM
     WAITMODE   N
  DO
  ==============================================================================

FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                  12.33.38
```

Example 4

Specify following series of values for variables in an AutoEdit Variable database.

```
RL: TESTDB01   LIB CTO.PROD.RULES                                TABLE: VARULES
COMMAND ===>                                                     SCROLL===> CRSR
-------------------------------------------------------------------------------
  ON EVENT    = TESTDB01
  OWNER M88A     GROUP                         MODE LOG     RUNTSEC
  THRESHOLD
  DESCRIPTION SPECIFY VARIABLES IN AN AUTOEDIT VARIABLE DATABASE
  DESCRIPTION
  ==============================================================================
  /* SET THE DEFAULT POOL TO THE DATABASE POOL
  DO SET      = %%$GLOBAL = MYDBPOOL                                GLOBAL  N
  /* RESET ROW COUNTER
  DO SET      = %%ROW = 0                                           GLOBAL  N
  /* INFORM WE WANT TO ACCESS ROW 1
  DO SET      = %%ROW = %%ROW %%$PLUS 1                             GLOBAL  N
  DO SET      = %%$DBROW  = %%ROW                                   GLOBAL  N
  /* SET ROW 1 VALUES AS DESIRED
  DO SET      = %%FIELD01 = ANYVALUE11                              GLOBAL  Y
  DO SET      = %%FIELD02 = ANYVALUE12                              GLOBAL  Y
  /* INFORM WE WANT TO ACCESS ROW 2
  DO SET     = %%ROW = %%ROW %%$PLUS 1                              GLOBAL  N
  DO SET     = %%$DBROW  = %%ROW                                    GLOBAL  N
  /* SET ROW 2 VALUES AS DESIRED
  DO SET     = %%FIELD01 = ANYVALUE21                               GLOBAL  Y
  DO SET      = %%FIELD02 = ANYVALUE22                              GLOBAL  Y
  FILL IN RULE DEFINITION. CMDS: EDIT , SHPF , SCHED , OPT               14.23.00
```

Example 5

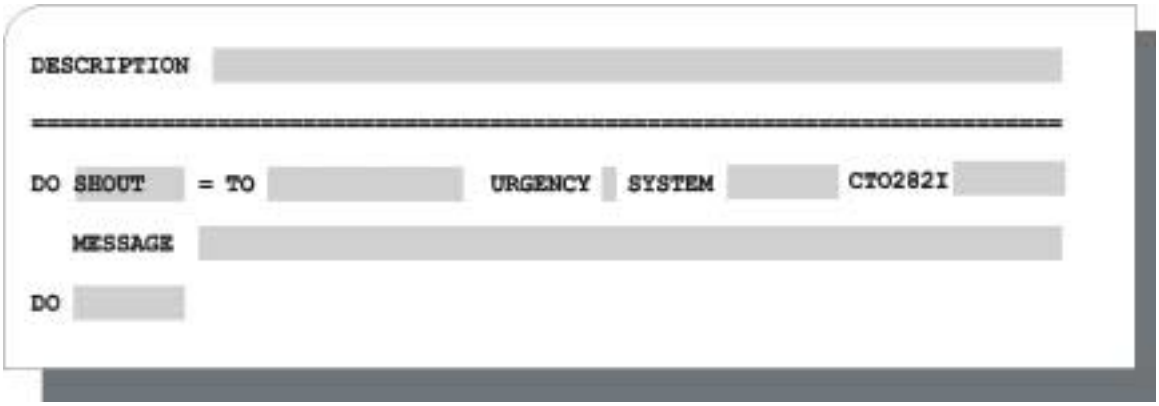
Retrieve following series of values from variables in an AutoEdit Variable database.

```
RL: TESTDB02   LIB CTO.PROD.RULES                              TABLE: VARULES
COMMAND ===>                                                   SCROLL===> CRSR
-------------------------------------------------------------------------------
  ON EVENT    = TESTDB02
  OWNER M88B     GROUP                          MODE PROD     RUNTSEC
  THRESHOLD
  DESCRIPTION PROCESS ROWS FROM ONE DATABASE POOL
  DESCRIPTION
  ==============================================================================
  DO SET      = %%$GLOBAL  = MYDB                                  GLOBAL  N
  DO SET      = %%COS_IROW = 0                                     GLOBAL  N
  WHILE    %%COS_IROW LT# %%$DBCOUNT
  DO SET      = %%COS_IROW = %%COS_IROW %%$PLUS 1                  GLOBAL  N
  DO SET      = %%$DBROW = %%COS_IROW                              GLOBAL  N
  DO SHOUT    = TO OPER              URGENCY R SYSTEM            CTO282I
     MESSAGE %%FIELD01 %%FIELD02
  ENDWHILE
  DO
  ==============================================================================
FILL IN RULE DEFINITION. CMDS: EDIT , SHPF , SCHED , OPT               14.23.00
```

DO SHOUT: Automated Console Action Parameter

Specifies a message to be sent ("shouted") to a specific destination.

Figure 165 DO SHOUT Parameter Format



Optional. Type **SHOUT** in the **DO** field and press **Enter**. The subparameters shown in Table 137 are displayed.

Table 137 DO SHOUT Subparameters (part 1 of 3)

Subparameter	Description
TO	Destination of the message (from 1 through 16 characters). Mandatory. Valid values are: ■ U-*userid* or USERID-*userid* – Writes the message to the IOA Log file under the specified user ID. *userid* must be from 1 through 8 characters. ■ OPER [*dd*] [-{*rrr* | -*ccc* | +*nnnnnnnn*}] – Sends the message to operator consoles, according to the optional subparameters *dd*, *rrr*, and *ccc*: — *dd* – Descriptor code (from 0 through 16). For more detailed information regarding descriptor codes, refer to the IBM publication *Routing and Descriptor Codes, GC38-1102*. — *rrr* – Route code (from 0 through 128). For more detailed information regarding route codes, refer to the IBM publication *Routing and Descriptor Codes, GC38-1102*. Route code and console ID are mutually exclusive.

Table 137 DO SHOUT Subparameters (part 2 of 3)

Subparameter	Description
	— *-ccc* – Console ID number (preceded by a hyphen) of the console to which the message is to be shouted. — *+nnnnnnnn* – Console Name (preceded by a plus sign) of the console to which the message is to be shouted. A valid name is between 2 to 8 alphanumeric characters. Route code. Console ID and Console Name are mutually exclusive. ■ U-M – sends a message to an email destination. In order to send an email, sample exit IOAX034M should be implemented. The destination must start with "U-M:". Refer to the description of sample exits IOAX034M and IOAMAIL in the *INCONTROL for z/OS Administrator Guide*. ■ TSO - *logonid* [;*Nn* | ;*Mm* | ;*NnMm* | ;*Lname*] – Sends the message to the user identified by the specified logon ID. *logonid* is mandatory (from 1 through 7 characters). An optional second value, indicating the computer and node (such as *Nn*) of the TSO logonid, can be specified, as follows: **Under JES2:** Valid values are *Mm*, *Nn* or *NnMm*, where — – *m* is the machine ID (the computer in JES2, not the 4-character SMF ID). For more information, see the discussion about specifying IOA CPUs in the IOA chapter of the *INCONTROL for z/OS Installation Guide*. — – *n* is the 1 to 2 character JES / NJE node ID. **Under JES3:** The only valid value is *Lname*, where *Lname* is the Logical JES name of the machine (that is, the name as used in JES3, command *T, not the SMF system ID). For more information, see the discussion about specifying IOA CPUs in the IOA chapter of the *INCONTROL for z/OS Installation Guide*.
	Note: A shout to a TSO user performs a TSO SEND command that may require authorization at the receiving node.

Table 137 DO SHOUT Subparameters (part 3 of 3)

Subparameter	Description
URGENCY	Determines the priority level of the message. Valid values are: ■ R—regular. Default. ■ U—urgent ■ V—very urgent
SYSTEM	Name of the system to which the message is directed. This subparameter supports the mask characters * and ?.
	Note: If no SYSTEM value is specified, the message is sent to the system identified by the %%$COMMSYS reserved user-defined variable in a preceding DO SET statement. For a description of %%$COMMSYS, see "Reserved User-Defined Variables" on page 561, and "Performing an Action on Another System" on page 294. If %%$COMMSYS is not specified, the message is issued on the current system.
CTO282I	Indicates if the message ID is prefixed by CTO282I. Optional. Valid values are: ■ Y (Yes)—The message ID is prefixed by CTO282I. Default. ■ N (No)—The message ID is the first word of the message text.
MESSAGE	Message text. Maximum Length: 60 characters. Mandatory.

General Information

The message is sent to the required destination when the accompanying ON statement criteria are satisfied.

It is also possible to shout to a ROSCOE user. For more information, contact your INCONTROL administrator.

The TO Subparameter

Specify TO=USERID-*userid* to write the message to the IOA Log under the user ID specified in the parameter.

Specify TO=OPER[*dd*]-{*rrr*,-*ccc*,+*nnnnnnnn*} to send the message to all operator consoles, or to operator consoles selected according to route code (*rrr*), console ID number (-*ccc*), or console name (+*nnnnnnnn*). The descriptor code (*dd*) determines the type of message displayed. The *dd*, *rrr*, -*ccc*, and +*nnnnnnnn* parameters are optional and can be assigned any valid value. *rrr*, -*ccc*, and +*nnnnnnnn* are mutually exclusive.

For more detailed information regarding route and descriptor codes, refer to the IBM publication *Routing and Descriptor Codes, GC38-1102*.

Examples

Table 138 shows examples of the DO SHOUT OPER subparameter.

Table 138 DO SHOUT OPER Subparameter Examples

Subparameter	Description
OPER	Send the message to all operator consoles.
OPER2	Send a highlighted unrollable message (descriptor code 2) to all operator consoles.
OPER-5	Send a message to operator consoles associated with route code 5.
OPER2-5	Send a highlighted unrollable message to operator consoles associated with route code 5.
OPER--4	Send a message to operator console ID 04
OPER2--4	Send a highlighted unrollable message (descriptor code 2) to operator console ID 04
OPER-+CONSNY	Send a message to operator console CONSNY

Specify TO=TSO-*logonid* to send the message to a groupid or logonid. The Shout facility first searches the IOA Dynamic Destination table for the specified ID. If the table contains an entry that matches the value, the entry's content is used as the target for the shouted message. The entire TO field is used. Therefore, when directing the message to a remote user, do not append Nn or Mm. Instead, do this in the IOA Dynamic Destination Table itself. For more information, see the description of the Dynamic Destination Table in the IOA chapter of the *INCONTROL for z/OS Administrator Guide*.

If no matching ID is found in the Dynamic Destination table, the Shout facility assumes the specified ID is a logonid. It then creates a TSO message that it hands over to MVS. MVS then sends the message to that logonid. If the logonid does not exist, MVS cannot send the message, but no error message is generated. When a second value is used, the message is sent to the TSO logonid in the specified computer or node (machine ID). To determine the machine ID under JES2, specify JES command $LSYS.

The URGENCY Subparameter

The URGENCY value indicates the urgency level of the message.

In addition, if the destination is USERID-*userid* (or U-*userid*), the user can control, according to urgency, which messages are displayed when the IOA Log file is accessed. Urgent and very urgent messages are highlighted on the screen. For more details, see "IOA Log Facility" on page 227.

The CTO282I Subparameter

By default, the CTO282I subparameter has a value of Y, and CTO282I is placed as the message ID preceding the message text. When CTO282I is set to N, the first word of the message text becomes the message ID.

CONTROL-O AutoEdit Variables

CONTROL-O AutoEdit variables embedded in the TO and MSG subparameters are automatically resolved at time of rule activation. For more information about the AutoEdit facility, see Chapter 4, “AutoEdit Facility.”

Example

When the DB2 master address space abends, issue a message to the DBA who is on duty. Notice the use of the generic TSO user name, which the Dynamic Destination table interprets as one or more TSO users.

Figure 166 DO SHOUT Parameter Example

```
RL: IEF450I    LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
  ON MESSAGE  = IEF450I
     JNAME DB2MSTR   JTYPE         SMFID        SYSTEM
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED       TIMES IN      MINUTES                        And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION WARN DBA THAT DB2 MASTER ABENDED
  DESCRIPTION
  ==============================================================================
  DO SHOUT    = TO TSO-DBA           URGENCY U SYSTEM          CTO282I
  MESSAGE DB2 MASTER ABENDED - PLEASE CHECK!
  DO
  ==============================================================================









  FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                  12.33.38
```

DO SMSCLASS: Automated Console Action Parameter

Assigns an SMS (Storage Management System) class name to a new data set.

Figure 167 DO SMSCLASS Parameter Format

```
================================================================================

DO SMSCLASS = ID   CLASS

DO

================================================================================
```

Optional. Type **SMSCLASS** in the **DO** field and press **Enter**. The subparameters shown in Table 139 are displayed.

Table 139 DO SMSCLASS Subparameters

Subparameter	Description
ID	Number of the SMS class to assign to selected data sets. Mandatory.
CLASS	Name of the SMS class to assign to selected data sets. Mandatory.

General Information

DO SMSCLASS overrides the SMS class that an ACS (Automatic Class Selection) routine assigns to a new data set.

DO SMSCLASS can be used only in an ON SMS rule. The ON SMS rule ACS CALL parameter determines which type of SMS class (DATA, MANAGEMENT, or STORAGE) is assigned by DO SMSCLASS.

For example, an ON SMS rule that contains `ACS CALL=DATA` executes a DO SMSCLASS command that contains `CLASS=X`. CONTROL-O sets the Data class of selected data sets to X.

An ON SMS rule that contains `ACS CALL=MANAGEMENT` executes a DO SMSCLASS command that contains `CLASS=Y`. CONTROL-O sets the Management class of selected data sets to Y.

An ON SMS rule that contains `ACS CALL=STORAGE` executes a DO SMSCLASS command that contains `CLASS=Z`. CONTROL-O sets the Storage class of selected data sets to Z.

NOTE

The DO SMSCLASS statement should not be placed after the following statements:

- DO ASKOPER
- DO COMMAND with WAIT RESPONSE
- DO KSL
- DO TSO
- DO WAIT

The above statements would cause the execution of the rule to be suspended. However, allocation of the new data set would continue without waiting for the rule to complete, and the DO SMSCLASS statement would not override the SMS class that ACS assigns to the data set.

Example

Change the class set by the SMS ACS rules to a new class, NEWCLASS. ID 01 is the default and cannot be changed.

Figure 168 DO SMSCLASS Parameter Example

```
RL: TESTDB02   LIB CTO.PROD.RULES                                TABLE: VARULES
    COMMAND ===>                                                 SCROLL===> CRSR
+-----------------------------------------------------------------------------+
ON SMS      = DSN.SMS.FILE
   ACS CALL ALL      JNAME MYJOBNAM JTYPE   SMFID      SYSTEM
   DDNAME  DDNAME    DSORG PDS      UNIT UNIT          DS-TYPE TEMP
   PGM               USER  GTUSER                             And/Or/Not
OWNER N18A     GROUP                        MODE PROD    RUNTSEC
THRESHOLD
DESCRIPTION
==============================================================================
DO SMSCLASS = ID 01 CLASS NEWCLASS
DO SMSMSG   = ID 1  MESSAGE OVERRIDE ALL  ACS ROUTINES
DO
==============================================================================
DAYS                                                          DCAL
                                                                    AND/OR
WDAYS                                                         WCAL
MONTHS  1- Y 2- Y 3- Y 4- Y 5- Y 6- Y 7- Y 8- Y 9- Y 10- Y 11- Y 12- Y
DATES
CONFCAL          SHIFT
ENVIRONMENT SMFID      SYSTEM
==============================================================================
IN
TIME FROM      UNTIL           INTERVAL      PRIORITY     CONTINUE SEARCH Y
======= >>>>>>>>>>>>>>>> END OF RULE DEFINITION PARAMETERS <<<<<<<<<<<<<<<< =====
```

DO SMSMSG: Automated Console Action Parameter

Defines and generates a message to be displayed in the job log of a new data set.

Figure 169 DO SMSMSG Parameter Format

```
=================================================================
DO SMSMG  =     MESSAGE

DO
=================================================================
```

Optional. Type **SMSMSG** in the **DO** field and press **Enter**. The subparameters shown in Table 140 are displayed:

Table 140 DO SMSMSG Subparameters

Subparameter	Description
ID	The sequence number of a line of message text. Valid values are from 1 through 6.
MESSAGE	The message to be displayed.

General Information

DO SMSMSG can be used only in ON SMS rules.

The message specified in the MESSAGE subparameter, can be used to provide informative text regarding data set allocation. Up to six sequential lines of SMS message text can be written. Specify the sequential number of the line of message text in the ID field. Information about the data set allocation can then be viewed and saved.

The messages appear on the TSO screen, or in the job log under the following message IDs:

- IGD1004I, for Data class selection
- IGD1005I, for Storage class selection
- IGD1006I, for Management class selection

NOTE

The DO SMSMSG statement should not be placed at any point after the following statements:

- DO ASKOPER
- DO COMMAND with WAIT RESPONSE
- DO KSL
- DO TSO
- DO WAIT

The above statements would cause the execution of the rule to be suspended. However, the allocation of the new data set would continue, without waiting for the rule to complete, and the DO SMSMSG statement would not override the SMS class that ACS assigns to the data set.

Example

Change the SMS class to NEWCLASS, and issue a message to the JOBLOG file about the change.

Figure 170 DO SMSMSG Parameter Example

```
COMMAND ===>                                                    SCROLL===> CRSR
 +-----------------------------------------------------------------------------+
ON SMS      = DSN.SMS.FILE
   ACS CALL ALL      JNAME MYJOBNAM JTYPE   SMFID      SYSTEM
   DDNAME  DDNAME    DSORG PDS      UNIT UNIT          DS-TYPE TEMP
   PGM               USER  GTUSER                              And/Or/Not
OWNER N18A     GROUP                        MODE PROD    RUNTSEC
THRESHOLD
DESCRIPTION
==============================================================================
DO SMSCLASS = ID 01 CLASS NEWCLASS
DO SMSMSG   = ID 1  MESSAGE OVERRIDE ALL ACS ROUTINES
DO SMSMSG   = ID 2  MESSAGE USER DEFINED VALUES USED
DO
==============================================================================
DAYS                                                            DCAL
                                                                     AND/OR
WDAYS                                                           WCAL
MONTHS  1- Y 2- Y 3- Y 4- Y 5- Y 6- Y 7- Y 8- Y 9- Y 10- Y 11- Y 12- Y
DATES
CONFCAL          SHIFT
ENVIRONMENT SMFID      SYSTEM
==============================================================================
IN
TIME FROM      UNTIL           INTERVAL      PRIORITY     CONTINUE SEARCH Y
======= >>>>>>>>>>>>>>>> END OF RULE DEFINITION PARAMETERS <<<<<<<<<<<<<<<< =====
```

DO SNMP: Automated Console Action Parameter

Sends an SNMP trap message to specified recipients.

Figure 171 DO SNMP Parameter Format

Optional. Type **SNMP** in the **DO** field and press **Enter**. The subparameters shown in Table 141 are displayed.

Table 141 DO SNMP Subparameters (part 1 of 2)

Subparameter	Description
TO	The destination of the SNMP trap message, from 1 through 21 alphanumeric characters. Mandatory. Valid values are: ■ the full SNMP name and address ■ the full SNMP name supplied by the SNMP DEST table in the IOA PARM library The DEST table also includes the DFLTSFFX field, which contains an SNMP address suffix such as @SNMP.DOMAIN.COM, the SMTP STC name, and the HOST name.
PORT	The port number to which the SNMP trap message is sent. Optional. If you do not specify a value, the default SNMP trap port number, 162, is used.
URGENCY	The priority level of the SNMP trap message. Valid values are: ■ R — Regular (default) ■ U — Urgent ■ V — Very urgent

Table 141 DO SNMP Subparameters (part 2 of 2)

Subparameter	Description
SYSTEM	The name of the system to which the SNMP trap message is directed. From 1 through 8 alphanumeric characters. This subparameter supports the mask characters * and ?.
	Note: If you do not specify a value for the SYSTEM subparameter, the SNMP trap message is sent to the system that was identified by the %%$COMMSYS reserved user-defined variable in a preceding DO SET statement. If the %%$COMSYS variable was not set, the SNMP trap message is issued on the current system. For a description of %%$COMSYS, see "Reserved User-Defined Variables" on page 561, and "Performing an Action on Another System" on page 294.
MESSAGE	The SNMP trap message text, up to 64 characters.

General Information

A message is sent to the required SNMP trap message destination when the accompanying ON statement criteria are satisfied.

TO Subparameter

To send an SNMP trap message, set this subparameter to the full SNMP name or name and address. The SNMP facility first searches the IOASNMP Dynamic Destination table for the specified destination. If the table contains an entry that matches the value set in the TO subparameter, the content of the entry is used as the target for the SNMP trap message. The entire TO field is used.

If the IOASNMP Dynamic Destination table does not contain a matching entry, the SNMP facility uses the specified value. It then creates a destination message and passes it to the SNMP server, which in turn sends the message to that destination.

For more information about the SNMP Dynamic Destination Table, see the IOA administration chapter in the *INCONTROL for z/OS Administrator Guide*.

URGENCY Subparameter

The value of the URGENCY subparameter indicates the urgency level of the message. In addition, you can control which messages are displayed when the IOA Log file is accessed, according to urgency. Urgent and very urgent messages are highlighted on the screen. For more details, see "IOA Log Facility" on page 227.

Example

When CICSPROD abends, notify the PATROL Agent that monitors CICS about the problem.

Figure 172 DO SNMP Parameter Example

```
RL: IEF450I    LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
-------------------------------------------------------------------------------
ON MESSAGE  = IEF450I
 JNAME          JTYPE      SMFID        SYSTEM          USERID
 ROUTE          DESC       CONSOLEID    CONSOLE
 APPEARED       TIMES IN      MINUTES                       And/Or/Not
OWNER N18B     GROUP                        MODE PROD    RUNTSEC
THRESHOLD
DESCRIPTION INFORM PATROL AGENT WIEN CICS ABENDED
DESCRIPTION
===============================================================================
DO SNMP     = TO PATROL.AGENT.SNMP     PORT       URGENCY V SYSTEM
 MESSAGE %%JOBNAME ENDED S%%$SABEND U%%$UABEND RC%%$STEPCC
DO
===============================================================================









FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                  12.33.38
```

DO STOPJOB: Automated Console Action Parameter

Stops execution of the job under which the rule is executing, after the current step is completed.

Figure 173 DO STOPJOB Parameter Format

```
=============================================================

DO STOPJOB

DO
```

Optional. Type **STOPJOB** in the **DO** field and press **Enter**. A DO STOPJOB statement has no subparameters.

NOTE

A DO STOPJOB statement is meaningful only for jobs. It is not executed if the rule is performed under a started task or TSO user, or if the job does not have additional steps.

General Information

CONTROL-O rules are triggered by messages, commands and events under the address space that issued the message or command. When the rule executes a statement that causes it to enter Wait mode, such as

- DO COMMAND
- DO KSL
- DO TSO with WAITMODE set to Y
- DO WAIT
- DO ASKOPER

the rule may resume execution in an address space different from the one under which it was originally triggered. Therefore, when specifying DO STOPJOB statements, special care should be taken to ensure that the correct job is terminated by the statement.

Example

Stop execution of a job whenever a CHK0007E error message is issued.

Figure 174 DO STOPJOB Parameter Example

```
RL: CHK0007E   LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
  ON MESSAGE  = CHK0007E
     JNAME PROD*    JTYPE J       SMFID        SYSTEM
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED       TIMES IN      MINUTES                        And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION STOPJOB EXAMPLE
  DESCRIPTION   PREVENT EXECUTION OF THE NEXT STEPS OF A JOB WHENEVER
  DESCRIPTION   ERROR MESSAGE CHK0007E OCCURS.
  DESCRIPTION
  ==============================================================================
  /* STOP THE JOB
  DO STOPJOB
  /* WRITE A MESSAGE TO THE IOA LOG
  DO SHOUT    = TO U-IOAADMIN        URGENCY R SYSTEM          CTO282I
     MESSAGE JOB %%$JOBNAME WAS STOPPED, REASON : %%$MSGID
  DO
  ==============================================================================

FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                  10.06.36
```

DO SYSREQ: Automated Console Action Parameter

Executes a variety of system related functions and queries. The ENQINFO function (a request to Extract Enqueue information) is currently implemented.

Figure 175 DO SYSREQ Parameter Format

```
DO SYSREQ  = ENQINFO     STATUS        SCOPE        JOBNAME
   QNAME                 RNAME
DO
```

Optional. Type **SYSREQ** in the **DO** field and press **Enter**. The subparameters shown in Table 142 are displayed.

Table 142 DO SYSREQ Subparameters (part 1 of 2)

Subparameter	Description
function	Name of the function to be executed. This subparameter must be entered to the right of the = prompt. The only valid value is ENQINFO — Extract Enqueue (ENQ) information. When you enter ENQINFO, the remaining subparameters shown in this table are displayed.
STATUS	Status of the enqueues to be selected. Mandatory. Valid values are: ■ CONFLICT – Enqueue conflicts (that is, jobs waiting for resources and the jobs holding those resources) are selected. Default. ■ WAITER – Jobs waiting for resources are selected. ■ OWNER – Jobs that hold (own) resources are selected. ■ LOCK – Deadlocked jobs (where job A holds resources that job B is waiting for and vice versa) are selected. ■ ALL – All ENQ entries are selected.
SCOPE	Scope of ENQ entries selected. Mandatory. Valid values are: ■ STEP – STEP level ■ SYSTEM – SYSTEM level ■ SYSTEMS – SYSTEMS level ■ ALL – ENQ entries of all three levels are selected. Default.

Table 142 DO SYSREQ Subparameters (part 2 of 2)

Subparameter	Description
JOBNAME	Name (or mask) of the job holding or waiting for the resource. Optional.
QNAME	Queue name or mask (major name of the resource), such as, SYSDSN or SYSVSAM. Initially set to blanks. Optional.
RNAME	Resource name or mask (minor name of the resource). Initially set to blanks. Optional. Trailing blanks can be included in the resource name by specifying RNAME in quotes.

General Information

The `DO SYSREQ=ENQINFO` execution call sets the following AutoEdit system variables:

- %%$SYSRC
  Completion code: 0 for successful completion

  All other return codes indicate an internal error and should be reported to BMC Software Customer Support.

- %%$SYSLINES
  Number of lines selected in the ENQ request. A value of 0 means that no ENQ entry matches the selection criteria.

- %%$SYSLINE*n*
  Information about a specific ENQ entry, contained in line number *n*.

  A %%$SYSLINE*n* is saved for each ENQ entry. However, lines that did not match the selection criteria, such as OWNER lines, when only WAITER lines were specified, are not included in the %%$SYSLINES AutoEdit variable that contains the count of ENQ entries that matched the selection criteria.

Data in the %%$SYSLINE*n* variables can be extracted as a whole string, or the data string can be broken up into words, using the %%$PARSE function with templates. For more information, see "%%$PARSE" on page 587. A built-in template, %%$EITEMPLATE, is provided, to assist in writing the rule and reduce the amount of code in the rules. The layout of the %%$SYSLINEn and %%$EITEMPLATE AutoEdit variables corresponding to the `DO SYSREQ=ENQINFO` option is detailed below.

Table 143 Layout of AutoEdit Variable %%SYSLINEn

Characters	Variable	Description
01 through 08	JOBNAME	Name of the job that issued the ENQ.
09 through 12	ASID	Address space ID.
13 through 20	SYSNAME	System name.
21 through 28	QNAME	Resource major name or mask.
29 through 29	RANGE	Range of the ENQ request. Valid values are: ■ L – Local ■ G – Global
30 through 36	SCOPE	Scope of the ENQ request.
37 through 44		Reserved.
45 through 48	FOI	First owner index. If this job is waiting for resources, the %%$SYSLINE*n* AutoEdit variable (where *n* = FOI) contains information about the first job in the chain that owns the resource.
49 through 52	NWI	Next waiter index. If this job is waiting for resources, the %%$SYSLINE*n* AutoEdit variable (where *n* = NWI) contains information about the next job in the chain that waits for the resource.
53 through 56	NOI	Next owner index. If this job owns a resource, the %%$SYSLINE*n* AutoEdit variable (where *n* = NOI) contains information about the next job in the chain that requires the same resource.
57 through 58	STAT1	Status of the job. Valid values are: ■ O – Job owns the resource. ■ W – Job is waiting for the resource. ■ An R (RESERVE) character appearing next to the status, indicates a RESERVE condition on the disk.
59 through 59	STAT2	Resource type. Valid values are: ■ E – Exclusive ■ S – Shared
92 through 94	RNAMEL	Length of the resource name.
95 through xx	RNAME	Resource name.

Table 144 Layout of AutoEdit Variable %%$EITEMPLATE (part 1 of 2)

Character	Variable	Value
01	EIJOBN	+8
09	EIASID	+4

Table 144 Layout of AutoEdit Variable %%$EITEMPLATE (part 2 of 2)

Character	Variable	Value
13	EISYSN	+8
21	EIQNAM	+8
29	EISCP1	+1
30	EISCP2	+7
37	EIWTIM	+8
45	EIFOI	+4
49	EINWI	+4
53	EINOI	+4
57	EISTA1	+2
59	EISTA2	+1
92	EIRLEN	+3
95	EIRNAM	

The variables listed in the template layout above contain, after parsing, the value of the various fields described in the layout of the %%$SYSLINEn variable. These variables can be accessed by prefixing them with %%.

Example

Determine who is holding the specified data set.

Figure 176 DO SYSREQ Parameter Example

```
RL: WHOHAS     LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
  +-----------------------------------------------------------------------------+
  ON RULE     = WHOHAS
  OWNER IOAADMIN GROUP                          MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION FIND WHO OWNS A DATASET.
  DESCRIPTION   THIS RULE RECEIVES AS PARAMETER A DATASET NAME,
  DESCRIPTION   FINDS WHAT DATASETS ARE HOLDING THE JOB AND RETURNS
  DESCRIPTION   THE JOBNAME OF THE FIRST OWNER IN VARIABLE %%DS_NAME.
  DESCRIPTION   WHEN THE DATASET IS NOT HELD BY ANY JOB, THE VALUE IS
  DESCRIPTION   SET TO 'NONE'.
  DESCRIPTION
  ==============================================================================
  /* GET DATASET NAME PASSED AS PARAMETER
  DO SET      = %%DSNAME = %%$ARGS                                GLOBAL  N
  /* GET ALL THE OWNERS OF THE DATASET
  DO SYSREQ   = ENQINFO    STATUS OWNER      SCOPE ALL       JOBNAME
     QNAME      SYSDSN     RNAME %%DSNAME
  /* GET THE FIRST OWNER
  IF       %%$SYSLINES GE# 1
  DO SET      = %%$PARSE %%$SYSLINE1 %%$EITEMPLATE                GLOBAL  N
  DO SET      = %%DS_OWNER = %%EIJOBN                             GLOBAL  N
  ELSE
  /* NO JOB IS OWNING THE DATASET: SET OWNER TO 'NONE'
  DO SET      = %%DS_OWNER = NONE                                 GLOBAL  N
  ENDIF
  /* WRITE A LOG ENTRY TO THE IOA LOG
  DO SHOUT    = TO OPER              URGENCY R SYSTEM            CTO282I
     MESSAGE DATASET %%DATASET IS HELD BY %%DS_OWNER
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 10.58.07
```

DO TERMINAT: Automated Console Action Parameter

Terminates the process of the triggering rule, and all called rules if any, and continue to next rule.

Figure 177 DO TERMINAT Parameter Format

```
==========================================================================

DO TERMINAT =

DO

==========================================================================
```

Optional. Type **TERMINAT** (or its abbreviation **TE**) in the **DO** field and press **Enter**.

General Information

DO TERMINAT terminates processing of the rule and all calling rules, if any. Control is returned directly to CONTROL-O to search for more rules, without going back to the calling rules. DO TERMINIT can be specified in any rule.

Example

Check the text in the message. If the command has parameters errors, terminate processing of the rule.

Figure 178 DO TERMINAT Parameter Example

```
RL: WHOHAS     LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
  ON COMMAND  = CTORMTCMD *
     JNAME          JTYPE         SMFID        SYSTEM       USERID
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED       TIMES IN      MINUTES                        And/Or/Not
  OWNER IOADMIN  GROUP                         MODE LOG     RUNTSEC
  THRESHOLD
  DESCRIPTION RECEIVE CROSS SYSTEM COMMAND            (INTERNAL)
  ==============================================================================
  DO DISPLAY  = SUPPRESS Y ROUTE     DESC    CONSOLEID    CONSOLE
     SYSTEM
  DO SET      = %%T= . SYS RID PARMS 'CMD=' C                        GLOBAL  N
  DO SET      = %%$PARSE %%$CMD %%T                                  GLOBAL  N
  /* VALIDITY CHECKS
  IF       %%SYS EQ %%$NULL OR %%RID EQ %%$NULL
  DO SHOUT    = TO OPER              URGENCY R SYSTEM          CTO282I
     MESSAGE REMOTE COMMAND REQUEST WITH INSUFFICIENT PARAMETERS - IGNORED
  TERMINAT
  ENDIF
  FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 10.58.07
```

DO TSO: Automated Console Action Parameter

Specifies a TSO command, CLIST or REXX procedure to be activated.

Figure 179 DO TSO Parameter Format

```
DESCRIPTION
==================================================================
DO TSO      =

   WAITMODE                                  TIMEOUT        STOP

   INITPROC          SHARELOC                IMMEDIATE

DO
```

Optional. Type **TSO** in the **DO** field and press **Enter**. The subparameters described in Table 145 are displayed.

Table 145 DO TSO Subparameters (part 1 of 2)

Subparameter	Description
comm/proc	TSO command or CLIST or REXX procedure name. Mandatory.
WAITMODE	Mandatory. Valid values are: ■ Y (Yes)–Wait for completion of the TSO command, CLIST, or REXX procedure. ■ N (No)–Do not wait for completion of the TSO command, CLIST, or REXX procedure.
TIMEOUT	*n*—Number of seconds (maximum 9999) to wait for the completion of the TSO command, CLIST or REXX procedure. Valid only if STOP is Y. Optional. Default: 60 seconds.
STOP	Whether or not the TSO command, CLIST, or REXX procedure should be stopped when time-out is reached. Valid values are: ■ Y (Yes)–Stop execution of the TSO command, CLIST, or REXX procedure when time-out is reached. Default. ■ N (No)–Allow execution of the TSO command, CLIST, or REXX procedure to continue after time-out.
INITPROC	Name of a TSO command, CLIST, or REXX procedure that handles the establishment, resetting, and termination of an environment for the TSO command, CLIST, or REXX procedure specified in the DO TSO statement. Optional.

Table 145 DO TSO Subparameters (part 2 of 2)

Subparameter	Description
SHARELOC	Whether local variables are shared. Valid values are: ■ Y (YES)–Local variables can be shared with the script by using XAM. ■ N (NO)–Local variables are not shared. Default
IMMEDIATE	Whether or not the TSO request (command, CLIST, or REXX procedure) should be executed by an Immediate server. Server types are described in "Using a Preset Environment" on page 410. Optional. ■ Y (Yes)–Execute the TSO request procedure in an Immediate server. ■ N (No)–Queue the TSO request to a Special or General server for execution. Default.

General Information

A DO TSO statement can be used to initiate any TSO command, CLIST or REXX procedure that does not require terminal input (that is, one that is executable from READY mode without prompting for additional information).

Use of the TSO option can be resource-consuming (because of the nature of TSO). For performance reasons, whenever possible, use regular CONTROL-O functions or CONTROL-M activated tasks.

CONTROL-O AutoEdit variables embedded in a DO TSO statement are automatically resolved (replaced) at time of rule activation. For more information about the AutoEdit facility, see Chapter 4, "AutoEdit Facility."

Wait Completion Mode

Execution of the DO statements that follow a DO TSO statement can be delayed until the TSO command, CLIST, or REXX procedure has finished executing, thereby enabling checking of the completion code. This delay is achieved by specifying **Y** (Yes) for the WAITMODE subparameter, which places the rule in Wait (Completion) mode. The TIMEOUT subparameter can be used to specify how long (in seconds) to wait for completion of the TSO command, CLIST, or REXX procedure.

When rule execution is resumed, the %%TSORC AutoEdit system variable will contain either the completion code of the TSO command, CLIST, or REXX procedure, or the value 522, which means that the TIMEOUT limit was reached before completion of the TSO command, CLIST, or REXX procedure.

Wait mode can also be specified for a TSO command, CLIST, or REXX procedure execution by specifying a `DO SET=%%WAITTSO = Y` statement before the `DO TSO` statement. Using this method, a TIMEOUT period may be specified through a `DO SET %%TIMEOUT=value` statement. This method is supported for historical reasons.

Using a Preset Environment

DO TSO statements are executed by CONTROL-O servers. Servers are started tasks that are managed automatically by CONTROL-O. You can define Immediate, Special, and General servers. These server types are discussed in detail in Chapter 5, "CONTROL-O Servers." However, when defining a DO TSO statement, bear in mind the following information:

- Immediate servers

  Immediate servers are useful for either

  — TSO commands, CLIST, or REXX procedures that need to be executed immediately, for example, those that need to bypass the wait queue of the server

  — TSO commands, CLIST, or REXX procedures that should not be executed by a Special or General server, for example, long running scripts that delay the running of other scripts waiting to be executed

  To request an Immediate server, type **Y** (Yes) in the **IMMEDIATE** subparameter.

- Special servers

  Special servers are useful when the same environment is used frequently for TSO requests. This generally occurs when different TSO commands, CLIST, or REXX procedures (in the same or different rules) use the same environment. Use of the same environment by many TSO requests improves performance considerably.

  To request a Special server, do the following:

  1. Type **N** (No) in the IMMEDIATE subparameter, or leave it blank.
  2. Enter the name of the TSO command, CLIST, or REXX procedure that handles the preset environment in the INITPROC subparameter.
  3. Ensure that a Special server with the name specified in the INITPROC subparameter has been defined to CONTROL-O.

- General servers

  General servers are useful when scripts infrequently use a specific environment and/or do not use a preset environment.

To request a General server, do the following:

1. Type **N** (No) in the IMMEDIATE subparameter, or leave it blank.

2. Ensure that the necessary environment is established by either the script specified in the DO TSO statement or by the TSO command, CLIST, or REXX procedure specified in the INITPROC subparameter.

3. Ensure that there is no Special server defined to CONTROL-O with the same name as the TSO command, CLIST, or REXX procedure specified in the INITPROC subparameter (if one was specified).

Whenever INITPROC is specified, CONTROL-O ensures that the indicated TSO command, CLIST or REXX procedure is automatically invoked to maintain the preset environment.

Ensure that the procedure specified in the DO TSO statement does not perform any of the functions performed by the procedure specified in INITPROC.

For information on how to define servers, see the *INCONTROL for z/OS Installation Guide*.

Example

Execute a specified REXX in Wait mode, and “shout” the completion code.

Figure 180 DO TSO Parameter Example

```
RL: REXX*      LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
  ON COMMAND  = REXX*
     JNAME          JTYPE         SMFID        SYSTEM       USERID
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED     TIMES IN      MINUTES                         And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION OPERATOR COMMAND TO EXECUTE ANY GIVEN REXX
  DESCRIPTION
  ==============================================================================
  DO TSO      = %%$V2
     WAITMODE   Y                                      TIMEOUT 9999    STOP Y
     INITPROC        SHARELOC Y                        IMMEDIATE Y
  DO SHOUT    = TO OPER              URGENCY R SYSTEM           CTO282I
     MESSAGE REXX %%$V2 ENDED WITH RC=%%TSORC
  DO
  ==============================================================================
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                  18.11.14
```

DO WAIT: Automated Console Action Parameter

Delays subsequent action until one of the specified events is detected.

Figure 181 DO WAIT Parameter Format

```
DESCRIPTION
==================================================================
DO WAIT    = REPLY              DOM              TIMEOUT

   MESSAGE

DO
```

Optional. Type **WAIT** in the **DO** field and press **Enter**. The subparameters described in Table 146 are displayed. A value must be specified for at least one of these subparameters.

Table 146 DO WAIT Subparameters

Subparameter	Description
REPLY	Valid values are: ■ Y (Yes) – Resume execution when a reply to the WTOR message that triggered the rule is received from an operator. ■ N (No) – Operator replies do not affect the wait period. Default.
DOM	Valid values are: ■ Y (Yes) – Resume execution when the message that triggered the rule is deleted by DOM (Delete Operator Message). ■ N (No) – Deletion of the triggering message does not affect the wait period. Default.
TIMEOUT	*n* — If specified, resume execution when the specified number of seconds (maximum 9999) has elapsed.
MESSAGE	If specified, resume execution when any of the specified message IDs are detected. The message ID is the first “word” of the message. A maximum of five message IDs can be specified.

General Information

DO WAIT subparameters specify when to resume processing (with the next DO statement).

If multiple DO WAIT subparameters are defined, the Wait is terminated (and the next statement is processed) as soon as one of the specified conditions is satisfied.

When the rule resumes execution after DO WAIT, the %%$WAITRC System variable indicates the event caused the end of the wait. Possible values for %%$WAITRC are shown in Table 147.

Table 147 Possible Values for %%$WAITRC

Value	Description
0	No wait was issued.
4	A reply to the triggering message was intercepted.
8	The triggering message was deleted by DOM.
12	One of the specified message IDs was detected.
522	The specified time-out limit was reached.

NOTE

For the value 4, the %%$RPLYTXT AutoEdit System variable will contain the value of the reply. For the value 12, the %%M* AutoEdit System variable will contain the message responsible for ending the wait.

Example

Wait three minutes for an operator reply before replying to the IEF238D message.

```
RL: IEF238D    LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
  ON MESSAGE  = IEF238D
     JNAME          JTYPE         SMFID        SYSTEM
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED       TIMES IN      MINUTES                        And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION AUTOMATIC HANDLING OF MSG IEF238D
  DESCRIPTION ENSURE THAT THE IEF238D MESSAGE IS REPLIED TO WITHIN 3 MIN.
  DESCRIPTION
  ==============================================================================
  DO WAIT     = REPLY Y              DOM N             TIMEOUT 0180
     MESSAGE
  IF       %%$WAITRC EQ# 522
  DO COMMAND  = R %%$REPLY,CANCEL
     WAIT        CONSOLEID    CONSOLE          SYSTEM
     WAITMODE   N
  ENDIF
  DO
=================================================================================
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 15.03.04
```

DO WHILE / DO ENDWHILE: Automated Console Action Parameter

DO WHILE, and DO ENDWHILE statements enable use of repetition (loop) logic in a CONTROL-O rule. These statements can be used to repeatedly perform other DO actions for as long as a specified condition is met.

Figure 182 DO WHILE/DO ENDWHILE Parameter Format

```
DESCRIPTION

==========================================================

WHILE

.
.
.
DO ENDWHILE
```

Type **WHILE** in the **DO** field and press **Enter**. The word DO is replaced by WHILE on the screen. The same will occur when you type **ENDWHILE** in a **DO** field.

The basic format of WHILE and ENDWHILE statements is:

Figure 183 Format of WHILE and ENDWHILE Statements

```
WHILE conditional_expresssion1 [{AND|OR} conditional_expression2]
 DO action
      .
      .
      .
   DO action
ENDWHILE
```

The WHILE conditional expression has the following format:

`WHILE` *operand operator operand*

Valid logical operators are shown in Table 148.

Table 148 DO WHILE and ENDWHILE Logical Operators

Operator	Definition
EQ EQ#	is equal to
NE NE#	is not equal to
GT GT#	is greater than
GE GE#	is greater than or equal to
LT LT#	is less than
LE LE#	is less than or equal to

Valid Boolean operators are shown in Table 149.

Table 149 DO WHILE and ENDWHILE Boolean Operators

Operator	Definition
AND	both expressions must be true
OR	either expression must be true

Operators that end with the pound sign (#) are used for numeric comparisons, as opposed to string comparisons.

An operand can be any character string. It can also be composed of AutoEdit symbols. In such cases, it is resolved into a character string before the conditional expression is analyzed at execution time.

Whenever non-numeric comparison operators are specified, operands are compared as character strings from left to right.

An operand cannot be resolved into nulls (as in CLISTs). If it is possible that an operand will resolve into nulls, place a character before the first and second operands.

In the following example, the character B is placed before the two operands:

```
WHILE B%%A GT B%%C
```

Each WHILE statement must be terminated with an ENDWHILE statement.

General Information

As long as the WHILE expression is true, commands between the WHILE expression and its matching ENDWHILE statement are repeatedly processed by CONTROL-O.

WHILE statements can be nested providing that each WHILE statement has a corresponding ENDWHILE statement.

WHILE and IF statements can be nested within each other provided that all nesting rules are maintained. A combination of up to 100 nested WHILE and IF statements are permitted.

CONTROL-O detects “infinite loops” that are caused by problematic DO WHILE statements (for example, `DO WHILE 1 EQ 1`), and stops rule execution.

When DO EXIT for a DO WHILE block is specified, processing of the DO WHILE is ended and rule processing continues after the ENDWHILE statement.

The SHOWNEST Command

To see the nesting levels of DO statements, relative to the nesting level of DO IF and DO WHILE statements, type **SHOWNEST** (or **SH**) in the **COMMAND** field. The nesting levels are displayed to the left of each DO parameter.

Issue the SHOWNEST command again to suppress display of the nesting levels.

Examples

Example 1

Using nested DO WHILE and DO ENDWHILE statements, check each word in each message line to determine whether or not the specified volume is mounted.

```
RL: FINDVOL*   LIB CTO.PROD.RULES                                TABLE: TEST1
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------+
  ON COMMAND  = FINDVOL*
     JNAME          JTYPE         SMFID        SYSTEM       USERID
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED     TIMES IN      MINUTES                        And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION
  ==========================================================================
  DO DISPLAY  = SUPPRESS Y ROUTE     DESC    CONSOLEID    CONSOLE
     SYSTEM
  DO SHOUT    = TO OPER              URGENCY R SYSTEM           CTO282I
     MESSAGE ISSUING COMMAND D U,DASD,ONLINE
  DO COMMAND  = D U,DASD,ONLINE
     WAIT        CONSOLEID    CONSOLE          SYSTEM
     WAITMODE   Y             WAITRESP Y            TIMEOUT
     RESPMSG
  DO SET      = %%FLAG = 0                                          GLOBAL  N
  DO SET      = %%I = 1                                             GLOBAL  N
  WHILE    %%I LE# %%$LINES
  DO SET      = %%J = 1                                             GLOBAL  N
  WHILE    %%J LE# %%$WORDS %%$M%%I
  DO SET      = %%T =  %%$W%%J %%$M%%I                              GLOBAL  N
  IF       %%T EQ %%$V2
  DO SHOUT    = TO OPER              URGENCY R SYSTEM           CTO282I
     MESSAGE AFFIRMATIVE - %%$V2 IS MOUNTED
  DO SET      = %%FLAG = 1                                          GLOBAL  N
  DO SET      = %%I = 9999                                          GLOBAL  N
  ENDIF
  DO SET      = %%J = %%J %%$PLUS 1                                 GLOBAL  N
  ENDWHILE
  DO SET      = %%I = %%I %%$PLUS 1                                 GLOBAL  N
  ENDWHILE
  IF       %%FLAG EQ# 0
  DO SHOUT    = TO OPER              URGENCY R SYSTEM           CTO282I
     MESSAGE NEGATIVE -  %%$V2 IS NOT MOUNTED
  ENDIF
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                18.44.01
```

Example 2

When command SHUTTSO is issued, ask the operator if the shift supervisor has been notified about the pending shutdown. Repeat the question to the operator every 30 seconds until a reply is received (RC=4). Depending on the reply, either continue the shutdown, or cancel it.

```
RL: SHUTTSO    LIB CTO.PROD.RULES                                TABLE: TEST1
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
  ON COMMAND  = SHUTTSO
     JNAME          JTYPE         SMFID        SYSTEM       USERID
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED     TIMES IN      MINUTES                          And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION
  ==============================================================================
  DO DISPLAY  = SUPPRESS Y ROUTE     DESC    CONSOLEID    CONSOLE
     SYSTEM
  DO SHOUT    = TO OPER              URGENCY R SYSTEM           CTO282I
     MESSAGE TSO IS BEING SHUT DOWN. SHIFT SUPERVISOR MUST BE NOTIFIED.
  DO SET      = %%RC = 4                                            GLOBAL  N
  WHILE    %%RC NE# 0
  DO ASKOPER  = HAVE YOU NOTIFIED SHIFT SUPERVISOR ? REPLY 'YES' OR 'CANCEL'
  ROUTE       CONSOLEID    CONSOLE                          TIMEOUT 0030
  IF       (%%$ASKRC EQ# 4) AND ((%%$RPLYTXT EQ YES) OR (%%$RPLYTXT EQ CANCEL))
  DO SET      = %%RC = 0                                            GLOBAL  N
  ENDIF
  ENDWHILE
  IF       %%$RPLYTXT EQ YES
  DO COMMAND  = P TSO
     WAIT        CONSOLEID    CONSOLE          SYSTEM
     WAITMODE   N
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 18.46.46
```

ENVIRONMENT: Basic Scheduling Parameter

Environment where the current rule should be scheduled for execution.

Figure 184 ENVIRONMENT Parameter Format

```
DAYS                                                    DCAL
                                                        AND/OR
WDAYS                                                   WCAL
MONTHS  1-  2-  3-  4-  5-  6-  7-  8-  9-  10-  11-  12-
DATES
CONFCAL         SHIFT
ENVIRONMENT SMFID       SYSTEM
```

Optional. The subparameters described in Table 150 can be specified.

Table 150 ENVIRONMENT Subparameters

Subparameter	Description
SMF ID	The SMF ID of the system where the rule should be loaded. Mask characters, * and ?, are supported for this subparameter. Up to four alphanumeric characters can be specified.
SYSTEM	The name of the system where the rule should be loaded. Mask characters, * and ?, are supported for this subparameter. Up to eight alphanumeric characters can be specified.

General Information

This parameter is especially relevant for sites with more than one system, specifically, more than one CONTROL-O. The values specified for SMF ID and SYSTEM indicate systems where the current rule can be loaded.

If values are specified for both the SMF ID and SYSTEM parameters, these values have an OR relationship. Mask characters can be used to indicate that the rule should be loaded on more than one system.

If no value is specified for either subparameter, the rule is loaded in all systems.

Example

Make a rule eligible for load only on the system with the name MVS1.

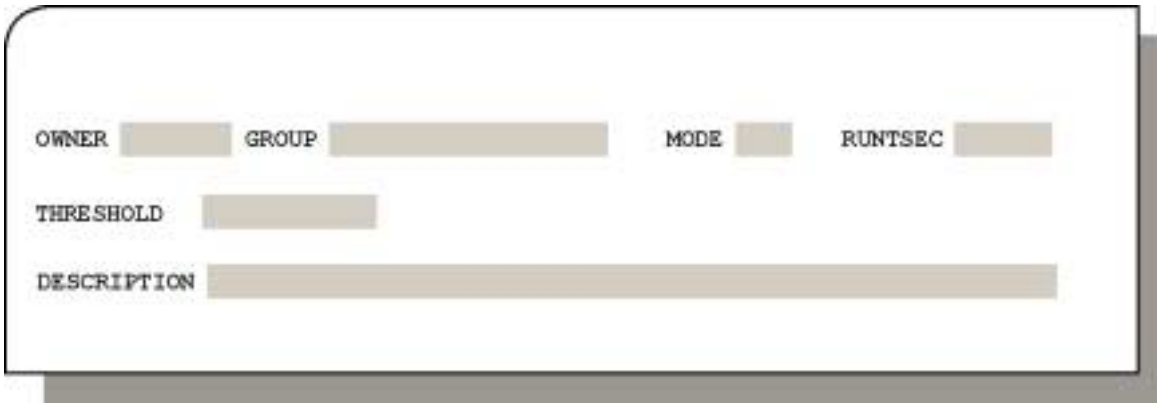
Figure 185 ENVIRONMENT Parameter Example

```
RL: INITMVS1   LIB CTOP.PROD.RULES                                TABLE: ENVIRO
COMMAND ===>                                                      SCROLL===> CRSR
  ON EVENT    = INITMVS1
  OWNER IOAADIM  GROUP                          MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION INITIALIZATION OF CONTROL-O ON MVS1
  DESCRIPTION
  ==============================================================================
  DO RULE     = INIT %%$CONTROLO                               OWNER
     TABLE               LIBRARY
  DO
  ==============================================================================
  DAYS                                                            DCAL
                                                                         AND/OR
  WDAYS   ALL                                                     WCAL
  MONTHS  1- Y 2- Y 3- Y 4- Y 5- Y 6- Y 7- Y 8- Y 9- Y 10- Y 11- Y 12- Y
  DATES
  CONFCAL          SHIFT
  ENVIRONMENT SMFID      SYSTEM MVS1
  ==============================================================================
  IN
  TIME FROM      UNTIL           INTERVAL      PRIORITY     CONTINUE SEARCH Y

FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 18.46.46
```

GROUP: General Parameter

The group name of the rule. It is used to supply a common descriptive name to a group of rules.

Figure 186 GROUP Parameter Format



Optional. This parameter specifies a group name of from 1 through 20 characters (embedded blanks are not permitted).

General Information

The GROUP parameter is used for more convenient rule handling. It enables information retrieval on a the rules of a specific group, usually through the Rule Status screen or the Reporting facility.

The group name appears in all important IOA Log messages relating to the rules of the group.

Example

Check if the spool is full at half hour intervals from seven in the morning until seven in the evening.

This rule is used by the INCONTROL administrator, and is grouped with JES2 rules. It is run in production mode.

Figure 187 GROUP Parameter Example

```
RL: SPOOL      LIB CTOW.WORKO.RULES                                TABLE: DATES
COMMAND ===>                                                       SCROLL===> CRSR
-------------------------------------------------------------------------------
  ON EVENT    = SPOOL
  OWNER IOAADMIN GROUP JES2                    MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION WARN OPERATOR IF SPOOL IS FULL.
  DESCRIPTION THIS RULE IS ACTIVATED EVERY 30 MINUTES, FROM 0700 TO 1900
  DESCRIPTION WHEN THE PREREQUISITE CONDITION CTO-MONITOR-SPOOL IS ACTIVE
  DESCRIPTION
  ==============================================================================
  DO COMMAND  = $DPSL
     WAIT        CONSOLEID    CONSOLE          SYSTEM
     WAITMODE   Y             WAITRESP Y            TIMEOUT
     RESPMSG $HASP646
  IF       %%$V2 GE# 70
  DO SHOUT    = TO OPER              URGENCY R SYSTEM           CTO282I
     MESSAGE SPOOL IS %%$V2 FULL - PURGE JOBS
  ENDIF
  ENDMSG
  DO
  ==============================================================================
  DAYS                                                           DCAL
 AND/OR
  WDAYS                                                          WCAL
  MONTHS  1- Y 2- Y 3- Y 4- Y 5- Y 6- Y 7- Y 8- Y 9- Y 10- Y 11- Y 12- Y
  DATES
  CONFCAL          SHIFT
  ENVIRONMENT SMFID      SYSTEM
  ==============================================================================
  IN        CTO-MONITOR-SPOOL    0101
  TIME FROM 0700 UNTIL 1900      INTERVAL 030  PRIORITY     CONTINUE SEARCH Y
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 17.25.16
```

IN: Runtime Scheduling Parameter

Specifies prerequisite conditions for rule activation. The rule is activated only if the specified prerequisite conditions exist.

Figure 188 IN Parameter Format

```
IN

TIME FROM    UNTIL      INTERVAL    PRIORITY    CONTINUE SEARCH
```

Optional. A prerequisite condition is a descriptive name of from 1 through 20 characters. A date reference is associated with each condition.

Prefixing a prerequisite condition with the NOT symbol (the ¬ or ! character) indicates that the activation of the rule is dependent on the inverse of the condition, that is, the nonexistence of the prerequisite condition.

Prefixing prerequisite conditions with the OR symbol (“ | ”) indicates that only one of those “OR” conditions (and all “non-OR” conditions) must exist to trigger the rule.

NOTE

A condition name should not begin with the “ | ” character, since this character is used in defining Boolean logic. It should also not begin with the ¬ or ! character, since these characters are used in specifying inverse conditions.

The date reference for each IN condition is four characters long and is optional. It can be a specific date, in either mmdd or ddmm format, depending on the site standard, or it can have one of the values shown in Table 151.

Table 151 IN Condition DATE Values (part 1 of 2)

Value	Description
ODAT	Original schedule date (the default).
PREV	Rule’s previous schedule date (or, for a forced rule, ODAT-1).

Table 151 IN Condition DATE Values (part 2 of 2)

Value	Description
STAT	Indicates that the condition (for example, IMS_ACTIVE) is not one that is date-dependent.
	Note: Before STAT was introduced, date 0101 was recommended to be used in conditions that were not date-dependent. Unlike 0101, STAT is not a date, and it operates differently. Always use STAT when defining conditions that are not date-dependent.
****	Any schedule date.
$$$$	Any schedule date.

General Information

The rule is activated only if all the prerequisite conditions specified in the IN statement exist. If any of the conditions are not satisfied, the rule does not participate in the message or event event scan.

A prerequisite condition can represent any user-specified situation. The following are a few examples:

```
IMS-ACTIVE
WEEKEND
JOB-EJGH12-FINISHED
SALARY-OK
BRANCH_TRANSMISSION
```

Inverse Conditions

In order to activate a rule if the inverse condition is met, specify the NOT symbol ¬ (or the ! character) as a prefix to the condition name.

Examples

```
¬ CICS-DOWN
¬ IMS-ACTIVE
```

The rule will then be activated only if the prerequisite condition is not present.

Or Relations

If a prerequisite condition starts with the character “ | ” (hexadecimal 4F), it means that it should be checked, with an OR relation, together with other prerequisite conditions of the same rule, which are also marked with “ | .”

NOTE

The length of prerequisite condition names used in OR relations is limited to 19 characters.

For example

```
IN  A  |B
    |C |D
    E
```

The A and E prerequisite conditions must exist in order for the rule to be activated. Additionally, one of the other conditions, that is, B or C or D, must also exist.

Rule dependencies can be defined and implemented using the prerequisite conditions created by the DO COND parameter. It can trigger, or stop, the activation of rules in CONTROL-O, or trigger or stop a job or process in CONTROL-M or CONTROL-D.

CONTROL-O AutoEdit System or Global variables embedded in the IN condition name are automatically resolved (replaced) at time of rule ordering (not rule activation). For more information about the AutoEdit facility, see Chapter 4, “AutoEdit Facility.”

Each prerequisite condition is associated with a specific scheduling date. This scheduling date is used to differentiate between different activations of the same rule for different scheduling dates.

The PREV date reference automatically resolves into a date reference for the rule’s previous scheduling date.

The **** (or $$$$) date reference in an IN statement is satisfied only by the addition of any prerequisite condition with the same name as that specified IN condition, with any date reference.

The ODAT of an IN condition is only calculated once – when the rule is first ordered. This date is then retained until the rule is reordered.

Example

When a command is issued to start NetView, and it is already active, ignore the command and inform the user that the command has been suppressed.

Figure 189 IN Parameter Example

```
RL: START NE   LIB CTOW.WORKO.RULES                              TABLE: DATES
COMMAND ===>                                                     SCROLL===> CRSR
-------------------------------------------------------------------------------
  ON COMMAND  = START NETVIEW
     JNAME          JTYPE         SMFID        SYSTEM       USERID
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED     TIMES IN      MINUTES                        And/Or/Not
  OWNER IOAADMIN GROUP NETVIEW                 MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION PREVENT START-UP OF NETVIEW IF IT IS ALREADY ACTIVE
  DESCRIPTION
  ==============================================================================
  DO DISPLAY  = SUPPRESS Y ROUTE     DESC    CONSOLEID    CONSOLE
     SYSTEM
  DO SHOUT    = TO OPER              URGENCY R SYSTEM           CTO282I
     MESSAGE START COMMAND SUPPRESSED. NETVIEW IS ALREADY ACTIVE
  DO
  ==============================================================================
  DAYS                                                           DCAL
                                                                          AND/OR
  WDAYS                                                          WCAL
  MONTHS  1- Y 2- Y 3- Y 4- Y 5- Y 6- Y 7- Y 8- Y 9- Y 10- Y 11- Y 12- Y
  DATES
  CONFCAL          SHIFT
  ENVIRONMENT SMFID      SYSTEM
  =============================================================================
  IN        CTO-NETVIEW-ACTIVE   STAT
  TIME FROM      UNTIL           INTERVAL      PRIORITY 99  CONTINUE SEARCH N
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                  17.24.07
```

INTERVAL: Runtime Scheduling Parameter

Specifies the number of minutes to wait between reactivations of the rule.

Figure 190 INTERVAL Parameter Format

```
IN

TIME FROM      UNTIL      INTERVAL    PRIORITY    CONTINUE SEARCH
```

Optional. The INTERVAL parameter specifies a 3-digit number. The default is 0 (zero).

General Information

When a rule is activated, CONTROL-O waits at least INTERVAL minutes before it attempts the next activation of the rule. During the interval, the rule is “dormant.”

After the interval has passed, CONTROL-O starts to use the rule again during message and event scan.

Cyclic Events

When specifying a cyclic rule, the TIME FROM parameter is used to determine the start time of the cycle. The INTERVAL parameter then determines how many minutes should lapse, that is, how many minutes CONTROL-O should wait, before the next activation of the rule.

If the rule is ordered after the specified TIME FROM, the rule is activated immediately. In this case, the interval is based on the time of rule ordering. The cycle will occur at fixed intervals, but not at a specifically designated time.

To run a cyclic event rule at designated times, for example, at exactly 2:00, 3:00, and so on, the EVENT name prefix FIXT must be specified. Even if the rule is ordered after the specified TIME FROM, the rule will not be executed until the next interval as calculated from the starting time.

NOTE

When the IN conditions of a cyclic rule are deleted and later added again, the intervals are still calculated from the first ordering time of the rule and its TIME FROM. To reset the interval to the time when the IN conditions were added, set the prefix of the event name to CINT.

Example

Check to see if the spool is full at half hour intervals from seven in the morning until seven in the evening.

Figure 191 INTERVAL Parameter Example

```
RL: SPOOL      LIB CTOW.WORKO.RULES                              TABLE: DATES
COMMAND ===>                                                     SCROLL===> CRSR
-------------------------------------------------------------------------------
  ON EVENT    = SPOOL
  OWNER IOAADMIN GROUP JES2                    MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION WARN OPERATOR IF SPOOL IS FULL.
  DESCRIPTION THIS RULE IS ACTIVATED EVERY 30 MINUTES, FROM 0700 TO 1900
  DESCRIPTION WHEN THE PREREQUISITE CONDITION CTO-MONITOR-SPOOL IS ACTIVE
  DESCRIPTION
  ==============================================================================
  DO COMMAND  = $DPSL
     WAIT        CONSOLEID    CONSOLE          SYSTEM
     WAITMODE   Y             WAITRESP Y            TIMEOUT
     RESPMSG $HASP646
  IF       %%$V2 GE# 70
  DO SHOUT    = TO OPER              URGENCY R SYSTEM           CTO282I
     MESSAGE SPOOL IS %%$V2 FULL - PURGE JOBS
  ENDIF
  ENDMSG
  DO
  ==============================================================================
  DAYS                                                           DCAL
                                                                         AND/OR
  WDAYS                                                          WCAL
  MONTHS  1- Y 2- Y 3- Y 4- Y 5- Y 6- Y 7- Y 8- Y 9- Y 10- Y 11- Y 12- Y
  DATES
  CONFCAL          SHIFT
  ENVIRONMENT SMFID      SYSTEM
  ==============================================================================
  IN        CTO-MONITOR-SPOOL    STAT
  TIME FROM 0700 UNTIL 1900      INTERVAL 030  PRIORITY     CONTINUE SEARCH Y
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 17.25.16
```

MODE: General Parameter

Specifies rule operation mode.

Figure 192 MODE Parameter Format

```
ON MESSAGE =
   ROUTE      DESC      CONSOLEID  SMFID    JNAME    JTYPE
   APPEARED   TIMES IN  MINUTES                  And/Or/Not
OWNER      GROUP                  MODE     RUNTSEC
THRESHOLD
DESCRIPTION
```

The MODE parameter is mandatory. Valid values are shown in Table 152.

Table 152 MODE Parameter Valid Values

Value	Description
p-prod	Standard production mode. The rule is processed normally. Default.
t-test	Test mode. Console actions are not performed, but are written to a test journal. Setting of variables is performed.
l-log	Same as production mode except that, additionally, all identified events and actions are written to a test journal.

General Information

TEST mode enables you to test the effects of a rule definition without actually performing the DO console actions. Assignment of Global variables is performed.

LOG mode performs the same as PROD mode but also logs events and actions to the test journal for test tracking purposes.

If the CONTROL-O Automation Log facility is active, events and actions are recorded in the Automation Log. If the Automation Log facility is not active, this information is written to the CONTROL-O monitor SYSOUT referenced by the DAACTLOG DD statement. For more information, see the description of controlling the automation log facility in the CONTROL-O chapter of the *INCONTROL for z/OS Administrator Guide*.

The operation mode of a rule can be changed temporarily after a rule is ordered:

- The operation mode for specific rules can be changed by the M (Mode) option in the Rule Status screen. For more information, see "Options of the Rule Status Screen" on page 142.

- The operation mode can be changed globally for all active rules through the following operator command:

```
F CONTROLO,LOG=ALL|DEFAULT|TRIGGER
```

For more information, see the description of controlling rule operation mode in the CONTROL-O chapter of the *INCONTROL for z/OS Administrator Guide*.

Example

Check if the spool is full at half hour intervals from seven in the morning until seven in the evening.

This rule is used by the INCONTROL administrator and is grouped with JES2 rules. It is run in production mode.

Figure 193 MODE Parameter Example

```
RL: SPOOL      LIB CTOW.WORKO.RULES                          TABLE: DATES
COMMAND ===>                                                 SCROLL===> CRSR
-------------------------------------------------------------------------------
  ON EVENT    = SPOOL
  OWNER IOAADMIN GROUP JES2                    MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION WARN OPERATOR IF SPOOL IS FULL.
  DESCRIPTION THIS RULE IS ACTIVATED EVERY 30 MINUTES, FROM 0700 TO 1900
  DESCRIPTION WHEN THE PREREQUISITE CONDITION CTO-MONITOR-SPOOL IS ACTIVE
  DESCRIPTION
  ==============================================================================
  DO COMMAND  = $DPSL
     WAIT        CONSOLEID    CONSOLE          SYSTEM
     WAITMODE   Y             WAITRESP Y            TIMEOUT
     RESPMSG $HASP646
  IF       %%$V2 GE# 70
  DO SHOUT    = TO OPER              URGENCY R SYSTEM           CTO282I
     MESSAGE SPOOL IS %%$V2 FULL - PURGE JOBS
  ENDIF
  ENDMSG
  DO
  ==============================================================================
  DAYS                                                         DCAL
                                                                      AND/OR
  WDAYS                                                        WCAL
  MONTHS  1- Y 2- Y 3- Y 4- Y 5- Y 6- Y 7- Y 8- Y 9- Y 10- Y 11- Y 12- Y
  DATES
  CONFCAL          SHIFT
  ENVIRONMENT SMFID      SYSTEM
  ==============================================================================
  IN        CTO-MONITOR-SPOOL    STAT
  TIME FROM 0700 UNTIL 1900      INTERVAL 030  PRIORITY     CONTINUE SEARCH Y
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 17.25.16
```

MONTHS: Basic Scheduling Parameter

Months of the year when the rule should be scheduled for execution.

Figure 194 MONTHS Parameter Format

```
DAYS                                                    DCAL
                                                        AND/OR
WDAYS                                                   WCAL
MONTHS  1-  2-  3-  4-  5-  6-  7-  8-  9-  10-  11-  12-
DATES
CONFCAL         SHIFT
ENVIRONMENT SMFID       SYSTEM
```

Optional. Each month in the year is identified separately (represented by numbers 1 through 12) and a value can be specified for each month. Valid values are:

- Y (Yes) – Schedule the rule in that month. Default.
- N (No) – Do not schedule the rule in that month.

General Information

The rule is scheduled for execution only during the months when a value of Y (Yes) is specified.

When the MONTHS parameter is used, at least one of the following must be specified:

- DAYS
- DCAL
- WDAYS
- WCAL

When specified with one of these parameters, the MONTHS parameter works as a filter to limit when the rule can be activated.

The MONTHS parameter is ignored when periodic values are specified in the DAYS or WDAYS parameter.

Example

Schedule a rule only in March and September:

```
MONTHS 1-N 2-N 3-Y 4-N 5-N 6-N 7-N 8-N 9-Y 10-N 11-N 12-N
```

ON Statement: Message/Event Selection Parameter

Specifies conditions under which the rule is performed. If the conditions are satisfied, CONTROL-O performs the specified DO actions.

Figure 195 ON Statement Format

```
ON          (Msg String Command CTopc Event Rule JArrival JEnd Dataset)

OWNER       GROUP                    MODE     RUNTSEC

THRESHOLD

DESCRIPTION
```

Type one of the options in the **ON** field and press **Enter**.

Valid options are described briefly in Table 153.

NOTE

For more information about each of the ON parameters in Table 153, refer to the detailed description of the parameter later in this chapter.

Table 153 ON Statement Options (part 1 of 2)

Option	Description
M-MESSAGE	A message identifier (ID) from 1 through 10 characters in length.
STR–STRING	Message text to be intercepted by CONTROL-O.
CO–COMMAND	Operator command to be intercepted by CONTROL-O.
CT–CTOPCMSG	Message text issued by CONTROL-M/Links for Windows NT to be intercepted by CONTROL-O.
E–EVENT	An event identifier from 1 through 8 characters in length. Use of an ON EVENT statement indicates that CONTROL-O will use runtime scheduling criteria to determine whether or not to perform an action.
R–RULE	Rule name from 1 through 8 characters in length. The rule is performed only when invoked by a DO RULE statement that is part of another rule.

Table 153 ON Statement Options (part 2 of 2)

Option	Description
STE–STEP	Name or mask of the job to be monitored for the completion of a specified step. The rule is performed when the specified step of the specified job is completed.
JA–JOBARRIV	Job name (or mask). The rule is performed when a matching job or started task arrives on the JES spool from any source (such as jobs submitted by a TSO user, by CICS, or jobs received over an NJE network).
JE–JOBEND	Job name (or mask). The rule is performed when a matching job or started task terminates.
D–DSNEVENT	Name (or mask) of the job to be monitored for data set events. The rule is performed when data set disposition is performed by z/OS, for specified data sets, at deallocation time during step termination or dynamic deallocation.
OM–OMEGAEXP	Exception code (or mask) issued by an OMEGAMON monitor. The rule is triggered when the specified exception code is issued from the specified OMEGAMON monitor.
SMS	Name of data set to be allocated.
SYSOUT	Message text to be intercepted. ON SYSOUT is used to trap messages associated with a specific SYSOUT stream of messages for a DD name.

General Information

When you specify an ON parameter and press **Enter**, additional fields (subparameters) that are relevant to the parameter are displayed. Each ON parameter and its subparameters comprise an ON statement. At least one ON statement is required in a rule definition.

Additional ON statements can be specified using the And / Or / Not option, except if an ON EVENT or ON RULE statement is specified. No other ON statements can be specified with an ON EVENT or ON RULE statement.

The first ten characters of the message ID, string, command, or event name will appear as the name of the rule in the Rule List and Rule Status screens.

AutoEdit Variables

CONTROL-O AutoEdit System or Global variables that are embedded in the message ID, string or command name are automatically resolved (replaced) at the time of rule ordering (not rule activation). For more information about AutoEdit variables, see Chapter 4, “AutoEdit Facility.”

And/Or/Not Subparameter

This subparameter enables the specification of multiple ON statements.

The And / Or / Not subparameter uses standard Boolean logic, as described in Table 154.

Table 154 And/Or/Not Subparameter Operators

Operator	Description
A (And)	Another ON line is opened; the rule is activated only if both ON statements are true for the same triggering message or command.
O (Or)	Another ON line is opened; the rule is activated if at least one of the ON statements is true for the same triggering message or command.
N (Not)	Another ON line is opened; the rule is activated only when previous ON statements are true and the following ON statement is false.

And and Not are applied before Or.

Not means And Not as follows:

- A NOT B is interpreted as A and (NOT B)
- A OR B AND C is interpreted as A or (B AND C)
- A AND B OR C NOT D is interpreted as [(A AND B) OR (C AND NOT D)]

Use of OR reduces the amount of redundant data in the CONTROL-O Rules library and improves rule management.

NOTE

When specifying multiple ON statements, insure that the statements are not mutually exclusive or not connected by an AND parameter. Rules containing mutually exclusive ON statements connected by an AND parameter will never be triggered.

Examples

```
ON MESSAGE …
AND
ON COMMAND
ON DSNEVENT  JOBA  STEPA
AND
ON DSNEVENT  JOBA  STEPB
```

ON AOREQ: Message/Event Selection Parameter

Indicates that this rule is triggered by MAINVIEW AutoOPERATOR only, as designated in its Runtime Scheduling parameters.

Figure 196 ON AOREQ Parameter Format

```
ON AOREQ  =

OWNER        GROUP                    MODE        RUNTSEC

THRESHOLD

DESCRIPTION
```

Optional. Type **AOREQ** (or its abbreviation **AO**) in the **ON** field and press **Enter**.Specify the following subparameter to the right of the = prompt:

Table 155 ON COMMAND Subparameters

Subparameter	Description
ao_req	Request identifier from 1 through 13 characters in length. ao_req is the name on the variable in the SET IOA Variable in AutoOPERATOR rule.

General Information

The AOREQ identifier is a name assigned to the request characterized in the SET IOA variable sentence in the AutoOPERATOR rule for scheduling parameters (such as prerequisite conditions or time considerations).

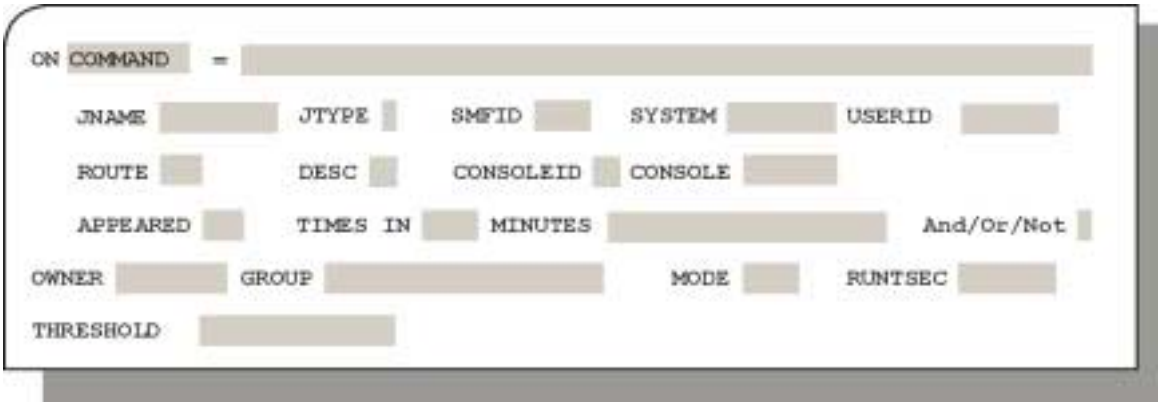
This option is particularly useful for customers who have both AutoOPERATOR and CONTROL-O or CONTROL-M with CMEM and need to perform actions supported by CONTROL-M, CONTROL-O, or CMEM.

AOREQ rules are supplied as part of AutoOPERATOR version 6.5 and later.

ON COMMAND: Message/Event Selection Parameter

Specifies a command whose appearance triggers execution of the rule.

Figure 197 ON Command Format



Optional. Type **COMMAND** (or its abbreviation **CO**) in the **ON** field and press **Enter**. The following subparameters are displayed:

Table 156 ON COMMAND Subparameters (part 1 of 2)

Subparameter	Description
command	Operator command (or mask) to be intercepted by CONTROL-O. Mandatory.
JNAME	Name of the job (or mask) that issued the command. It must be a valid job name of from 1 through 8 characters. Optional. If JNAME is specified, only commands issued from the specified JNAME will trigger the rule.
JTYPE	Type of the job from which the command originated. Optional. Valid values are: ■ J – Batch job (JOB) ■ S – Started task (STC) ■ T – TSO user (TSU) If JTYPE is specified, only commands issued from a job of the specified type will trigger the rule.
SMFID	SMF ID of the CPU that issued the command. Optional.
SYSTEM	Name of the system where the command is executed. Mask characters (* and ?) are supported.
USERID	ID of the address space that created the event.
ROUTE	Routing code (a value from 0 through 128) to be used as selection criteria. Optional.

Table 156 ON COMMAND Subparameters (part 2 of 2)

Subparameter	Description
DESC	Descriptor code (a value from 0 through 16) to be used as selection criteria. Optional.
CONSOLEID	Console identification used as a selection criteria. Only the specified command issued from the specified console will trigger the rule. Optional.
CONSOLE	Name of the console where the command is executed. Mask characters (* and ?) are supported.
APPEARED *n* TIMES IN *m* MINUTES	Number of times (*n* = 2 through 999) the command must occur within a specified (*m* = 1 through 9999) number of minutes before CONTROL-O triggers the rule.
And / Or / Not	Conjunctional subparameter that permits linking of ON statements. Valid values are: ■ A (And) – Both statements must be satisfied. ■ O (Or) – Only one statement need be satisfied. ■ N (Not) – The condition in the following statement must not be satisfied. For detailed information on this subparameter, see "General Information" on page 435.

General Information

CONSOLEID Subparameter

During system initialization, each console on the system is assigned a console identifier by z / OS. This identifier (*xx*) is a 2-digit number from 00 through 99 that corresponds to the position of the CONSOLE statement in member CONSOL*xx* in the SYS1.PARMLIB library.

Only commands issued from the specified console IDs can trigger the rule.

CONSOLE Subparameter

This is the name that is assigned to the console. A valid name contains 2 to 8 alphanumeric characters.

Only commands issued from the specified console name can trigger the rule.

SYSTEM Subparameter

The name specified by the SYSTEM subparameter is the unique system name of the z / OS image in the Sysplex environment.

When a system name is specified for the SYSTEM subparameter, commands issued by the specified system can trigger rules. However, if no system is specified, only commands originally issued on the current system are used.

NOTE

If the specified SYSTEM name does not match the system name where CONTROL-O is currently running, CONTROL-O does not trigger the rule. Conversely, CONTROL-O will trigger such rules on the system where CONTROL-O is currently running.

SMFID Subparameter

Each computer in a complex installation is assigned an SMF identifier of from 1 through 4 characters.

If SMFID is specified, only commands issued from the specified SMF IDs will trigger the rule.

Suppressing a LOGON command

Use an ON MESSAGE statement to suppress the LOGON messages appearing in the SYSLOG.

Example

```
ON MESSAGE=LOGON
DO DISPLAY=SUPPRESS Y
```

NOTE

BMC Software recommends that you not specify the following statements together in one rule:

```
ON COMMAND=LOGON
DO DISPLAY=SUPPRESS Y
```

This combination of statements can result in bringing TSO down because TSO issues an internal LOGON command to start a TSO user.

Dealias Feature

Most z/OS, JES2, and JES3 operator commands can be specified in more than one format:

- z/OS and JES3 commands:
  These commands usually have two formats – a full name format and a shorter format known as an alias. For example, the RESET z/OS command has the alias E.

- JES2 commands:
  These commands can contain embedded backspace characters.

- z/OS, JES2 and JES3 commands:
  These commands can contain a variable number of blank spaces between parameters.

CONTROL-O provides a Dealias feature that recognizes and converts the various formats of a command. For a list of commands for which dealiasing is supported, see Appendix C, "List of Commands for Which Dealiasing Is Supported."

Example

A rule contains an `ON COMMAND RESET *` statement. If the operator enters the command alias E JOB1

- with the Dealias feature, the rule is triggered
- without the Dealias feature, the rule is not triggered

The Dealias feature can be enabled at time of installation. It converts commands to standardized format in the following ways:

- All z/OS JES3 operator commands and aliases are changed to their full name format. For example, E JOB1 becomes RESET JOB1. A list of z/OS JES3 commands and aliases can be found in Appendix C, "List of Commands for Which Dealiasing Is Supported."

- Multiple spaces between a command and its operands are reduced to single spacing. For example, RESET JOB1 becomes RESET JOB1.

- JES2 backspace characters, indicated here by the symbol <, are interpreted, and backspaced text is deleted from the command. For example, $PJ12345<<<<<1 becomes $PJ54321.

The Dealias feature edits commands in the following instances:

- during rule definition in Screen OR
  Any reference to a command in alias form is automatically changed to its full name in the ON COMMAND statement.

- when a table or rule is ordered or forced
  Any command in alias format is changed to the corresponding full name format command.

- when an operator command is intercepted by CONTROL-O
  If it is in alias format, it is brought to its full name format before the rules are scanned.

- when an ID is specified as a show criteria in the Automation Log

Example

Define a new command (SHUTSYS) to shut down the system. The shutdown process in this example is simplified. It includes two operator commands, and a highlighted, unrollable message on the operator console.

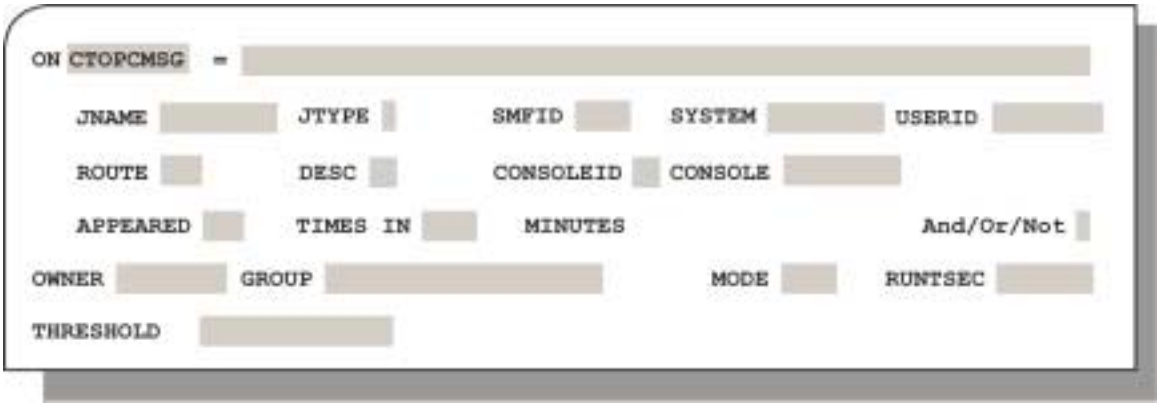
Figure 198 ON COMMAND Parameter Format

```
RL: SHUTSYS    LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
  ON COMMAND  = SHUTSYS
     JNAME          JTYPE         SMFID        SYSTEM       USERID
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED     TIMES IN      MINUTES                         And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION A NEW COMMAND TO SHUTDOWN THE SYSTEM
  DESCRIPTION
  ===============================================================================
  DO DISPLAY  = SUPPRESS Y ROUTE     DESC    CONSOLEID    CONSOLE
     SYSTEM
  DO COMMAND  = $PI
     WAIT        CONSOLEID    CONSOLE          SYSTEM
     WAITMODE   N
  DO COMMAND  = $PPRT
     WAIT        CONSOLEID    CONSOLE          SYSTEM
     WAITMODE   N
  DO SHOUT    = TO OPER2             URGENCY R SYSTEM          CTO282I
     MESSAGE SYSTEM IS BEING SHUT DOWN
  DO
  ===============================================================================
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF               18.46.46
```

ON CTOPCMSG: Message/Event Selection Parameter

Specifies the message, sent by CONTROL-M/Links for Windows NT, the appearance of which triggers execution of the rule.

Figure 199 ON CTOPCMSG Parameter Format



Optional. Type **CTOPCMSG**, or its abbreviation **CT**, in the **ON** field and press **Enter**. The subparameters shown in Table 157 are displayed.

Table 157 ON CTOPCMSG Subparameters (part 1 of 2)

Subparameter	Description
string	Message text issued by CONTROL-M/Links for Windows NT, to be intercepted by CONTROL-O. Mandatory.
JTYPE	Ignore this subparameter.
JNAME	Ignore this subparameter.
SMFID	SMF ID of the CPU that issued the message. Optional.
SYSTEM	Name of the system from which the message is issued. Mask characters (* and ?) are supported.
USERID	ID of the address space that created the event.
ROUTE	Ignore this subparameter.
DESC	Ignore this subparameter.
CONSOLEID	Console identification used as a selection criteria. Only CONTROL-M/Links for Windows NT messages issued to the specified console will trigger the rule. Optional.
CONSOLE	Name of the console from which the message is issued. Mask characters (* and ?) are supported.

Table 157 ON CTOPCMSG Subparameters (part 2 of 2)

Subparameter	Description
APPEARED *n* TIMES IN *m* MINUTES	Number of times (*n* = from 2 through 999) the message must occur within a specified number of minutes (*m* = from 1 through 9999) before CONTROL-O triggers the rule. Optional.
And / Or / Not	Conjunctional subparameter that permits linking of ON statements. Valid values are: ■ A (And) – Both statements must be satisfied. ■ O (Or) – Only one statement need be satisfied. ■ N (Not) – The condition in the following statement must not be satisfied. For detailed information on this subparameter, see "And / Or / Not Subparameter" on page 436.

General Information

CONSOLEID Subparameter

During system initialization, each console on the system is assigned a console identifier by z / OS. This identifier (*xx*) is a 2-digit number from 00 through 99 that corresponds to the position of the CONSOL*xx* member in the SYS1.PARMLIB library.

Only messages issued from the specified console IDs can trigger the rule.

CONSOLE Subparameter

This is the name that is assigned to the console. A valid name contains 2 to 8 alphanumeric characters.

Only messages issued from the specified console name can trigger the rule.

SYSTEM Subparameter

The name specified by the SYSTEM subparameter is the unique system name of the z / OS image in the Sysplex environment.

When a system name is specified by the SYSTEM subparameter, messages issued on the specified system can trigger rules. However, if no system is specified, only messages originally issued on the current system are used.

SMFID Subparameter

Each computer in a complex installation is assigned an SMF identifier from 1 through 4 characters in length.

If SMFID is specified, only messages issued from the specified SMF IDs will trigger the rule.

Example

Assume CONTROL-M/Links for Windows NT issues the following statement:

```
DO  CONTROLO: ADDCOND condition-name  date
```

The rule shown in Figure 200 is triggered. This rule adds the *condition-name* prerequisite condition date on behalf of CONTROL-M/Links for Windows NT.

Figure 200 ON CTOPCMSG Parameter Example

```
RL: ADDCOND*   LIB CTOP.PROD.RULES                          TABLE: SCREENS
COMMAND ===>                                                SCROLL===> CRSR
+-----------------------------------------------------------------------+
  ON CTOPCMSG = ADDCOND*
     JNAME          JTYPE         SMFID        SYSTEM
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED       TIMES IN      MINUTES                       And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION
  ==========================================================================
  DO COND     = %%$V2                ODAT +
  DO
  ==========================================================================

FILL IN RULE DEFINITION. CMDS: EDIT , SHPF , SCHED , OPT             17.01.15
```

ON DSNEVENT: Message/Event Selection Parameter

Specifies a data set disposition event as a selection criteria for the execution of the rule.

Figure 201 ON DSNEVENT Parameter Format

```
ON DSNEVENT =          JTYPE   SMFID     SYSTEM

   DSN                                                DISP

   PROCSTEP        PGMSTEP          STEPRC          And/Or/Not

OWNER          GROUP                  MODE      RUNTSEC

THRESHOLD
```

Optional. Type **DSNEVENT** (or its abbreviation **D**) in the **ON** field and press **Enter**. The subparameters shown in Table 158 are displayed.

Table 158 ON DSNEVENT Subparameters (part 1 of 3)

Subparameter	Description
jobname	Name (or mask) of the job to be monitored for data set events. Mandatory.
JTYPE	Type of job that triggered the data set event. ■ J – batch job (JOB) ■ S – started task (STC) ■ T – TSO user (TSU) ■ ' ' (blank) – Any type of job. Default. Valid only if STEPRC is blank, when the rule is processed immediately upon detection of the data set event. If a value is set for JTYPE, only jobs of the specified type will trigger the rule.
SMFID	SMF ID of the CPU to monitor for data set events. Mask characters (* and ?) are supported. The default is the current CPU.
SYSTEM	Name of the system to monitor for data set events. Mask characters (* and ?) are supported. The default is the current system.
DSN	Name of data set (or mask) to be monitored for this event within the selected jobs. Mandatory.

Table 158 ON DSNEVENT Subparameters (part 2 of 3)

Subparameter	Description
DISP	Data set disposition. Mandatory. The abbreviation (that is, the first letter) of the desired value can be specified. Valid values are: ■ CATLG – Cataloged (including SMS-managed files and ROLLED-IN SMS-managed GDG files). ■ DELETE – Deleted. ■ UNCATLG – Uncataloged. ■ KEEP – Kept (including SMS-managed files). ■ RETAIN – Cataloged or Kept. ■ SCRATCH – Deleted and uncataloged (SMS managed files). ■ NCT2 – Occurrence of a NOT CATLG 2 event – when a data set was created in a previous job step, but not cataloged at deallocation because its name already exists in the z/OS catalog. ■ ALL – Any of the above dispositions. ■ * – Any of the above data set dispositions, except NCT2.
PROCSTEP	Procedure stepname (or mask) to be monitored for this event within the selected jobs. This parameter is optional. If omitted, all procedure steps in the selected jobs are monitored.
	Note: When a started task is initiated, it can be assigned a task ID. For example, in command S GTF.G, the task ID of GTF is G. If a task ID is not specified, z/OS assigns a default task ID to the started task, as follows: ■ For a system started task with stepname IEFPROC, z/OS sets an internal task ID. ■ For other started tasks, the default task ID is the procedure (started task) name. Therefore, when using CONTROL-O to monitor system started tasks, if no task ID is specified in the START command, the PROCSTEP subparameter should not be specified.
PGMSTEP	Program step name (or mask) to be monitored for this event within the selected jobs. This parameter is optional. If omitted, all program steps in the selected jobs are monitored.
	Note: When a system started task with the step name IEFPROC is initiated, z/OS assigns the step a default program step name. Therefore, when using CONTROL-O to monitor these system started tasks, the PGMSTEP subparameter should not be specified.

Table 158 ON DSNEVENT Subparameters (part 3 of 3)

Subparameter	Description
STEPRC	Determines at what point in the jobstep being monitored the DO statements in the rule are executed. Valid values are: ■ *value* – see below ■ ' ' (blank) – If no completion code is specified, the rule is executed immediately upon detection of the specified data set event. Default. Immediate execution is useful for performing actions when data sets are dynamically deallocated using long-running address spaces, for example, CICS, TSO users, and file transfer monitors. If STEPRC is not blank, CONTROL-O will wait until the step ends to trigger the rule. In this case, the DO statements of the rule may not be performed for a very long time. For example, if you set STEPRC to a non-blank value for a TSO user, the rule will not be triggered until the TSO user logs off. If any of the following values is specified for STEPRC, execution of the DO statements in this rule is delayed until the end of the monitored job step, and is dependent upon how the jobstep is ended. ■ OK – step ended with a condition code of 0 ■ NOTOK – step ended with a non-zero condition code ■ **** – step ended with any condition code ■ C*nnnn* – condition code ■ S*nnn* – system abend code ■ U*nnnn* – user abend code Asterisks can be specified in place of code digits. Condition codes and abend codes can be preceded by code qualifiers (<, >, N). This is described in "The STEPRC Subparameter" on page 450.
	Note: If you use STEPRC in a long-running task, rules do not execute until tasks such as STC (such as CICS, IMS) or TSO USER terminate.
And / Or / Not	Conjunctional subparameter that permits linking of ON statements. Valid values: ■ A (And) – Both statements must be satisfied. ■ O (Or) – Only one statement need be satisfied. ■ N (Not) – The condition in the following statement must not be satisfied. For detailed information on this subparameter, see "And / Or / Not Subparameter" on page 436.

General Information

ON DSNEVENT rules are triggered by the setting of the data set disposition at the time of deallocation (during step termination or dynamic deallocation).

The action parameters (DO statements) in the rule can be performed either immediately upon detection of the data set event, or at the end of the jobstep that caused the data set event. For information on how the time and conditions of execution are determined, see "STEPRC" on page 448.

ON DSNEVENT rules only intercept data set events for jobs, started tasks, or TSO users that started after the rule was ordered.

NOTE

To monitor data set events for a job, started task or TSO user, the job, started task or TSO user must have MSGLEVEL set to (1,1) and the IEF403I message or the IEF125I message should appear on the job log.

A DSNEVENT can be triggered only on the CONTROL-O/CMEM that runs on the same z/OS system on which the event occurs. Even a focal CONTROL-O or CMEM in a Sysplex environment is insufficient. This is because CONTROL-O or CMEM intercepts the messages written to JESYSMSG while they are being written, which can be done only on the same system where the event happens.

ON DSNEVENT rules do not intercept data set events (for example, cataloging, uncataloging, or scratching) when they are performed through z/OS CATALOG or SCRATCH macros.

NOTE

When the IDCAMS IBM utility is used to delete a file, it verifies the existence of the file by using file data set events with a disposition of RETAIN. It does not create any data set events with a disposition of DELETE.

The following System variables can be specified in ON DSNEVENT rules:

- %%$DSN (data set name)
- %%$DSNDISP (data set disposition)
- %%$Dn (qualifiers of the data set name).

For more information about those variables, see Chapter 4, "AutoEdit Facility."

Specification of values for the PROCSTEP, PGMSTEP and STEPRC optional subparameters limits the situations that can satisfy the step termination event. Conversely, if a subparameter is blank, that subparameter is ignored.

Example

- If PGMSTEP and PROCSTEP values are both specified, the rule is triggered only if the specified PGMSTEP is completed in the specified PROCSTEP procedure.
- If a PGMSTEP value is specified without a PROCSTEP value, the rule is triggered if the PGMSTEP is completed anywhere within the job stream.

The STEPRC Subparameter

When specifying a condition code or abend code in the STEPRC subparameter, any characters in the code can be replaced by an asterisk (*). An asterisk means “any value” for the character it replaces. For example, if you enter **S*13**, the code criteria are satisfied by codes such as S013, S613, S913.

When specifying condition or abend codes, the following qualifiers can be used as indicated:

- > (Greater than) – valid for condition codes and user abend codes
- < (Less than) – valid for condition codes and user abend codes
- N (Not exist) – triggers the rule if the specified code does not exist in the step Valid as a qualifier for condition codes, user abend codes, and system abend codes.

The SMFID and SYSTEM Subparameters

The default values for the SMFID and SYSTEM subparameters are the current system. If no value is specified for either SMFID or SYSTEM, the rule is triggered only by events that occur in the current system.

Example

If a new data set is created, trigger a backup job.

Figure 202 ON DSNEVENT Parameter Example

```
RL: PRDJ0003   LIB CTOP.PRODSMP.RULES                          TABLE: $HASP
COMMAND ===>                                                   SCROLL===> CRSR
-------------------------------------------------------------------------------
  ON DSNEVENT = PRDJ0003 JTYPE   SMFID      SYSTEM
     DSN      PROD.*                                       DISP CATLG
     PROCSTEP            PGMSTEP            STEPRC OK            And/Or/Not
  OWNER IOAADMIN GROUP                          MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION NEW DATASET CREATED - TRIGGER A BACKUP JOB
  DESCRIPTION
  ==============================================================================
  DO SET      = %%BACKUP\DATASET=%%$DSN                             GLOBAL  N
  DO COMMAND  = F %%CONTROLO,WRITEGLOBAL=BACKUP
     WAIT        CONSOLEID    CONSOLE          SYSTEM
     WAITMODE   Y             WAITRESP Y            TIMEOUT 0300 0001
     RESPMSG CTO163I
  IF       %%$MSGID EQ CTO163I
  /* SCHEDULE A CONTROL-M JOB TO HANDLE THE BACKUP
  DO FORCEJOB = TABLE   BACKUP       JOB BACKUP               DATE  ODAT
              LIBRARY PROD.ALL.SCHEDULE
  /* WRITE A MESSAGE TO THE IOA LOG
  DO SHOUT    = TO U-BACKUP          URGENCY R SYSTEM             CTO282I
     MESSAGE BACKUP WAS STARTED FOR JOB %%$JOBNAME, DATASET %%$DSN
  ELSE
  DO SHOUT    = TO OPER              URGENCY R SYSTEM             CTO282I
     MESSAGE WRITEGLOBAL DID NOT TERMINATE IN FIVE MINUTES - JOB NOT FORCED
  ENDIF
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 18.42.56
```

ON EVENT: Message/Event Selection Parameter

Indicates that this rule is triggered by runtime conditions only, as designated in its Runtime Scheduling parameters.

Figure 203 ON EVENT Parameter Format

Optional. Type **EVENT** (or its abbreviation **E**) in the **ON** field and press **Enter**. Specify the following subparameter to the right of the = prompt:

identifier – Event identifier from 1 through 8 characters in length.

NOTE

No additional Message/Event Selection parameters (ON statements) can be specified with an ON EVENT statement.

General Information

The Event identifier is a name assigned to the event characterized by the current rule's Runtime Scheduling parameters (such as prerequisite conditions, or time considerations). This name is for identification purposes only. It has no effect on rule processing.

This option is particularly useful for time-initiated events and pro-active processes. For example, actions can be performed at a specific time of day or at a cyclic interval. For information regarding events with a cyclic interval, see "INTERVAL: Runtime Scheduling Parameter" on page 428. A message or command does not trigger Event rules; instead the specified Runtime Scheduling parameters do.

The ON EVENT statement can also be used to perform an action upon the fulfillment of an IOA prerequisite condition (specified in the IN Runtime Scheduling parameter).

Examples

Example 1

Issue an operator command every 10 minutes.

```
RL: DAL-CMD    LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-----------------------------------------------------------------------------+
  ON EVENT    = DAL-CMD
  OWNER IOAADMIN GROUP                          MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION ISSUE D A,L COMMAND EVERY 10 MINUTES
  DESCRIPTION
  ==============================================================================
  DO COMMAND  = D A,L
     WAIT        CONSOLEID    CONSOLE          SYSTEM
     WAITMODE   N
  DO
  ==============================================================================
  DAYS                                                           DCAL
                                                                    AND/OR
  WDAYS   ALL                                                    WCAL
  MONTHS  1- Y 2- Y 3- Y 4- Y 5- Y 6- Y 7- Y 8- Y 9- Y 10- Y 11- Y 12- Y
  DATES
  CONFCAL          SHIFT
  ENVIRONMENT SMFID      SYSTEM
  ==============================================================================
  IN
  TIME FROM      UNTIL           INTERVAL 010  PRIORITY     CONTINUE SEARCH Y
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                12.33.38
```

Example 2

At 7:30 a.m., decrease the number of initiators, start CICS (by the setting of a prerequisite condition), and notify the shift manager.

```
RL: DAY-TIME   LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
  ON EVENT    = DAY-TIME
  OWNER SYS3     GROUP                          MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION AT 7:30 IN THE MORNING, THE AMOUNT OF INITIATORS IS DECREASED
  DESCRIPTION BY 10 AND CICS IS STARTED.
  DESCRIPTION
  ==============================================================================
  DO COMMAND  = $PI9-18
     WAIT        CONSOLEID    CONSOLE          SYSTEM
     WAITMODE   N
  DO RESOURCE = INIT                 0010 -
  DO SHOUT    = TO U-SHIFTMNGR       URGENCY R SYSTEM           CTO282I
     MESSAGE DAY TIME EVENT OCCURRED. NO. OF INITIATORS IS DECREASED BY 10
  DO COND     = START-CICS           STAT +
  DO
  ==============================================================================
  DAYS                                                           DCAL
                                                                       AND/OR
  WDAYS   ALL                                                    WCAL
  MONTHS  1- Y 2- Y 3- Y 4- Y 5- Y 6- Y 7- Y 8- Y 9- Y 10- Y 11- Y 12- Y
  DATES
  CONFCAL          SHIFT
  ENVIRONMENT SMFID      SYSTEM
  ==============================================================================
  IN
  TIME FROM 0730 UNTIL           INTERVAL      PRIORITY     CONTINUE SEARCH Y
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                12.33.38
```

Example 3

Notify the user when the CICS_UP prerequisite condition is added to the IOA Conditions file.

```
RL: CNDRIVEN   LIB CTO.PROD.RULES                                TABLE: SAMPLE
COMMAND ===>                                                     SCROLL===> CRSR
-------------------------------------------------------------------------------
  ON EVENT    = CDRIVEN
  OWNER IOAADMIN GROUP                          MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION EVENT RULE TRIGGERED EACH TIME THE CONDITION IS ADDED
  DESCRIPTION
  ===============================================================================
  DO SHOUT    = TO OPER              URGENCY R SYSTEM           CTO282I
     MESSAGE CONDITION CICS_UP 0101 WAS ADDED
  DO
=============================================================================
  DAYS                                                           DCAL
                                                                       AND/OR
  WDAYS   ALL                                                    WCAL
  MONTHS  1- Y 2- Y 3- Y 4- Y 5- Y 6- Y 7- Y 8- Y 9- Y 10- Y 11- Y 12- Y
  DATES
  CONFCAL          SHIFT
  ENVIRONMENT SMFID      SYSTEM
  ===============================================================================
  IN        CICS_UP               STAT
  TIME FROM      UNTIL           INTERVAL      PRIORITY     CONTINUE SEARCH Y
======= >>>>>>>>>>>>>>> END OF RULE DEFINITION PARAMETERS <<<<<<<<<<<<<<< =====

FILL IN RULE DEFINITION. CMDS: EDIT , SHPF , SCHED , OPT               12.32.04
```

ON JOBARRIV: Message/Event Selection Parameter

Specifies the name of jobs the arrival of which on the spool triggers the execution of the rule.

Figure 204 ON JOBARRIV Parameter Format

```
ON JOBARRIV        JTYPE  SMFID    SYSTEM        And/Or/Not
          =
OWNER        GROUP                  MODE     RUNTSEC

THRESHOLD

DESCRIPTION
```

Optional. Type **JOBARRIV** (or its abbreviation **JA**) in the **ON** field and press **Enter**. The subparameters shown in Table 159 are displayed.

Table 159 ON JOBARRIV Subparameters (part 1 of 2)

Subparameter	Description
identifier	Job name (or mask). Mandatory.
JTYPE	Type of the job the arrival of which on the JES spool can trigger the rule. Optional. Valid values are: ■ J – Batch job (JOB) ■ S – Started task (STC) ■ T – TSO user (TSU) If JTYPE is specified, only jobs of the specified type will invoke the rule.
	Note: The JTYPE subparameter is not supported under JES3.
SMFID	SMF ID of the CPU to monitor for job arrival. Mask characters (* and ?) are supported. The default is the current CPU.

Table 159 ON JOBARRIV Subparameters (part 2 of 2)

Subparameter	Description
SYSTEM	Name of the system to monitor for job arrival. Mask characters (* and ?) are supported. The default is the current system.
And / Or / Not	Conjunctional subparameter that permits linking of ON statements. Valid values are: ■ A (And) – Both statements need be satisfied. ■ O (Or) – Only one statement must be satisfied. ■ N (Not) – The condition in the following statement need not be satisfied. For detailed information on this subparameter, see "And / Or / Not Subparameter" on page 436.

NOTE

For JES3 Users: JOBARRIV rules are processed on the global CPU.

General Information

The default values for the SMFID and SYSTEM subparameters are the current system. If no value is specified for either SMFID or SYSTEM, the rule is triggered only by events that occur in the current system.

The SMFID and SYSTEM subparameters can be used to filter any messages issued from z / OS.

Example

Have CONTROL-M monitor the startup of backup jobs.

Figure 205 ON JOBARRIV Parameter Example

```
RL: BKP*       LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-----------------------------------------------------------------------------+
  ON JOBARRIV = BKP*     JTYPE   SMFID      SYSTEM               And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION MONITOR START-UP OF BACKUP JOBS
  DESCRIPTION
  ==============================================================================
  /* TELL CONTROL-M TO MONITOR THIS JOB
  /*
  DO FORCEJOB = TABLE   BACKUP       JOB                       DATE  ODAT
                LIBRARY CTM.PROD.SCHEDULE
  /* KEEP TRACK OF THE STATUS OF THE JOB
  /*
  DO SET      = %%STATUS_%%JOBNAME = ON-RDR                         GLOBAL  Y
  DO
==============================================================================
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                  07.36.24
```

ON JOBEND: Message/Event Selection Parameter

Specifies the name of jobs the end of which on the spool triggers the execution of the rule.

Figure 206 ON JOBEND Parameter Format

```
ON JOBEND  =          JTYPE  SMFID    SYSTEM          And/Or/Not
OWNER          GROUP                  MODE     RUNTSEC

THRESHOLD

DESCRIPTION
```

Optional. Type **JOBEND** (or its abbreviation **JE**) in the **ON** field and press **Enter**. The subparameters shown in Table 160 are displayed.

Table 160 ON JOBEND Subparameters (part 1 of 2)

Subparameter	Description
identifier	Job name (or mask). Mandatory.
JTYPE	Type of the job whose end on the JES spool invokes the rule. Optional. Valid values are: ■ J – Batch job (JOB) ■ S – Started task (STC) ■ T – TSO user (TSU) If JTYPE is specified, only jobs of the specified type invoke the rule.
SMFID	SMF ID of the CPU to monitor for job ends. Mask characters (* and ?) are supported. The default is the current CPU.

Table 160 ON JOBEND Subparameters (part 2 of 2)

Subparameter	Description
SYSTEM	Name of the system to monitor for job ends. Mask characters (* and ?) are supported. The default is the current system.
And / Or / Not	Conjunctional subparameter that permits linking of ON statements. Valid values are: ■ A (And) – Both statements must be satisfied. ■ O (Or) – Only one statement need be satisfied. ■ N (Not) – The condition in the following statement need not be satisfied. For detailed information on this subparameter, see "And / Or / Not Subparameter" on page 436.

NOTE

Note for JES3 Users: JOBEND rules are processed in the same CPU that executed the specified job.

General Information

The default values for the SMFID and SYSTEM subparameters are the current system. If no value is specified for either SMFID or SYSTEM, the rule is triggered only by events that occur in the current system.

The SMFID and SYSTEM subparameters can be used to filter any messages issued from z / OS.

Example

Start the batch shift when CICSPROD ends.

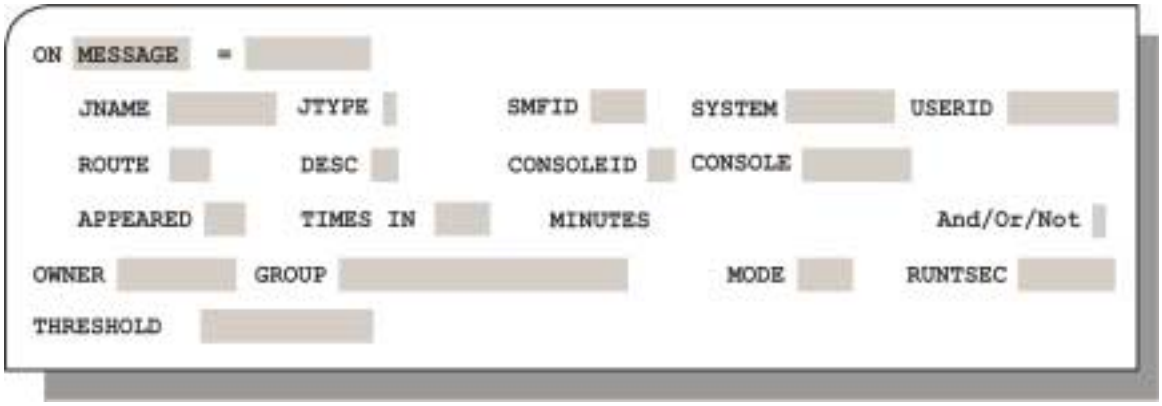
Figure 207 ON JOBEND Parameter Example

```
RL: CICSPROD   LIB CTOP.PRODSMP.RULES                          TABLE: $HASP
COMMAND ===>                                                   SCROLL===> CRSR
-------------------------------------------------------------------------------
  ON JOBEND   = CICSPROD JTYPE   SMFID      SYSTEM               And/Or/Not
  ON            (Msg String COmmand CTopc Event Rule JArrival JEnd Dataset)
  OWNER IOAADMIN GROUP                          MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION START THE BATCH SHIFT
  DESCRIPTION
  ==============================================================================
  /* INFORM CONTROL-M THAT BATCH CAN BE STARTED
  DO COND     = START-BATCH          ODAT +
  /* KEEP TRACK OF THE STATUS OF THE JOB
  DO SET      = %%STATUS_%%$JOBNAME=INACTIVE                        GLOBAL  Y
  DO
  ==============================================================================
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                  18.25.05
```

ON MESSAGE: Message/Event Selection Parameter

Specifies the message whose detection triggers execution of the rule.

Figure 208 ON MESSAGE Parameter Format



Optional. Type **MESSAGE** (or its abbreviation **M**) in the **ON** field and press **Enter**. The subparameters shown in Table 161 are displayed.

Table 161 ON MESSAGE Subparameters (part 1 of 2)

Subparameter	Description
message	Message identifier (from 1 through 10 characters in length). Mask characters (* and ?) can be specified in this field. Mandatory.
JNAME	Name of the job (or mask) that issued the message. It must be a valid job name of 1-8 characters. Optional. If JNAME is specified, only messages issued from the specified JNAME will trigger the rule.
JTYPE	Type of the job from which the message originated. Optional. Valid values are: ■ J–Batch job (JOB) ■ S–Started task (STC) ■ T–TSO user (TSU) If JTYPE is specified, only messages issued from a job of the specified type will trigger the rule.
SMFID	SMF ID of the CPU that issued the message. Optional.
SYSTEM	Name of the system where the message was sent. Mask characters (* and ?) are supported. Optional.
USERID	ID of the address space that created the event.

Table 161 ON MESSAGE Subparameters (part 2 of 2)

Subparameter	Description
ROUTE	Routing code (a value from 0 through 128) to be used as selection criteria. Optional.
DESC	Descriptor code (a value from 0 through 16) to be used as selection criteria. Optional.
CONSOLEID	Console identification used as a selection criteria; only messages issued to the specified console will trigger the rule. Optional.
CONSOLE	Name of the console where the message was displayed. Mask characters (* and ?) are supported.
APPEARED *n* TIMES IN *m* MINUTES	Number of times (*n* = 2 through 999) the message must occur within a specified number of minutes (*m* = 1 through 9999) before CONTROL-O triggers the rule.
And / Or / Not	Conjunctional subparameter that permits linking of ON statements. Valid values are: ■ A (And) – Both statements must be satisfied. ■ O (Or) – Only one statement need be satisfied. ■ N (Not) – The condition in the following statement must not be satisfied. For detailed information on this subparameter, see "And / Or / Not Subparameter" on page 436.

General Information

The ID specified in an ON MESSAGE statement must be either the ID of a regular message or the ID of the major (first) line of a multi-line message.

Messages used by CONTROL-O internally (such as CTO15AI, CTO162I, CTO211I, and CTO283I), and messages issued under the CONTROL-O subsystem interface (CTO282I), cannot be detected using an ON MESSAGE statement.

ROUTE Subparameter

z / OS assign routing codes to each console. When a message is sent to a specific routing code, consoles with that routing code display the message. Usually, routing codes correspond to logical groups of messages that are assigned by the system. The ROUTE subparameter uses the routing code as a message / event selection criteria. Only messages with the specified routing codes are selected.

For example, your tape-related messages use a routing code of 3 and 5. CONTROL-O can intercept all messages with a routing code of 3 or 5 and redirect them to a specific console, or handle them in another manner.

For additional information regarding routing and descriptor codes, refer to the IBM publication *Routing and Descriptor Codes, GC38-1102*.

DESC Subparameter

Descriptor codes determine message display characteristics such as deletion, scrolling, highlighting, and color. The DESC subparameter uses the descriptor code as a message selection criteria – only messages having the specified descriptor codes are selected. For example, CONTROL-O can intercept all messages that have a descriptor code of 1, 2 or 11, which indicates the need for critical action, and send these messages to a specific console.

Descriptor codes also control the indicator character. Any message sent by the operating system or an authorized program begins with a blank or asterisk (*) indicator. Messages sent by application programs begin with plus signs (+) or at signs (@). The asterisk, or at sign, marks the message as critical (descriptor code 1, 2, or 11). CONTROL-O ignores these indicator characters during message ID comparison.

For additional information regarding routing and descriptor codes, refer to the IBM publication *Routing and Descriptor Codes, GC38-1102*.

CONSOLEID Subparameter

During system initialization, each console on the system is assigned a console identifier by z/OS. This identifier (*xx*) is a 2-digit number from 00 through 99 that corresponds to the position of the CONSOLE statement in member CONSOL*xx* in the SYS1.PARMLIB library.

Only messages issued to the specified console IDs are selected. For example, CONTROL-O can intercept all messages that have a specific console ID, and redirect them or handle them in another manner.

CONSOLE Subparameter

This is the name that is assigned to the console. A valid name contains 2 to 8 alphanumeric characters.

Only the message issued to the specified console NAME is selected. For example, CONTROL-O can intercept any message that has a specific console NAME, and redirect the message or handle it in another manner.

SYSTEM Subparameter

The name specified by the SYSTEM subparameter is the unique system name of the z/OS image in the Sysplex environment.

When a system name is specified by the SYSTEM subparameter, messages issued by the specified system can trigger rules. However, if no system is specified, only messages originally issued on the current system are used.

SMFID Subparameter

Each computer in a complex installation is assigned an SMF identifier of 1 through 4 characters.

If SMFID is specified, only messages or commands issued from the specified SMF IDs will trigger the rule.

Handling Multi-line Messages

z/OS issues two different types of messages:

- regular
- multi-line

Regular messages are only one logical line of text. Multi-line messages can be any number of lines. When you define a rule, it is important to be aware what type of message (regular or multi-line) is being handled, so that the rule can be designed to process the message correctly.

Some messages appear either as a regular or a multi-line message, depending on the source of the message, for example, the ICH408I RACF message.

Some messages appear as either a regular or multi-line message depending on the status of different on-site programs, for example, whether NetView is active.

To determine whether or not a given message is a multi-line message, look for an occurrence of that message in the All Fields display of the Automation Log. The MULTILN field indicates the type of message.

Message type (regular or multi-line) can also be checked during rule execution by the %%$MULTIFLG system variable, which indicates whether the message that triggered the rule is a multi-line message.

When a multi-line message is specified in an ON MESSAGE rule, each line of the message triggers the rule. However, unless otherwise specified (using a DO ENDMSG statement), DO statements in the rule are not performed until the rule is triggered by the last line of the message.

When specific DO statements should be performed each time the rule is triggered by a line of the message, insert a DO ENDMSG statement as follows:

- DO statements to be performed each time the rule is triggered should appear before the DO ENDMSG statement.
- DO statements to be performed only when the rule detects the last line of the message should appear after the DO ENDMSG statement.

For example, to suppress a multi-line message, suppression must be performed for each line of the message. Therefore, the DO ENDMSG statement must follow the suppress (DO DISPLAY) statement, as shown below.

```
ON MESSAGE IEE853I
...
DO DISPLAY SUPPRESS Y
DO ENDMSG
```

If DO ENDMSG was placed before the DO DISPLAY statement, or was not included in the above rule, only the last line of the message would be suppressed.

For more information, see "DO ENDMSG: Automated Console Action Parameter" on page 350.

Examples

Example 1

Suppress the $HASP373 message (Job Started).

```
RL: $HASP373   LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
  ON MESSAGE  = $HASP373
     JNAME          JTYPE         SMFID        SYSTEM
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED       TIMES IN      MINUTES                        And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION SUPPRESS JOB STARTED MESSAGE
  DESCRIPTION
  ===============================================================================
  DO DISPLAY  = SUPPRESS Y ROUTE     DESC    CONSOLEID    CONSOLE
     SYSTEM
  DO
  ===============================================================================

FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 12.33.38
```

Example 2

Trace all tape-related messages by writing them to the IOA Log under the user ID TAPEOPER. Tape-related messages are characterized by either route code 3 or 5.

```
RL: *          LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
  ON MESSAGE  = *
     JNAME          JTYPE         SMFID        SYSTEM
     ROUTE    003   DESC          CONSOLEID    CONSOLE
     APPEARED       TIMES IN      MINUTES                        And/Or/Not O
  ON MESSAGE  = *
     JNAME          JTYPE         SMFID        SYSTEM
     ROUTE    005   DESC          CONSOLEID    CONSOLE
     APPEARED       TIMES IN      MINUTES                        And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION WRITE A COPY OF EVERY TAPE RELATED MESSAGE TO THE IOA LOG
  DESCRIPTION FOR EASY TRACING
  DESCRIPTION
  ==============================================================================
  DO SHOUT    = TO U-TAPEOPER        URGENCY R SYSTEM           CTO282I
     MESSAGE %%MSG
  DO
 ==============================================================================
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 12.33.38
```

Example 3

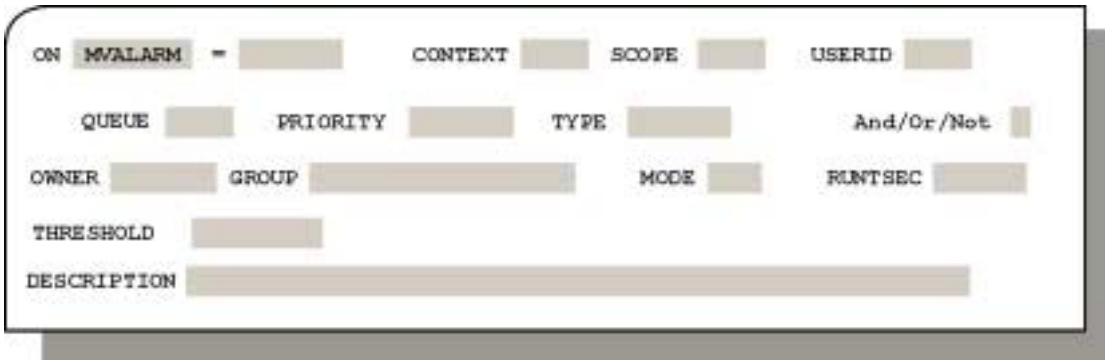
The following rule demonstrates suppression for a multi-line WTO message ($HASP688).

```
RL: $HASP688   LIB CTOP.PRODSMP.RULES                            TABLE: $HASP
COMMAND ===>                                                     SCROLL===> CRSR
-------------------------------------------------------------------------------
  ON MESSAGE  = $HASP688
     JNAME          JTYPE         SMFID        SYSTEM
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED       TIMES IN      MINUTES                        And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION SUPPRESS ALL LINES OF MULITLINE MESSAGE $HASP688
  DESCRIPTION
  ==============================================================================
  DO DISPLAY  = SUPPRESS Y ROUTE     DESC    CONSOLEID    CONSOLE
     SYSTEM
  DO SHOUT    = TO OPER              URGENCY R SYSTEM           CTO282I
     MESSAGE SUPPRESSING INDIVIDUAL LINES
  ENDMSG
  DO SHOUT    = TO OPER              URGENCY R SYSTEM           CTO282I
     MESSAGE ALL LINES OF MESSAGE $HASP688 WERE SUPPRESSED
  DO
  ==============================================================================
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 18.08.13
```

ON MVALARM: Message/Event Selection Parameter

Monitors and detects performance problems, and issues an alarm as necessary.

Figure 209 ON MVALARM Parameter Format



Optional. Type **MVALARM** (or its abbreviation **MVA**) in the **ON** field and press **Enter**. The subparameters shown in Table 162 are displayed.

Table 162 ON MVALARM Subparameters (part 1 of 2)

Subparameter	Description
alarm_id	The alarm identifier. This is the first word of the alarm message text, from 1 through 12 characters. You can use the mask characters * and ? in this field. Mandatory.
CONTEXT	The MAINVIEW context associated with the alarm. Optional.
SCOPE	The MAINVIEW scope associated with the alarm. Optional.
USERID	The MAINVIEW user associated with the alarm. Optional.
QUEUE	The MAINVIEW queue associated with the alarm. Optional.
PRIORITY	The severity level of the alarm. Optional. Valid values are: ■ CLEAR (or the numeral 6) ■ INFORMATIONAL (or the numeral 5) ■ WARNING (or the numeral 4) ■ MINOR (or the numeral 3) ■ MAJOR (or the numeral 2) ■ CRITICAL (or the numeral 1)

Table 162 ON MVALARM Subparameters (part 2 of 2)

Subparameter	Description
TYPE	The type of the Alarm. Optional. Valid values are: ■ S — A new MAINVIEW alarm. ■ E — The end of the MAINVIEW alarm.
And / Or / Not	Conjunctional subparameter that permits linking of ON statements. Valid values are: ■ A (And) – Both statements must be satisfied. ■ O (Or) – Only one statement need be satisfied. ■ N (Not) – The condition in the following statement must not be satisfied. For detailed information on this subparameter, see "And / Or / Not Subparameter" on page 436.

General Information

The MAINVIEW Alarm Manager inspects data collected by the MAINVIEW line of monitors for values indicating a potential performance problem. It then issues a warning and / or informs the user about the problem, as specified in the alarm definition.

For a complete description of the MAINVIEW Alarm Manager, see the relevant MAINVIEW product documentation.

Example

When a JOBDELAY Alarm appears in the MVMVS context, the first SHOUT informs the system programmer about it.

The second SHOUT sends details about the alarm. CONTROL-O obtains these details from the MAINVIEW Alarm Manager and places them in AutoEdit variables.

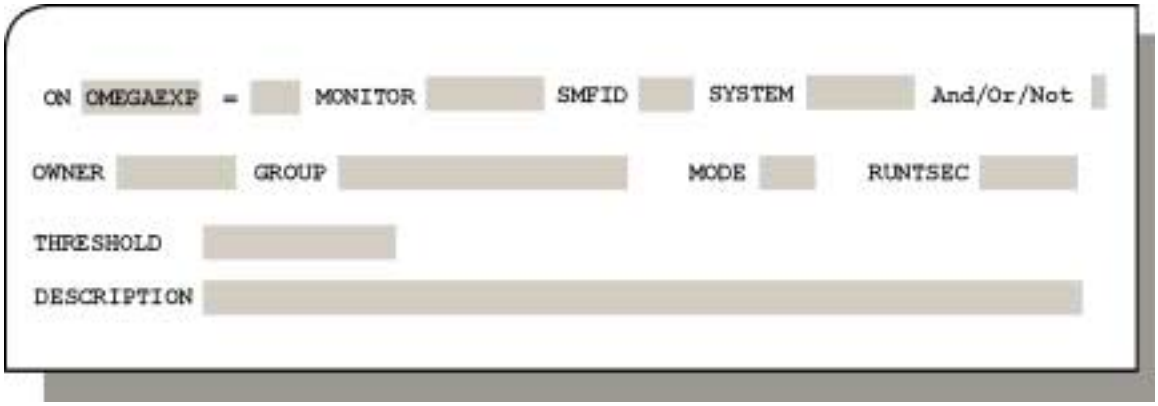
Figure 210 ON MVALARM Parameter Example

```
RL:            LIB IOAP.V610.IOAENV                            TABLE: Z
 COMMAND ===>                                                   SCROLL===> CRSR
 +-------------------------------------------------------------------------+
 ON MVALARM  = JOBDELAY     Context  MVMVS    Scope          Userid
 Queue          PRIORTY CRITICA       Type START             And/Or/Not
 OWNER M88B     GROUP                         MODE PROD    RUNTSEC
 THRESHOLD
 DESCRIPTION INFORM A SYSTEM PROGRAMMER ABOUT A MAINVIEW ALARM
 DESCRIPTION
 ==========================================================================
 DO SHOUT    = TO TSO-SYSPROG       URGENCY R SYSTEM          CTO282I
 MESSAGE SERVICE TO A JOB IS BEING DELAYED
 DO SHOUT    = TO TSO-SYSPROG       URGENCY R SYSTEM          CTO282I
 MESSAGE %%$MVA_DATE %%$MVA_TIME %%$MVA_TEXT
 DO
 ==========================================================================









FILL IN RULE DEFINITION. CMDS: CAPS, EDIT, SHPF, SCHED, OPT           10.16.22
```

ON OMEGAEXP: Message/Event Selection Parameter

Specifies an OMEGAMON exception code the detection of which triggers the rule.

Figure 211 ON OMEGAEXP Parameter Format



Optional. Type **OMEGAEXP** (or its abbreviation **OM**) in the ON field and press **Enter**. The subparameters shown in Table 162 are displayed.

Table 163 ON OMEGAEXP Subparameters

Subparameter	Description
exception_code	Exception code (or mask) the detection of which should trigger the rule. Mandatory.
MONITOR	Name of the OMEGAMON monitor that issued the exception code. Mask characters can be specified in this field. However, at least one non-mask character must be specified. Mandatory.
SMFID	SMF ID of the CPU where the OMEGAMON monitor is running. Mask characters (* and ?) are supported.
SYSTEM	Name of the system where the OMEGAMON monitor is running. Mask characters (* and ?) are supported.
And / Or / Not	Conjunctional subparameter that permits linking of ON statements. Valid values are: ■ A (And) – Both statements must be satisfied. ■ O (Or) – Only one statement need be satisfied. ■ N (Not) – The condition in the following statement must not be satisfied. For detailed information on this subparameter, see "And / Or / Not Subparameter" on page 436.

General Information

The default values for the SMFID and SYSTEM subparameter are the current system. If no value is specified for either SMFID or SYSTEM, the rule is triggered only by events that occur in the current system.

Example

The OMEGAMON monitor checks the MAX TASK CICS parameter periodically, and issues an exception code if a specified threshold value is reached. The following sample detects this exception code, and notifies the CICS administrator of the problem.

Figure 212 OMEGAEXP Parameter Example

```
RL: MAXP       LIB CTO.PROD.RULES                                TABLE: OMEGA
COMMAND ===>                                                     SCROLL===> CRSR
+-----------------------------------------------------------------------------+
  ON OMEGAEXP = MAXP MONITOR OMEGCICS SMFID      SYSTEM          And/Or/Not
  OWNER COURSO5  GROUP                          MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION INFORM THE CICS ADMINISTRATOR ABOUT THE MAX TASK IN CICS
  DESCRIPTION
  ==============================================================================
  DO SHOUT    = TO TSO-CICSADMIN     URGENCY R SYSTEM           CTO282I
     MESSAGE CICS MAX TASKED REACHED %%$V2
  DO
==============================================================================
FILL IN RULE DEFINITION. CMDS: EDIT , SHPF , SCHED , OPT               14.23.00
```

ON RULE: Message/Event Selection Parameter

Indicates that the current rule should be performed only when invoked by a DO RULE statement in another CONTROL-O rule.

Figure 213 ON RULE Parameter Format

```
ON RULE     =

OWNER        GROUP                    MODE        RUNTSEC

THRESHOLD

DESCRIPTION
```

Optional. Type **RULE** (or its abbreviation **R**) in the **ON** field and press **Enter**. Specify a value for the following subparameter to the right of the = prompt:

identifier – rule name from 1 through 8 characters in length
The rule name must be unique within its rule table.

General Information

No additional Message/Event Selection parameters (ON statements) can be specified with an ON RULE statement. If a value is specified for the OWNER parameter in an ON RULE rule it is ignored. The OWNER specified for the rule that called this rule (using a DO RULE statement) is applied to the ON RULE rule.

DO RETURN can be used to exit from a rule and return to a calling rule, or to processing of other existing rules. DO TERMINAT can be used to end the processing of a triggering rule and any called rules, and to continue to the next rule.

NOTE

The value specified for the RUNTSEC parameter for each ON RULE rule is applied to that rule even though the OWNER parameter is not.

Example

When the STOPSTC rule is triggered, stop the started task and wait for the termination message.

Figure 214 ON RULE Parameter Example

```
RL: STOPSTC    LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-----------------------------------------------------------------------------+
  ON RULE     = STOPSTC
  OWNER IOAADMIN GROUP                        MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION STOP AN STC AND WAIT FOR TERMINATION
  DESCRIPTION
  ==============================================================================
  /*
  /* PARSE THE INPUT PARAMETERS: JOBNAME AND TIMEOUT VALUE
  /*
  DO SET      = %%$PARSE %%$ARGS JNM TM                            GLOBAL  N
  IF       %%$STATUS %%JNM NE ACTIVE
  /*
  /* JOB IS NOT ACTIVE. SET THE STATUS VARIABLE
  /*
  DO SET      = %%STATUS_JOBNAME= INACTIVE                         GLOBAL  Y
  ELSE
  /*
  /* JOB IS ACTIVE. STOP IT AND WAIT FOR TERMINATION MESSAGE
  /*
  DO SET      = %%TIMEOUT = %%TM                                   GLOBAL  N
  DO COMMAND  = P %%JNM
  WAIT        CONSOLEID    CONSOLE          SYSTEM
  WAITMODE   Y             WAITRESP              TIMEOUT
  RESPMSG IEF404I
  /*
  /* IF TERMINATION MESSAGE BELONGS TO OUR JOB, THEN SET STATUS
  /*
  IF       %%JOBNAME EQ %%JNM
  DO SET      = %%STATUS_%%JOBNAME = INACTIVE                      GLOBAL  Y
     ENDIF
     ENDMSG
     ENDIF
  DO
  FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 08.24.08
```

ON SMS: Message/Event Selection Parameter

Specifies the Storage Management System (SMS) data set allocation event that triggers the rule.

Figure 215 ON SMS Parameter Format

```
ON  SMS      =  FILE.NAME
  ACS CALL  ALL  JNAME        JTYPE    SMFID      SYSTEM
   DDNAME       DSORG VSAM      UNIT            DS-TYPE
   PGM          USER                                  And/Or/Not
OWNER SMSADMIN  GROUP                    MODE PROD    RUNTSEC
THRESHOLD
DESCRIPTION
```

Optional. Type **SMS** in the **ON** field and press **Enter**. The subparameters shown in Table 164 are displayed.

Table 164 ON SMS Subparameters (part 1 of 2)

Subparameter	Description
file_name	Name (or mask) of the data set being allocated. Mandatory.
ACS CALL	Type of ACS (Automatic Class Selection) routine that is executing. Mandatory. Valid values are: ■ MANAGMNT – Management class selection routine. ■ DATA – Data class selection routine. ■ STORAGE – Storage class selection routine. ■ ALL – All of the above. The rule is executed three times for the data set, once for each type of selection routine. ■ * – Same as ALL.
JNAME	Name (or mask) of the job that allocates the data set. Optional.
JTYPE	Type of job that allocates the data set. Optional. Valid values are: ■ J – Batch job (JOB). ■ S – Started task (STC). ■ T – TSO user (TSU).
SMFID	SMF ID of the CPU that requests the allocation. The default is the current CPU.
SYSTEM	System name of the CPU that requests the allocation. The default is the current system.
DDNAME	Name (or mask) of the DD statement that allocates the data set. Optional.

Table 164 ON SMS Subparameters (part 2 of 2)

Subparameter	Description
DSORG	Data set organization of the data set. Optional. Valid values are: ■ PS – Physical sequential data set. ■ SEQ – Physical sequential data set. ■ PO – Partitioned data set (library). ■ PDS – Partitioned data set (library). ■ VS – VSAM data set. ■ DA – Direct access data set.
UNIT	Unit type of data set in allocation. Optional.
DS-TYPE	Type of the data set in allocation. Optional. Valid values are: ■ GDG – Generation data set. ■ GDS – Generation data set. ■ PERM – Permanent data set. ■ TEMP – Temporary data set.
PGM	Name or mask of the program that requests the allocation. Optional.
USER	Name or mask of the user that requests the allocation. Optional.
And / Or / Not	Conjunctional subparameter that permits linking of ON statements. Valid values are: ■ A (And) – Both statements must be satisfied. ■ O (Or) – Only one statement need be satisfied. ■ N (Not) – The condition in the following statement must not be satisfied. For detailed information on this subparameter, see "And / Or / Not Subparameter" on page 436.

General Information

SMS, a component of z / OS, is executed during data set allocation and is used to manage storage space on disk. SMS creates a data set in an appropriate place with appropriate attributes, based upon the data set name. The name, created by the user, should be created using naming conventions and based upon desired data set characteristics. SMS provides interfaces to the user to specify how classes are selected, based upon the data set name.

SMS calls CONTROL-O using DO SMS statements and ACS (CLIST-like routines, that are explained in the following paragraphs) to allocate data sets. SMS calls Automatic Class Selection (ACS) exit routines that control the triggering of ON SMS rules. ON SMS is used to trap SMS information received from the call.

ACS CALL Parameter

When a new data set is allocated, SMS calls one or all of the following ACS exit routines, depending on the value specified in the ACS Call. If you set ACS CALL to ALL, the rule is triggered three times, once for each ACS exit routine.

- Data class selection.
- Management class selection.
- Storage class selection.

NOTE

Do not set ACS CALL to ALL in combination with DO SMSCLASS, because the rule will assign the same class name to all three classes.

Example

Change the class set by the SMS ACS rules to a new class, NEWCLASS. ID 01 is the default and cannot be changed.

Figure 216 ON SMS Parameter Example

```
COMMAND ===>                                                    SCROLL===> CRSR
 +-----------------------------------------------------------------------------+
ON SMS      = DSN.SMS.FILE
     ACS CALL ALL      JNAME MYJOBNAM JTYPE   SMFID      SYSTEM
     DDNAME  DDNAME    DSORG PDS      UNIT UNIT          DS-TYPE TEMP
     PGM               USER  GTUSER                            And/Or/Not
  OWNER N18A     GROUP                        MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION
  ==============================================================================
  DO SMSCLASS = ID 01 CLASS NEWCLASS
  DO SMSMSG   = ID 1  MESSAGE OVERRIDE ALL  ACS ROUTINES
  DO
  ==============================================================================
  DAYS                                                          DCAL
                                                                      AND/OR
  WDAYS                                                         WCAL
  MONTHS  1- Y 2- Y 3- Y 4- Y 5- Y 6- Y 7- Y 8- Y 9- Y 10- Y 11- Y 12- Y
  DATES
  CONFCAL          SHIFT
  ENVIRONMENT SMFID      SYSTEM
  ==============================================================================
  IN
  TIME FROM      UNTIL           INTERVAL      PRIORITY     CONTINUE SEARCH Y
  ======= >>>>>>>>>>>>>>>> END OF RULE DEFINITION PARAMETERS <<<<<<<<<<<<<<< =====
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                  08.24.08
```

ON STEP: Message/Event Selection Parameter

Specifies a job step the completion of which triggers the rule.

Figure 217 ON STEP Parameter Format

```
ON STEP    =          JTYPE   SMFID    SYSTEM
   PROCSTEP          PGMSTEP          STEPRC          And/Or/Not
OWNER          GROUP                    MODE      RUNTSEC
THRESHOLD
DESCRIPTION
```

Optional. Type **STEP** (or its abbreviation **STE**) in the **ON** field and press **Enter**.

The subparameters in Table 165 are displayed:

Table 165 ON STEP Subparameters (part 1 of 3)

Subparameter	Description
jobname	Name (or mask) of the job to be monitored for step termination. Mandatory.
JTYPE	Type of job to be monitored for the step termination event. Optional. Valid values are: ■ J (JOB) – batch job ■ S (STC) – started task ■ T (TSU) - tso user task. ■ ' ' (blank) – any type of job. Default. If JTYPE is specified, only the termination of steps from the specified type of job can trigger the rule.
SMFID	SMF ID of the CPU to monitor for step termination. Mask characters (* and ?) are supported. The default is the current CPU.
SYSTEM	Name of the system to monitor for step termination. Mask characters (* and ?) are supported. The default is the current system.

Table 165 ON STEP Subparameters (part 2 of 3)

Subparameter	Description
PROCSTEP	Name or mask of a step invoking a procedure or, for a started task, the task ID. Optional. If omitted, all procedure steps in the selected jobs are monitored.
	Note: When a started task is initiated, it can be assigned a task ID. For example, in the S GTF.G command, the task ID of GTF is G. If a task ID is not specified, z/OS assigns a default task ID to the started task, as follows: ■ For a system started task with the step name IEFPROC, z/OS sets an internal task ID. ■ For other started tasks, the default task ID is the same as the name of the procedure (started task). Therefore, when using CONTROL-O to monitor system started tasks, if no task ID is specified in the START command, the PROCSTEP parameter should not be specified.
PGMSTEP	Name (or mask) of a step invoking a program. Optional. If omitted, all program steps in the selected jobs are monitored.
	Note: When a system started task with the step name IEFPROC is initiated, MVS assigns the step a default program name. Therefore, when using CONTROL-O to monitor these system started tasks, the PGMSTEP parameter should not be specified.

Table 165 ON STEP Subparameters (part 3 of 3)

Subparameter	Description
STEPRC	Return codes or status returned upon the termination of the specified steps that will satisfy the step termination criteria. Valid values are: ■ OK – step ended with a condition code of 0 ■ NOTOK – step ended with a non-zero code ■ Cnnnn – condition code. ■ Snnn – system abend code ■ Unnnn – user abend code ■ blank / **** – If no value or four asterisks are specified, the return code and the status are irrelevant. Asterisks can be specified in place of code digits. Condition codes and abends can be preceded by code qualifiers (<, >, N). This is described in "The STEPRC Subparameter" on page 481.
And / Or / Not	Conjunctional parameter that opens a new ON statement and links it to the previous ON statement. Valid values are: ■ A (And) – indicates AND logic between the two ON statements ■ O (Or) – indicates OR logic between the preceding and following sets of ON statements ■ N (Not) – indicates AND NOT logic between the two ON statements For detailed information on this subparameter, see "And / Or / Not Subparameter" on page 436.

General Information

ON STEP rules are triggered when specified job steps terminate with specified return codes or statuses.

Specification of values for the PROCSTEP, PGMSTEP, and STEPRC optional subparameters limit the situations that can satisfy the step termination event. Conversely, if a subparameter is blank, that subparameter is ignored. For example:

- If PGMSTEP and PROCSTEP values are both specified, the rule is triggered only if the specified PGMSTEP is completed in the specified PROCSTEP procedure.

- If a PGMSTEP value is specified without a PROCSTEP value, the rule is triggered if the PGMSTEP is completed anywhere within the job stream.

NOTE

To monitor data set events for a job, started task or TSO user, the job, started task or TSO user must have MSGLEVEL set to (1,1) and the IEF403I message or the IEF125I message should appear on the job log.

A DSNEVENT can be triggered only on the CONTROL-O/CMEM that runs on the same z/OS system on which the event occurs. Even a focal CONTROL-O or CMEM in a Sysplex environment is insufficient. This is because CONTROL-O or CMEM intercepts the messages written to JESYSMSG while they are being written, which can be done only on the same system where the event happens.

The SMFID and SYSTEM Subparameters

The default values for the SMFID and SYSTEM subparameters are the current system. If no value is specified for either SMFID or SYSTEM, the rule is triggered only by events that occur in the current system.

The STEPRC Subparameter

When specifying a condition code or abend code in the STEPRC subparameter, any characters in the code can be replaced by an asterisk (*). An asterisk means “any value” for the character it replaces. For example, if S*13 is specified, the code criteria is satisfied by codes such as S013, S613, S913. When specifying condition and abend codes, the following qualifiers shown in Table 166 can be used as indicated.

Table 166 STEPRC ON STEP Subparameter Qualifiers

Qualifier	Description
>	Greater than – valid for condition codes and user abend codes
<	Less than – valid for condition codes and user abend codes
N	Not Exist – triggers the rule if the specified code does not exist in the step Valid as a qualifier for condition codes, user abend codes, and system abend codes.

Example

When the STEP2 step in the PRD00010 job is completed, add a prerequisite condition indicating that a file has been created.

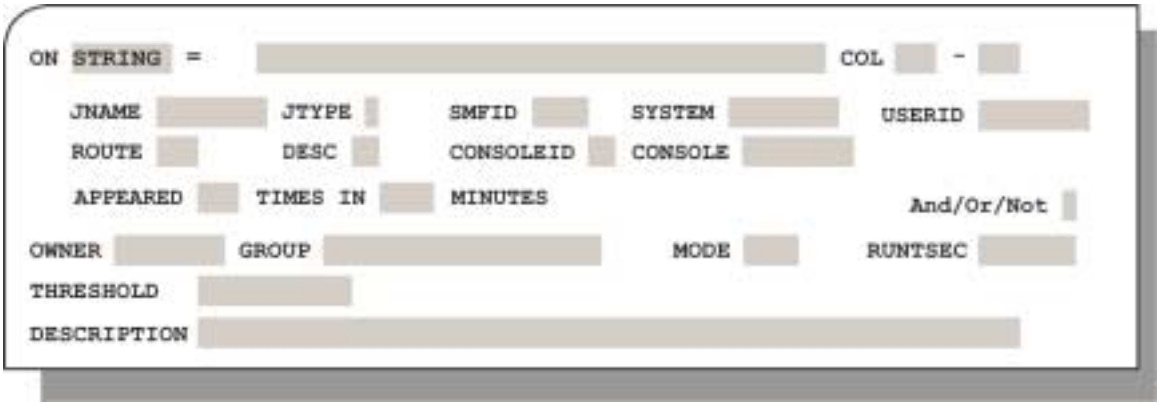
Figure 218 ON STEP Parameter Example

```
RL: PRD00010   LIB CTO.PROD.RULES                                TABLE: SAMPLE
COMMAND ===>                                                     SCROLL===> CRSR
-------------------------------------------------------------------------------
  ON STEP     = PRD00010 JTYPE   SMFID      SYSTEM
     PROCSTEP STEP2      PGMSTEP            STEPRC OK            And/Or/Not
  OWNER IOAADMIN GROUP                          MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION RULE TRIGGERED BY JOB PRD00010, STEP2 TO ADD A CONDITION
  DESCRIPTION INFORMING THE FILE WAS CREATED
  DESCRIPTION
  ==============================================================================
  DO COND     = FILE-CREATED         ODAT +
  DO
  ==============================================================================
  DAYS                                                           DCAL
                                                                        AND/OR
  WDAYS   ALL                                                    WCAL
  MONTHS  1- Y 2- Y 3- Y 4- Y 5- Y 6- Y 7- Y 8- Y 9- Y 10- Y 11- Y 12- Y
  DATES
  CONFCAL          SHIFT
  ENVIRONMENT SMFID      SYSTEM
  ==============================================================================
  IN
  TIME FROM      UNTIL           INTERVAL      PRIORITY     CONTINUE SEARCH Y
FILL IN RULE DEFINITION. CMDS: EDIT , SHPF , SCHED , OPT               09.11.17
```

ON STRING: Message/Event Selection Parameter

Specifies the message text the appearance of which triggers execution of the rule.

Figure 219 ON STRING Parameter Format



Optional. Type **STRING** (or its abbreviation **STR**) in the **ON** field and press **Enter**. The subparameters described in Table 167 are displayed.

Table 167 ON STRING Subparameters (part 1 of 2)

Subparameter	Description
string	Message text to be intercepted by CONTROL-O from the first line of the message. Mandatory. A string of from 1 through 47 characters can be specified. Mask characters (* and ?) are supported for this subparameter.
COL	*fromcol-tocol* – The from and to column range subparameter limits the search for the specified string. The first column (column 1) is the column containing the first character of the message ID. For more information, see "Column Range" on page 486.
JNAME	Name of the job (or mask) that issued the message text. It must be a valid job name of from 1 through 8 characters. Optional. If JNAME is specified, only messages containing the specified string issued from the specified JNAME will trigger the rule.
JTYPE	Type of the job from which the message (containing the specified string) originated. Optional. Valid values are: ■ J – Batch job (JOB) ■ S – Started task (STC) ■ T – TSO user (TSU) If JTYPE is specified, only messages containing the specified string issued from a job of the specified type will trigger the rule.

Table 167 ON STRING Subparameters (part 2 of 2)

Subparameter	Description
SMFID	SMF ID of the CPU that issued the message. Optional.
SYSTEM	Name of the system where the message was sent. Mask characters (* and ?) are supported.
USERID	ID of the address space that created the event.
ROUTE	Routing code (from 0 through 128) to be used as selection criteria. Optional.
DESC	Descriptor code (from 0 through 16) to be used as selection criteria. Optional.
CONSOLEID	Console identification used as a selection criteria; only messages containing the specified string, issued to the specified console, will trigger the rule. Optional.
CONSOLE	Name of the console where the message was sent. Mask characters (* and ?) are supported.
APPEARED *n* TIMES IN *m* MINUTES	Number of times (*n* = 2 through 999) the string must occur within a specified number of minutes (*m* = 1 through 9999) before CONTROL-O triggers the rule.
And / Or / Not	Conjunctional subparameter that permits linking of ON statements. Valid values are: ■ A (And) – Both statements must be satisfied. ■ O (Or) – Only one statement need be satisfied. ■ N (Not) – The condition in the following statement must not be satisfied. For detailed information on this subparameter, see "And / Or / Not Subparameter" on page 436.

General Information

The specified string is detected only if it appears in either a regular message, or the major (first) line of a multi-line message.

ROUTE Subparameter

z / OS assign routing codes to each console. When a message is sent to a specific routing code, consoles with that routing code display the message. Usually, routing codes correspond to logical groups of messages that are assigned by the system. The ROUTE subparameter uses the routing code as a message or event selection criteria. Only messages with the specified routing codes are selected.

For example, your tape-related messages use a routing code of 3 and 5. CONTROL-O can intercept all messages with a routing code of 3 or 5 and redirect them to a specific console, or handle them in another manner.

For additional information regarding routing and descriptor codes, refer to the IBM publication *Routing and Descriptor Codes, GC38-1102*.

DESC Subparameter

Descriptor codes determine message display characteristics such as deletion, scrolling, highlighting, and color. The DESC subparameter uses the descriptor code as a message selection criteria – only messages having the specified descriptor codes will be selected. For example, CONTROL-O can intercept all messages that have a descriptor code of 1, 2 or 11, which indicates the need for critical action, and send these messages to a specific console.

Descriptor codes also control the indicator character. Any message sent by the operating system or an authorized program begins with a blank or asterisk (*) indicator. Messages sent by application programs begin with plus signs (+) or at signs (@). The asterisk, or at sign, marks the message as critical (descriptor code 1, 2, or 11). CONTROL-O ignores these indicator characters during message ID comparison.

For additional information regarding routing and descriptor codes, refer to the IBM publication *Routing and Descriptor Codes, GC38-1102*.

CONSOLEID Subparameter

During system initialization, each console on the system is assigned a console identifier by z/OS. This identifier (*xx*) is a 2-digit number from 00 through 99 that corresponds to the position of the CONSOLE statement in the CONSOL*xx* member in the SYS1.PARMLIB library.

Only messages issued to the specified console IDs will be selected. For example, CONTROL-O can intercept all messages that have a specific console ID, and redirect them or handle them in another manner.

CONSOLE Subparameter

This is the name that is assigned to the console. A valid name contains 2 to 8 alphanumeric characters.

Only the message issued to the specified console NAME will be selected. For example, CONTROL-O can intercept any message that has a specific console NAME, and redirect the message or handle it in another manner.

SYSTEM Subparameter

The name specified by the SYSTEM subparameter is the unique system name of the z/OS image in the Sysplex environment.

When a system name is specified by the SYSTEM subparameter, messages issued by the specified system can trigger rules. However, if no system is specified, only messages originally issued on the current system will be used.

SMFID Subparameter

Each computer in a complex installation is assigned an SMF identifier of from 1 through 4 characters.

If SMFID is specified, only messages or commands issued from the specified SMF IDs will trigger the rule.

Column Range

As mentioned above, the first column (column 1) that can be searched for the specified string is the column where the first character of the message ID appears. Sometimes, z/OS adds a special character (+, *, or @) before the message. This character is not part of the message and is not counted as column 1 of the message.

You can check what CONTROL-O is detecting by activating a rule containing the following statements:

```
ON STRING xxxx
MODE LOG
DO SET %%A = %%$MSG
```

When this rule is processed, it produces messages in the Automation Log that contain the value of the %%$MSG variable, the detected string.

NOTE

The ON STRING statement cannot be used to detect:

- fields shown to the left of the message ID in the SYSLOG (such as jobid, or time)
- reply IDs
- special characters in a WTO or WTOR message, for example, *, +, or @

Example

Check the messages of the M200AB10 job for the string NOT BALANCED in columns 20 through 40 of the message. If the string is found, trigger a job for execution under CONTROL-M, using a DO FORCEJOB statement that selects a job from a CONTROL-M scheduling table and places it on the Active Jobs file. The job name is composed of the third word of the message (using an AutoEdit variable). The message is also suppressed from the operator console.

Figure 220 ON STRING Parameter Example

```
RL: NOT BALANC LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
  ON STRING   = NOT BALANCED                                     COL 020 - 040
     JNAME M200AB10 JTYPE J       SMFID        SYSTEM
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED     TIMES IN      MINUTES                          And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION CHECK IF A BRANCH IS NOT BALANCED DURING UPDATE EXECUTION.
  DESCRIPTION IF IT IS, TRIGGER A JOB UNDER CONTROL-M. THE JOB NAME IS
  DESCRIPTION DETERMINED ACCORDING TO THE BRANCH GROUP NAME (THIRD WORD
  DESCRIPTION OF THE MESSAGE). THE MESSAGE IS ALSO SUPPRESSED.
  DESCRIPTION
  ===============================================================================
  DO DISPLAY  = SUPPRESS A ROUTE     DESC    CONSOLEID    CONSOLE
     SYSTEM
  DO SET      = %%J = %%$W3                                        GLOBAL  N
  DO FORCEJOB = TABLE   M200NBAL     JOB NBAL%%J                 DATE ODAT
                 LIBRARY CTM.PROD.SCHEDULE
  DO
===============================================================================
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                12.33.38
```

ON SYSOUT: General Parameter

Specifies the SYSOUT text that triggers the rule when it appears.

NOTE

ON SYSOUT is not available for use with JESMSGLG, JESJCL, or JESYSMSG, which are the first three data sets of a job.

Figure 221 ON SYSOUT Parameter Format

```
ON SYSOUT = JNAME JTYPE SMFID SYSTEM
  PROCSTEP PGMSTEP And/Or/Not
ON MESSAGE =
  JNAME JTYPE SMFID SYSTEM USERID
```

Optional. Type **SYSOUT** in the **ON** field and press **Enter**. The subparameters shown in Table 168 are displayed.

Table 168 ON SYSOUT Subparameters (part 1 of 2)

Subparameter	Description
sysout_name	Name (or mask) of the SYSOUT DD statement to which the message is issued. Mandatory.
JNAME	Name (or mask) of the job that contains the SYSOUT DD statement. Optional.
JTYPE	Type of job that contains the SYSOUT DD statement. Optional. Valid values are: ■ J – batch job (JOB) ■ S – started task (STC) ■ T – TSO user (TSU)
SMFID	SMF ID of the CPU where the job runs. The default is the current CPU.
SYSTEM	System name of the CPU where the job runs. The default is the current system.
PROCSTEP	Procedure step name (or mask) of the SYSOUT DD statement. Optional

Table 168 ON SYSOUT Subparameters (part 2 of 2)

Subparameter	Description
PGMSTEP	Program step name (or mask) of the SYSOUT DD statement. Optional.
And / Or / Not	Conjunctional subparameter that links ON statements. Optional. Valid values are: ■ A (And) – Both statements must be satisfied. ■ O (Or) – Only one statement must be satisfied. ■ N (Not) – The condition in the following statement must not be satisfied. For detailed information on this subparameter, see "And / Or / Not Subparameter" on page 436.

General Information

The ON SYSOUT statement causes CONTROL-O to monitor the text written to the specified SYSOUT. Unless an ON MESSAGE statement is also specified, the rule will be triggered for each message written to the SYSOUT. The number of messages that trigger the rule can be limited by using conjunctional operators (And / Or / Not) to connect ON SYSOUT, ON MESSAGE, and ON STRING statements.

When a SYSOUT is opened, CONTROL-O searches for an ON SYSOUT statement that has ON SYSOUT criteria that match the criteria of the new SYSOUT. If the search succeeds, CONTROL-O starts to monitor the message traffic in the SYSOUT, regardless of the conjunctional operator. From this point on, CONTROL-O treats every line that is written to the SYSOUT as a standard message. For this reason, all lines written to the SYSOUT are also written to the Operation Log.

Although CONTROL-O constantly monitors the SYSOUT stream, CONTROL-O triggers the rule only when its ON statements are satisfied.

You can use the ON SYSOUT statement to respond to messages that an application writes to SYSOUT. The following are examples of the use of the ON SYSOUT parameter:

- respond to messages that the backup utility writes to SYSOUT
- check for problems with SORT by examining the messages that SORT writes to the log
- verify that various database procedures do not write warning messages
- monitor an application developed by your site

Example

Check the message that the IEBCOPY utility writes to the SYSPRINT during COMPRESS, and issues a Shout of the IEB1098I message.

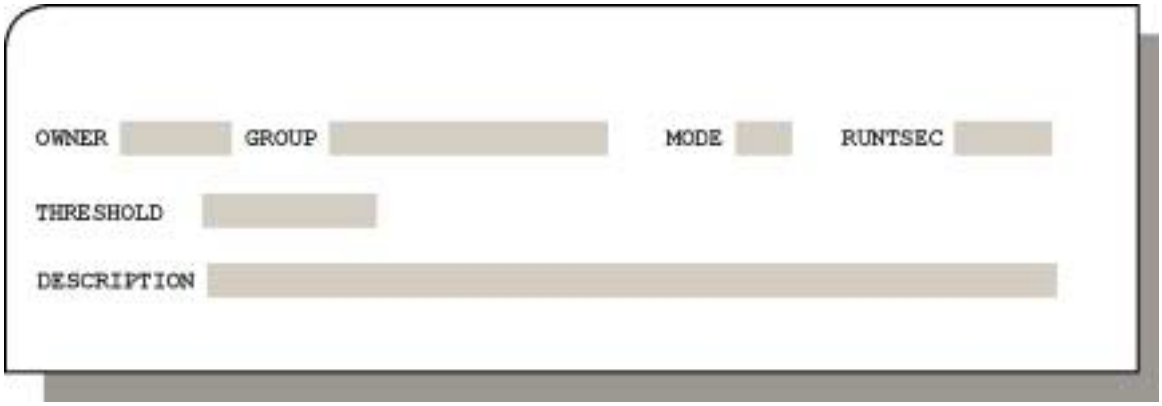
Figure 222 ON SYSOUT Parameter Example

```
RL: COMPRESS      LIB CTOW.WORKO.RULES                          TABLE: DATES
COMMAND ===>                                                  SCROLL===> CRSR
+-----------------------------------------------------------------------------+
  ON SYSOUT   = SYSPRINT JNAME COMPRESS JTYPE   SMFID      SYSTEM
     PROCSTEP            PGMSTEP                                And/Or/Not A
  ON MESSAGE  = IEB1098I
     JNAME          JTYPE      SMFID        SYSTEM          USERID
     ROUTE          DESC       CONSOLEID    CONSOLE
  APPEARED       TIMES IN      MINUTES                        And/Or/Not
  OWNER N18A     GROUP                         MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION IEBCOPY - NUMBER OF MEMBERS COPIED
  DESCRIPTION
  ==============================================================================
  DO SHOUT    = TO OPER              URGENCY R SYSTEM          CTO282I
     MESSAGE IEBCOPY - %%$MSG
  DO
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 12.33.38
```

OWNER: General Parameter

Identifies the user requesting CONTROL-O services. This parameter can be used by the CONTROL-O security mechanism and for documentation purposes and for selection under the Show Option window in the Rule Status screen.

Figure 223 OWNER Parameter Format



Mandatory. The OWNER parameter must be from 1 through 8 characters.

General Information

The OWNER parameter is primarily used by CONTROL-O to determine (together with an external security product, such as TOP SECRET, RACF, or ACF2) those operations each user is authorized to perform.

Example

Check to see if the spool is full at half hour intervals from seven in the morning until seven in the evening.

This rule is used by the INCONTROL administrator, and is grouped with JES2 rules. It is run in production mode.

Figure 224 OWNER Parameter Example

```
RL: SPOOL      LIB CTOW.WORKO.RULES                              TABLE: DATES
COMMAND ===>                                                     SCROLL===> CRSR
-------------------------------------------------------------------------------
  ON EVENT    = SPOOL
  OWNER IOAADMIN GROUP JES2                    MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION WARN OPERATOR IF SPOOL IS FULL.
  DESCRIPTION THIS RULE IS ACTIVATED EVERY 30 MINUTES, FROM 0700 TO 1900
  DESCRIPTION WHEN THE PREREQUISITE CONDITION CTO-MONITOR-SPOOL IS ACTIVE
  DESCRIPTION
  ==============================================================================
  DO COMMAND  = $DSPL
     WAIT        CONSOLEID    CONSOLE          SYSTEM
     WAITMODE   Y             WAITRESP Y            TIMEOUT
     RESPMSG $HASP646
  IF       %%$V2 GE# 70
  DO SHOUT    = TO OPER              URGENCY R SYSTEM          CTO282I
     MESSAGE SPOOL IS %%$V2 FULL - PURGE JOBS
  ENDIF
  ENDMSG
  DO
  ==============================================================================
  DAYS                                                             DCAL
                                                                          AND/OR
WDAYS                                                            WCAL
MONTHS  1- Y 2- Y 3- Y 4- Y 5- Y 6- Y 7- Y 8- Y 9- Y 10- Y 11- Y 12- Y
  DATES
  CONFCAL          SHIFT
  ENVIRONMENT SMFID      SYSTEM
  ==============================================================================
  IN        CTO-MONITOR-SPOOL    STAT
  TIME FROM 0700 UNTIL 1900      INTERVAL 030  PRIORITY     CONTINUE SEARCH Y
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 17.25.16
```

PRIORITY: Runtime Scheduling Parameter

Specifies internal CONTROL-O rule scanning priority.

Figure 225 PRIORITY Parameter Format

```
IN

TIME FROM    UNTIL      INTERVAL    PRIORITY    CONTINUE SEARCH
```

Optional. The PRIORITY parameter must be 2 numeric characters.

The default PRIORITY is blank. (Note that 0 ≠ blank.)

General Information

For each intercepted command or message, PRIORITY determines the order in which CONTROL-O scans rules.

The PRIORITY parameter is ignored for ON RULE rules.

Rules assigned the same priority are processed according to the order in which they were ordered by CONTROL-O.

NOTE

Note for CMEM users: CMEM rules, loaded through Screen C, or by the DACTMLST member) are assigned a priority of 100.

Example

When a command is issued to start NetView, and it is already active, ignore the command and inform the user that the command has been suppressed.

This rule is given the highest priority.

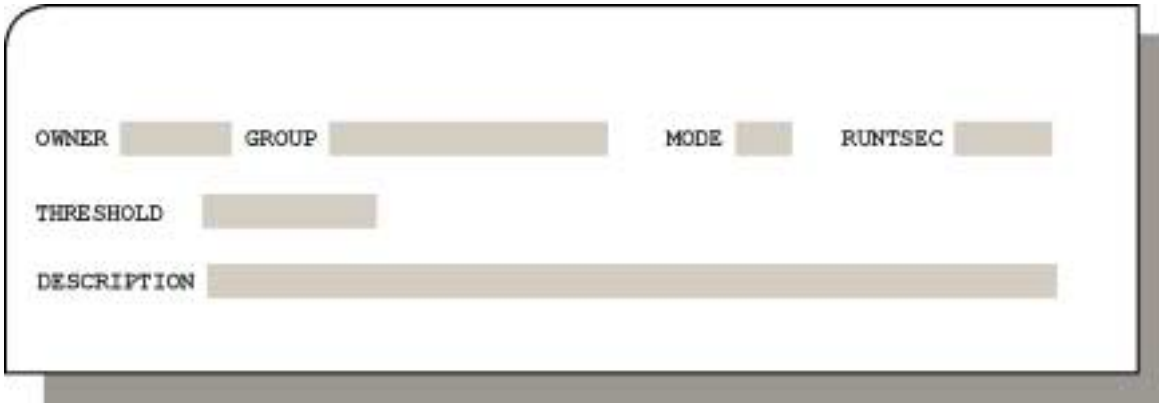
Figure 226 PRIORITY Parameter Example

```
RL: START NE   LIB CTOW.WORKO.RULES                                TABLE: DATES
COMMAND ===>                                                       SCROLL===> CRSR
-------------------------------------------------------------------------------
  ON COMMAND  = START NETVIEW
     JNAME          JTYPE         SMFID        SYSTEM       USERID
     ROUTE          DESC          CONSOLEID    CONSOLE
     APPEARED     TIMES IN      MINUTES                         And/Or/Not
  OWNER IOAADMIN GROUP NETVIEW                 MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION PREVENT START-UP OF NETVIEW IF IT IS ALREADY ACTIVE
  DESCRIPTION
  ==============================================================================
  DO DISPLAY  = SUPPRESS Y ROUTE     DESC    CONSOLEID    CONSOLE
     SYSTEM
  DO SHOUT    = TO OPER              URGENCY R SYSTEM           CTO282I
     MESSAGE START COMMAND SUPPRESSED. NETVIEW IS ALREADY ACTIVE
  DO
  ==============================================================================
  DAYS                                                             DCAL
                                                                          AND/OR
  WDAYS                                                            WCAL
  MONTHS  1- Y 2- Y 3- Y 4- Y 5- Y 6- Y 7- Y 8- Y 9- Y 10- Y 11- Y 12- Y
  DATES
  CONFCAL          SHIFT
  ENVIRONMENT SMFID      SYSTEM
  ==============================================================================
  IN        CTO-NETVIEW-ACTIVE   STAT
  TIME FROM      UNTIL           INTERVAL      PRIORITY 99  CONTINUE SEARCH N
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                  17.24.07
```

RUNTSEC: General Parameter

Specifies the runtime security environment for the rule.

Figure 227 RUNTSEC Parameter Format



Optional. Valid values are described in Table 169.

Table 169 RUNTSEC Values

Value	Description
NONE	Runtime security checks are not carried out for this rule.
OWNER	Runtime security checks are carried out using the user ID entered in the OWNER field of the rule.
TRIGGER	Runtime security checks are carried out using the user ID associated with the started task, TSO use or batch job that issued the message or command that invoked the rule.
blank	Whether runtime security checks are performed, depending on the value set for the RUNTDFT global parameter (NONE, OWNER, or TRIGGER) in the CTOPARM member during CONTROL-O installation. Default.

NOTE

The value TRIGGER can be set only for rules with the following ON statements:

- ON MESSAGE
- ON STRING
- ON COMMAND
- ON DSNEVENT
- ON JOBEND
- ON STEP

In all other cases, RUNTSEC is interpreted as OWNER.

General Information

The RUNTSEC parameter is used by the CONTROL-O security interface for interaction with external security products, such as RACF, TOP SECRET, and ACF2.

CONTROL-O security checks are carried out in two stages:

- at order time
- at runtime

At order time, security checks are carried out to ascertain whether the owner of the rule, as specified in the OWNER subparameter, is authorized to request each of the rule statements.

At runtime, additional security checks are carried out to determine whether the user who owns the rule (when RUNTSEC is set to OWNER) or the user who triggered the rule (when RUNTSEC is set to TRIGGER) is authorized to execute each DO COMMAND, DO COND, DO TSO, DO KSL, DO FORCEJOB statement to be executed in the rule.

NOTE

If runtime security is active for a rule (RUNTSEC is set to OWNER or TRIGGER), the operator commands issued by a DO COMMAND will always be issued by the CONTROL-O monitor and not under the same address space as the message or command that triggered the rule. For more information, see "Issuing a Command" on page 326.

Example

Delete the data sets of a job under the security ID of the triggering job.

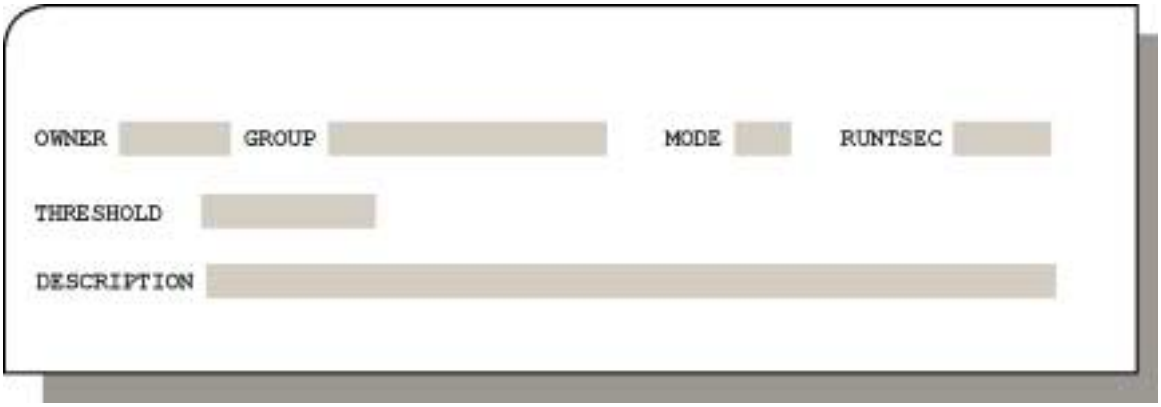
Figure 228 RUNTSEC Parameter Example

```
RL: PRDJOB01   LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
  ON DSNEVENT = PRDJOB01 JTYPE   SMFID      SYSTEM
     DSN      *                                            DISP CATLG
     PROCSTEP            PGMSTEP            STEPRC NOTOK         And/Or/Not
  OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC TRIGGER
  THRESHOLD
  DESCRIPTION   WHEN JOB ENDS NOT OK, DELETE THE DATASETS CREATED BY
  DESCRIPTION   THE JOB. THE DELETE IS PERFORMED BY TSO COMMAND, UNDER
  DESCRIPTION   THE SECURITY USERID OF THE TRIGGERING JOB (RUNTSEC=TRIGGER)
  DESCRIPTION
  ==============================================================================
  /* DELETE THE DATASET
  /*
  DO TSO      = DEL %%$DSN
     WAITMODE   N                                      TIMEOUT         STOP N
     INITPROC   N             SHARELOC N               IMMEDIATE N
  /* WRITE A MESSAGE TO THE IOA LOG
  /*
  DO SHOUT    = TO U-IOAADMIN        URGENCY R SYSTEM           CTO282I
  MESSAGE JOB %%$JOBNAME ENDED NOT OK, DATASET %%$DSN DELETED.
  DO
  ==============================================================================
  DAYS                                                          DCAL
                                                                     AND/OR
  WDAYS   ALL                                                   WCAL
  MONTHS  1- Y 2- Y 3- Y 4- Y 5- Y 6- Y 7- Y 8- Y 9- Y 10- Y 11- Y 12- Y
  DATES
  CONFCAL          SHIFT
  ENVIRONMENT SMFID      SYSTEM
  ==============================================================================
  IN
  TIME FROM      UNTIL           INTERVAL      PRIORITY     CONTINUE SEARCH Y
=====FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF              13.21.53
```

THRESHOLD: Runtime Scheduling Parameter

Limits the number of times that a rule can be triggered in one CONTROL-O interval.

Figure 229 THRESHOLD Parameter Format



Optional. Valid values are 1 through 999999999.

General Information

This parameter is used to prevent unlimited loops within the system. The THRESHOLD parameter value indicates the maximum number of times that CONTROL-O will trigger the rule in one interval.

Before CONTROL-O triggers a rule, it checks if the rule has already been triggered the maximum number of times in the current interval. If so, CONTROL-O does not trigger the rule again, but instead sets the rule STATUS to SUSPEND, and issues the CTO285W message to the console.

The THRESHOLD parameter in the CTOPARM member also limits the number of times that a rule can be triggered in one interval. A value specified in the THRESHOLD parameter of a rule overrides a value specified in the THRESHOLD parameter in CTOPARM.

If the value of the THRESHOLD parameter, in both a rule and CTOPARM, is set to zero or no value, CONTROL-O does not limit the number of times that the rule can be triggered.

Example

Limit execution of the following rule to 10 executions. Do not allow rule to be triggered until it is released from SUSPEND status.

Figure 230 THRESHOLD Parameter Example

```
RL: PRDJOB01   LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                  SCROLL===> CRSR
+-------------------------------------------------------------------------------
  ON COMMAND  = $D A                                                    JNAME
JTYPE      SMFID        SYSTEM          USERID
     ROUTE          DESC       CONSOLEID    CONSOLE
     APPEARED       TIMES IN      MINUTES                        And/Or/Not
  OWNER N18      GROUP                        MODE PROD    RUNTSEC
  THRESHOLD 000000010
  DESCRIPTION
  ==========================================================================
  DO COMMAND  = %%$DA
     WAIT 0000   CONSOLEID    CONSOLE          SYSTEM
     WAITMODE   N
  DO
=====FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF              13.21.53
```

TIME: Runtime Scheduling Parameter

Sets time limits (FROM, UNTIL) for rule activation.

Figure 231 TIME Parameter Format

```
IN

TIME FROM      UNTIL      INTERVAL    PRIORITY    CONTINUE SEARCH
```

The TIME parameter is optional.

FROM and UNTIL must be specified in the valid time format hhmm. In this format, *hh* is hours, and *mm* is minutes.

Example

`2101` is equivalent to 9:01 P.M.

`0301` is equivalent to 3:01 A.M.

TIME can be specified in the following ways:

- TIME FROM *hhmm* UNTIL
- TIME FROM UNTIL *hhmm*
- TIME FROM *hhmm* UNTIL *hhmm*

General Information

CONTROL-O activates the rule only during the time range defined in the TIME parameter.

The rule is activated only from (but not before) the FROM time + the CONTROL-O sleeping interval, and up to the UNTIL time + the CONTROL-O sleeping interval. For more information on the CONTROL-O sleeping interval, see the *INCONTROL for z/OS Installation Guide*.

- If either FROM or UNTIL is blank, the default is the starting time of the working day as specified to CONTROL-O.
- If both FROM or UNTIL are blank, no time limits are assumed.

Example

Check if the spool is full, at half-hour intervals, from seven in the morning until seven in the evening.

Figure 232 TIME Parameter Example

```
RL: SPOOL      LIB CTOW.WORKO.RULES                              TABLE: DATES
COMMAND ===>                                                     SCROLL===> CRSR
-------------------------------------------------------------------------------
  ON EVENT    = SPOOL
  OWNER IOAADMIN GROUP JES2                    MODE PROD    RUNTSEC
  THRESHOLD
  DESCRIPTION WARN OPERATOR IF SPOOL IS FULL.
  DESCRIPTION THIS RULE IS ACTIVATED EVERY 30 MINUTES, FROM 0700 TO 1900
  DESCRIPTION WHEN THE PREREQUISITE CONDITION CTO-MONITOR-SPOOL IS ACTIVE
  DESCRIPTION
===============================================================================
  DO COMMAND  = $DSPL
     WAIT        CONSOLEID    CONSOLE          SYSTEM
     WAITMODE   Y             WAITRESP Y            TIMEOUT
     RESPMSG $HASP646
  IF       %%$V2 GE# 70
  DO SHOUT    = TO OPER              URGENCY R SYSTEM           CTO282I
     MESSAGE SPOOL IS %%$V2 FULL - PURGE JOBS
  ENDIF
  ENDMSG
  DO
  ==============================================================================
  DAYS                                                           DCAL
                                                                       AND/OR
  WDAYS                                                          WCAL
  MONTHS  1- Y 2- Y 3- Y 4- Y 5- Y 6- Y 7- Y 8- Y 9- Y 10- Y 11- Y 12- Y
  DATES
  CONFCAL          SHIFT
  ENVIRONMENT SMFID      SYSTEM
  ==============================================================================
  IN        CTO-MONITOR-SPOOL    STAT
  TIME FROM 0700 UNTIL 1900      INTERVAL 030  PRIORITY     CONTINUE SEARCH Y
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 17.25.16
```

WDAYS: Basic Scheduling Parameter

Specifies days of the week when the rule is ordered.

For more information, see also "DAYS: Basic Scheduling Parameter" on page 307, and "CONFCAL: Basic Scheduling Parameter" on page 300.

Figure 233 WDAYS Parameter Format

```
DAYS                                                    DCAL
                                                        AND/OR
WDAYS                                                   WCAL
MONTHS  1-  2-  3-  4-  5-  6-  7-  8-  9-  10-  11-  12-
DATES
CONFCAL         SHIFT
ENVIRONMENT SMFID       SYSTEM
```

Optional. The WDAYS parameter specifies days of the week when rules should be scheduled, provided other basic scheduling criteria are met.

Values for WDAYS can be specified by themselves, or together with a calendar specified in the WCAL subparameter. WDAYS and WCAL can also be specified together with DAYS and DCAL, which are described in "DAYS: Basic Scheduling Parameter" on page 307.

WDAYS subparameters are described in Table 170.

Table 170 WDAYS Subparameters (part 1 of 2)

Subparameter	Description
WDAYS	Days of each week in the month when a mission is scheduled. The months when missions are scheduled are specified in the MONTHS parameter, which is described in "MONTHS: Basic Scheduling Parameter" on page 432. Various formats (described later) can be used to specify WDAYS (for example, 3 means the 3rd day of the week, L2 means the day before the last day of the week).
	Note: Start of the week depends on IOA Installation Parameters specifying whether 1 is equivalent to Sunday or to Monday. Contact your INCONTROL administrator for your site standard. All references below assume that 1 is equivalent to Monday, 2 to Tuesday, and so on. The last day of the week is always coded zero (0).

Table 170 WDAYS Subparameters (part 2 of 2)

Subparameter	Description
WCAL	Name of a calendar containing a predefined set of dates (referred to as working days) on which a mission should be scheduled. A specified value must be a valid member name of from 1 through 8 characters or an * to indicate that the calendar specified in the CONFCAL parameter should be used for scheduling. For more information about how to define, use and modify calendars, see "IOA Calendar Facility" on page 237.

A calendar specified in WCAL does not have to exist when defining the rule. However it must exist when the rule is ordered.

Assuming all other basic scheduling criteria are met:

- When WDAYS is specified without WCAL, the rule is scheduled on the specified days of the week.
- When WCAL is specified without WDAYS, the rule is scheduled on the working days marked in the WCAL calendar.
- When WDAYS and WCAL are both specified, scheduling depends on the how the working days defined in the calendar and the values or format of the WDAYS parameter combine. This is described in the following section, "Valid Formats for WDAYS."
- When both DAYS and WDAYS criteria are specified, scheduling depends on the connecting AND/OR value. For more information, see "AND/OR" on page 308.

Valid Formats for WDAYS

Valid formats for the WDAYS parameter, and how they relate to WCAL, are described in this section.

Non-periodic scheduling

The following rules govern the use of non-periodic scheduling formats:

- *n* is an integer from 0 through 6, where 1 is the first day of the week (Sunday or Monday, depending on the standards at your site) and 0 is the last day of the week (either Saturday or Sunday).
- Multiple values can be specified (separated by commas) in any order.
- If a calendar name is specified for WCAL, it should not designate a periodic calendar.

Table 171 Non-Periodic Scheduling Formats

Format	Description
ALL	All days in the week. If ALL is specified, other WDAYS values cannot be specified with it. ■ If a WCAL calendar is not defined, schedule the rule on all days in the week. ■ If a WCAL calendar is defined, schedule the rule only on the working days indicated in the calendar.
n,...	Specific days of the week. ■ If a WCAL calendar is not defined, schedule the rule on the specified days. ■ If a WCAL calendar is defined, schedule the rule only when a day is defined as a working day in both the WDAYS and the WCAL parameters.
+n,...	Days of the week in addition to the working days specified in the WCAL calendar. WCAL is mandatory.
–n,...	Order the rule on all days except the *n*th day from the beginning of the week. WCAL is mandatory.
>n,...	Order the rule on the indicated day if it is a working day in the WCAL calendar; otherwise, order the rule on the next working day (within the next seven days) that is not negated by a –*n* value in the parameter. If none of the next seven days is a working day, the rule is not ordered. This format is frequently used for holiday handling. WCAL is mandatory.
<n,...	Order the rule on the indicated day if it is a working day in the WCAL calendar; otherwise, order the rule on the last previous working day (within the preceding seven days) that is not negated by a –*n* value in the parameter. If none of the preceding seven days was a working day, the rule is not ordered. This format is frequently used for holiday handling. WCAL is mandatory.
Dn,...	Order the rule on the *n*th working day from the beginning of the week. WCAL is mandatory.
–Dn,...	Order the rule on all working days except the *n*th working day from the beginning of the week. WCAL is mandatory.
Ln,...	Order the rule on the *n*th working day from the end of the week. WCAL is mandatory.
–Ln,...	Order the rule on all working days except the *n*th working day from the end of the week. WCAL is mandatory.
DnWm,...	(Where *m* is a number from 1 through 6). If WCAL is defined, order the rule on the *n*th day of the *m*th week of the month. If WCAL is not defined, order the rule on the *m*th appearance of the *n*th day of the week during the month. WCAL is optional.
	Note: When specifying DnWm with a calendar in the WCAL field, do not code *n* as 0. This may produce unpredictable results.

Periodic scheduling

Table 172 shows the periodic scheduling formats that can be used with the WDAYS parameter.

The following rules govern the use of periodic scheduling formats:

- *n* is any integer from 0 through 6, and *i* is any valid period identifier (or * for all periods).
- WDAYS period identifiers are counted on a week by week basis. Calculations do not cross week boundaries (unlike DAYS periodic identifiers, which do cross month boundaries).
- The name of a periodic calendar must be specified in WCAL.
- A maximum of eight periodic values can be designated in any desired order.

Table 172 Periodic Scheduling Formats

Format	Description
DnPi,...	Order the rule on the *n*th day of period *i* in each week, from the beginning of the week.
–DnPi,...	Order the rule on all days except the *n*th day of period *i* in each week, from the beginning of the week.
LnPi,...	Order the rule on the *n*th day of period *i* in each week, from the last day of the week.
–LnPi,...	Order the job on all days in period *i* except the *n*th day of period *i* in each week, from the last day of the week.

General Information

Negative values take precedence over positive values when determining whether or not a rule will be scheduled on a certain date. If a negative value, such as the formats –n, –Dn, –Ln, –DnPi, or –LnPi, in either the DAYS or WDAYS field, prevents a rule from being scheduled on a date, the rule will not be scheduled on that date even if a positive value (for example, Ln) would otherwise result in the rule being scheduled on that date.

If periodic and non-periodic values are mixed when specifying the WDAYS parameter, processing will depend on the calendar type specified in the WCAL parameter.

If a non-periodic calendar is specified in the WCAL parameter, only non-periodic values in the WDAYS parameter are processed, and periodic values are ignored. In this case, the negative periodic values –DnPi and –LnPi are also ignored and do not supersede other values.

If a periodic calendar is specified in the WCAL parameter, all periodic values and the negative non-periodic value -n in the WDAYS parameter are processed; all other non-periodic values are ignored.

The MONTHS parameter is ignored when periodic values are specified in the WDAYS parameter.

When Ln or Dn values, or both Ln and Dn values, are specified in a week that overlaps two months, it is the MONTHS value of the earlier month that determines whether Dn or Ln values are applied in the week.

If the first day of the week falls in a month with a MONTHS value of Y, all Dn and Ln values in that week are applied, even those falling in the next or previous month when that month has a MONTHS value of N.

If the first day of the week falls in a month with a MONTHS value of N, no Dn or Ln values in that week are applied, not even if those falling in the next or previous month when that month has a MONTHS value of Y.

Examples

The examples in this chapter are based on the following assumptions:

- The current month is December 2001.
- Working days are defined in the WORKDAYS calendar, which contains the following working days (indicated by Y) for December 2001:

```
---S-------------S-------------S-------------S-------------S---
 1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8 9 + 1
 Y Y Y Y Y     Y Y Y Y Y     Y Y Y Y Y     Y   Y Y Y     Y
```

- The PERIDAYS periodic calendar contains the following periodic definition for December 2001. These examples assume that all other days of this calendar are blank.

```
---S-------------S-------------S-------------S-------------S---
 1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8 9 + 1 2 3 4 5 6 7 8 9 + 1
 B C A A B     B C A A B     B C A A B     B C A A B     B
```

- The start of the week is defined as Monday. Weeks start on the following dates in December 2001: 3rd, 10th, 17th, 24th, and 31st.

At the end of each example, asterisks in a December 2001 calendar indicate the days when the rule is scheduled.

Example 1

Schedule the rule on every Sunday and Monday.

```
WDAYS    - 0,1
```

The rule is scheduled on the days of the month indicated by an asterisk in Figure 234.

Figure 234 WDAYS Parameter – Example 1

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO
	*	*						*	*						*	*						*	*						*	*

Example 2

Schedule the rule on all working days and on all Saturdays.

```
WDAYS    - +6
WCAL     - WORKDAYS
```

The rule is scheduled on the days of the month indicated by an asterisk in Figure 235

Figure 235 WDAYS Parameter – Example 2

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO
*		*	*	*	*	*	*		*	*	*	*	*	*		*	*	*	*	*	*		*		*	*	*	*		*

Example 3

Schedule the rule on Sunday, if it is a working day. If Sunday is not a working day, schedule the rule on the first preceding working day that is not a Friday.

```
WDAYS    - -5,<0
WCAL     - WORKDAYS
```

The rule is scheduled on the days of the month indicated by an asterisk in Figure 236.

Figure 236 WDAYS Parameter – Example 3

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO
					*							*							*							*				

Example 4

Schedule the rule on the 1st Monday of the 1st week.

```
WDAYS    - D1W1
```

The rule is scheduled on the day of the month indicated by an asterisk in Figure 237.

Figure 237 WDAYS Parameter – Example 4

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO
		*																												

Example 5

Schedule the rule on all working days except Mondays and Fridays.

```
WDAYS    - -D1,-L1
WCAL     - WORKDAYS
```

The rule is scheduled on the days of the month indicated by an asterisk in Figure 238.

Figure 238 WDAYS Parameter – Example 5

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO
			*	*	*					*	*	*					*	*	*						*	*				

Example 6

Each week, schedule the rule on the 1st day of period A in that week, and on all days except the second day of period B in that week.

```
WDAYS    - D1PA,-D2PB
WCAL     - PERIDAYS
```

The rule is scheduled on the days of the month indicated by an asterisk in Figure 239.

Figure 239 WDAYS Parameter – Example 6

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO
		*		*					*		*					*		*					*		*					*

Example 7

Schedule the rule on each Monday, and on the 1st day of the month.

```
DAYS     - 1
AND/OR   - OR
WDAYS    - 1
```

The rule is scheduled on the days of the month indicated by an asterisk in Figure 240.

Figure 240 WDAYS Parameter – Example 7

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO
*		*							*							*							*							*

Example 8

Schedule the rule on the 3rd day of the month provided it is a Monday.

```
DAYS     - 3
AND/OR   - AND
WDAYS    - 1
```

The rule is scheduled on the day of the month indicated by an asterisk in Figure 241.

Figure 241 WDAYS Parameter – Example 8

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO
		*																												

Example 9

Schedule the rule on the last Monday of the month.

```
DAYS    - L1,L2,L3,L4,L5,L6,L7
AND/OR  - AND
WDAYS   - 1
```

The rule is scheduled on the day of the month indicated by an asterisk in Figure 242.

Figure 242 WDAYS Parameter – Example 9

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO
																														*

Example 10

Schedule the rule on the 1st, 7th and 15th day of the month if they are both Saturdays and working days. If the day of the month (1st, 7th, 15th) is not a Saturday, do not schedule the rule. If the day of the month is a Saturday, but it is not a working day, schedule the rule on the next working day.

```
DAYS    - 1,7,15
AND/OR  - AND
WDAYS   - 6
CONFCAL - WORKDAYS
SHIFT   - >
```

The rule is scheduled on the days of the month indicated by an asterisk in Figure 243.

Figure 243 WDAYS Parameter – Example 10

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO	TU	WE	TH	FR	SA	SU	MO
		*														*														

Chapter 4

AutoEdit Facility

This chapter contains the following topics:

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Overview

CONTROL-O can automatically perform actions based on the occurrence of messages or events. The variety of possible actions is enhanced by use of the AutoEdit facility.

When CONTROL-O handles DO actions, ON statements and IN conditions, the contents of the subparameters are scanned for special symbols, starting with %%. These symbols are analyzed, edited and automatically assigned new values. The modified statement is then activated. The contents of the original statement remain unchanged.

NOTE

Unlike DO statements, which are resolved at rule execution, IN conditions and ON statements are resolved at rule ordering.

Using the AutoEdit facility in a rule definition provides great flexibility in condition specification and action definition. For example:

- A start command can contain the current date as a parameter.
- The job ID of the job that issued the message can be included in a command issued to correct a situation.
- Text from the original message can be used within a newly edited message, or in an operator command or a TSO command.
- The DO SET command can be used to assign values to reserved user-defined AutoEdit variables, or to define your own user-defined AutoEdit variables and assign them values that can be retrieved from the message or command. These values can be used in subsequent DO actions, ON statements and IN conditions of the rule.

User-defined AutoEdit variables can be defined as local, global, and XAE global. Local variables are stored on one machine, with changes affecting only a rule running on that machine. Global variables are stored in a common storage area on a machine. Changes to a Global variable can be accessed by all rules on that system. XAE Global variables can be accessed by all rules running on any system in a Sysplex. For more information about the XAE facility, see "Using an XAE AutoEdit Variable Database" on page 571.

NOTE

User-defined AutoEdit variables to be used in ON statements and IN statements must be defined as Global.

Global variables can be used:

- in subsequent executions of the same rule
- in other rules
- by the CONTROL-M AutoEdit facility
- in KOA scripts
- in execution of a rule on other Sysplex participants (if an XAE database is defined)

There are several categories of AutoEdit symbols

- control statements
- functions
- operators
- System variables
- user-defined Local variables
- user-defined Global variables

The following Rule Definition screen displays examples of AutoEdit symbol types. For information about reserved user-defined variables, see page 561.

Figure 244 AutoEdit Symbol Types Example

```
RL: DFS810A    LIB CTOP.V610.RULES                          TABLE: JOB
 COMMAND ===>                                               SCROLL===> CRSR
 +-----------------------------------------------------------------------+
 ON MESSAGE  = DFS810A
 JNAME          JTYPE      SMFID        SYSTEM          USERID
 ROUTE          DESC       CONSOLEID    CONSOLE
 APPEARED       TIMES IN      MINUTES                       And/Or/Not
 OWNER IOAADMIN GROUP                        MODE PROD    RUNTSEC
 THRESHOLD
 DESCRIPTION IDENTIFY IMS IS READY (KEEP REPLY NUMBER + SIGNAL CONTROL-M)
 DESCRIPTION
 =======================================================================
 DO SET      = %%J = %%$JOBNAME                                GLOBAL  N
 DO SET      = %%COUNT_%%J = %%COUNT_%%J %%$PLUS 1             GLOBAL  Y
 DO SET      = %%REPLY_%%J = %%$REPLY                          GLOBAL  Y
 DO SET      = %%PREF = %%$SUBSTR %%$JOBNAME 1 3               GLOBAL  N
 DO COND     = %%%J_IS_DOWN         STAT -
 DO SHOUT    = TO TSO-%%PREF        URGENCY R SYSTEM          CTO282I
 MESSAGE %%$JOBNAME ACTIVE
 DO
 =======================================================================


 FILL IN RULE DEFINITION. CMDS: CAPS, EDIT, SHPF, SCHED, OPT         11.51.00
```

The first DO SET statement defines a local user variable named %%J. It is assigned the value of the %%$JOBNAME System variable that is the name of the job issuing the message.

The second DO SET statement defines a Global user variable named %%COUNT_%%J. The variable resolves into the name of the IMS that has started, for example, COUNT_IMS1. The %%$PLUS AutoEdit operator increments the variable by 1. This Global variable serves as a counter of the number of times that IMS has been started.

The third DO SET statement defines a Global user variable named %%REPLY_%%J, which is used to keep the open reply number of IMS (from the %%$REPLY System variable).

The fourth DO SET statement defines a local user variable named *%%PREF* using the %%$SUBSTR function to extract a prefix (the first three characters of the job name). This prefix is used in the following DO SHOUT statement to send a message to a specific TSO user.

The DO COND statement deletes a prerequisite condition in the IOA Conditions file. The prerequisite condition name is defined by an AutoEdit variable.

System Variables

CONTROL-O System variables are predefined variables whose values are automatically updated and maintained by CONTROL-O.

The System variable format is

%%$var

In this format, *var* is the name of the System variable.

Each AutoEdit System variable begins with “%%$”. Each variable resolves to (is replaced by) the corresponding system value.

Example 1

On the 12th of December, 2000

```
DO COMMAND=S BKPDISK,PARM='%%$RDATE'
```

resolves to

```
DO COMMAND=S BKPDISK,PARM='001212'
```

Example 2

For a CPU whose ID is FDSF

IN %%$SMFID-UP

resolves to

```
IN FDSF-UP
```

Supported Variables

This section describes the supported AutoEdit system variables.

Table 173 Commonly Used AutoEdit System Variables (part 1 of 8)

Variable	Description
%%$BFPH	Whether the BFP hardware instruction set is present. Valid values are: ■ Y – the BFP hardware instruction set is present ■ N – BFP hardware instruction set is not present
%%$CMD	The text of the original (intercepted) command. When the Dealias feature is active, the value of the %%$CMD system variable is that of the command in its full format, even if it was entered as an alias. For example, if the system command **D A** was entered, the %%$CMD variable contains the value **DISPLAY A**.
%%$CONSNAME	The console name. ■ If the rule is triggered by the detection of a message, %%$CONSNAME contains the name of the console to which the message is issued whenever the message is explicitly sent to a specific console. ■ If the rule is triggered by the detection of a command, %%$CONSNAME is the name of the console issuing the command.

Table 173 Commonly Used AutoEdit System Variables (part 2 of 8)

Variable	Description
%%$CONSOLEID	The console ID. ■ If the rule is triggered by the detection of a message, %%$CONSOLEID is the ID of the console to which the message is issued (whenever the message is explicitly sent to a specific console). ■ If the rule is triggered by the detection of a command, %%$CONSOLEID is the ID of the console issuing the command.
%%$CPUMODEL	CPU model number
%%$CTOVAR	CTOVAR 28-characters module information
%%$CTOVARMD	CTOVAR 8-characters module modified level
%%$CTOVARRL	CTOVAR 9-characters module release
%%$CVTBFP	Whether Binary Floating Point is supported. Valid values are: ■ Y – Binary Floating Point is supported (simulated unless CVTBFPH is on). ■ N – Binary Floating Point is not supported.
%%$CVTCMPSC	Whether the MVS compression and expansion service is present. Valid values are: ■ Y – The MVS compression and expansion service is present. ■ N – The MVS compression and expansion service is not present.
%%$CVTCMPSH	■ Whether CMPCS compression and expansion hardware instruction is present. Valid values are: ■ Y – CMPCS compression and expansion hardware instruction is present. ■ N – CMPCS compression and expansion hardware instruction is not present.
%%$CVTCRPTL	Whether the encryption asymmetric feature is supported. Valid values are: ■ Y – The encryption asymmetric feature is supported. ■ N – The encryption asymmetric feature is not supported.
%%$CVTCSRSI	Whether the CSRSI service is available. Valid values are: ■ Y – The CSRSI service is available. ■ N – The CSRSI service is not available.
%%$CVTCSRUN	Whether the CSRUNIC callable service is available. Valid values are: ■ Y – The CSRUNIC callable service is available. ■ N – The CSRUNIC callable service is not available.
%%$CVTCSTR	Whether the CSTRING facility is present on this system. Valid values are: ■ Y – The CSTRING facility is present on this system. ■ N – The CSTRING facility is not present on this system.

Table 173 Commonly Used AutoEdit System Variables (part 3 of 8)

Variable	Description
%%$CVTCUSE	Whether the CUSE facility is present on this system. Valid values are: ■ Y – The CUSE facility is present on this system. ■ N – The CUSE facility is not present on this system.
%%$CVTDYAPF	Whether dynamic APF, through CSVAPF, is present. Valid values are: ■ Y – Dynamic APF is present. ■ N – Dynamic APF is not present.
%%$CVTDYLPA	Whether dynamic LPA (CSVDYLPA) is available. Valid values are: ■ Y – Dynamic LPA (CSVDYLPA) is available. ■ N – Dynamic LPA (CSVDYLPA) is not available.
%%$CVTDYNEX	Whether CSVDYNEX for dynamic exits is present. Valid values are: ■ Y – CSVDYNEX for dynamic exits is present. ■ N – CSVDYNEX for dynamic exits is not present.
%%$CVTDYNL	Whether dynamic LNKLST, using CSVDYNL, is present. Valid values are: ■ Y – Dynamic LNKLST, using CSVDYNL, is present. ■ N – Dynamic LNKLST, using CSVDYNL, is not present.
%%$CVTENCLV	Whether the ENCLAVES function is present. Valid values are: ■ Y – The ENCLAVES function is present. ■ N – The ENCLAVES function is not present.
%%$CVTESAME	Whether ESAME hardware is present. Valid values are: ■ Y – ESAME hardware is present. ■ N – ESAME hardware is not present.
%%$CVTGTFAV	Whether GTF is active. Valid values are: ■ Y – GTF is active. ■ N – GTF is not active.
%%$CVTHIPER	Whether Hiperspaces are supported. Valid values are: ■ Y – Hiperspaces are supported. ■ N – Hiperspaces are not supported.
%%$CVTILM	Whether IBM License Manager ILM functions are present. Valid values are: ■ Y – IBM License Manager ILM functions are present. ■ N – IBM License Manager ILM functions are not present.
%%$CVTJESCT	Primary subsystem name
%%$CVTLPARC	Whether LPAR clustering is present. Valid values are: ■ Y – LPAR clustering is present. ■ N – LPAR clustering is not present.
%%$CVTMDL	CPU model number
%%$CVTMVPG	Whether MOVEPAGE capability is present on this system. Valid values are: ■ Y – MOVEPAGE capability is present on this system. ■ N – MOVEPAGE capability is not present on this system.
%%$CVTOSLVL	16-characters system level indicators

Table 173 Commonly Used AutoEdit System Variables (part 4 of 8)

Variable	Description
%%$CVTOVER	Whether SUBPOOL override is supported. Valid values are: ■ Y – SUBPOOL override is supported. ■ N – SUBPOOL override is not supported.
%%$CVTPARMC	Whether Logical Parmlib Service is available through IEFPRMLB. Valid values are: ■ Y – Logical Parmlib Service is available through IEFPRMLB. ■ N – Logical Parmlib Service is not available through IEFPRMLB.
%%$CVTPAUSE	Whether Pause and Release services are present. Valid values are: ■ Y – Pause and Release services are present. ■ N – Pause and Release services are not present.
%%$CVTPPER2	Whether PER2 hardware is present on all CPUs. Valid values are: ■ Y – PER2 hardware is present on all CPUs. ■ N – PER2 hardware is not present on all CPUs.
%%$CVTPLO	Whether PLO instruction is present. Valid values are: ■ Y – PLO instruction is present. ■ N – PLO instruction is not present.
%%$CVTPRDED	Whether product enable and disable (IFAED*xxx*) is present. Valid values are: ■ Y – product enable and disable (IFAED*xxx*) is present. ■ N – product enable and disable (IFAED*xxx*) is not present.
%%$CVTPRODI	Product FMID identifier of the control program, such as JBB1328.
%%$CVTRELNO	Release number—usually 038.
%%$CVTRSMWD	Whether the storage manager window has been built. Valid values are: ■ Y – The storage manager window has been built. ■ N – The storage manager window has not been built.
%%$CVTRTLS	Whether Runtime Library Services (CSVRTLS) are present. Valid values are: ■ Y – Runtime Library Services (CSVRTLS) are present. ■ N – Runtime Library Services (CSVRTLS) are not present.
%%$CVTSNAME	System name for current system.
%%$CVTSOPF	Whether the suppression-on-protection hardware facility is present on this system. Valid values are: ■ Y – The suppression-on-protection hardware facility is present. ■ N – The suppression-on-protection hardware facility is not present.
%%$CVTSUBSP	Whether the SUBSPACE utility, initialized by NIP, is present on this system. Valid values are: ■ Y – The SUBSPACE utility is present on this system. ■ N – The SUBSPACE utility is not present on this system.

Table 173 Commonly Used AutoEdit System Variables (part 5 of 8)

Variable	Description
%%$CVTUNICS	Whether Unicode callable services are available. Valid values are: ■ Y – Unicode callable services are available. ■ N – Unicode callable services are not available.
%%$CVTWLM	Whether workload manager is installed. Valid values are: ■ Y – The workload manager is installed. ■ N – The workload manager is not installed.
%%$DATE	The current system date, in the format yymmdd.
%%$DAY	The current system day, in the format dd.
%%$DBMAXRW	Maximum number of rows in a database.
%%$ECVTCLON	1 or 2 character value used to identify a system within a Sysplex. Valid values are: ■ letters from A through Z ■ numbers from 0 through 9 ■ $ ■ @ ■ #
%%$ECVTGMOD	GRS mode of operation.
%%$ECVTHDNM	Hardware name of the processor.
%%$ECVTLOAD	Edited MVS load parameter.
%%$ECVTLPID	8-character IBM product ID for ILM.
%%$ECVTLPNM	LPAR name of the processor configuration. If the processor is not in LPAR mode, the variable will be null.
%%$ECVTLPUB	8-character IBM Publisher ID for ILM.
%%$ECVTLVID	8-character IBM Version ID for ILM.
%%$ECVTPIDN	PID number.
%%$ECVTPMOD	Control product modify level.
%%$ECVTPNAM	16-character Control product name.
%%$ECVTPOWN	16-character Control product owner.
%%$ECVTPREL	Control product release.
%%$ECVTPVER	Control product version.
%%$ECVTSPLX	Sysplex name.
%%$ECVTVMNM	VM user ID of the virtual computer, of which this MVS image is a guest. This field is blank if the processor is not a guest under VM.
%%$GRSMODE	GRS mode of operation.
%%$HARDWARE	Hardware name of the processor.

Table 173 Commonly Used AutoEdit System Variables (part 6 of 8)

Variable	Description
%%$JESJOBNM	For JES2 job-related messages, this variable resolves to the job ID of the related job (eight characters in the format JOB*nnnnn)*. The value is taken from the WQEJOBNM field in the IHAWQE block associated with the message. This variable is available for the ON MESSAGE, ON STRING, ON JOBARRIV, and ON JOBEND message-type rules.
%%$JNAME	The name of the job that issued the message or command. This system variable contains the same value as %%$JOBNAME.
%%$JOBACCT	The account information of the job that issued the message or command.
%%$JOBID	The JES ID of the job that issued the message or command.
%%$JOBNAME	The name of the job that issued the message or command. This system variable contains the same value as %%$JNAME.
%%$JOBTYPE	The job type associated with the job that issued the message. Valid values are: ■ J — Batch jobs (JOB) ■ S — Started task (STC) ■ T — TSO user (TSU)
%%$JULDAY	The current system day, in the format jjj.
%%$LENGTH *var*	The length of the *var* variable.
%%$LINES	The line counter for multiline messages and messages intercepted in command-response mode. Multiline messages are messages that consist of one primary line followed by at least one secondary line. ■ If the messages are processed with the %%$M* variable, the %%$LINES variable represents the number of the current secondary line. If the current line is the primary line, the %%$LINES variable resolves to zero. ■ If the lines are processed with the %%$Mn variable, %%$LINES represents the total number of secondary lines. For information regarding these two types of processing, see the %%$M* and %%$Mn variables in this table. The maximum value for the %%$LINES variable is 10. If a command response contains more than ten lines, the variable resolves to 10.
%%$LPARMNAME	LPAR name of the processor configuration. This field is blank if the processor is not in LPAR mode.

Table 173 Commonly Used AutoEdit System Variables (part 7 of 8)

Variable	Description
%%$M*	For multiline messages and messages intercepted in command-response mode. Multiline messages are messages that consist of one primary line followed by at least one secondary line. When this system variable is specified in a rule, CONTROL-O processes the message line by line, and all DO statements in the rule are executed repeatedly on each new line of the message. A %%$M* variable in a DO statement resolves to the text of the current line of the message. Therefore, %%$M* can resolve an unlimited number of message lines. This variable is useful for handling a message with an unknown number of lines, or where the information to be resolved does not occur in any one specific line. For more information, see "Command-Response Mode" on page 326, and "DO ENDMSG: Automated Console Action Parameter" on page 350.
%%$M*n*	For multiline messages and messages intercepted in command-response mode. Multiline messages are messages that consist of one primary line followed by at least one secondary line. Specifies the *n*th line of the original message text after the primary message line, where *n* is a number from 1 through 10. For example, %%$M1 resolves to the message text contained in the first secondary line. For more information, see "Command-Response Mode" on page 326, and "DO ENDMSG: Automated Console Action Parameter" on page 350.
%%$MONTH	The current system month, in the format mm.
%%$MSG	The text of the original message (the primary line only for multiline messages).
%%$MULTIFLG	The multiline message flag. Valid values are: ■ R — the line is regular (that is, not part of a multiline message) ■ F — the line is the first line of a multiline WTO ■ M — the line is a middle line of a multiline WTO ■ L — the line is the last line of a multiline WTO
%%$MVSUSER	VM user ID of the virtual computer, of which this MVS image is a guest. This field is blank if the processor is not a guest under VM.
%%$NULL	A null variable.
%%$PRISUBNM	Primary subsystem name.

Table 173 Commonly Used AutoEdit System Variables (part 8 of 8)

Variable	Description
%%$REPLY	The reply number of the last WTOR message detected by the rule.
%%$RPLYTXT	The text of the reply to a DO ASKOPER statement.
%%$SMSLEVEL	SMS level.
%%$SSNAME	The name of the CONTROL-O subsystem.
%%$SYSFMID	Product FMID identifier for the control program, such as JBB1328.
%%$SYSPLEX	Sysplex name.
%%$SYSTEMNM	System name for the current system
%%$TIME	The time of day, in the format hhmmss.
%%$TSOLEVEL	TSO level.

%%$UNDEF	An undefined variable. This variable can be used to
	■ test whether a variable is defined, using the following syntax:
	`IF %%$variable EQ %%$UNDEF`
	■ delete a variable, using the following syntax:
	`DO SET=%%$variable = %%$UNDEF`

%%$USERID	The security package user ID of the job, started task, or TSO under which the rule is executing.
%%$Vn	The *n*th word in the original message or command text, where *n* is a value from 1 through 99. A comma or a blank can serve as a delimiter.
%%$WAITRC	The return code of the event that caused the end of a DO WAIT, or a DO COMMAND with a WAITMODE value of YES. For more information, see "DO WAIT: Automated Console Action Parameter" on page 412.
%%$WDAY	The current Gregorian day of the week in the format d, where d is from 1 through 6 or 0. For example, 1=Sunday, 2=Monday, ... 6= Friday, 0=Saturday.
	Note: The start of the week depends on installation parameters specifying whether 1=Sunday or 1=Monday. Contact your INCONTROL administrator for your site standard. All references assume 1=Sunday, 2=Monday, and so on.
%%$W*n* *varname*	The *n*th word of the *varname* variable, where *n* is a value from 1 through 99. A comma or a blank can serve as a delimiter. For example, `%%$W3 %%$MSG` represents the third word in the original message text.
%%$WORDS *varname*	The number of words in the *varname* variable. A comma or a blank can serve as a delimiter within the variable.
%%$YEAR	The current system year, in the format yy.

Table 174 1-byte autoedit system variables

Variable	Description
%%Dn	the *N*th qualifier of the data set name triggering the ON DSNEVENT rule.
%%Mn	For multiline messages and messages intercepted in command-response mode. Multiline messages are messages that consist of one primary line followed by at least one secondary line.
%%Vn	The *N*th word in the original message or command text, where *N* is a value from 1 through 99. A comma or blank erve as a delimiter.
%%Wn	The *N*th word of the varname variable, where *N* is a value from 1 through 99. A comma or blank erve as a delimiter.
Note: BMC Software does not recommend using %%An because you might confuse the variable with the KSL %An system variable.	

Table 175 Global AutoEdit System Variables (part 1 of 3)

Variable	Description
%%$AUTOSYS	The default system in the Sysplex from which TYPE 1 XAE database variables are retrieved.
%%$DBCOUNT	The number of rows in the current global variable pool (the variable group loaded in memory), if the current pool is an AutoEdit variable database or an XAE database.
%%$DBMAXRW	The maximum number of rows in a database.
%%$DBROW	The current row in the current global variable pool, if the current pool is an AutoEdit variable database.

Table 175 Global AutoEdit System Variables (part 2 of 3)

Variable	Description

%%$GLOBAL	The name of the global pool to be accessed.
	
	Global pools contain Global variables and their values. One global pool ($GLOBAL) is defined as the default, but multiple global pools can be defined.
	
	Unless a global pool is specified using a %%$GLOBAL parameter, the default $GLOBAL member is used.
	
	After a pool is specified using a %%$GLOBAL parameter, that member remains assigned until a different pool is specified using another %%$GLOBAL parameter. To respecify the default, use this parameter to specify the $GLOBAL member.
	
	For more information, see "DO SET: Automated Console Action Parameter" on page 380, and see the description of Global AutoEdit variables in the *INCONTROL for z/OS Administrator Guide*.
	
	Example
	`DO SET=%%$GLOBAL = IMS`
	`DO SET=%%STATUS = UP GLOBAL Y`

%%$POOLCOSMOS	Described on page 581.
%%$POOLSTORE	Described on page 582.
%%$POOLTYPE	Described on page 583.
%%$RESOLVE	Described on page 576.
%%$SYSPCPU	The ordinal sequence number of the Sysplex-connected system with the name that will be accessed by the next resolution of %%SYSPCPUNAME (described in this table).

Table 175 Global AutoEdit System Variables (part 3 of 3)

Variable	Description
%%SYSPCPUCOUNT	The number of additional CONTROL-O systems in the Sysplex that are connected to XAE structures. Examples: ■ 0 — Only this system is connected or XAE is not enabled. ■ 2 — This system and two others are connected to XAE structures.
%%SYSPCPUNAME	The system name of a Sysplex participant. The system name that is returned is determined by the %%$SYSPCPU parameter, as described in this table. Each Sysplex-connected system on which CONTROL-O runs the XAE facility is dynamically assigned an ordinal sequence number. %%$SYSPCPU specifies the sequence number of the system whose name is to be retrieved by the next resolution of %%SYSPCPUNAME. If the sequence number is greater than the total number of systems connected in a Sysplex, the literal value END is returned by %%SYSPCPUNAME in place of the system name.

Table 176 Command AutoEdit System Variables (part 1 of 3)

Variable	Description
%%$CMD	The text of the original (intercepted) command. When the Dealias feature is active, the value of the %%$CMD system variable is that of the command in its full format, even if it was entered as an alias. For example, if the system command **D A** was entered, the %%$CMD variable contains the value **DISPLAY A**.
%%$CONSNAME	The console name. ■ If the rule is triggered by the detection of a message, %%$CONSNAME contains the name of the console to which the message is issued whenever the message is explicitly sent to a specific console. ■ If the rule is triggered by the detection of a command, %%$CONSNAME is the name of the console issuing the command.

Table 176 Command AutoEdit System Variables (part 2 of 3)

Variable	Description
%%$CONSOLEID	The console ID. ■ If the rule is triggered by the detection of a message, %%$CONSOLEID is the ID of the console to which the message is issued (whenever the message is explicitly sent to a specific console). ■ If the rule is triggered by the detection of a command, %%$CONSOLEID is the ID of the console issuing the command.
%%$DATE	The current system date, in the format yymmdd.
%%$DAY	The current system day, in the format dd.
%%$JNAME	The name of the job that issued the message or command. This system variable contains the same value as %%$JOBNAME.
%%$JOBID	The JES ID of the job that issued the message or command.
%%$JOBNAME	The name of the job that issued the message or command. This system variable contains the same value as %%$JNAME.
%%$JOBTYPE	The job type associated with the job that issued the message. Valid values are: ■ J — Batch jobs (JOB) ■ S — Started task (STC) ■ T — TSO user (TSU)
%%$JULDAY	The current system day, in the format jjj.
%%$LENGTH *variable*	The length of the var variable.
%%$MONTH	The current system month, in the format mm.
%%$TIME	The time of day, in the format hhmmss.
%%$USERID	The security package user ID of the job, started task, or TSO under which the rule is executing.
%%$Vn	The nth word in the original message or command text, where n is a value from 1 through 99. A comma or a blank can serve as a delimiter.
%%$WAITRC	The return code of the event that caused the end of a DO WAIT, or a DO COMMAND with a WAITMODE value of YES. For more information, see “DO WAIT: Automated Console Action Parameter” on page 412.
%%$WDAY	The current Gregorian day of the week in the format d, where d is from 1 through 6 or 0. For example, 1=Sunday, 2=Monday, ... 6= Friday, 0=Saturday.
	Note: The start of the week depends on installation parameters specifying whether 1=Sunday or 1=Monday. Contact your INCONTROL administrator for your site standard. All references assume 1=Sunday, 2=Monday, and so on.

Table 176 Command AutoEdit System Variables (part 3 of 3)

Variable	Description
%%$W*n* *varname*	The *n*th word of the *varname* variable, where *n* is a value from 1 through 99. A comma or a blank can serve as a delimiter. For example, `%%$W3 %%$MSG` represents the third word in the original message text.
%%$WORDS *varname*	The number of words in the *varname* variable. A comma or a blank can serve as a delimiter within the variable.
%%$YEAR	The current system year, in the format yy.

Table 177 CONTROL-M AutoEdit System Variables (part 1 of 3)

Variable	Description
%%$CTMHLDSTATUS	The job Held / Free status.
%%$CTMJGROUP	The job group.
%%$CTMJJOBID	The job ID.
%%$CTMJJOBNAME	The job name.
%%$CTMJJOWNER	The job owner.
%%$CTMJLIBRARY	The name of the job schedule library.
Note: Values for the variables from %%$CTMJMEMNAME through %%$CTMJTYPE are returned by the CONTROL-M interface. These values are taken from the current job entry in the Active Jobs file. The current job entry is set using the %%$CTMLINE# reserved user-defined variable, which is described in this table. For more information, see "Reserved User-Defined Variables" on page 561.	
%%$CTMJMEMNAME	The job member name.
%%$CTMJODATE	The job ODATE.
%%$CTMJORDERID	The job order ID.
%%$CTMJRBA	The job RBA in the Active Jobs file.

Table 177 CONTROL-M AutoEdit System Variables (part 2 of 3)

Variable	Description
%%$CTMJSTATUS	The job status. Valid values are: ■ DEL – The job was deleted. ■ END_NOK_ABND – The job ended NOTOK because of an abend. ■ END_NOK_CC – The job ended NOTOK because of the condition code of the job. ■ END_NOK_DISA – The job ended NOTOK. It disappeared. ■ END_NOK_JCLE – The job ended NOTOK because of a JCL error. ■ END_NOK_NSUB – The job ended NOTOK. It was not submitted by JES. ■ END_NOK_UNKW – The job ended NOTOK for an unknown reason. ■ END_OK – The job ended OK. ■ END_OK_FOR – The job was FORCEd OK. ■ EXEC – The job is executing. ■ EXEC_ERR – (Relevant only to Group entities.) Several of the jobs in the group are still executing, but at least one of them has ended NOTOK. ■ EXEC_INQ – The job was submitted to JES, but is not yet being processed. ■ EXEC_NJE – The job has a status of NJE. ■ EXEC_WSUB – The job was selected, but is still waiting for CONTROL-M to submit it to JES (WAIT SUBMISSION status). ■ EXIST – The job exists on the Active Jobs file. ■ NONEXIST – The job does not exist on the Active Jobs file. ■ WAIT_CONF – Wait for confirmation. ■ WAIT_ORD – (Relevant only to Group entities.) The ordering of the group is not yet complete. The group is still in the process of being ordered. ■ WAIT_PIPE – The system is waiting for all members of the PIPE to be ready for submission. ■ WAIT_SCH – The status of the job is WAIT SCHEDULE.
%%$CTMJTABLE	The name of the job schedule table.
%%$CTMJTYPE	The job type.
%%$CTMLINE#	The current line, or job entry, in the Active Jobs file from which values are returned by the CONTROL-M interface.
%%$CTMLINES	The number of lines of response returned by the CONTROL-M interface.
%%$CTMRC	The return code from the CONTROL-M interface. Valid values are: ■ 0 — OK (response can be accessed) ■ 4 — job not found in AJF file ■ > 4 — error
%%$CTMRESCURR	The currently used quantity of the CONTROL-M resource.

Table 177 CONTROL-M AutoEdit System Variables (part 3 of 3)

Variable	Description
%%$CTMRESMAX	The maximum available quantity of the CONTROL-M resource.
%%$CTMRESPRI	The priority of the CONTROL-M resource when the jobs requesting it are part of the critical path.

Table 178 CONTROL-O AutoEdit System Variables (part 1 of 10)

Variable	Description
%%	The concatenation character.
%%$ARGS	The argument string passed by a calling rule, through its DO RULE statement, to an invoked rule.
%%$ASKRC	The return code of the event that caused the end of a DO ASKOPER wait.

%%$AUTOLOG	The recording mode for the currently handled message or command.
	
	Valid values are:
	■ Y — The message or command is recorded to the Automation Log.
	■ N — The message or command is not recorded.
	
	For more information, see "DO SET: Automated Console Action Parameter" on page 380, and see the discussion about preventing logging of unnecessary messages in the *INCONTROL for z/OS Administrator Guide*.
	
	Example
	`ON MESSAGE TST*`
	`DO SET=%%$AUTOLOG=N`

%%$AUTOSYS	The default system in the Sysplex from which TYPE 1 XAE database variables are retrieved.
%%$BLANK	Resolves to one blank.
%%$BLANKn	Resolves to *n* blanks, where *n* is a number from 1 through 99.

Table 178 CONTROL-O AutoEdit System Variables (part 2 of 10)

Variable	Description

%%$COMMSYS	The system communication name or the CONTROL-O system name (CTOGATE name).
	
	■ For DO statements that support communication, such as DO COND, this variable can identify a remote CONTROL-O that should perform the DO action.
	
	■ If the DO statement has a SYSTEM subparameter, such as DO COMMAND, this variable can be used instead of that subparameter.
	
	The DO statements are distributed by Sysplex or CTOGATE communication.
	
	For more information, see "Performing an Action on Another System" on page 294.
	
	Example
	`DO SET  %%$COMMSYS = SYS*`
	`DO SHOUT=TO TSO-CICSOPR`
	`URGENCY  R  SYSTEM`
	`MESSAGE  CICS IS DOWN!`

%%$CONDSTAT	The status of the condition obtained by the last executed DO COND statement, where CONDOPT is set to **?** (Check the status of the condition). Valid values are: ■ Y — The condition exists ■ N — The condition does not exist
%%$CONTROLO	The name of the CONTROL-O monitor started task.
%%$CTOVAR	The CTOVAR 28-character module information.
%%$CTOVARMD	The CTOVAR 8-character module modified level.
%%$CTOVARRL	The CTOVAR 9-character module release.
%%$DBCOUNT	The number of rows in the current global variable pool (the variable group loaded in memory), if the current pool is an AutoEdit variable database or an XAE database.
%%$DBMAXRW	The maximum number of rows in a database.
%%$DBROW	The current row in the current global variable pool, if the current pool is an AutoEdit variable database.
%%$D*n*	The *n*th qualifier of the data set name that triggered the ON DSNEVENT rule. For example, if the rule was triggered by the data set name USER01.LIB.CNTL, `%%$D2` resolves to LIB.

Table 178 CONTROL-O AutoEdit System Variables (part 3 of 10)

Variable	Description
%%$DOLIMIT	The maximum number of DO actions that can be performed during execution of the current CONTROL-O rule. Valid values are: ■ *n* — Allow execution of from 1 through 999999 DO actions in the current rule. If the rule attempts to exceed the specified number of DO actions, the rule is aborted and an error message is issued. ■ 0 — Allow the rule to execute an unlimited number of DO actions. If `%%$DOLIMIT` is not specified in a CONTROL-O rule, the rule is allowed to execute a maximum of 10,000 DO actions. **Example** To allow the current rule to execute a maximum of 500 DO actions, specify the following: `DO SET=%%$DOLIMIT = 500`
%%$DSN	Name of the data set handled by the rule (for ON DSNEVENT rules).
%%$DSNDISP	The disposition of the data set handled by the rule (for ON DSNEVENT rules). Valid values are: ■ C — Cataloged ■ D — Deleted ■ K — Kept ■ 2 — NOT CATLG2 ■ R — Retained ■ S — Scratched ■ U — Uncataloged
%%$EITEMPLATE	The built-in template used to parse the results of an ENQ entry.

Table 178 CONTROL-O AutoEdit System Variables (part 4 of 10)

Variable	Description

%%$GLOBAL	The name of the global pool to be accessed.
	
	Global pools contain Global variables and their values. One global pool ($GLOBAL) is defined as the default, but multiple global pools can be defined.
	
	Unless a global pool is specified using a %%$GLOBAL parameter, the default $GLOBAL member is used.
	
	After a pool is specified using a %%$GLOBAL parameter, that member remains assigned until a different pool is specified using another %%$GLOBAL parameter. To respecify the default, use this parameter to specify the $GLOBAL member.
	
	For more information, see "DO SET: Automated Console Action Parameter" on page 380, and see the description of Global AutoEdit variables in the *INCONTROL for z/OS Administrator Guide*.
	
	Example
	`DO SET=%%$GLOBAL = IMS`
	`DO SET=%%STATUS = UP GLOBAL Y`

%%$IO0024	Status of the pre-version-6.*x.xx* optional Wish IO0024. For more information see "%%$WQEUPD" on page 537.
%%$KSLRC	The completion code returned by the KeyStroke OpenAccess (KOA) script specified in the associated DO KSL statement. For more information, see "DO KSL: Automated Console Action Parameter" on page 365.
%%$MSGENV	The environment under which the message or command was intercepted by CONTROL-O. Valid values are: ■ CICS — The CONTROL-O CICS interface. ■ COM — The CONTROL-O communication interface. ■ COS — A CONTROL-O / COSMOS rule. ■ CTD — The CONTROL-D Sample Exit 18. ■ CTM — A CONTROL-O rule called by CONTROL-M. ■ DSN — The data set event or step completion event detected by the CONTROL-O. ■ IMS — The CONTROL-O IMS interface. ■ J2M — JES2 by JES2 Exit 5. ■ J3C — JES3 by JES3 command Exit IATUX18. ■ J3M — JES3 by JES3 message Exit IATUX31. ■ MVA — MAINVIEW Alarm interface ■ OMG — OMEGAEXP (OMEGAMON exception interface). ■ SSI — The CONTROL-O interface. ■ SYSOUT — The SYSOUT interface. ■ XAM — The CONTROL-O Extended Access Method interface.

Table 178 CONTROL-O AutoEdit System Variables (part 5 of 10)

Variable	Description
%%$MODIFY_O_F	Status of optional Wish WO0943. Valid values are: ■ Y — Wish WO0943 is applied. When the wish is applied the MVS MODIFY command will be done under the CONTROL-O or CMEM address space. ■ N — Default. Wish WO0943 is not applied. When the wish is not applied the MVS MODIFY command will be done under the USER address space of the user who issued the command from Screen OR or Screen C For further information see "Wish WO0943" on page 123.
%%$NULL	A null variable.
%%$OWNER	The user ID of the rule owner, taken from the OWNER field.
%%$PARSRC	The return code resulting from a %%$PARSE function that indicates whether the parsed string matched all string patterns in the template. Valid values are: ■ 0 — The parsed string fully matched the string patterns in the template. ■ 4 — At least one string pattern in the template was not matched.
%%$REPLY	The reply number of the last WTOR message detected by the rule.

%%$RESPMSG	The IDs of messages expected in response to the DO COMMAND statement that follows the DO SET %%$RESPMSG statement. This variable is supported for historical reasons. For more information, see "Command-Response Mode" on page 326.
	
	Example
	`DO SET=%%$RESPMSG = (CTM101I, CTM240I)`
	`DO COMMAND=F CONTROLM,NEWCONLIST`

%%$RJOBID	The ID of the job associated with DO COND, DO FORCEJOB, and DO RESOURCE requests. When specified, the value overrides the default job ID. If this variable is set, you should also set the %%$RJOBNAME reserved user-defined variable. For an example of usage, see the %%$RJOBNAME variable in this table.

Table 178 CONTROL-O AutoEdit System Variables (part 6 of 10)

Variable	Description

%%$RJOBNAME	The name of the job associated with DO COND, DO FORCEJOB, and DO RESOURCE requests. When specified, the value overrides the default job name. If this variable is set, you should also set the %%$RJOBID variable, described in this table.
	
	Example
	The IAT5210 JES3 tape mount message is issued under the address space of JES3, and CONTROL-O sets the default job name to JES3. To associate the correct job, which mounts the tape, with the DO RESOURCE request, the job name and job ID are extracted from the text of the message, as follows:
	`DO SET=%%$RJOBNAME = %%$V3`
	`DO SET=%%$RJOBID = %%$V4`
	`DO RESOURCE=TAPE  0001 -`

%%$RPLYTXT	The text of the reply to a DO ASKOPER statement.
%%$SECJES	Status of optional Wish WI0920: ■ Y — CTOPARM SECJES=Y. CONTROL-O rules are triggered regardless of issuing JES2. Default. ■ N — CTOPARM SECJES=N. The JES that issued the message is taken into account before rules are triggered. For more information, see the CONTROL-O installation chapter in the *INCONTROL for z/OS Installation Guide*.
%%$SSNAME	The name of the CONTROL-O subsystem.

%%$STATID	The message ID under which the statistics for a message should be accumulated.
	
	This variable can be used to combine the statistics of messages with individual statistics that are not required. This eliminates unnecessary messages from the Message Statistics screen.
	
	Example
	To combine the statistics for all messages with the prefix CKH into one general statistics item under the identifier CKHMSG, specify the following:
	`ON MSG CKH*`
	`DO SET %%$STATID = CKHMSG`

%%$STEPCC	The completion code of the step the termination of which triggered the rule.
%%$SYSLINE*n*	The contents of a line selected in a DO SYSREQ statement.
%%$SYSLINES	The number of lines selected in a DO SYSREQ statement.
%%$SYSRC	The return code for DO SYSREQ statement.

Table 178 CONTROL-O AutoEdit System Variables (part 7 of 10)

Variable	Description

%%$TIMEOUT	The time, in seconds, to wait for one of the following:
	
	■ completion of the DO TSO or DO KSL statements running in WAIT mode
	■ interception of responses to messages after a command was issued in command-response mode
	
	The following formats are possible:
	
	■ For `DO COMMAND` statements, use the syntax
	`DO SET=%%$TIMEOUT=(value1,value2)`
	
	In this syntax
	
	— *value1* is the maximum number of seconds to wait for the first message
	
	— *value2* is the maximum number of seconds to wait between the first and the last message
	
	■ For DO KSL and DO TSO statements, use the syntax
	`DO SET=%%$TIMEOUT=value1`
	
	In this syntax, *value1* is the maximum number of seconds CONTROL-O waits for completion of the task or command before aborting the task or command.
	
	This variable is supported for historical reasons. For more information, see "Command-Response Mode" on page 326.

%%$TSORC	The completion code returned by the TSO command, CLIST, or REXX procedure specified in the associated DO TSO statement. For more information, see "DO TSO: Automated Console Action Parameter" on page 408.
%%$TYPE	The rule type as it appears in the Rule Status screen.

%%$UNDEF	An undefined variable. This variable can be used to
	
	■ test whether a variable is defined, using the following syntax:
	`IF %%$variable EQ %%$UNDEF`
	
	■ delete a variable, using the following syntax:
	`DO SET=%%$variable = %%$UNDEF`

%%$Vn	The *n*th word in the original message or command text, where *n* is a value from 1 through 99. A comma or a blank can serve as a delimiter.

Table 178 CONTROL-O AutoEdit System Variables (part 8 of 10)

Variable	Description

%%$WAITKSL	Whether a CONTROL-O rule waits for the KeyStroke OpenAccess (KOA) script to complete so that it can check return codes or Global variables set by the script and proceed accordingly.
	
	Valid values are
	
	■ YES
	■ NO
	
	The value of %%$WAITKSL is automatically reset to NO after the completion of the KOA script.
	
	Example
	`DO SET=%%$WAITKSL = YES`
	`DO KSL=`*scriptname arg1 arg2 ... arg10*
	`IF %%$KSLRC EQ# 4`
	`DO SHOUT=...`
	
	This variable is supported for historical reasons. For more information, see "DO KSL: Automated Console Action Parameter" on page 365.

%%$WAITRC	The return code of the event that caused the end of a DO WAIT, or a DO COMMAND with a WAITMODE value of YES. For more information, see "DO WAIT: Automated Console Action Parameter" on page 412.

%%$WAITRESP	Whether CONTROL-O retrieves, in the same rule, all messages issued in response to an operator command.
	Valid values are YES and NO.
	The value of %%$WAITRESP is automatically reset to NO after all response messages have been intercepted.
	Example
	`DO SET=%%$WAITRESP = YES`
	`DO COMMAND=D T`
	This variable is supported for historical reasons. For more information, see "DO COMMAND: Automated Console Action Parameter" on page 324.

Table 178 CONTROL-O AutoEdit System Variables (part 9 of 10)

Variable	Description

%%$WAITTSO	Whether a CONTROL-O rule waits for the completion of the TSO command, CLIST, or REXX procedure so that it can check return codes or Global variables set by the command and proceed accordingly.
	
	Valid values are:
	
	■ YES
	■ NO
	
	The value of *%%$WAITTSO* is automatically reset to NO after the completion of the TSO command, CLIST, or REXX procedure.
	
	Example
	`DO SET=%%$WAITTSO = YES`
	`DO TSO=...`
	`IF %%$TSORC EQ# 4`
	`DO SHOUT=...`
	
	This variable is supported for historical reasons. For more information, see "DO TSO: Automated Console Action Parameter" on page 408.

%%$WI0920	Prior to version 6.0.00, optional Wish WI0920 displayed the value of %%$SECJES. This %%$WI0920 variable performs the same function. For more information, see "%%$SECJES" on page 534.
%%$WO0943	Status of optional wish WO0943. For more information, see "%%$MODIFY_O_F" on page 533.
%%$WQEUPD	Status of optional Wish IO0024. Indicates whether to update the message block (WQE) "in place" with the required changes created in the DO DISPLAY statement with the NEWTEXT text. Valid values are: ■ N — CTOPARM WEQUPD is set to N. Do not update the message block. Default. ■ Y — CTOPARM WEQUPD is set to Y. Update the message block. For more information, see the CONTROL-O chapter in the *INCONTROL for z/OS Installation Guide.*

Table 178 CONTROL-O AutoEdit System Variables (part 10 of 10)

Variable	Description
%%$WTOLINKAGE	Determines how the Write To Operator (WTO) service that caused the message to appear was requested. WTO is the MVS system service that allows programs to write messages to consoles and the system log. Valid values are: ■ SVC - the message was issued by WTO with LINKAGE=SVC (default) ■ BRANCH - the message was issued by WTO with LINKAGE=BRANCH
%%$XAMLB	Name of the library containing the rule that will be used in the DO RULE request when using the CONTROL-O eXtended Automation Mechanism (XAM). The default is ALL.
%%$XAMTB	Name of the table containing the rule that will be used in the DO RULE request when using the CONTROL-O eXtended Automation Mechanism (XAM). The default is ALL.

Table 179 CONTROL-O Control Statements

Statement	Description
%%$MLLEND	For a complete description of this statement, see page 575.
%%$RESOLVE	For a complete description of this statement, see page 576.
%%$RANGE	For a complete description of this statement, see page 579.

Table 180 CONTROL-O Function AutoEdit System Variables (part 1 of 4)

Variables	Description
%%$CALCDATE	Date calculations based on a given date. The syntax is `%%$CALCDATE date ± quantity` In this syntax ■ *date* must be in the format yymmdd. ■ *quantity* is the number of days, from 1 through 99999, to add to or subtract from the date. It can be one of the following: — a number — a numeric AutoEdit expression For more information, see "%%$CALCDATE" on page 581.
	Note: This variable operates on Gregorian dates only; you cannot specify Julian dates such as with the %%JULDAY variable.

Table 180 CONTROL-O Function AutoEdit System Variables (part 2 of 4)

Variables	Description
%%$D2X *num*	The decimal value-to-hexadecimal string convertor. The maximum number that can be converted with this variable is 2147483647, or 231-1. **Example** To convert decimal 4095 to the equivalent hexadecimal string (FFF), specify `%%$D2X 4095`
%%$DIV	The operator that divides one operand by another operand.
%%$ISNUM	Whether a specified string is numeric. To be considered numeric, the specified string must contain only the digits from 0 through 9. The syntax is `%%$ISNUM string`. In this syntax, *string* is the constant or variable that contains the string to evaluate. Possible values returned by this function are: ■ YES — The specified string is numeric. ■ NO — The specified string is not numeric. For more information, see "%%$ISNUM" on page 587.
%%$JOBSTAT *job_name*	The job status. Valid values are: ■ ACTIVE — The specified job, started task, or TSO is executing. ■ INACTIVE — The specified job, started task, or TSO is not executing. ■ NOTJOB — The specified name is not valid.
%%$LENGTH *var*	The length of the *var* variable.
%%$MINUS	The operator that subtracts one operand from another operand.
%%$PARSE	Splits a specified string into substrings according to a specified template. A template consists of variables and patterns that determine the parsing process. The syntax is DO SET=%%$PARSE *string template* In this syntax ■ *string* is the AutoEdit variable that contains the string to be parsed. ■ *template* is the AutoEdit variable or constant that contains the template. For more information, see "%%$PARSE" on page 587.
%%$PLUS	The operator that adds two operands.

Table 180 CONTROL-O Function AutoEdit System Variables (part 3 of 4)

Variables	Description
%%$POOLCOSMOS *cosmos_dbname*	Returns the type of the specified COSMOS database. The syntax is `%%$POOLCOSMOS cosmos_dbname` In this syntax, *cosmos_dbname* is the name of the COSMOS database.
%%$POOLSTORE *gblvar_pname*	Returns the source type of the specified pool CONTROL-O storage. The syntax is %%$POOLSTORE *gblvar_pname* where *gblvar_pname* is the Global variable pool name.
%%$POOLTYPE *gblvar_pname*	Returns the type of the specified pool in CONTROL-O, as defined in the list of pools to be loaded (DAGLBLST). The syntax is `%%$POOLTYPE gblvar_pname` In this syntax, *gblvar_pname* is the Global variable pool name.
%%$POS	Locates a substring in a specified string, and indicates the position of the first character of that substring. The syntax is `%%$POS substring string` In this syntax, ■ *substring* is the constant or variable that contains the substring for which to search ■ *string* is the constant or variable that contains the string to search for the specified substring For more information, see "%%$POS" on page 586.
	Note: If the substring is not found in the specified string, this variable returns a value of 0.
%%$SUBSTR	Extracts a substring from the input string. The syntax is `%%$SUBSTR strng startpos len` In this syntax ■ *strng* is the input string from which the substring is extracted ■ *startpos* is the first character of the input string to extract ■ *len* is the number of characters to extract For more information, see "%%$SUBSTR" on page 584.

Table 180 CONTROL-O Function AutoEdit System Variables (part 4 of 4)

Variables	Description
%%$TIMEINT	Calculates the time interval between two given times, specified in any order. The syntax is `%%$TIMEINT time1 time2` In this syntax, *time1* and *time2* are constants or variables in the format yydddhhmmss. For more information, see "%%$TIMEINT" on page 585.
%%$TIMES	The operator that multiplies one operand by another operand.
%%$W*n* `varname`	The *n*th word of the *varname* variable, where *n* is a value from 1 through 99. A comma or a blank can serve as a delimiter. For example, `%%$W3 %%$MSG` represents the third word in the original message text.
%%$WORDS `varname`	The number of words in the *varname* variable. A comma or a blank can serve as a delimiter within the variable.
%%$X2C `string`	The hexadecimal string-to-character convertor. **Example** To convert the hexadecimal string "2A4F" to text format, specify `%%$X2C 2A4F`
%%$X2D `string`	The hexadecimal string-to-decimal value convertor. The result of the conversion is always positive. The highest number that can be converted using this variable is 7FFFFFFF. **Example** To convert the hexadecimal string "FFF" to the equivalent decimal value (4095), specify `%%$X2D FFF`.

Table 181 CVT and ECVT AutoEdit System Variables (part 1 of 5)

Variable	Description
%%$CVTBFP	Whether Binary Floating Point support is active. Binary Floating Point support is simulated unless the CVTBFPH variable, described in this table, is set to Y (Yes). Valid values are: ■ Y (Yes) ■ N (No)
%%$CVTCMPSC	Whether to indicate the presence of the MVS compression / expansion service. Valid values are: ■ Y (Yes) ■ N (No)

Table 181 CVT and ECVT AutoEdit System Variables (part 2 of 5)

Variable	Description
%%$CVTCMPSH	Whether to indicate the presence of the CMPCS compression / expansion hardware instruction. Valid values are: ■ Y (Yes) ■ N (No)
%%$CVTCRPTL	Whether the encryption asymmetric feature is supported. Valid values are: ■ Y (Yes) ■ N (No)
%%$CVTCSRSI	Whether CSRSI service is available. Valid values are: ■ Y (Yes) ■ N (No)
%%$CVTCSRUN	Whether CSRUNIC callable service is available. Valid values are ■ Y (Yes) ■ N (No)
%%$CVTCSTR	Whether the CSTRING facility is present on this system. Valid values are: ■ Y (Yes) ■ N (No)
%%$CVTCUSE	Whether the CUSE facility is present on this system. Valid values are: ■ Y (Yes) ■ N (No)
%%$CVTDLPA	Whether dynamic LPA (CSVDYLPA) is available. Valid values are: ■ Y (Yes) ■ N (No)
%%$CVTDNEX	Whether CSVDYNEX for dynamic exits is present. Valid values are: ■ Y (Yes) ■ N (No)
%%$CVTDYAPF	Whether the dynamic APF is present through CSVAPF. Valid values are: ■ Y (Yes) ■ N (No)
%%$CVTDYNL	Whether dynamic LNKLST is present through CSVDYNL. Valid values are: ■ Y (Yes) ■ N (No)
%%$CVTENCLV	Whether the ENCLAVES function is present. Valid values are: ■ Y (Yes) ■ N (No)

Table 181 CVT and ECVT AutoEdit System Variables (part 3 of 5)

Variable	Description
%%$CVTESAME	Whether to indicate the presence of ESAME hardware. Valid values are: ■ Y (Yes) ■ N (No)
%%$CVTGTFAV	Whether GTF is active. Valid values are: ■ Y (Yes) ■ N (No)
%%$CVTHIPER	Whether hyperspaces are supported. Valid values are: ■ Y (Yes) ■ N (No)
%%$CVTILM	Whether IBM License ManagerILM functions are present. Valid values are: ■ Y (Yes) ■ N (No)
%%$CVTJESCT	The primary subsystem name.
%%$CVTLPARC	Whether LPAR Clustering is present. Valid values are: ■ Y (Yes) ■ N (No)
%%$CVTMDL	The CPU model number.
%%$CVTMVPG	Whether MOVEPAGE capability is present on this system. Valid values are: ■ Y (Yes) ■ N (No)
%%$CVTOSLVL	The 16-character system level indicators
%%$CVTOVER	Whether SUBPOOL override is supported. Valid values are: ■ Y (Yes) ■ N (No)
%%$CVTPARMC	Whether Logical Parmlib Service is available through IEFPRMLB. Valid values are: ■ Y (Yes) ■ N (No)
%%$CVTPAUSE	Whether Pause / Release services are present. Valid values are: ■ Y (Yes) ■ N (No)
%%$CVTPER2	Whether PER2 hardware is present on all CPUs. Valid values are: ■ Y (Yes) ■ N (No)

Table 181 CVT and ECVT AutoEdit System Variables (part 4 of 5)

Variable	Description
%%$CVTPLO	Whether a PLO instruction is present. Valid values are: ■ Y (Yes) ■ N (No)
%%$CVTPRDED	Whether product enable / disable (IFAEDxxx) is present. Valid values are: ■ Y (Yes) ■ N (No)
%%$CVTPRODI	The product FMID identifier for the control program. For example, JBB1328.
%%$CVTRELNO	The 4-character release number, usually “038 “ (with trailing blank).
%%$CVTRSMWD	Whether the storage manager window was built. Valid values are: ■ Y (Yes) ■ N (No)
%%$CVTRTLS	Whether Runtime Library services (CSVRTLS) are present. Valid values are: ■ Y (Yes) ■ N (No)
%%$CVTSNAME	The name of the current system.
%%$CVTSOPF	Whether the suppression-on-protection hardware facility is present. Valid values are: ■ Y (Yes) ■ N (No)
%%$CVTSUBSP	Whether the SUBSPACE facility is present on this system. The facility is initialized by NIP. Valid values are: ■ Y (Yes) ■ N (No)
%%$CVTUNICS	Whether Unicode callable services are available. Valid values are: ■ Y (Yes) ■ N (No)
%%$CVTWLM	Whether the IBM Workload Manager is installed. Valid values are: ■ Y (Yes) ■ N (No)
%%$ECVTCLON	The 1-character or 2-character value used to identify a system within a Sysplex. Valid values are: ■ from A through Z ■ from) 0 through 9 ■ $ ■ @ ■ #

Table 181 CVT and ECVT AutoEdit System Variables (part 5 of 5)

Variable	Description
%%$ECVTGMOD	The GRS mode of operation.
%%$ECVTHDNM	The hardware name of the processor.
%%$ECVTLOAD	The edited MVS load parameter.
%%$ECVTLPID	The 8-character IBM product ID for ILM.
%%$ECVTLPNM	The LPAR name of the processor configuration. This field is blank if the processor is not in LPAR mode.
%%$ECVTLPUB	The 8-character IBM publisher ID for ILM.
%%$ECVTLVID	The 8-character IBM version ID for ILM.
%%$ECVTPIDN	The PID number.
%%$ECVTPMOD	The Control Product modify level.
%%$ECVTPNAM	The 16-character Control Product name.
%%$ECVTPOWN	The 16-character Control Product owner.
%%$ECVTPREL	The Control Product release.
%%$ECVTPVER	The Control Product version.
%%$ECVTSPLX	The name of the Sysplex.
%%$ECVTVMNM	The VM user ID of the virtual machine, of which this MVS image is a guest. This field is blank if the processor is not a guest under VM.

Table 182 General AutoEdit System Variables (part 1 of 3)

Variable	Description
%%$ASID	The address space ID in decimal format.
%%$ASIDX	The address space ID in hexadecimal format.
%%$BFPH	Whether to indicate the presence of the BFP hardware instruction set. Valid values are: ■ Y (Yes) ■ N (No)
%%$CONSNAME	The console name. ■ If the rule is triggered by the detection of a message, %%$CONSNAME contains the name of the console to which the message is issued whenever the message is explicitly sent to a specific console. ■ If the rule is triggered by the detection of a command, %%$CONSNAME is the name of the console issuing the command.

Table 182 General AutoEdit System Variables (part 2 of 3)

Variable	Description
%%$CONSOLEID	The console ID. ■ If the rule is triggered by the detection of a message, %%$CONSOLEID is the ID of the console to which the message is issued (whenever the message is explicitly sent to a specific console). ■ If the rule is triggered by the detection of a command, %%$CONSOLEID is the ID of the console issuing the command.
%%$CPUMODEL	The CPU model number.
%%$GRSMODE	The GRS mode of operation.
%%$GTFMODE	Whether GTF is active. Valid values are: ■ Y (Yes) ■ N (No)
%%$HARDWARE	The hardware name of the processor.
%%$JES2CHAR	JES2 recognition character
%%$JES2LEVEL	Primary subsystem name
%%$JES2SSNM	JES2 subsystem name
%%$JES2SSVS	JES2 version, release and mod
%%$JES2SYSID	4-character JES2 system ID
%%$JES2SYSNM	8-character JES2 system name
%%$JESMAXDD	Maximum number of single unit DD statements allowed for a job step
%%$JESNRSS	Total number of subsystems
%%$JNAME	The name of the job that issued the message or command. This system variable contains the same value as %%$JOBNAME.
%%$JOBACCT	The account information of the job that issued the message or command.
%%$JOBNAME	The name of the job that issued the message or command. This system variable contains the same value as %%$JNAME.
%%$JOBTYPE	The job type associated with the job that issued the message. Valid values are: ■ J — Batch jobs (JOB) ■ S — Started task (STC) ■ T — TSO user (TSU)
%%$LPARNAME	The LPAR name of the processor configuration. This field is blank if the processor is not in LPAR mode.
%%$MAXDDS	Maximum number of single unit DD statements allowed for a job step

Table 182 General AutoEdit System Variables (part 3 of 3)

Variable	Description
%%$MVSLEVEL	The z / OS product release under which CONTROL-O is running. Up to eight characters. For example, SP3.1.1 or SP4.2.2
%%$MVSUSER	The VM user ID of the virtual machine, of which this MVS image is a guest. This field is blank if the processor is not a guest under VM.
%%$PGMSTEP	The job program step name from which the message was issued.
%%$PRISUBNM	The primary subsystem name.
%%$PROCSTEP	The job procedure step from which the message was issued.
%%$SABEND	The system abend code of the step whose termination triggered the rule.
%%$SMFID	The SMF ID of the CPU issuing the message or running the KSL script.
%%$SUBSYSS#	Total number of subsystems
%%$SYSFMID	The product FMID identifier for the control program, for example, JBB1328.
%%$SYSPLEX	The Sysplex name
%%$SYSTEMNM	The name of the current system.
%%$TSOLEVEL	The TSO level.
%%$UABEND	The user abend code of the step the termination of which triggered the rule.
%%$USERID	The security package user ID of the job, started task, or TSO under which the rule is executing.
%%$XCONSOLEID	The 8-character ID of the console that received the message or issued the command.

Table 183 IPL AutoEdit System Variables

Variable	Description
%%$IPLCLPA	Whether the keyword CLPA was specified during IPL. Valid values are: ■ YES — CLPA was specified. ■ NO — CLPA was not specified.
%%$IPLCVIO	Whether the keyword CVIO was specified during IPL. Valid values are: ■ YES — CVIO was specified. ■ NO — CVIO was not specified.
%%$IPLDATE	The date of the most recent IPL. The format is defined in the DATETYP parameter of the IOAPARM library. For a description of this parameter, see the IOA chapter in the *INCONTROL for z/OS Installation Guide*.

Table 183 IPL AutoEdit System Variables

Variable	Description
%%$IPLTIME	The time of the most recent IPL in the format hhmmss.
%%$IPLTYPE	The type of IPL that was run, determined by whether the keyword CLPA or CVIO was specified. Valid values are: ■ WARM — Neither CLPA nor CVIO was specified. ■ QUICK — CVIO was specified. ■ COLD — Either CLPA, or both CLPA and CVIO, was specified.
%%$LOADPARM	The value of the LOADPARM parameter, which was specified during IPL. The format is wwwwxxyz In this format ■ *wwww* is the IODF device number ■ *xx* is the LOAD*xx* suffix ■ *y* is the NIP console prompt feature ■ *z* is the z/OS nucleus suffix
%%$SYSRESCUA	The address of the volume used for IPL.
%%$SYSRESVOL	The name of the volume used for IPL.

Table 184 JES2 and JES3 AutoEdit System Variables (part 1 of 2)

Variable	Description
%%$CCTCOMCH	The JES2 recognition character
%%$CCTLEVEL	The primary subsystem name
%%$CCTMVSNM	The 8-character JES2 system name
%%$CCTNDENM	The JES2 node name
%%$CCTSID	The 4-character JES2 system ID
%%$CCTSSNM	The JES2 subsystem name
%%$CCTSSVS	The JES2 version, release and mod
%%$JES2CHAR	The JES2 recognition character
%%$JES2CKP1	The JES2 checkpoint1 name
%%$JES2CKP2	The JES2 checkpoint2 name
%%$JES2LEEL	The primary subsystem name
%%$JES2NODE	The JES2 node name
%%$JES2SSNM	The JES2 subsystem name
%%$JES2SSVS	The JES2 version, release and mod
%%$JES2SYSID	The 4-character JES2 system ID
%%$JES2SYSNM	The 8-character JES2 system name

Table 184 JES2 and JES3 AutoEdit System Variables (part 2 of 2)

Variable	Description
%%$JES3MSTAT	For JES3 and Sysplex environment. The status of the message intercepted by CONTROL-O. Valid values are: ■ R — The message was initially issued on a local system, and then reissued by JES3 on the global system. The rule is triggered by the reissued message on the global system. ■ F — First (original) occurrence of the message.
%%$JESJOBNM	For JES2 job-related messages, this variable resolves to the job ID of the related job (eight characters in the format JOB*nnnnn)* The value is taken from the WQEJOBNM field in the IHAWQE block associated with the message. This variable is available for the ON MESSAGE, ON STRING, ON JOBARRIV, and ON JOBEND message-type rules.
%%$JESMAXDD	The maximum number of single unit DD statements allowed for a job step
%%$JESNRSS	The total number of subsystems
%%$JESTYPE	The type of JES environment under which CONTROL-O is running. Valid values are: ■ 2 — For JES2 ■ 3 — For JES3
%%$JOBID	The JES ID of the job that issued the message or command.
%%$MAXDDS	The maximum number of single unit DD statements allowed for a job step
%%$SUBSYSS#	The total number of subsystems

Table 185 MAINVIEW AutoEdit System Variables

Variable	Description
%%$MVA_CONTEXT	The context of the exception.
%%$MVA_DATA	The assigned user data (PCMD).
%%$MVA_DATE	The exception date in the format yyddd.
%%$MVA_IND	Whether the alarm should be sounded. Valid values are: ■ Y — Sound the alarm ■ N — Do not sound the alarm
%%$MVA_KEY	The unique key that identifies the exception.
%%$MVA_PRODUCT	The MAINVIEW product associated with the exception.

Table 185 MAINVIEW AutoEdit System Variables

Variable	Description
%%$MVA_PRTY	The exception priority. Valid values are: ■ CLEAR ■ INFO ■ WARNING ■ MINOR ■ MAJOR ■ CRITICAL
%%$MVA_QUEUE	The queue that the exception is assigned to.
%%$MVA_SCOPE	The scope associated with the exception.
%%$MVA_TEXT	The text of the alert message.
%%$MVA_TIME	The exception time in the format hhmmss.
%%$MVA_TYPE	The exception type. Valid values are: ■ EXCEPT — Start of new exception ■ EXCEPTX — End of exception
%%$MVA_USER	The ID of the user that made the last exception update.
%%$MVA_VIEW	The view associated with the exception.

Table 186 Message AutoEdit System Variables (part 1 of 5)

Variable	Description
%%$CONSNAME	The console name. ■ If the rule is triggered by the detection of a message, %%$CONSNAME contains the name of the console to which the message is issued whenever the message is explicitly sent to a specific console. ■ If the rule is triggered by the detection of a command, %%$CONSNAME is the name of the console issuing the command.
%%$CONSOLEID	The console ID. ■ If the rule is triggered by the detection of a message, %%$CONSOLEID is the ID of the console to which the message is issued (whenever the message is explicitly sent to a specific console). ■ If the rule is triggered by the detection of a command, %%$CONSOLEID is the ID of the console issuing the command.
%%$DATE	The current system date, in the format yymmdd.
%%$DAY	The current system day, in the format dd.

Table 186 Message AutoEdit System Variables (part 2 of 5)

Variable	Description
%%$DDNAME	The name of the SYSOUT DD statement to which the message that triggered the rule was written. This variable is relevant only for rules that contain an ON SYSOUT statement.
%%$DESC	The descriptor code of the original message.
%%$JESJOBNM	For JES2 job-related messages, this variable resolves to the job ID of the related job (eight characters in the format JOBnnnnn). The value is taken from the WQEJOBNM field in the IHAWQE block associated with the message. This variable is available for the ON MESSAGE, ON STRING, ON JOBARRIV, and ON JOBEND message-type rules.
%%$JNAME	The name of the job that issued the message or command. This system variable contains the same value as %%$JOBNAME.
%%$JOBID	The JES ID of the job that issued the message or command.
%%$JOBNAME	The name of the job that issued the message or command. This system variable contains the same value as %%$JNAME.
%%$JOBTYPE	The job type associated with the job that issued the message. Valid values are: ■ J — Batch jobs (JOB) ■ S — Started task (STC) ■ T — TSO user (TSU)
%%$JULDAY	The current system day, in the format jjj.
%%$LDOMID	The message ID of the last message issued or intercepted by CONTROL-O.
%%$LENGTH *variable*	The length of the *var* variable.
%%$LINES	The line counter for multiline messages and messages intercepted in command-response mode. Multiline messages are messages that consist of one primary line followed by at least one secondary line. ■ If the messages are processed with the %%$M* variable, the %%$LINES variable represents the number of the current secondary line. If the current line is the primary line, the %%$LINES variable resolves to zero. ■ If the lines are processed with the %%$Mn variable, %%$LINES represents the total number of secondary lines. For information regarding these two types of processing, see the %%$M* and %%$Mn variables in this table. The maximum value for the %%$LINES variable is 10. If a command response contains more than ten lines, the variable resolves to 10.

Table 186 Message AutoEdit System Variables (part 3 of 5)

Variable	Description
%%$M*	For multiline messages and messages intercepted in command-response mode. Multiline messages are messages that consist of one primary line followed by at least one secondary line. When this system variable is specified in a rule, CONTROL-O processes the message line by line, and all DO statements in the rule are executed repeatedly on each new line of the message. A %%$M* variable in a DO statement resolves to the text of the current line of the message. Therefore, %%$M* can resolve an unlimited number of message lines. This variable is useful for handling a message with an unknown number of lines, or where the information to be resolved does not occur in any one specific line. For more information, see "Command-Response Mode" on page 326, and "DO ENDMSG: Automated Console Action Parameter" on page 350.
%%$MCSFLAGB	The MCS flags from the WQE (WQEMCSF source) in binary format. For messages only.
%%$MCSFLAGX	The MCS flags from the WQE (WQEMCSF source) in hexadecimal format. For messages only.
%%$MDOMID	The message identification number of the message that triggered the rule.
%%$M*n*	For multiline messages and messages intercepted in command-response mode. Multiline messages are messages that consist of one primary line followed by at least one secondary line. Specifies the *n*th line of the original message text after the primary message line, where *n* is a number from 1 through 10. For example, %%$M1 resolves to the message text contained in the first secondary line. For more information, see "Command-Response Mode" on page 326, and "DO ENDMSG: Automated Console Action Parameter" on page 350.
%%$MONTH	The current system month, in the format mm.
%%$MSG	The text of the original message (the primary line only for multiline messages).

Table 186 Message AutoEdit System Variables (part 4 of 5)

Variable	Description
%%$MSGENV	The environment under which the message or command was intercepted by CONTROL-O. Valid values are: ■ CICS — the CONTROL-O CICS interface ■ COM — the CONTROL-O communication interface ■ COS — a CONTROL-O / COSMOS rule ■ CTD — the CONTROL-D Sample Exit 18 ■ CTM — a CONTROL-O rule called by CONTROL-M ■ DSN — the data set event or step completion event detected by the CONTROL-O ■ IMS — the CONTROL-O IMS interface ■ J2M — JES2 by JES2 Exit 5 ■ J3C — JES3 by JES3 command Exit IATUX18 ■ J3M — JES3 by JES3 message Exit IATUX31 ■ MVA — MAINVIEW Alarm interface ■ OMG — OMEGAEXP (OMEGAMON exception interface) ■ SSI — the CONTROL-O interface ■ SYSOUT — the SYSOUT interface ■ XAM — the CONTROL-O Extended Access Method interface
%%$MSGID	The first ten characters of the message code.
%%$MSGSYSID	For JES3. The SYSID of the system on which the message was originally issued.
%%$MSGSYSNM	The system name associated with the message.
%%$MULTIFLG	The multiline message flag. Valid values are: ■ R — the line is regular (that is, not part of a multiline message) ■ F — the line is the first line of a multiline WTO ■ M — the line is a middle line of a multiline WTO ■ L — the line is the last line of a multiline WTO
%%$REISSUED	Whether the message that triggered the rule was issued from the current system. ■ Y (Yes) — The message was issued from a different system. It was transferred to this system by a system component. ■ N (No) — The message was issued from the current system.
%%$ROUTE	The route code of the original message.
%%$SPECIALC	The special character (+, @, or *) that appears on the console or in the Syslog at the beginning of a message.
%%$TIME	The time of day, in the format hhmmss.
%%$USERID	The security package user ID of the job, started task, or TSO under which the rule is executing.
%%$V*n*	The *n*th word in the original message or command text, where *n* is a value from 1 through 99. A comma or a blank can serve as a delimiter.

Table 186 Message AutoEdit System Variables (part 5 of 5)

Variable	Description
%%$WAITRC	The return code of the event that caused the end of a DO WAIT, or a DO COMMAND with a WAITMODE value of YES. For more information, see "DO WAIT: Automated Console Action Parameter" on page 412.
%%$WDAY	The current Gregorian day of the week in the format d, where d is from 1 through 6 or 0. For example, 1=Sunday, 2=Monday, ... 6= Friday, 0=Saturday.
	Note: The start of the week depends on installation parameters specifying whether 1=Sunday or 1=Monday. Contact your INCONTROL administrator for your site standard. All references assume 1=Sunday, 2=Monday, and so on.
%%$W*n* *varname*	The *n*th word of the *varname* variable, where *n* is a value from 1 through 99. A comma or a blank can serve as a delimiter. For example, `%%$W3 %%$MSG` represents the third word in the original message text.
%%$WORDS *varname*	The number of words in the *varname* variable. A comma or a blank can serve as a delimiter within the variable.
%%$YEAR	The current system year, in the format yy.

The SMS variables described in the following table pass the associated values to the ACS exit routines.

Table 187 SMS AutoEdit System Variables (part 1 of 4)

Variable	Description
%%$SMS_ACCT_JOB#	The maximum number of job account fields.
	Note: %%$SMS_ACCT_JOB# resolves to the number of fields in the job account information.
%%$SMS_ACCT_JOB*nnn*	The account information from the JOB statement.
	Note: %%$SMS_ACCT_JOB# resolves to the number of fields in the job account information. %%$SMS_ACCT_JOB*nnn* resolves to the job account information in field number *nnn*. For example, if the account information on the JOB card is (SMITH,PAYROLL,3) then %%$SMS_ACCT_JOB2 resolves to PAYROLL.
%%$SMS_ACCT_STEP#	The maximum number of step account fields.
	Note: %%$SMS_ACCT_STEP# resolves to the number of fields in the step account information. %%$SMS_ACCT_STEP*nnn* resolves to the step account information in field number *nnn*. For example, if the account information in the EXEC card is (SMITH,PAYROLL,3) then %%$SMS_ACCT_STEP2 resolves to PAYROLL.

Table 187 SMS AutoEdit System Variables (part 2 of 4)

Variable	Description
%%$SMS_ACCT_STEP*nnn*	The account information from the EXEC statement.
	Note: %%$SMS_ACCT_STEP# resolves to the number of fields in the step account information. %%$SMS_ACCT_STEP*nnn* resolves to the step account information in field number *nnn*. For example, if the account information in the EXEC card is (SMITH,PAYROLL,3) then %%$SMS_ACCT_STEP2 resolves to PAYROLL.
%%$SMS_ACSENVIR	The environment in which the rule is invoked. Valid values are: ■ RECALL ■ RECOVER ■ RENAME ■ CONVERT ■ ALLOC ■ STORE ■ CHANGE ■ CTRANS
%%$SMS_APPLIC	The name of the RACF application.
%%$SMS_DD	The name of the DD statement.
%%$SMS_DEF_DATACLAS	The RACF default Data class of the data set owner.
%%$SMS_DEF_MGMTCLAS	The RACF default Management class of the data set owner.
%%$SMS_DEF_STORCLAS	The RACF default Storage class of the data set owner.
%%$SMS_DSN	The data set name.
	Note: %%$SMS_DSN resolves to the complete data set name. To reference a single qualifier of the data set name, use %%$SMS_DSN*nnn*, where *nnn* resolves to the number of the qualifier. %%$SMS_NQUAL resolves to the number of qualifiers in the data set name. For example, %%$SMS_DSN%%$SMS_NQUAL returns the rightmost qualifier.
%%$SMS_DSNTYPE	The data set name type. Valid values are: ■ EXC ■ EXR ■ HFS ■ LIBRARY ■ PDS ■ Null
%%$SMS_DSORG	The data set organization. Valid values are: ■ PS ■ PO ■ VS ■ DA ■ Null

Table 187 SMS AutoEdit System Variables (part 3 of 4)

Variable	Description
%%$SMS_DSOWNER	The name of the user or group that owns the data set
%%$SMS_DSTYPE	The data set type. One of the following: ■ GDS ■ PERM ■ TEMP ■ Null
%%$SMS_EXPDT	The expiration date in the format yyyyddd.
%%$SMS_FILENUM	The data set sequence number from the LABEL parameter.
%%$SMS_GROUP	The RACF group.
%%$SMS_JOB	The job name.
%%$SMS_LABEL	The label type. Valid values are: ■ NL ■ AL ■ SL ■ NSL ■ SUL ■ AUL ■ BLP ■ LTM
%%$SMS_LIBANAME	The tape library name.
%%$SMS_MAXSIZE	The maximum data set size in KB.
%%$SMS_MEMN	The name of the OAM object.
	Note: %%$SMS_MEMN resolves to the full OAM member name. To reference a single qualifier, use %%$SMS_MEMN*nnn*, where *nnn* resolves to the number of the qualifier.
%%$SMS_MEMNQUAL	The number of qualifiers in the OAM object name.
	Note: %%$SMS_MEMN resolves to the full OAM member name. To reference a single qualifier, use %%$SMS_MEMNnnn, where nnn resolves to the number of the qualifier. %%$SMS_MEMNQUAL resolves to the number of qualifiers in the data set name. For example, %%$SMS_MEMN%%$SMS_MEMNQUAL returns the rightmost qualifier.
%%$SMS_MSVGP	The group name for MSS.
%%$SMS_NQUAL	The number of qualifiers in the data set name.
	Note: %%$SMS_DSN resolves to the complete data set name. To reference a single qualifier of the data set name, use %%$SMS_DSN*nnn*, where *nnn* resolves to the number of the qualifier. %%$SMS_NQUAL resolves to the number of qualifiers in the data set name. For example, %%$SMS_DSN%%$SMS_NQUAL returns the rightmost qualifier.

Table 187 SMS AutoEdit System Variables (part 4 of 4)

Variable	Description
%%$SMS_NVOL	The volume count.
	Note: %%$SMS_VOLUME*nnn* resolves to volume number *nnn* in the volume list. %%$SMS_NVOL resolves to the number of volumes in the volume list.
%%$SMS_PGM	The program name.
%%$SMS_RECORG	The organization of the data set record. Valid values are: ■ KS ■ ES ■ RR ■ LS ■ Null
%%$SMS_RETPD	The retention period.
%%$SMS_SIZE	The data set primary size in KB.
%%$SMS_SYSNAME	The system name.
%%$SMS_SYSPLEX	The Sysplex name.
%%$SMS_UNIT	The unit name.
%%$SMS_USER	The user ID.
%%$SMS_VOLUME	The volume name.
	Note: %%$SMS_VOLUME*nnn* resolves to volume number *nnn* in the volume list. %%$SMS_NVOL resolves to the number of volumes in the volume list.
%%$SMS_XMODE	The execution mode. Valid values are: ■ BATCH ■ TSO ■ TASK
%%$SMSLEVEL	The SMS level.

CONTROL-O can support time-simulation products such as Compuware Xchange. When the CONTROL-O monitor starts with the TYPE parameter set to CONTROLT and a simulation product is active on the same system, the CONTROL-O AutoEdit system variables shown in Table 188 show the value set by the simulation product and not by the system.

Table 188 Time AutoEdit System Variables

Variable	Description
%%$CENT	The first two digits in the current year. For example, 20 in the year 2000.
%%$DATE	The current system date, in the format yymmdd.
%%$DAY	The current system day, in the format dd.

Table 188 Time AutoEdit System Variables

Variable	Description
%%$JULDAY	The current system day, in the format jjj.
%%$MONTH	The current system month, in the format mm.
%%$RDATE	The installation current working date, in the format yymmdd.
%%$RDAY	The installation current working day, in the format dd.
%%$RJULDAY	The installation current working day of the year, in the Julian format jjj.
%%$RMONTH	The installation current working month, in the format mm.
%%$RWDAY	The current working day of the week, in the format *d*, where *d* is 1 through 6 or 0 For example, 1=Sunday, 2=Monday, ... 6=Friday, 0=Saturday.
	Note: The start of the week depends on installation parameters specifying whether 1=Sunday or 1=Monday. Contact your INCONTROL administrator for your site standard. All references assume 1=Sunday, 2=Monday, and so on.
%%$RYEAR	The installation current working year, in the format yy.
%%$TIME	The time of day, in the format hhmmss.
%%$WDAY	The current Gregorian day of the week in the format d, where d is from 1 through 6 or 0. For example, 1=Sunday, 2=Monday, ... 6= Friday, 0=Saturday.a
%%$YEAR	The current system year, in the format yy.

UNIX Server for z/OS Resource Monitor System Variables

Table 189 is a list of the UNIX Server for z/OS Monitor system variables that are supplied by CONTROL-O.

Table 189 Unix Server for z/OS System Variables (part 1 of 2)

Variable	Description
%%$RMONCPUTIME	Total CPU time spent in kernel, in hundredths of a second.
%%$RMONOVRIPCMSGNIDS	Number of attempts to exceed the maximum number of message queue IDs.
%%$RMONOVRIPCSEMNIDS	Number of attempts to exceed the maximum number of semaphore IDs.
%%$RMONOVRIPCSHMNIDS	Number of attempts to exceed the maximum number of shared memory IDs.
%%$RMONOVRIPCSHMSPGS	Number of attempts to exceed the maximum number of shared memory pages for all segments.
%%$RMONOVRMMAPAREA	Number of attempts to exceed the maximum number of *mmap* storage pages.

Table 189 Unix Server for z/OS System Variables (part 2 of 2)

Variable	Description
%%$RMONOVRPROC	Number of times the maximum number of processes was exceeded.
%%$RMONOVRPRUID	Number of times the maximum number of processes per UID was exceeded.
%%$RMONOVRSHRPAGES	Number of attempts to exceed the maximum number of shared storage pages.
%%$RMONOVRUID	Number of times the maximum number of active UIDs was exceeded.
%%$RMONMAXIPCMSGNIDS	Maximum number of message queue IDs.
%%$RMONMAXIPCSEMNIDS	Maximum number of semaphore IDs.
%%$RMONMAXIPCSHMNIDS	Maximum number of shared memory IDs.
%%$RMONMAXIPCSHMSPGS	Maximum number of shared memory pages for all segments.
%%$RMONMAXMMAPAREA	Maximum number of mmap storage pages.
%%$RMONMAXPROC	Maximum number of processes.
%%$RMONMAXPRUID	Maximum number of processes per UID.
%%$RMONMAXSHRPAGES	Maximum number of shared storage pages as specified by BPXPRMXX *parmlib* statement MAXSHAREPAGES.
%%$RMONMAXUID	Maximum number of active UIDs.
%%$RMONNUMIPCMSGNIDS	Current number of message queue IDs.
%%$RMONNUMIPCSEMNIDS	Current number of semaphore IDs.
%%$RMONNUMIPCSHMNIDS	Current number of shared memory IDs.
%%$RMONNUMIPCSHMSPGS	Current number of shared memory pages for all segments.
%%$RMONNUMMMAPPAGES	Current number of *mmap* storage pages (in use).
%%$RMONNUMPROC	Current number of processes.
%%$RMONNUMSHRPAGES	Current number of shared storage pages.
%%$RMONNUMUID	Current number of active UIDs.
%%$RMONSYSCALLS	Total number of system calls. This includes system calls done internally by the kernel. It does not include trivial system calls.

Rule Stack Variables

A CONTROL-O rule can trigger other CONTROL-O rules through DO RULE statements. When a series of CONTROL-O rules trigger each other they are referred to collectively as a Rule Stack. CONTROL-O rules can be stacked up to 20 deep.

The variables listed below can be included in a CONTROL-O rule to determine information about the Rule Stack of the rule.

Some of these variable names must be supplied with a numerator, where 0 indicates the first rule in a stack, 1 is the rule triggered by the first rule in the stack (that is, the second rule in the stack), and so on.

NOTE

These variables are intended primarily for use during debugging operations.

Table 190 Rule Stack Variables

Variable	Description
%%$RULELIBRARY *n*	Name of the rule library containing the *n*th rule in the Rule Stack.
%%$RULETABLE *n*	Name of the rule table containing the *n*th rule in the Rule Stack.
%%$RULENAME *n*	Name of the *n*th rule in the Rule Stack.
%%$RULELEVEL	Level of the current rule in the Rule Stack.

Examples

- If %%$RULELEVEL = 0, the current rule was triggered by an event, and not by another rule.
- If %%$RULELEVEL = 1, the current rule was called by a DO RULE statement in a level 0 rule.

User-Defined Variables

User-defined variables can be defined to provide additional flexibility for CONTROL-O rules. You can define your own symbols, assign values to them, and they will automatically be resolved in DO statements, ON and IN statements. DO statements are resolved during rule execution. AutoEdit symbols in ON statements and IN condition names are resolved during rule ordering.

NOTE

User-defined AutoEdit variables used in ON statements and IN statements must be defined as Global.

When CONTROL-O identifies a string that starts with %%, the string is assumed to be an AutoEdit variable or instruction. If the string is a reserved AutoEdit variable or a CONTROL-O System variable, it is interpreted as such. Otherwise the string is assumed to be a user-defined variable.

DO actions within a rule are performed sequentially. If a user-defined variable in a DO statement is not completely resolved, the default action is to cancel the DO statement and all subsequent DO statements of the rule (for the current activation). This default can be overridden by using the %%$RESOLVE NO control statement in a prior DO SET statement. For a description of the %%$RESOLVE statement format, see page 576. In this case, CONTROL-O resolves the symbol as far as possible and then performs the DO statements in which it is found.

Global Variables

Global variables are user-defined variables that can be used to share information between different features of CONTROL-O. These variables can also be referenced by other INCONTROL products active at your site. A primary usage of the Global variables is to set globally accessed flags or counters (such as the current IMS reply number).

Global variables are contained in the Global AutoEdit library and in AutoEdit variable databases. Global variables are loaded when CONTROL-O is started. For more information on the Global AutoEdit library see the CONTROL-O chapter in the *INCONTROL for z/OS Administrator Guide*. For more information on AutoEdit variable databases see "IOA Variables Database Facility" on page 203.

XAE databases can be used for sharing variables across the Sysplex. XAE databases are defined and administered by the INCONTROL administrator. For more information, see "Using an XAE AutoEdit Variable Database" on page 571.

Reserved User-Defined Variables

Some user-defined variables are reserved by, and have a special meaning for, CONTROL-O. The values of most reserved variables are tested by CONTROL-O before performing specific DO statements, in order to establish the processing mode and the processing parameters of the DO statements.

Reserved variables, like other user-defined variables, are set by a DO SET statement, and then resolved automatically when they appear in other DO statements. They are never Global variables.

Table 191 shows the reserved user-defined variables are available.

Table 191 Reserved User-Defined Variables (part 1 of 6)

Variable	Description

%%$AUTOLOG	The recording mode for the currently handled message or command.
	Valid values are:
	■ Y — The message or command is recorded to the Automation Log.
	■ N — The message or command is not recorded.
	For more information, see "DO SET: Automated Console Action Parameter" on page 380, and see the description of preventing the logging of unnecessary messages in the *INCONTROL for z/OS Administrator Guide*.
	Example
	`ON MESSAGE TST*`
	`DO SET=%%$AUTOLOG=N`

%%$AUTOSYS	The default system in the Sysplex from which TYPE 1 XAE database variables are retrieved.

%%$COMMSYS	The system communication name or the CONTROL-O system name (CTOGATE name).
	■ For DO statements that support communication, such as DO COND, this variable can identify a remote CONTROL-O that should perform the DO action.
	■ If the DO statement has a SYSTEM subparameter, such as DO COMMAND, this variable can be used instead of that subparameter.
	The DO statements are distributed by Sysplex or CTOGATE communication.
	For more information, see "Performing an Action on Another System" on page 294.
	Example
	`DO SET %%$COMMSYS = SYS*`
	`DO SHOUT=TO TSO-CICSOPR`
	`URGENCY R SYSTEM`
	`MESSAGE CICS IS DOWN!`

%%$CTMLINE#	The current line, or job entry, in the Active Jobs file from which values are returned by the CONTROL-M interface.
%%$DBROW	The current row in the current global variable pool, if the current pool is an AutoEdit variable database.

Table 191 Reserved User-Defined Variables (part 2 of 6)

Variable	Description
%%$DOLIMIT	The maximum number of DO actions that can be performed during execution of the current CONTROL-O rule. Valid values are: ■ n — Allow execution of from 1 through 999999 DO actions in the current rule. If the rule attempts to exceed the specified number of DO actions, the rule is aborted and an error message is issued. ■ 0 — Allow the rule to execute an unlimited number of DO actions. If `%%$DOLIMIT` is not specified in a CONTROL-O rule, the rule is allowed to execute a maximum of 10,000 DO actions. **Example** To allow the current rule to execute a maximum of 500 DO actions, specify the following: `DO SET=%%$DOLIMIT = 500`

%%$GLOBAL	The name of the global pool to be accessed.
	
	Global pools contain Global variables and their values. One global pool ($GLOBAL) is defined as the default, but multiple global pools can be defined.
	
	Unless a global pool is specified using a %%$GLOBAL parameter, the default $GLOBAL member is used.
	
	After a pool is specified using a %%$GLOBAL parameter, that member remains assigned until a different pool is specified using another %%$GLOBAL parameter. To respecify the default, use this parameter to specify the $GLOBAL member.
	
	For more information, see "DO SET: Automated Console Action Parameter" on page 380, and see the description of Global AutoEdit variables in the *INCONTROL for z/OS Administrator Guide*.
	
	Example
	`DO SET=%%$GLOBAL = IMS`
	`DO SET=%%STATUS = UP GLOBAL Y`

%%$RESPMSG	IDs of messages expected in response to the DO COMMAND statement that follows the DO SET %%$RESPMSG statement. This variable is supported for historical reasons. For more information, see "Command-Response Mode" on page 326
	
	Example
	`DO SET=%%$RESPMSG = (CTM101I, CTM240I)`
	`DO COMMAND=F CONTROLM,NEWCONLIST`

Table 191 Reserved User-Defined Variables (part 3 of 6)

Variable	Description
%%$RJOBID	The ID of the job associated with DO COND, DO FORCEJOB, and DO RESOURCE requests. When specified, the value overrides the default job ID. If this variable is set, you should also set the %%$RJOBNAME reserved user-defined variable. For an example of usage, see the %%$RJOBNAME variable in this table.

%%$RJOBNAME	The name of the job associated with DO COND, DO FORCEJOB, and DO RESOURCE requests. When specified, the value overrides the default job name. If this variable is set, you should also set the %%$RJOBID variable, described in this table.
	
	Example
	The IAT5210 JES3 tape mount message is issued under the address space of JES3, and CONTROL-O sets the default job name to JES3. To associate the correct job, which mounts the tape, with the DO RESOURCE request, the job name and job ID are extracted from the text of the message, as follows:
	`DO SET=%%$RJOBNAME = %%$V3`
	`DO SET=%%$RJOBID = %%$V4`
	`DO RESOURCE=TAPE 0001 -`

%%$STATID	The message ID under which the statistics for a message should be accumulated.
	
	This variable can be used to combine the statistics of messages with individual statistics that are not required. This eliminates unnecessary messages from the Message Statistics screen.
	
	Example
	To combine the statistics for all messages with the prefix CKH into one general statistics item under the identifier CKHMSG, specify the following:
	`ON MSG CKH*`
	`DO SET %%$STATID = CKHMSG`

%%$SYSPCPU	The ordinal sequence number of the Sysplex-connected system with the name that will be accessed by the next resolution of %%SYSPCPUNAME. For information on %%SYSPCPUNAME, see “%%SYSPCPUNAME” on page 525

Table 191 Reserved User-Defined Variables (part 4 of 6)

Variable	Description
%%$TIMEOUT	The time, in seconds, to wait for one of the following: ■ completion of the DO TSO or DO KSL statements running in WAIT mode ■ interception of responses to messages after a command was issued in command-response mode The following formats are possible: ■ For `DO COMMAND` statements, use the syntax `DO SET=%%$TIMEOUT=(`*`value1`*`,`*`value2`*`)` In this syntax — *value1* is the maximum number of seconds to wait for the first message. — *value2* is the maximum number of seconds to wait between the first and the last message. ■ For DO KSL and DO TSO statements, use the syntax `DO SET=%%$TIMEOUT=`*`value1`* In this syntax, *value1* is the maximum number of seconds CONTROL-O waits for completion of the task or command before aborting the task or command. This variable is supported for historical reasons. For more information, see "Command-Response Mode" on page 326.

Table 191 Reserved User-Defined Variables (part 5 of 6)

Variable	Description

%%$WAITKSL	Whether a CONTROL-O rule waits for the KeyStroke OpenAccess (KOA) script to complete so that it can check return codes or Global variables set by the script and proceed accordingly.
	
	Valid values are:
	■ YES
	■ NO
	
	The value of %%$WAITKSL is automatically reset to NO after the completion of the KOA script.
	
	Example
	`DO SET=%%$WAITKSL = YES`
	`DO KSL=scriptname arg1 arg2 ... arg10`
	`IF %%$KSLRC EQ# 4`
	`DO SHOUT=...`
	
	This variable is supported for historical reasons. For more information, see "DO KSL: Automated Console Action Parameter" on page 365.

%%$WAITRESP	Whether CONTROL-O retrieves, in the same rule, all messages issued in response to an operator command.
	
	Valid values are:
	
	■ YES
	■ NO
	
	The value of %%$WAITRESP is automatically reset to NO after all response messages have been intercepted.
	
	Example
	`DO SET=%%$WAITRESP = YES`
	`DO COMMAND=D T`
	
	This variable is supported for historical reasons. For more information, see "DO COMMAND: Automated Console Action Parameter" on page 324.

Table 191 Reserved User-Defined Variables (part 6 of 6)

Variable	Description

%%$WAITTSO	Whether a CONTROL-O rule waits for the completion of the TSO command, CLIST, or REXX procedure so that it can check return codes or Global variables set by the command and proceed accordingly.
	
	Valid values are:
	
	■ YES
	■ NO
	
	The value of %%$WAITTSO is automatically reset to NO after the completion of the TSO command, CLIST, or REXX procedure.
	
	Example
	`DO SET=%%$WAITTSO = YES`
	`DO TSO=...`
	`IF %%$TSORC EQ# 4`
	`DO SHOUT=...`
	
	This variable is supported for historical reasons. For more information, see "DO TSO: Automated Console Action Parameter" on page 408.

Rules of Variable Substitution

A User-defined variable name must conform to the following rules. It must

- begin with "%%" (percent sign, percent sign)
- be composed of letters, digits, and the following characters: "@" (at sign), "#" (number sign), "$" (dollar sign), and "_" (underscore)
- have a maximum of 163 characters
- not begin with
  - — %%$ (percent sign, percent sign, dollar sign)
  - — %%@ (percent sign, percent sign, at sign)
  - — %%# (percent sign, percent sign, number sign)

  Variables that begin with these strings are either system variables or reserved user-defined variables.

Lowercase characters are not translated to uppercase characters upon resolution.

Variables are substituted sequentially from right to left, until the symbol is assigned a value. For example

```
%%SMF_TAPE_%%$DAY,
```

resolves on the third of the month to

```
%%SMF_TAPE_03,
```

CONTROL-O then tries to resolve the symbol %%SMF_TAPE_03. Assuming the value of the symbol in the Global environment is EE1022, the result is

```
EE1022
```

To concatenate two symbols, separate them with a period. Before AutoEdit variables are concatenated, trailing blanks are eliminated. For example

```
%%$DAY.%%$MONTH
```

resolves on the 3rd of December to

```
0312
```

NOTE

%%$DAY%%$MONTH (written without a period) partially resolves to User-defined variable *%%$DAY12*, which must be fully resolved.

To put a period between two symbols, use two consecutive periods. For example

```
%%$DAY..%%$MONTH
```

resolves on the 3rd of December to

```
03.12
```

To concatenate a symbol and a constant, use %%. (concatenation symbol). For example

```
A91%%$DAY%%.UP
```

resolves on the 3rd of December to

```
A9103UP
```

NOTE

Resolution of A91%%DAYUP would require a search for the %%DAYUP symbol.

When CONTROL-O assigns a value to a variable, CONTROL-O ignores leading and trailing spaces. For example, the statement

```
DO SET=%%X = FRIDAY RUN
```

assigns the value “FRIDAY RUN” to the *%%X* variable, regardless of how many spaces you type before or after “FRIDAY RUN.”

To assign a value with leading or trailing spaces, use the *%%$BLANK* system variable. For example, the statement

```
DO SET=%%X=%%$BLANK.FRIDAY RUN
```

assigns the value “FRIDAY RUN” (with a leading space) to the *%%X* variable. Be sure to include the “.” concatenation operator between “%%$BLANK” and “FRIDAY RUN.” Without the “.” CONTROL-O would look for a variable called “%%$BLANKFRIDAY.”

Assigning AutoEdit Variables

Values can be set to user-defined variables by either of the following methods:

- using a DO SET statement
- using an AutoEdit variable database

These methods are described below.

Using the DO SET Statement

The DO SET statement is used to set values to user-defined variables, or to specify AutoEdit control statements. The format of the DO SET statement is

```
DO SET=%%var = value
```

or

```
DO SET=%%var = valid_expression
```

or

`DO SET=`AutoEdit CONTROL-statements

%%var must be a valid user-defined AutoEdit variable.

CONTROL-O attempts to resolve the variable to a single value by processing it from right to left. For example

```
DO SET=%%BACKUP_UNIT_%%$WDAY = EE%%$MONTH.%%$DAY
```

On Sunday the 24th of September, the user-defined symbol %%BACKUP_UNIT_1 is assigned the value EE0924.

If the symbol assigned in the DO SET statement is not completely resolved, the default action is to cancel the DO SET action and the subsequent DO actions of the current rule activation. This default can be overridden by using the %%$RESOLVE NO control statement in a previous DO SET statement, in which case the symbol is resolved as far as possible before performing the DO statement in which it is found. For more information, see "%%$RESOLVE" on page 576.

When rule (DO parameter) activation is canceled, a message is sent to the IOA Log.

All variable assignments remain valid during the activation of that specific rule and will not affect other rules unless you set GLOBAL to Y.

When CONTROL-O tries to resolve a symbol, it searches for the value according to the following order:

1. AutoEdit System variables
2. AutoEdit reserved words (control statements)
3. user-defined variables (Local)
4. user-defined variables (Global)

A Global AutoEdit variable that is referred to as %%*variable* resides in the default global member (usually $GLOBAL).

A Global AutoEdit variable can be assigned to a specific global member by referring to it as follows:

```
%%member\variable
```

For an explanation of Global assignments, see "DO SET: Automated Console Action Parameter" on page 380

The maximum number that can be handled by mathematical AutoEdit operations is 231 - 1, (that is, 2147483647).

Using an AutoEdit Variable Database

To assign a value to a variable in an AutoEdit variable database:

1. Specify the variable database as the current global variable pool using the %%$GLOBAL system variable.
2. Specify the appropriate row through the %%$DBROW reserved user-defined variable.
3. Set the variable by a DO SET statement as follows:

   ```
   DO SET %%colname = val
   ```

   In this statement

   - *colname* is the name of the column where the variable exists
   - *val* is the value to be assigned to the variable

   The following sample set of DO statements accomplishes the steps described above.

```
DO SET=%%$GLOBAL = MYDB        GLOBAL  N
DO SET=%%$DBROW = 3       GLOBAL  N
DO SET=%%COLNAME = NEWVALUE       GLOBAL  Y
```

WHILE and ENDWHILE statements can be used to loop through variables in a column of a table. For more information, see the description of the DO SET statement in Chapter 3, “Rule Parameters.”

Using an XAE AutoEdit Variable Database

XAE database variable values are different in scope than other database variables. They can be accessed by rules on every system in a Sysplex XAE AutoEdit databases are defined by the administrator.

Values for XAE database variables are set using the same methods as used for other AutoEdit variables. Similarly, they can be defined using the Variable Database Definition facility and can be changed using a DO SET command.

There are two types of XAE databases:

- TYPE 1
- TYPE 2

Type 1 XAE databases

The Type 1 XAE database is composed of variable values maintained by the Sysplex partners. Each system updates its own variables in ECSA (Extended Common Service Area, a common memory area in that system), and in the Coupling Facility. Each system resolves TYPE 1 variables from its own ECSA, but other systems can access these values using the mirror copy of the variables stored in the Coupling Facility.

Resolving an XAE Type 1 database variable value on a current (default) system is the same as for standard databases. For resolutions of the rule from other systems, the default system name is obtained based on the last value set to the %%$AUTOSYS user-defined system variable.

Type 2 XAE databases

In Type 2 XAE databases, all systems participating in a Sysplex share the same view of the database. If one system updates a variable, that variable is updated in the view that is accessible by each of the other systems in the Sysplex. Resolving an XAE Type 2 database variable is the same as for a standard database, except that more than one system can update the same variable. For example, if system A updates a database variable and then system B attempts to resolve that same variable in a statement, the value of the variable accessed by system B is the value as updated by system A.

NOTE

Resolution of an XAE AutoEdit expression is synchronous with the execution of the rule.

Example 1

This example demonstrates a new syntax expression that can be written to resolve variables in XAE Type 1 databases located in a different system.

This expression is `%%systemname\poolname\variable(column)name`.

Figure 245 Using an XAE AutoEdit Variable Database - Example 1

```
/*
/* SHOUT A VAR WITH STYLE %%SYSTEMNAME\POOLNAME\VARIABLE
/*
DO SHOUT = TO OPER URGENCY R SYSTEM CTO282I
MESSAGE XES XAES1D01 SHOUTING A VARIABLE WITH STYLE SYSTEM\POOL\VAR
/* SET THE ROW NUMBER TO 2
DO SET = %%$DBROW = 2 GLOBAL N
/* THIS STATEMENT CHANGES THE DEFAULT CPU TO OS33
DO SHOUT = TO OPER URGENCY R SYSTEM CTO282I
MESSAGE OS33\XAES1D01\S1D01C01 = %%MYSYS\MYDB\MYCOL
/*
```

Example 2

By setting %%$AUTOSYS to OS35, the XAE Type 1 database variables are resolved by values retrieved from the OS35 system (although the default executing system is, for example, OS33).

Figure 246 Using an XAE AutoEdit Variable Database - Example 2

```
/*
/* SHOUT FROM CPU OS33 THE DATABASE CONTENTS FOR OS35
/*
DO SHOUT = TO OPER URGENCY R SYSTEM CTO282I
MESSAGE XES XAES1D01 OS33 SHOUTING DATABASE IN OS35
DO SET = %%I = 0 GLOBAL N
DO SET = %%X = %%$DBCOUNT GLOBAL N
/* CHANGING THE DEFAULT SYSTEM TO OS35
DO SET = %%$AUTOSYS = OS35 GLOBAL N
WHILE %%I LT# %%X
DO SET = %%I = %%I %%$PLUS 1 GLOBAL N
DO SET = %%$DBROW = %%I GLOBAL N
DO SHOUT = TO OPER URGENCY R SYSTEM CTO282I
MESSAGE S1D01C01-5 = %%S1D01C01 %%S1D01C02 %%S1D01C03 %%S1D01C04 %%S1D01C05
ENDWHILE
DO SET = %%X = %%$DBCOUNT GLOBAL N
/* CHANGING THE DEFAULT SYSTEM BACK TO OS33
DO SET = %%$AUTOSYS = OS33 GLOBAL N
/*
```

Example 3

%%$SYSPCPUCOUNT, %%$SYSPCPU, and %%$SYSPCPUNAME are used to enable the browsing of the XAE Type 1 database contents in the other systems. An outer loop is performed for each system; the inner loop displays the content of the database variables of that system.

Figure 247 Using an XAE AutoEdit Variable Database - Example 3

```
/*
/* SHOUT ALL THE VARIABLES IN ALL PARTNER SYSTEMS
/*
/* OUTER LOOP
/*
DO SET = %%Y = 0 GLOBAL N
WHILE %%Y LT# %%$SYSPCPUCOUNT
DO SET = %%Y = %%Y %%$PLUS 1 GLOBAL N
/* EXTRACT THE NAME OF NEXT SYSTEM AND SET AS DEFAULT
DO SET = %%$SYSPCPU = %%Y GLOBAL N
DO SET = %%SYST = %%$SYSPCPUNAME GLOBAL N
DO SET = %%$AUTOSYS = %%SYST GLOBAL N
DO SHOUT = TO OPER URGENCY R SYSTEM CTO282I
MESSAGE XES XAES1D01 OS33 SHOUTING DATABASE IN SYSTEM # %%Y (%%SYST)
/*
/* INNER LOOP
/*
DO SET = %%I = 0 GLOBAL N
DO SET = %%X = %%$DBCOUNT GLOBAL N
WHILE %%I LT# %%X
DO SET = %%I = %%I %%$PLUS 1 GLOBAL N
DO SET = %%$DBROW = %%I GLOBAL N
DO SHOUT = TO OPER URGENCY R SYSTEM CTO282I
/* DISPLAY THE VARIABLE (COLUMN NAME)
MESSAGE S1D01C01-5 = %%S1D01C01 %%S1D01C02 %%S1D01C03 %%S1D01C04 %%S1D01C05
ENDWHILE
ENDWHILE
/* RESTORE TO DEFAULT SYSTEM
DO SET = %%$AUTOSYS = %%$SYSTEMNM GLOBAL N
```

AutoEdit Operators

Within a DO SET statement, AutoEdit operators can be used together with AutoEdit variables. Valid AutoEdit operators are shown in Table 192.

Table 192 AutoEdit Operators

Operator	Description
%%$PLUS	The operator that adds two operands.
%%$MINUS	The operator that subtracts one operand from another operand.
%%$TIMES	The operator that multiplies one operand by another operand.
%%$DIV	The operator that divides one operand by another operand.

NOTE

Negative numbers are not recognized by AutoEdit operators.
The maximum number that can be handled by mathematical AutoEdit operations is 2,147,483,647 (that is, 231 – 1).

The format for use of AutoEdit symbols and operators is

```
operand operator operand
```

Only one operator may be used in each AutoEdit expression.

Operands must be resolved into numeric constants. The final result is translated into a character string. For example:

```
DO SET=%%NUMBER_OF_ABENDS_%%$RDATE = %%NUMBER_OF_ABENDS%%$RDATE
%%$PLUS 1
```

On installation working date November 03, 2000 the symbol %%NUMBER_OF_ABENDS_001103 will contain the number of abends that occurred in the data center, during the working day.

Control Statements

The following AutoEdit Control Statements can be specified in a DO SET statement.

%%$MLLEND

When a rule is in command-response mode, that is, when `WAITMODE=Y` is specified in a DO COMMAND statement, CONTROL-O suspends rule execution until either the specified time-out is reached, or a “last” line (that is, the last line of a multiline message) is detected.

Some command responses can contain more than one “last” line, for example, if the response contains more than one multiline message. In such cases CONTROL-O normally exits command-response mode when it detects the first “last” line. To avoid this problem, a %%$MLLEND statement can be used to disable the search for a “last” line, in this way causing the rule to remain in command-response mode until the specified time-out is reached. The time-out is specified in the TIMEOUT subparameter in the DO COMMAND statement.

Valid %%$MLLEND control statements are shown in Table 193.

Table 193 %%$MLLEND Control Statements

Statement	Description
%%$MLLEND NO	Disable the search for the last line of the message. Rule execution will not exit command-response mode until the time-out specified in the DO COMMAND statement is reached. The search for the last line remains disabled until the end of the execution of the rule (that is, for subsequent DO COMMAND statements in the same rule), or until DO SET %%$MLLEND YES is specified.
%%$MLLEND YES	Enable the search for the last line of the message. This control statement is only necessary if the search is to be re-enabled in a rule in which the search was disabled. If %%$MLLEND NO is specified the value of system variable %%WAITRC is always 522 (ended due to time-out).

For more information, see "DO COMMAND: Automated Console Action Parameter" on page 324.

Example

Figure 248 %%$MLLEND Control Statement Example

```
DO SET  = %%$MLLEND = NO
DO COMMAND = F CICST,CEMT I TASK
       WAITMODE   Y                    WAITRESP Y
.
ENDMSG
```

All DO statements specified after the DO COMMAND statement and before (above) the ENDMSG statement are performed for each line of the command response.

%%$RESOLVE

CONTROL-O always attempts to resolve a variable that begins with %%. By default, if the AutoEdit expression cannot be fully resolved, the DO action containing the variable, and all subsequent DO actions of the current activation of the rule, are cancelled.

You can override this default by including a %%$RESOLVE NO or %%RESOLVE FORCE statement in a previous DO SET parameter statement. For details, see "AutoEdit Resolution Override Process" on page 577.

If any %%$RESOLVE statements other than %%$RESOLVE NO are specified, and a variable cannot be resolved, subsequent DO actions in the rule are cancelled and an error message is issued.

A %%$RESOLVE statement is assigned in a DO SET statement and affects all subsequent DO statements until the next %%$RESOLVE statement in the rule. For more information, see "DO SET: Automated Console Action Parameter" on page 380

Default AutoEdit Resolution Process

The default %%RESOLVE statements are

- %%$RESOLVE
- %%$RESOLVE MUST
- %%$RESOLVE YES

NOTE

These statements perform the same function. You can use them to return to default resolve mode after an override is performed.

To resolve an AutoEdit expression, CONTROL-O analyzes the expression from right to left. The expression is divided into its components, called tokens. Each token represents an AutoEdit variable to be resolved. During normal AutoEdit resolution, this process is normally performed once.

However, if an unresolved token exists after this process is performed, a second pass is performed on the entire expression. If an unresolved token still exists, then the expression remains unresolved and the current and subsequent DO statements are not performed.

AutoEdit Resolution Override Process

The %%RESOLVE override statements are

- %%$RESOLVE NO
- %%$RESOLVE FORCE

%%$RESOLVE NO

The %%$RESOLVE NO statement instructs CONTROL-O to perform the DO statements even if the AutoEdit statement cannot be fully resolved. If any tokens cannot be fully resolved, they are resolved as far as possible before performing the DO statement.

%%$RESOLVE FORCE

By default, if a token resolves to the name of another AutoEdit variable during the first pass, that token is considered resolved and there is no further attempt at resolution. This can occur in the following situations:

- A global variable was loaded into memory at CONTROL-O startup, or during a LOADGLOBAL operation, and the value of that variable contained an expression that included the name of another variable.
- A variable was set to a non-existent AutoEdit variable while %%$RESOLVE NO was in effect.

The %%RESOLVE FORCE statement overrides this default by instructing CONTROL-O to perform a second pass on the token that initially resolved to the name of another AutoEdit variable.

AutoEdit Resolution Process for Sysplex

When CONTROL-O attempts to resolve a variable stored in a Sysplex XAE type 1 database that belongs to a CONTROL-O in another system, then by default, if the CONTROL-O system is down, an AutoEdit error is issued.

The %%RESOLVE ODOWN statement resolves any variables left in the Coupling facility by a CONTROL-O system that is no longer available. This can be used, for example, to ascertain values set by the failing system.

Examples

Example 1

Assume that it is not known whether the %%INDEX_DOLLAR DO SHOUT message variable contains a value. By including the %%RESOLVE NO statement, the DO rule will be processed either way.

The last statement resets AutoEdit resolution to its default mode.

```
DO SET=%%$RESOLVE NO
DO SHOUT=TO TSO-PROD URGENCY R
 MESSAGE SET THE VALUE OF THE %%INDEX_DOLLAR PARAMETER
DO SET=%%$RESOLVE
```

Example 2

Assume that

- the STARTCMD column in an AutoEdit variable database contains the value SUB=MSTR,LLA=%%$GLOBAL\SYSCLONE
- the %%$GLOBAL\SYSCLONE global variable is equivalent to 01

In this case, resolution of %%STARTCMD without %%$RESOLVE FORCE results in the following:

```
SUB=MSTR,LLA=%%$GLOBAL\SYSCLONE
```

with the value of the global variable %%$GLOBAL\SYSCLONE unchanged.

However, with %%$RESOLVE FORCE, the result is

```
SUB=MSTR,LLA=01
```

Example 3

Assume that CONTROL-O operating in the *othersys* system goes down, and you need to determine the last value set in the *colname* column of the *dbname* database. The following statements shout the value:

```
DO SET=%%$RESOLVE ODOWN
DO SHOUT=THE VARIABLE VALUE IS
 %%othersys\dbname\colname
DO SET=%%$RESOLVE
```

%%$RANGE

A %%$RANGE statement limits performance of AutoEdit functions to a specified column range. Data, commands and control statements outside the range remain unchanged.

This statement is useful when values must be specified in specific columns and when not every AutoEdit expression needs to be resolved.

The format of the %%$RANGE statement is:

```
%%$RANGE fromcol tocol
```

In this format

- *fromcol* is the first column in the range
- *tocol* is the last column in the range

Any range from 1 through 255 can be specified. If no range is specified, the default range is from 1 through 255.

The specified range limit applies both to the columns read for resolution and to the columns containing the resolved values, as follows:

Input for AutoEdit resolution is taken from the specified column range. All columns in the range are processed, whether they contain AutoEdit terms or constants.

Resolved values are limited to the specified range. If the resolved value would normally exceed the range, it is truncated.

The %%$RANGE statement can prevent the shifting of constants and variables that appear subsequent to an AutoEdit variable in the same line. By limiting AutoEdit resolution to a specified range, all constants and variables outside the specified range remain in their original positions regardless of the length of the resolved variables.

A %%$RANGE statement is valid until a new %%$RANGE statement is specified.

NOTE

The length of a %%$RANGE statement with 3-digit fromcol and tocol values is 14 characters. BMC software recommends that you allow room for 14 characters even if the present %%$RANGE statement does not include 3-digit numbers. If a %%$RANGE statement containing fewer than 14 characters is specified, the user will not be able to use a subsequent %%$RANGE statement to expand the range back to the maximum length.

Example

In the example shown below, the %%$RANGE statement limits resolution to the columns from 1 through 44. If the %%MYVAR variable resolves to more than 44 spaces, only the first 44 characters are displayed.

```
DO SET      = %%$RANGE 1 44                                          GLOBAL
DO SHOUT    = TO OPER                  URGENCY  RCT0282I
     MESSAGE %%$MYVAR                                          WAS DELETED
```

Functions

The following AutoEdit functions can be specified in a DO SET statement.

%%$CALCDATE

The %%$CALCDATE function performs date calculations based on a given date. The valid format is

```
%%$CALCDATE date ± quantity
```

In this format

- *date* must be in the format yymmdd
- *quantity* is a number, or numeric AutoEdit expression, of days to add to or subtract from the date (from 1 through 99999)

NOTE

%%$CALCDATE operates on Gregorian dates only; Julian dates (such as %%JULDAY) cannot be specified.

Example

```
DO SET=%%A = %%$CALCDATE %%$RDATE -1
```

On February 1, 2000

```
DO SET=%%A = 000131
```

%%$POOLCOSMOS

The %%$POOLCOSMOS function returns the type of COSMOS database. The valid format is

```
%%$POOLCOSMOS cosmos_dbname
```

In this format, *cosmos_dbname* is the name of the COSMOS database, and is mandatory.

This function returns one of the following types:

- UNKNOWN — The pool is unknown.
- METHOD — The database contains methods of operation.
- PREREQ — The database contains prerequisite conditions.
- WORKING — The database contains working objects.
- NONE — The database is not supported by COSMOS.

Example 1

```
DO SET %%COSTYPE = %%$POOLCOSMOS COSSTCSD
```

%%COSTYPE is set to WOR KING.

Example 2

```
DO SET %%COSTYPE = %%$POOLCOSMOS $GLOBAL
```

%%COSTYPE is set to NONE.

%%$POOLSTORE

The %%$POOLSTORE function returns the source type of the pool CONTROL-O storage. The valid format is

```
%%$POOLSTORE gblvar_pname
```

In this format, *gblvar_pname* is the Global variable pool name, and is mandatory.

This function returns one of the following types:

- UNKNOWN — The pool is unknown.
- MEMBER — The source is a member in the CONTROL-O Global variable library.
- DATABASE — The pool is a database type.
- SYSPLEX1 — The pool is a database type that can be shared for read-only operations in the Sysplex environment.
- SYSPLEX2 — The pool is a database type that can be shared for read and write operations in the Sysplex environment.

Example 1

In a non-Sysplex environment

```
DO SET %%DB_STOR = %%$POOLSTORE COSSTCSD
```

%%DB_STOR is set to DATABASE.

Example 2

In a Sysplex environment

```
DO SET %%DB_STOR = %%$POOLSTORE COSSTCSD
```

%%DB_STOR is set to SYSPLEX1.

Example 3

```
DO SET %%DB_STOR = %%$POOLSTORE $GLOBAL
```

%%DB_STOR is set to MEMBER.

%%$POOLTYPE

The %%$POOLTYPE function returns the type of pool in CONTROL-O as defined in the list of pools to be loaded (DAGLBLST). The valid format is

```
%%$POOLTYPE gblvar_pname
```

In this format, *gblvar_pname* is the global variable pool name, and is mandatory.

This function returns one of the following types:

- UNKNOWN — Unknown pool.
- INOUT— The database is loaded and updated using the LOADGLOBAL and WRITEGLOABAL commands.
- INPUT — The database can be loaded, but not written to. This type can be used for AutoEdit variables whose initial values are specified in the database and do not require check pointing. The value of each AutoEdit variable can be changed, and new AutoEdit variables can be added to the database, during the INCONTROL product session. However, these new values and variables are not saved when the product session is ended.
- PROT — The database cannot be updated during the INCONTROL product session, and no new AutoEdit variables can be assigned to the database. This type can be used for a database containing AutoEdit variables that are “constants.”
- TEMP — The database does not reside on the disk, and therefore cannot be loaded or written to. This type is useful for a database containing AutoEdit variables that do not need to be saved after the INCONTROL product session is ended.

Example 1

```
DO SET %%DB_TYPE =%%$POOLTYPE COSSTCSD
```

%%DB_TYPE is set to TEMP.

Example 2

```
DO SET %%DB_TYPE =%%$POOLTYPE $GLOBAL
```

%%DB_TYPE is set to INOUT.

%%$SUBSTR

The %%$SUBSTR function extracts a substring from the input string. The valid format is

```
%%$SUBSTR strng startpos len
```

In this format

- *strng* is the input string from which the substring is extracted.
- *startpos* is the first character of the input string to extract.
- *len* is the number of characters to extract.

A string is returned composed of the specified number of characters from the input string beginning with the character in the specified starting position.

startpos and *len* must be numbers (or numeric AutoEdit expressions) and greater than zero.

- If *startpos* is greater than the string length, an AutoEdit error message is displayed.
- If (*startpos* + *len* – 1) is greater than the string length, the returned value is truncated.
- If the length is unknown you can use the values shown in Table 194.

Table 194 Valid %%$SUBSTR Values — Unknown Length

Value	Description
*	CONTROL-O calculates the end of the string.
' ' (Blank)	CONTROL-O calculates the end of the string, but at least one valid character must be input after the beginning of the string.

Example

```
DO SET=%%A = %%$CALCDATE %%$RDATE -1
DO SET=%%AMON = %%$SUBSTR %%A 3 2
```

On December 1, 2000:

```
DO SET=%%A = 001130
DO SET=%%AMON = 11
```

%%$TIMEINT

The %%$TIMEINT function calculates the time interval between two given times (specified in any order). The valid format is

```
%%$TIMEINT time1 time2
```

time1 and *time2* are constants or variables in the format yydddhhmmss.

In this format

- *yy* is the two-digit year
- *ddd* is the Julian day
- *hh* are the hours
- *mm* are the minutes
- *ss* are the seconds

The resulting time interval is in format dddddhhmmss

- *ddddd* is the number of days
- *hh* is the number of hours
- *mm* is the number of minutes
- *ss* is the number of seconds

Example 1

```
DO SET=%%A = %%$TIMEINT 00120070000 00119060000
```

The result is: 00001010000.

Example 2

```
DO SET=%%NOW = %%$YEAR.%%$JULDAY.%%$TIME
IF %%$TIMEINT %%NOW %%PAST GT# 30
DO SHOUT
ENDIF
```

This calculates the time interval between now and an earlier time (*%%PAST*), and notifies the user through a DO SHOUT statement if the time interval exceeds thirty seconds.

%%$POS

The %%$POS function locates a substring in a specified string, and indicates the position of the first character in the located substring.

The format of the %%$POS function is

```
%%$POS substring string
```

In this format

- *substring* is the constant or variable that contains the substring for which to search.
- *string* is the constant or variable that contains the string to search for the specified substring.

NOTE

If the substring is not found in the specified string, function %%$POS returns a value of 0.

Example 1

```
DO SET %%A = HAVE A NICE DAY
DO SET %%B = %%$POS NICE %%A
```

This returns a value of 8.

Example 2

```
DO SET %%A = %%$POS ABCD ABCED
```

This returns a value of 0.

%%$ISNUM

The %%$ISNUM function indicates whether a specified string is numeric. In order to be considered numeric, the specified string must contain only numeric characters from 0 through 9, because a numeric string cannot contain letters, blanks, or special characters.

Possible values returned by this function are

- YES — the specified string is numeric
- NO — the specified string is not numeric

The format of the %%$ISNUM function is

```
%%$ISNUM string
```

In this format, *string* is the constant or variable that contains the string to evaluate.

Example 1

```
DO SET %%A = %%$ISNUM 1234
```

This returns a value of YES.

Example 2

```
DO SET %%A = %%$ISNUM 12PM
```

This returns a value of NO.

%%$PARSE

The %%$PARSE function is a powerful tool that offers extensive string manipulation capabilities in CONTROL-O AutoEdit environment. This function, which is similar to the REXX PARSE command in the TSO/E environment, can be used to analyze and extract information from various AutoEdit strings, such as messages intercepted by CONTROL-O.

The %%$PARSE function parses a specified string (that is, it splits the specified string into substrings) according to a specified template. A template consists of variables and “patterns” that determine the parsing process.

The format of the %%$PARSE function is

```
DO SET=%%$PARSE string template
```

In this format

- *string* is the AutoEdit variable that contains the string to be parsed
- *template* is the AutoEdit variable or constant that contains the template

Example

```
DO SET=%%S=THIS IS A SAMPLE STRING
DO SET=%%T=A1 A2 A3 A4 A5
DO SET=%%$PARSE %%S %%T
```

The %%$PARSE function assigns substrings of the specified string to the specified variables according to the specified template.

The DO SET statements in the above example provide the same result as the following DO SET statements:

```
DO SET=%%A1=THIS
DO SET=%%A2=IS
DO SET=%%A3=A
DO SET=%%A4=SAMPLE
DO SET=%%A5=STRING
```

The parsing process involves the following stages:

1. The string is broken into substrings, from left to right, using the patterns in the template.

2. Each substring is parsed into words, from left to right, using the variable names in the template.

Template elements are

- String Patterns
- Position Patterns
- Variables
- Place holders (Dummy variables)

The rules of parsing are detailed in the following paragraphs.

Parsing Words

Scanning is performed from left to right and words in the string (leading and trailing blanks excluded) are matched one by one with the variables named in the template. The last variable named in the template will contain the remaining part of the string, including leading and trailing blanks.

Up to 30 variable names can be specified in a parsing template.

The following situations can be encountered:

- The number of words in the string matches the number of variables in the template.
  Each of those variables contains one word of the string. The last variable contains the last word in the string including leading and trailing blanks.

- The number of words in the string is smaller than the number of variables named in the template
  The first variables each contain one word of the string and the extra variables receive a value of NULL (a string of 0 character length).

- The number of words in the string is greater than the number of variables in the template
  All variables but the last one contain one word of the string and the last variable named in the template contains the remaining part of the string, including leading and trailing blanks.

Example

The DO SET statements below (which include a %%$PARSE function)

```
DO SET=%%S = THIS IS A SAMPLE STRING
DO SET=%%T = A1 A2 A3
DO SET=%%$PARSE %%S %%T
```

have the same result as the following DO SET statements:

```
DO SET=%%A1 = THIS
DO SET=%%A2 = IS
DO SET=%%A3 = A SAMPLE STRING
```

Using Dummy Variables (Place Holders)

A single period can be used as a dummy variable in the template. This is useful when the corresponding word in the string does not need to be stored in a named variable.

Example

The following DO SET statements (which include a %%$PARSE function)

```
DO SET=%%S = THIS IS A SAMPLE STRING
DO SET=%%T = . . . A4.
DO SET=%%$PARSE %%S %%T
```

have the same result as the following DO SET statement:

```
DO SET=%%A4 = SAMPLE
```

Using Patterns in Parsing

Patterns can be included in the template. Their purpose is to break down the string into substrings prior to the actual parsing into words process. Parsing will then be performed, as previously described, on the substrings and not on the original string.

Two types of patterns are available:

- String Patterns – a character string delimited by quotes, to distinguish it from a variable name
- Numeric (Positional) Patterns – a number, signed or unsigned

Using String Patterns

The string is scanned from left to right for a substring that matches the string pattern.

The following situations may occur:

- A match is found, that is, a substring within the string is identical to the given string pattern.

  The original string is divided into two substrings. The first substring (up to, but not including, the string pattern) is parsed into words using the variables named before the string pattern on the template. Parsing continues from the character following the matched string.

Example

```
DO SET=%%S= THIS IS A SAMPLE STRING
DO SET=%%T= A1 A2 'SAMPLE' A3 A4 A5
DO SET=%%$PARSE %%S %%T
```

A match is found since the string SAMPLE is part of the original string.

The %%$PARSRC System variable, which is discussed on page 587, can be used to check if all strings specified in the template were matched during the parsing process.

The original string is divided into two substrings while the matched part of the string is excluded. Parsing of the first substring will use the variables listed before the match on the template while parsing of the second substring will use the variables listed after the match:

— First substring: THIS IS A

As a result of parsing

```
A1=THIS
A2=IS A
```

— Second substring: STRING

As a result of parsing:

```
A3=STRING
A4=NULL
A5=NULL
```

3. A match is not found. There is no substring identical to the given string pattern within the string.

   It is assumed that a match is found at the end of the string. The first substring consists of the entire string and it is parsed using only the variables named before the string pattern on the template. Parsing continues from the character following the matched string (the end of the string, in this case).

   Example

```
DO SET=%%S = THIS IS A SAMPLE STRING
DO SET=%%T = A1 A2 A3 'EASY' A4 A5
DO SET=%%$PARSE %%S %%T
```

A match was not found. The string ‘EASY’ does not exist within the original string.

— First substring: THIS IS A SAMPLE STRING

As a result of parsing:

```
A1=THIS
A2=IS
A3=A SAMPLE STRING
```

— Second substring: NULL

As a result of parsing:

```
A4=NULL
A5=NULL
```

Using Numeric Patterns Within the Template

Numeric patterns are numbers that mark positions in the string. They are used to break the original string into substrings at the position indicated by the number.

The position specified can be absolute or relative:

- An absolute position is specified by an unsigned number.
- A relative position is specified by a signed number (positive or negative) and its purpose it to determine a new position within the string, relative to the last position.
- The last position is one of the following:
  - the start of the string (position 1), if the last position was not specified previously
  - the starting position of a string pattern if a match was found
  - the position of the end of the string, if the string pattern was not matched
  - the last position specified by a numeric pattern
- If the specified position exceeds the length of the string, the numeric pattern is adjusted to the end of the string. Similarly, if the specified position precedes the beginning of the string (negative or zero numeric pattern), then the beginning of the string is used as last position.

Example 1

A parsing template with an absolute numeric pattern:

```
DO SET=%%S =THIS IS A SAMPLE STRING
DO SET=%%T = A1 A2 11 A3 A4 A5
DO SET=%%$PARSE %%S %%T
```

- First substring: THIS IS A (up to, but not including, position 11)

  As a result of parsing

  ```
  A1=THIS
  A2=IS A
  ```

- Second substring: SAMPLE STRING (from position 11, up to the end of the string).

  As a result of parsing

  ```
  A3=SAMPLE
  A4=STRING
  A5=NULL
  ```
  (0 length string)

Example 2

A parsing template with a relative numeric pattern:

```
DO SET=%%S =THIS IS A SAMPLE STRING
DO SET=%%T = A1 A2 +10 A3 A4 A5
DO SET=%%$PARSE %%S %%T
```

Last position is the beginning of the string (position 1).

Position marked within the string is 1 + 10 = 11.

- First substring: THIS IS A (up to, but not including, position 11)

  As a result of parsing

  ```
  A1=THIS
  A2=IS A
  ```

- Second substring: SAMPLE STRING (from position 11, up to the end of the string).

  As a result of parsing:

```
A3=SAMPLE
A4=STRING
A5=NULL (0 length string)
```

Using More Than One Pattern and Combining Pattern Types in the Template

Both types of patterns (string and numeric) can be combined in the same template. Up to 30 patterns and up to 30 variable names can be specified.

Scanning of the string proceeds from beginning of the string until the first pattern (if any).

1. String pattern – A match was found

   The substring that precedes the match to the pattern is parsed using the variables named in the template before the pattern, with the last variable receiving the end of the substring, including leading and trailing blanks.

2. String pattern – A match was not found

   Since no match was found in the string, it is assumed that a match is found at the end of the string. The whole string is parsed using only the variables named in the template before the pattern.

3. Numeric pattern (absolute)

   The absolute numeric pattern points to a position within the string when the beginning of the string is position 1.

   The string is divided into two substrings.

   - The first substring extends from the beginning of the string and up to, but not including, the position that corresponds to the numeric pattern and it is parsed using the variables named in the template before the pattern.

   - If the absolute numeric pattern specifies a position beyond the length of the string, it is readjusted to the first position beyond the length of the string and the entire string is parsed using the variables named in the template before the pattern.

4. Relative numeric pattern

   The relative numeric pattern (a signed number) specifies a position within the string, relative to the last position.

5. Last position

   It is the beginning of the string when the relative numeric pattern is the first pattern in the template.

   - If the relative numeric pattern is not the first pattern in the template and the previous pattern was numeric, the last position is that specified by the previous numeric pattern.

   - If the relative numeric pattern is not the first pattern in the template and the previous pattern was a string, the last position is that of the starting character of the match (if there was a match) or the position following the end of the string (if there was no match).

As a result of what was just explained:

- If a pattern was not matched until the end of the string and the following pattern is a string pattern, this new string pattern is ignored since the starting point for the new scan is the end of the string.

- If a pattern was not matched until the end of the string and the following pattern is a numeric pattern, then the scan and subsequent parsing will resume from the new position indicated by that numeric pattern.

Example 1

A parsing template with two absolute numeric patterns (with the second position preceding the first):

The following DO SET statements:

```
DO SET=%%S = THIS IS A SAMPLE STRING
DO SET=%%T = A1 A2 11 A3 6 A4
DO SET=%%$PARSE %%S %%T
```

have the same result as the following DO SET statements:

```
DO SET=%%A1 = THIS
DO SET=%%A2 = IS A
DO SET=%%A3 = SAMPLE STRING
DO SET=%%A4 = IS A SAMPLE STRING
```

- First substring: THIS IS A (up to, not including, position 11)

  As a result of parsing:

```
A1=THIS
A2=IS A
```

- Second substring: SAMPLE STRING (from position 11 and up to the end of the string; since the next pattern, position 6, precedes the previous position, it cannot limit this second substring)

  As a result of parsing:

  ```
  A3=SAMPLE STRING
  ```

- Third substring: IS A SAMPLE STRING (from position 6 and to the end of the string)

  As a result of parsing:

  ```
  A4=IS A SAMPLE STRING
  ```

Example 2

A parsing template with one absolute and one relative numeric pattern:

```
DO SET=%%S = THIS IS A SAMPLE STRING
DO SET=%%T = A1 6 A2 +3 A3
DO SET=%%$PARSE %%S %%T
```

- First substring: THIS (beginning of the string up to, but not including, position 6).

  As a result of parsing:

  ```
  A1=THIS
  ```

- Second substring: IS (from position 6 up to, but not including, position 6+3=9)

  As a result of parsing

  ```
  A2=IS
  ```

- Third substring: A SAMPLE STRING (from position 9 to the end of the string)

  As a result of parsing:

  ```
  A3=A SAMPLE STRING
  ```

Example 3

A parsing template with two relative numeric patterns:

The following DO SET statements

```
DO SET=%%T = A1 A2 +40 A3 -13 A4 A5
DO SET=%%S = THIS IS A SAMPLE STRING
DO SET=%%$PARSE %%S %%T
```

have the same result as the following DO SET statements:

```
DO SET=%%A1 = THIS
DO SET=%%A2 = IS A SAMPLE STRING
DO SET=%%A3 = %%NULL
DO SET=%%A4 = SAMPLE
DO SET=%%A5 = STRING
```

The first numeric pattern specifies a position at column 40. This is beyond the end of the string so the position is reset to column 24 (end of the string + 1). As a result, the whole string is parsed to words using the A1 and A2 variables.

The second numeric pattern specifies a position at column 11 (end of the string + 1 minus 13) that precedes the position (40 readjusted to 24) previously specified; therefore the data from the last position (which is the end of the string) to the end of the string is parsed to words using the A3 variable (A3 is set to NULL).

The data (from column 12 to the end of the string) is parsed to words using the A4 and A5 variables.

Example 4

Combining a string pattern and numeric pattern

The following DO SET statements

```
DO SET=%%S = THIS IS A SAMPLE STRING
DO SET=%%T = A1 'A' A2 +3 A3
DO SET=%%$PARSE %%S %%T
```

have the same result as the following DO SET statements:

```
DO SET=%%A1 = THIS IS
DO SET=%%A2 = A S
DO SET=%%A3 = AMPLE STRING
```

The pattern specifies a string (A) that is matched at column 9. The data before column 9 is parsed to words using the A1 variable. The Numeric pattern (+3) specifies a position at column 12 by using relative position. The data from column 9 to column 12 is parsed to words using the A2 variable. The remaining data (from column 12 to the end of the string) is parsed to words using the A3 variable.

Chapter 5

CONTROL-O Servers

This chapter contains the following topics:

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Preset Environment Concept 600
CONTROL-O Server Types 601
    Special Servers 601
    General Servers 602
    Immediate Servers 603
Server IDs 603
    Special Server ID 603
    General Server ID 604
    Immediate Server ID 604
Starting a CONTROL-O Server 605
Stopping a CONTROL-O Server 605
Specifying Actions to Be Performed on a CONTROL-O Server 605
    Time-out 606

Overview

CONTROL-O servers are started tasks that execute DO TSO and DO KSL statements issued by rules.

CONTROL-O servers provide the following benefits:

- They increase the efficiency of KOA script and TSO request (command, CLIST, or REXX procedure) execution by using a preset environment established in previous calls (thereby making logon and logoff procedures, for example, unnecessary for subsequent KOA or TSO calls).
- They enforce security controls by assigning each KOA script and TSO request a user ID, according to the runtime security environment of the rule.
- They enable the running of KOA scripts and TSO requests even when other started tasks cannot be started (such as those times when JES is not active).

Preset Environment Concept

A preset environment is a state of initialization necessary for the execution of certain DO KSL and DO TSO statements. A preset environment is managed entirely by the procedure specified in the INITPROC subparameter in the rule definition. The procedure is either a KOA script, or a TSO command, CLIST or REXX procedure. Procedures handling KOA or TSO environments must be defined to CONTROL-O prior to activation of the rules that call the procedures. Depending on the type of call (INIT, RESET, TERM) to the procedure, the preset environment is initialized, reset, or terminated.

- An INIT call establishes the preset environment.
- A RESET call restores the preset environment to the state it was in after initialization.
- A TERM call terminates the preset environment.

For example, for a preset environment named CICSP, a KOA script called CICSP should be defined to perform the environment functions shown in Table 195, which are passed as a parameter.

Table 195 Preset Functions for the CICSP Environment - Example

Function	Description
INIT call	Performs CICS logon
RESET call	Clears the screen
TERM call	Performs CICS logoff and terminates the CICS environment

The type of server determines the instances in which each of the calls is performed.

CONTROL-O Server Types

The following types of servers can be distinguished:

- Special servers
- General servers
- Immediate servers

Servers are defined to CONTROL-O through the CTOPARM customization member. For more information on server definition, see the *INCONTROL for z/OS Installation Guide*.

Special Servers

Each Special server is associated with a specific preset environment. More than one server can be associated with a preset environment.

CONTROL-O dedicates a request queue for all requests (DO KSL and DO TSO statements) sent to each preset environment.

When a request is received for a preset environment, it is executed by the first available Special server associated with that environment.

The first request for a Special server triggers an INIT call which initializes the environment prior to the request execution. Further requests for that Special server trigger a RESET call, and the preset environment is reset to post-initialization status prior to the request execution.

When the server is shutdown, a TERM call is made to the procedure and the preset environment is terminated.

Example

Various rules require access to CICS in order to activate CICS transactions. A preset environment can be defined for running those CICS transactions.

Assuming that the CICSP special server has been defined in CONTROL-O at time of installation, a KOA script of the same name (CICSP) should be created to handle the three functions of initialization, reset, and termination of the corresponding preset environment.

When executing the following statement:

```
DO KSL TRAN1
INITPROC CICSP
```

The TRAN1 KOA script is queued for execution in the corresponding preset environment request queue, and executed by the first CICSP server available. The KOA script is executed while the CICS logon and logoff are performed transparently to the rule.

General Servers

General servers are intended to process DO KSL and DO TSO statements which either do not specify a preset environment or which specify a preset environment for which a Special server has not been defined. These DO statements are sent to the general queue shared by all General servers, and execution is performed by the first General server which becomes available.

The server always calls the environment procedure to perform initialization. After server initialization and the execution of the DO KSL or DO TSO statements, the server calls upon the environment procedure to perform a TERM operation, thus terminating the preset environment.

Recommendation

The CONTROL-O server may access many files or will perform many CLIST or REXX procedures, which cause storage fragmentation or accumulation in the user region. After some time (depending of the number of open, closed, or performing CLISTs and REXXs), the CONTROL-O server may abend with S80A or S106, depending on where the fragmentation was created and what type of storage is required.

Performing a DO TSO process by an IBM service that does not release all system storage creates a storage accumulation.

BMC Software recommends stopping the server automatically with a CONTROL-O rule before it issues abend S80A or S106. This can be done with an ON EVENT rule that does the following:

DO COMMAND F %%$CONTROLO,SERVER=ALL,TERM.

The servers do not need to be restarted, as they will restart upon the triggering of the next rule that performs a DO TSO or DO KSL.

Immediate Servers

Immediate servers are intended to process DO KSL and DO TSO statements which must be processed immediately without waiting in a queue. An Immediate server is started for the execution of a single DO statement; it executes the statement and then terminates upon completion of the statement execution. A request is processed by an Immediate server if at least one of the following conditions is true:

- The DO statement specifies IMMEDIATE Y.
- A DO statement is targeted for execution by a General server but no General server is defined in the CONTROL-O installation.
- Queue time-out (described later) occurred for that DO statement. Immediate servers handle a preset environment, specified in the INITPROC parameter, in the same manner as General servers (that is, first the server is initialized, then the DO statement is executed, and then the server is terminated).

Server IDs

Each of the servers defined in a CONTROL-O site is assigned a server ID. The server ID identifies servers in CONTROL-O MODIFY commands and in the Automation Options screen (Screen OA). The formats of the types of servers are described below.

Special Server ID

The format is xxxxxnn.

In this format

- *xxxxx* is the preset environment name associated with the Special server
- *nn* is the sequence number attributed to each of the Special servers attached to the same preset environment

For example, if two Special servers are defined for the CICSP preset environment, one Special server for the CICST preset environment, and three Special servers for the IOA preset environment, the server IDs of the various Special servers are

- CICSP01, CICSP02
- CICST01
- IOA01, IOA02, IOA03

General Server ID

The format is `GENRL`*nn*.

In this format

- *nn* is the sequence number (01, 02, 03,...) used to identify the various General servers. The number of General servers is determined at installation time. The maximum is 99.

Immediate Server ID

The format is `IMMED`*nn*.

In this format

- *nn* is the sequence number (01, 02, 03,...) that allows to differentiate between the various Immediate servers. The number of Immediate servers is set at installation time. The maximum is 99. At least one Immediate server must be specified.

Starting a CONTROL-O Server

CONTROL-O servers are started implicitly by the CONTROL-O monitor the first time a rule issues a DO statement to be executed by the server. Special and General servers may also be started explicitly by issuing a MODIFY operator command to the CONTROL-O monitor or by the SERVERS option in the Automation Options screen (Screen OA). Once started, a Special or General server remains active until explicitly stopped or until CONTROL-O shutdown.

NOTE

When the primary subsystem (JES2 or JES3) is not active, CONTROL-O starts servers using the master subsystem (START command with keyword SUB=MSTR). For complete details regarding the Automation Options screen (Screen OA), see "Automation Options Facility" on page 177.

Stopping a CONTROL-O Server

CONTROL-O monitor shutdown terminates all CONTROL-O servers. In addition, CONTROL-O servers can be terminated explicitly by issuing MODIFY operator commands to the CONTROL-O monitor or by the SERVERS option in the Automation Options screen (Screen OA).

The STOP, FORCE, and TERMINATE commands will stop a server. However

- a server stopped with the STOP or FORCE command will not be restarted implicitly, even when there are requests queued for execution of that server; it remains inactive until explicitly started
- a server stopped with the TERMINATE command can be restarted implicitly or explicitly

Specifying Actions to Be Performed on a CONTROL-O Server

MODIFY commands to CONTROL-O can be used to specify the action to be performed on a server. These actions can also be performed by the SERVERS option in the Automation Options screen (Screen OA).

The format of the command to modify servers is

```
F CONTROLO,SERVER=serverid,action
```

In this command,

- *serverid* is the ID of the server to be modified. The value ALL can be specified to apply the action to all the servers.
- *action* is one of the actions described in Table 196.

Table 196 MODIFY Command Actions to Be Performed on a Server

Action	Description
START	Start the server
CANCEL	Cancel the request currently executing
STOP	Explicitly stop the server
FORCE	Cancel the request currently executing in the server and explicitly stop the server (the same as CANCEL + STOP)
TERM	Stop the server and allow it to be restarted implicitly
DISPLAY	Display information about the specified server

Time-out

The following types of timeout may occur for a DO KSL or DO TSO statement:

- Queue time-out

  Queue timeout occurs when a DO statement is queued to a server beyond the time period defined for that server in CONTROL-O installation parameters. When the timeout occurs, the DO statement is removed from the server queue and rerouted for execution by an Immediate server.

- Execution time-out

  Execution time-out occurs when a DO statement has been executing in a server beyond the time period specified for that DO statement in the TIMEOUT parameter. Following execution time-out, the response of the server depends upon the value of the STOP parameter in the DO statement of the rule. Valid values are:

  - Y (Yes) – The executing request is canceled.
  - N (No) – The request continues to execute.

NOTE

If the DO statement was issued in Wait-Completion mode, the Wait mode ends when execution time-out occurs (regardless of the value of the STOP parameter). The associated rule then continues executing.

Chapter 6

Extended Automation Mechanism

This chapter contains the following topics:

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Functions of the XAM Interface 610
The INIT Function – Interface Initialization 611
The TERM Function – Interface Termination 611
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The SETOLOC Function – AutoEdit Local Variable Setting 612
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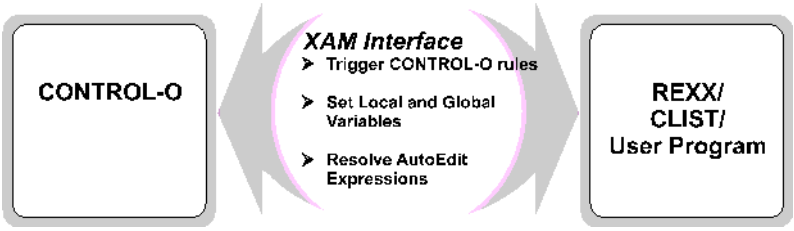
Introduction

The XAM (Extended Automation Mechanism) interface of CONTROL-O enables the customer to share information between an external environment and CONTROL-O. The XAM interface can also be used to issue requests which trigger CONTROL-O actions.

Figure 249 XAM (Extended Automation Mechanism) Interface



The XAM interface can be used for:

- AutoEdit expression resolution
- AutoEdit Local variable setting
- AutoEdit Global variable setting
- CONTROL-O rule triggering

Invoking the XAM Interface

XAM interface services can be invoked by the following methods:

- REXX External function
- REXX External environment
- TSO command processor
- CLIST external function
- Direct call from a user-written program

Numerous sample XAM interface invocation scripts or programs are provided. A list of these is provided in "Provided Samples" on page 617.

Functions of the XAM Interface

Table 197 describes the functions that can be passed to the XAM interface.

Table 197 Functions of the XAM Interface

Function	Description
INIT	Initializes the XAM interface
TERM	Terminates the XAM interface
RESOLVE	Resolves a specified AutoEdit expression
SETOLOC	Sets a Local AutoEdit variable
SETOGLB	Sets a Global AutoEdit variable
DORULE	Triggers a CONTROL-O rule

Each of these functions is described in detail in the following sections.

The INIT Function – Interface Initialization

The INIT function initializes the XAM interface.

The INIT function must be the first-called function. Other functions fail when no INIT function has been requested previously.

No parameters need to be specified for the INIT function.

The INIT function creates the necessary environment for the proper interface operations. It provides a new, clean AutoEdit environment.

The TERM Function – Interface Termination

The TERM function terminates the XAM interface.

The TERM function must be the last function called. Other functions fail if requested after the TERM function has been requested.

No parameters need to be specified for the TERM function.

The TERM function causes the interface to clean the obtained areas of storage and cleans the AutoEdit environment.

The RESOLVE Function – AutoEdit Resolution

The RESOLVE function resolves AutoEdit expressions.

The AutoEdit expression to be resolved must be supplied as an argument of the RESOLVE function.

The SETOLOC Function – AutoEdit Local Variable Setting

The SETOLOC function sets AutoEdit Local variables.

The AutoEdit expression that sets the local variable must be supplied as an argument of the SETOLOC function.

The SETOGLB Function – AutoEdit Global Variable Setting

The SETOGLB function sets AutoEdit Global variables.

The AutoEdit expression that sets the Global variable must be supplied as an argument of the SETOGLB function.

The DORULE Function – CONTROL-O Rule Triggering

The DORULE function triggers specified CONTROL-O rules.

The DORULE function is used to request services provided by CONTROL-O rules.

The name of the ON RULE rule to be triggered, followed by its parameters, must be specified as arguments of the DORULE function.

In order to be able to specify the name of the CONTROL-O LIBRARY and TABLE that contains the rule that should be used, you should include the following syntax before the DORULE request:

```
SETOLOC %%$XAMLB = controlo.tables
SETOLOC %%$XAMTB = table_name
```

In this syntax

- *controlo.tables* is the name of the library
- *table_name* is the name of the table (member) that contains the ALL parameter.

The default in both cases is ALL, which means that CONTROL-O will use the first rule found in the loaded rules with the name used in the DORULE regardless of the name of either the library or the table.

A CONTROL-O rule triggered by the DORULE function shares its local variables with the triggering environment. Changes to AutoEdit variables made by the rule are returned to its caller (such as the REXX program) after the rule terminates and returns control.

Special Considerations About CONTROL-O Servers

When executing interface functions under a CONTROL-O Server (using a DO TSO statement) Local variables are either shared or not shared with the calling rule, depending on the value specified for the SHARELOC subparameter.

If SHARELOC is set to Y (Yes), changes to Local AutoEdit variables made by the Server are shared with the rule requesting DO TSO execution.

REXX External Function Syntax

REXX External Function syntax is implemented with the provided CTOREX REXX External function and according to REXX syntax rules. The External function can be called either by using assignment statement syntax or through the REXX CALL statement.

The assignment statement syntax is

rexxvar = CTOREX(*function* ,*parameter*)

The syntax of the REXX CALL statement is

CALL CTOREX *function* *parameter*

Example

```
INITO = CTOREX("INIT")
SAY "INITIALIZATION =" INITO
SETLC1 = CTOREX("SETOLOC","%%MYVAR = %%$TIME")
SAY "SETLC1 =" SETLC1
CALL CTOREX "TERM"
SAY "TERMINATION=" RESULT
```

REXX External Environment Syntax

REXX External Environment syntax is implemented with the provided CONTROLO REXX External environment, and follows the syntax of the REXX ADDRESS statement.

Syntax

ADDRESS CONTROLO *function parameter*

Example

```
INITO = CTOREX("INIT")
SAY "INITIALIZATION =" INITO
ADDRESS CONTROLO
"SETOLOC %%MYLOCAL = %%$TIME"
"TERM"
```

NOTE

The INIT function is not supported under this syntax. This is because the “ADDRESS CONTROLO” environment becomes a valid REXX environment only after the INIT function has been executed.

CLIST External Function Syntax

CLIST External Function syntax is implemented as a SYSX External CLIST function, by using the standard IKJCT44B exit of TSO.

Syntax

SET clistvar = &STR(&SYSXfunction(parameter))

Example

```
PROC 0
SET INITO = &STR(&SYSXINIT)
WRITE INITIALIZATION = &INITO
SET SETLC1 = &STR(&SYSXSETOLOC(%%MYVAR = %%$TIME))
WRITE SETLC1 = &SETLC1
SET TERMO = &STR(&SYSXTERM)
WRITE TERMINATION = &TERMO
EXIT
```

TSO Command Processor Syntax

TSO Command Processor syntax is implemented with the provided CTOEXE command processor.

Syntax

```
CTOEXE 'function' 'parameter'
```

Example

```
PROC 0
SET INITO = &STR(&SYSXINIT)
WRITE INITIALIZATION = &INITO
CTOEXE 'SETOLOC' '%%MYLOCAL = %%$TIME'
SET TERMO = &STR(&SYSXTERM)
WRITE TERMINATION = &TERMO
EXIT
```

NOTE

The INIT and TERM functions are not supported under this syntax (due to certain limitations imposed by TSO command processors).

Calling the XAM Functions From a User-Written Program

All XAM functions can be called from a user-written program. This means that CONTROL-O XAM functions can be directly requested from customer-written applications. Sample Assembler program CTOXAMUR in the IOA SAMPLE library demonstrates how the different functions can be directly called.

Security Aspects

Access of the XAM facility is controlled by CONTROL-O Exit 15. For detail see the CONTROL-O security chapter of the *INCONTROL for z/OS Security Guide*.

CTOSCMD XAM Function

CTOSCMD is an implementation of the XAM interface. It allows the user to issue an operator command from a REXX or CLIST. If a response is needed (for example to return to the calling REXX command), it returns a REXX variable stack or a CLIST variable.

To implement the CTOSCMD XAM function, perform the following steps:

1. Create the XAM interface by calling the “INIT” function.
2. Implement CTOSCMD by specifying the following:

```
CTOSCMD 'command' CMDRESP(response_type) PREFIX(prefix) CMDWAIT(timeout)
```

where:

- *command* is the command to be issued.
- *response_type* is the response option. Valid values:
  - NOWHERE–No response is needed.
  - TERMINAL–Send response to the terminal.
  - CLIST–Send response to a CLIST variable.
  - REXX–Send response to a REXX stack.

- *prefix* is the CLIST variable prefix or REXX stack to which the command response will return.
- *timeout* is the timeout value, after which, the response is to return to the caller.

3 Terminate the XAM environment using the “TERM” function upon completion.

Security Aspects

To implement security for the CTOSCMD function, use the CTOSE15 security module. In addition, you can use this module to protect the INIT and TERM XAM functions and to implement security for an operating system command that may be issued through CTOSCMD. For details, see the CONTROL-O security chapter of the *INCONTROL for z/OS Security Guide*.

Provided Samples

The following libraries contains basic samples of the interface features. They can be used to test each feature of the XAM facility.

The most comprehensive ones are:

- CTOLSHRT
  Shows how local variables are shared.
- CTOUCMDR
  Shows how to issue a command and obtain the command’s response.
- CTOUKOA2
  Shows how to capture a screen of a VTAM application (such as CICS) and present it to the TSO user.

The above mentioned samples trigger and control the sequence of events. However, they also involve members from the same and other libraries, and they illustrate how the different parts of CONTROL-O can be used together to obtain the desired result.

Table 198 is a list of all provided members containing samples for implementation of the XAM interface. These members are listed according to the library in which they are stored.

Table 198 XAM Interface Implementation Sample Members

CLIST Library	
CTOADRUL	CTOASETG
CTOCDRUL	CTOCSETG
CTOERR01	CTOERR03
CTOLSHRT	CTOPDRUL
CTOPRSLV	CTOPSETL
CTORDRUL	CTORSETG
CTOUCMDR	CTOUKOA2
CTOARSLV	CTOASETL
CTOCRSLV	CTOCSETL
CTOERR02	CTOLSHRN
CTOLSHRY	CTOPINIT
CTOPSETG	CTOPTERM
CTORRSLV	CTORSETL
CTOUKOA1	
IOA SAMPLE Library	
CTOXAM01	CTOXAM03
CTOXAM02	
RULES Library	
CTOSCMD	XAMRULES

CLIST Library

■ CTOADRUL	■ CTOASETG
■ CTOCDRUL	■ CTOCSETG
■ CTOERR01	■ CTOERR03
■ CTOLSHRT	■ CTOPDRUL
■ CTOPRSLV	■ CTOPSETL
■ CTORDRUL	■ CTORSETG
■ CTOUCMDR	■ CTOUKOA2
■ CTOARSLV	■ CTOASETL
■ CTOCRSLV	■ CTOCSETL
■ CTOERR02	■ CTOLSHRN
■ CTOLSHRY	■ CTOPINIT
■ CTOPSETG	■ CTOPTERM
■ CTORRSLV	■ CTORSETL
■ CTOUKOA1	■

IOA SAMPLE Library

■ CTOXAM01
■ CTOXAM02
■ CTOXAM03

RULES Library

■ CTOSCMD
■ XAMRULES

Appendix A

Editing Rule Definitions in the IOA Edit Environment

Rule Definition parameters can be edited (moved, copied, deleted, repeated) by performing IOA Line Editing commands similar to standard ISPF line commands, from within the IOA Edit environment.

The Edit environment in a Rule Definition screen is accessed by typing **EDIT** in the **COMMAND** field and pressing **Enter**.

Figure 250 Edit Environment in a Rule Definition Screen

```
RL: CANCEL *   LIB CTO.PROD.RULES                                TABLE: JOB
COMMAND ===>                                                     SCROLL===> CRSR
+-------------------------------------------------------------------------------+
__ ON COMMAND  = CANCEL *
__    JNAME          JTYPE         SMFID        SYSTEM       USERID
__    ROUTE          DESC          CONSOLEID 01 CONSOLE
__    APPEARED        TIMES IN       MINUTES                          And/Or/Not
__ OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
__ DESCRIPTION ASK FOR OPERATOR'S CONFIRMATION OF SENSITIVE COMMANDS
__ DESCRIPTION
__ ==============================================================================
__ /* SUPPRESS ORIGINAL COMMAND
__ DO DISPLAY  = SUPPRESS Y           ROUTE             DESC      CONSOLEID
__ /* ASK OPERATOR FOR CONFIRMATION
__ WHILE    %%$RPLYTXT NE YES AND %%$RPLYTXT NE NOT
__ DO ASKOPER  = ENTER "YES" OR "NOT" FOR CONFIRMATION
__               ROUTE                CONSOLEID         TIMEOUT
__ ENDWHILE
__ /* UPON CONFIRMATION, RE-ISSUE THE ORIGINAL COMMAND
__ IF       %%$RPLYTXT EQ YES
__ DO COMMAND  = %%$CMD                                  WAIT      CONSOLEID
__    WAITMODE   N
__ ENDIF
__ DO
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 14.51.58
```

A 2-character line editing command field, marked by underscores, is displayed for each line on the Rule Definition screen.

Editing commands are typed directly onto these underscores.

Incorrectly specified line editing commands can be corrected by typing over them correctly. line editing commands can be deleted by blanking them out or by specifying the RESET command in the COMMAND field.

Specified line editing commands are processed when **Enter** is pressed.

CONTROL-O performs automatic syntax checking to ensure that the rule definition is still syntactically correct after editing. If an edit will invalidate the rule definition, a message is displayed at the top of the screen and the edit is not performed. For guidelines and recommendations for editing rule definitions see "Maintaining Valid Rule Definitions" on page 624.

All operations available in the Rule Definition screen can be performed while in the Edit environment. For example, parameter values can be changed, the Rule Definition screen can be saved, and the screen exited.

To exit the Edit environment, retype EDIT in the COMMAND field and press **Enter**. Line editing command fields are removed from the display.

Line editing commands can be performed on any single ON or DO statement or on a block of ON or DO statements.

Line Editing Commands

The following tables show the types of line editing commands that exist in the Edit environment.

Table 199 Delete Commands

Command	Description
DS	Delete a single line.
DL	Delete a logical line.
DD	Delete lines between two DD specifications.
D	Deletes a line. CONTROL-O determines whether to delete a single or logical line based on the parameter on the line.

Table 200 Copy commands (part 1 of 2)

Command	Description
CS	Copies a single line.
CL	Copies a logical line.
CC	Copies lines between two CC specifications.

Table 200 Copy commands (part 2 of 2)

Command	Description
C	Copies a line. CONTROL-O determines whether to copy a single or logical line based on the parameter on the line.
Copy commands are used in conjunction with Location commands. The lines are placed at the position indicated by the A or B Location command (described in Table 204).	

Table 201 Move commands

Command	Description
MS	Move a single line.
ML	Moves a logical line.
MM	Moves lines between two MM specifications.
M	Moves a line. CONTROL-O determines whether to move a single or logical line based on the parameter on the line.
Move commands are used in conjunction with Location commands. The lines are placed at the position indicated by the A or B Location command (described in Table 204).	

Table 202 Repeat commands

Command	Description
RS	Repeat a single line.
RL	Repeats a logical line.
RR	Repeats lines between two RR specifications.
R	Repeats a line. CONTROL-O determines whether to repeat a single or logical line based on the parameter on the line. The repeated lines is placed immediately after the lines that has been repeated.

Table 203 Insert commands

Command	Description
I (Insert)	Insert a new logical line or block after the logical line or block marked with an I.

Table 204 Location commands

Command	Description
Location commands indicate the position where lines should be placed.	
A (After)	Indicates that lines should be placed after the line marked with an A.
B (Before)	Indicates that lines should be placed before the line marked with a B.
The A and B Location commands are used together with Copy (C, CS, CL, CC), and Move (M, MS, ML, MM) commands.	

Maintaining Valid Rule Definitions

Since rule definitions must be syntactically correct at all times, the user should consider the following issues when specifying Line Editing commands:

- The result of a line editing command is dependent on the line on which the command is specified. For example, the D command deletes either a single or a logical line based on the line type.

- Logical lines function as a unit and may not be separated.

  When a logical command is specified within a logical line, that is, on a subparameter line, or a continuation line, the specified operation is performed on the entire logical line.

- Blank parameter lines added automatically by CONTROL-O, to allow the user to specify additional parameters, cannot be deleted.

It is recommended that, wherever possible, the D, C, R, and M commands be used for editing (instead of DS, DL, CS, CL, RS, RL, MS, and ML) because these commands automatically retain the logical structure of the rule definition.

Figure 251 Example 1 Before – Move a DO Block in the Rule Definition Screen

```
RL: $HASP050   LIB CTOP.PRODSMP.RULES                          TABLE: $HASP
COMMAND ===>                                                   SCROLL===> CRSR
-------------------------------------------------------------------------------
__ ON MESSAGE  = $HASP050
__    ROUTE        DESC        CONSOLEID    SMFID       JNAME          JTYPE
__    APPEARED     TIMES IN      MINUTES                          And/Or/Not
__ OWNER IOAADMIN GROUP                          MODE PROD    RUNTSEC
__ DESCRIPTION JES2 - RESOURCE SHORTAGE
__ DESCRIPTION FORCE A JOB TO ADJUST JES RESOURCES
__ DESCRIPTION
__ ==============================================================================
__ B_ DO SHOUT    = TO TSO-SHIFTUSER     URGENCY  R
__    MESSAGE JES2 RESOURCE SHORTAGE - PLEASE HANDLE IT
__ DO COMMAND  = $DSPL,ALL,JOBS=5                       WAIT      CONSOLEID
__    WAITMODE   N
__ M_ DO FORCEJOB = TABLE   JES2JOBS     JOB SYSJES1              DATE  ODAT
__             LIBRARY CTM.PROD.SCHEDULE
__ DO
__ ==============================================================================
__                     D O   O P T I O N S
__ ASKOPER  - Ask operator               COMMAND  - Issue operator command
__ COND     - Add/delete IOA conditions  CTOPCMSG - Message to CONTROL-O/PC
__ DISPLAY  - Message control            DOM      - Delete operator message
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 17.12.29
```

Figure 252 Example 1 After – Move a DO Block in the Rule Definition Screen (the DO block has been moved)

```
RL: $HASP050   LIB CTOP.PRODSMP.RULES                          TABLE: $HASP
COMMAND ===>                                                   SCROLL===> CRSR
 ---------------------------------------------------------------------------
__ ON MESSAGE  = $HASP050
__    ROUTE        DESC        CONSOLEID    SMFID       JNAME          JTYPE
__    APPEARED     TIMES IN      MINUTES                            And/Or/Not
__ OWNER IOAADMIN GROUP                          MODE PROD    RUNTSEC
__ DESCRIPTION FORCE A JOB TO ADJUST JES RESOURCES
__ DESCRIPTION
__ ==========================================================================
__ DO FORCEJOB = TABLE   JES2JOBS     JOB SYSJES1              DATE  ODAT
__            LIBRARY CTM.PROD.SCHEDULE
__ DO SHOUT    = TO TSO-SHIFTUSER     URGENCY  R
__    MESSAGE JES2 RESOURCE SHORTAGE - PLEASE HANDLE IT
__ DO COMMAND  = $DSPL,ALL,JOBS=5                       WAIT      CONSOLEID
__    WAITMODE   N
__ DO
__ ==========================================================================
__              D O   O P T I O N S
__ ASKOPER  - Ask operator               COMMAND  - Issue operator command
__ COND     - Add/delete IOA conditions  CTOPCMSG - Message to CONTROL-O/PC
__ DISPLAY  - Message control            DOM      - Delete operator message
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 17.17.14
```

Figure 253 Example 2 Before – Copy a Line of Text in the Rule Description

```
RL: $HASP250   LIB CTOP.PRODSMP.RULES                          TABLE: $HASP
COMMAND ===>                                                   SCROLL===> CRSR
---------------------------------------
__ ON MESSAGE  = $HASP250
__    ROUTE        DESC        CONSOLEID    SMFID       JNAME          JTYPE
__    APPEARED     TIMES IN      MINUTES                            And/Or/Not
__ OWNER IOAADMIN GROUP                          MODE PROD    RUNTSEC
__ C_ DESCRIPTION ************************************
__ A_ DESCRIPTION * JES2 - SUPPRESS JOB PURGED MESSAGE *
__ DESCRIPTION
__ ==========================================================================
__ DO DISPLAY  = SUPPRESS Y           ROUTE             DESC      CONSOLEID
__ DO
__  ========================================================================
 D O   O P T I O N S
__ ASKOPER  - Ask operator               COMMAND  - Issue operator command
__ COND     - Add/delete IOA conditions  CTOPCMSG - Message to CONTROL-O/PC
__ DISPLAY  - Message control            DOM      - Delete operator message
__ FORCEJOB - Order job under CONTROL-M  KSL      - Activate a KOA script
__ RESOURCE - Change IOA resources       RULE     - Call another rule
__ SET      - Set CONTROL-O variable     SHOUT    - Notification facility
__ STOPJOB  - Stop next job steps        SYSREQ   - System request
__ TSO      - Activate TSO command       WAIT     - Completion of events
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 17.20.04
```

Figure 254 Example 2 After – Copy a Line of Text in the Rule Description (the text has been copied)

```
RL: $HASP250   LIB CTOP.PRODSMP.RULES                          TABLE: $HASP
COMMAND ===>                                                   SCROLL===> CRSR
----------------------------------------
__ ON MESSAGE  = $HASP250
__    ROUTE        DESC        CONSOLEID    SMFID       JNAME          JTYPE
__    APPEARED     TIMES IN      MINUTES                            And/Or/Not
__ OWNER IOAADMIN GROUP                          MODE PROD    RUNTSEC
__ DESCRIPTION ***************************************
__ DESCRIPTION * JES2 - SUPPRESS JOB PURGED MESSAGE *
__ DESCRIPTION ***************************************
__ DESCRIPTION
==============================================================================
__ DO DISPLAY  = SUPPRESS Y           ROUTE             DESC      CONSOLEID
__ DO
__ ==============================================================================
 D O   O P T I O N S
__ ASKOPER  - Ask operator               COMMAND  - Issue operator command
__ COND     - Add/delete IOA conditions  CTOPCMSG - Message to CONTROL-O/PC
__ DISPLAY  - Message control            DOM      - Delete operator message
__ FORCEJOB - Order job under CONTROL-M  KSL      - Activate a KOA script
__ RESOURCE - Change IOA resources       RULE     - Call another rule
__ SET      - Set CONTROL-O variable     SHOUT    - Notification facility
__ STOPJOB  - Stop next job steps        SYSREQ   - System request
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                  17.23.22
```

Figure 255 Example 3 Before – Delete an Unnecessary DO Statement

```
RL: DAILY      LIB CTOP.PRODSMP.RULES                          TABLE: DAILY
COMMAND ===>                                                   SCROLL===> CRSR
----------------------------------------
__ ON EVENT    = DAILY
__ OWNER IOAADMIN GROUP                          MODE PROD    RUNTSEC
__ DESCRIPTION SAMPLE RULE TO DAILY ORDER THE CONTROL-O RULES
__ DESCRIPTION NOTE: THE CURRENT EXAMPLE WAS BUILT WITH THE ASSUMPTION
__ DESCRIPTION       THAT THE NEWDAY TIME IN CTOPARM IS 12:00.
__ DESCRIPTION
__ ==============================================================================
__ /* IF VARIABLE %%RELOADED WAS NOT SET YET, THEN SET IT TO RDATE
__ DO SET      = %%$GLOBAL = POOLTEMP                                GLOBAL  N
__ IF       %%RELOADED EQ %%$UNDEF
__ DO SET      = %%RELOADED = %%$RDATE                               GLOBAL  Y
__ D_ DO SHOUT    = TO OPER              URGENCY  R
__    MESSAGE VARIABLE %%RELOADED HAS BEEN SET
__ ENDIF
__ /* IF VARIABLE %%RELOADED WAS NOT SET TODAY, IT MEANS WE NEED TO RELOAD
__ /* THE CONTROL-O WORKING TABLES.
__ IF       %%RELOADED NE %%$RDATE
__ DO SET      = %%RELOADED = %%$RDATE                               GLOBAL  Y
__ DO COMMAND  = F %%$CONTROLO,O=ALL,REBUILD            WAIT      CONSOLEID
__   WAITMODE   N
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                  15.10.17
```

Figure 256 Example 3 After – Delete an Unnecessary DO Statement (the DO SHOUT statement has been deleted)

```
RL: DAILY      LIB CTOP.PRODSMP.RULES                          TABLE: DAILY
COMMAND ===>                                                   SCROLL===> CRSR
---------------------------------------
__ ON EVENT    = DAILY
__ OWNER IOAADMIN GROUP                        MODE PROD    RUNTSEC
__ DESCRIPTION SAMPLE RULE TO DAILY ORDER THE CONTROL-O RULES
__ DESCRIPTION NOTE: THE CURRENT EXAMPLE WAS BUILT WITH THE ASSUMPTION
__ DESCRIPTION       THAT THE NEWDAY TIME IN CTOPARM IS 12:00.
__ DESCRIPTION
__ ==============================================================================
__ /* IF VARIABLE %%RELOADED WAS NOT SET YET, THEN SET IT TO RDATE
__ DO SET      = %%$GLOBAL = POOLTEMP                                GLOBAL  N
__ IF       %%RELOADED EQ %%$UNDEF
__ DO SET      = %%RELOADED = %%$RDATE                               GLOBAL  Y
__ ENDIF
__ /* IF VARIABLE %%RELOADED WAS NOT SET TODAY, IT MEANS WE NEED TO RELOAD
__ /* THE CONTROL-O WORKING TABLES.
__ IF       %%RELOADED NE %%$RDATE
__ DO SET      = %%RELOADED = %%$RDATE                               GLOBAL  Y
__ DO COMMAND  = F %%$CONTROLO,O=ALL,REBUILD            WAIT      CONSOLEID
__    WAITMODE   N
__ ENDIF
__ DO
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 15.11.54
```

Figure 257 Example 4 Before – Move specified DO statements in the Rule Definition

```
RL: ABC123AR   LIB CTOP.PRODSMP.RULES                          TABLE: JOBRULE
COMMAND ===>                                                   SCROLL===> CRSR
---------------------------------------
__ ON MESSAGE  = ABC123AR
__    ROUTE        DESC        CONSOLEID    SMFID       JNAME          JTYPE
__    APPEARED     TIMES IN      MINUTES                          And/Or/Not
__ OWNER IOAADMIN GROUP                        MODE PROD    RUNTSEC
__ DESCRIPTION
==============================================================================
__ B DO SHOUT    = TO OPER2             URGENCY  R
__       MESSAGE CURRENTLY CLEANING DATABASE USING CONTROL-M JOB
__ MM DO SET      = %%ARMSG_DOMID = %%$LDOMID                          GLOBAL  Y
__ DO FORCEJOB = TABLE   JOBCTM       JOB JOBJCL               DATE  ODAT
__                 LIBRARY CTMP.PRODCTO.SCHEDULE
__ A_ DO COND     = CTO-ABC123XX-PAUSE   STAT +
__ DO
__ ==============================================================================
 D O   O P T I O N S
__ ASKOPER  - Ask operator               COMMAND  - Issue operator command
__ COND     - Add/delete IOA conditions  CTOPCMSG - Message to CONTROL-O/PC
__ DISPLAY  - Message control            DOM      - Delete operator message
__ FORCEJOB - Order job under CONTROL-M  KSL      - Activate a KOA script
__ RESOURCE - Change IOA resources       RULE     - Call another rule
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 17.35.51
```

Figure 258 Example 4 After – Move specified DO statements in the Rule Definition (the DO statements Have Been Moved)

```
RL: ABC123AR   LIB CTOP.PRODSMP.RULES                          TABLE: JOBRULE
COMMAND ===>                                                   SCROLL===> CRSR
-------------------------------------------------------------------------------
__ ON MESSAGE  = ABC123AR
__    ROUTE        DESC        CONSOLEID    SMFID       JNAME          JTYPE
__    APPEARED     TIMES IN      MINUTES                            And/Or/Not
__ OWNER IOAADMIN GROUP                         MODE PROD    RUNTSEC
__ DESCRIPTION
__ ===============================================================================
__ DO FORCEJOB = TABLE   JOBCTM       JOB JOBJCL               DATE  ODAT
__               LIBRARY CTMP.PRODCTO.SCHEDULE
__ DO COND     = CTO-ABC123XX-PAUSE   STAT +
__ DO SHOUT    = TO OPER2             URGENCY  R
__    MESSAGE CURRENTLY CLEANING DATABASE USING CONTROL-M JOB
__ DO SET      = %%ARMSG_DOMID = %%$LDOMID                          GLOBAL  Y
__ DO
__ ===============================================================================
 D O   O P T I O N S
__ ASKOPER  - Ask operator               COMMAND  - Issue operator command
__ COND     - Add/delete IOA conditions  CTOPCMSG - Message to CONTROL-O/PC
__ DISPLAY  - Message control            DOM      - Delete operator message
__ FORCEJOB - Order job under CONTROL-M  KSL      - Activate a KOA script
__ RESOURCE - Change IOA resources       RULE     - Call another rule
FILL IN RULE DEFINITION. CMDS: EDIT, SCHED, OPT, SHPF                 17.38.30
```

Appendix B

KOA VTAM Exception Codes

KOA VTAM Exception codes are listed and described below.

NOTE

%VTAMFDBK (if specified) contains information supplied by VTAM applications in the hexadecimal representation of two full words (16 characters). These two values (usually RPL and ACB error information) are determined by the specific error as described below.

For example, whenever RTNCD and FDBK2 are specified, the first 8 characters contain the hexadecimal representation of the RPL RTNCD field, and the next 8 characters contain the representation of the RPL FDBK2 field. If R15 and R0 are specified, the first 8 characters contain the hexadecimal representation of the contents of Register 15, and the next 8 characters contain the representation of the contents of Register 0.

These codes and their descriptions can be found in the IBM VTAM Programming manual.

Table 205 KOA VTAM Exception Codes (part 1 of 3)

%VTAMRC	%VTAMERR	%VTAMFDBK	Description
0	OK		The last operation completed successfully.
4	UNSOLMSG		An unsolicited (unexpected) message was received. The message can either be accepted (by means of the GETSCREEN command) or rejected (by re-sending the last screen).
8	NODATA		The GETSCREEN command did not receive any new messages from the VTAM application.
12	TIMEOUT		Response was not received from the VTAM application for *n* seconds. The maximum wait period is specified by the TIMEOUT command or by the KOATIME installation parameter.

Table 205 KOA VTAM Exception Codes (part 2 of 3)

%VTAMRC	%VTAMERR	%VTAMFDBK	Description
16	ERROR-EXIT	RTNCD, FDBK2	A VTAM error exit (SYNAD or LERAD) was activated because of an exception situation. The RTNCD and FDBK2 RPL fields determine the specific error situation.
20	NSEXIT		The NSEXIT VTAM Exit was activated because of a network services exception situation.
24	SESS-NOT-ACT		A KOA communication command failed because the session was no longer active.
28	VTAMREQ	R15 R0	A VTAM command (for example, SEND, RECEIVE) was rejected by the VTAM application. The values of registers 15 and 0 determine the specific error.
32	NOSTORAGE		KOA processing could not continue due to insufficient storage. The REGION parameter (in the JCL procedure) should be increased, and the KOA script should be reactivated.
36	OPEN	ACB error flag	An error occurred while opening the ACB. The error flag indicates the specific reason for the failure.
40	SLUNOTDEF		The terminal name specified in the LOGON command was not defined to VTAM. No new sessions can be initiated.
44	NOFREESLU		Selection of a KOA terminal (SLU) failed because all defined terminals were currently in use; no new sessions can be initiated.
48	NOTACCEPT		An attempt was made to initiate a session with a non-available VTAM application or a VTAM application which is not ready to accept any new sessions.
52	SETLOGON	RTNCD, FDBK2	The SETLOGON VTAM command (which enables KOA to start sessions) could not be executed. The RTNCD and FDBK2 RPL fields determine the specific error situation.
56	REQSESS	RTNCD, FDBK2	The REQSESS VTAM command (which initiates a session with a VTAM application) could not be executed. The RTNCD and FDBK2 RPL fields determine the specific error situation.

Table 205 KOA VTAM Exception Codes (part 3 of 3)

%VTAMRC	%VTAMERR	%VTAMFDBK	Description
60	BIND-REJECT		The specified parameters prevent session initiation. Check the validity of the supplied LOGMODE.
64	RECEIVE	RTNCD, FDBK2	The RECEIVE VTAM command (which accepts a message from a VTAM application) could not be executed. The RTNCD and FDBK2 RPL fields determine the specific error situation.
68	INVALID-DATA		A message (from the VTAM application) which contains invalid data was received. KOA cannot display the data.
72	UNKNOWN-CMD		A message (from the VTAM application) which contains an unknown 3270 command was received. KOA cannot display the data.
76	SEND	RTNCD, FDBK2	The SEND VTAM command (send a message to the VTAM application) could not be executed. The RTNCD and FDBK2 RPL fields determine the specific error situation.
80	KEYLOCKED		The keyboard was locked. Messages cannot be sent to the VTAM application.
84	QUIESCED		The session was halted (as requested by the application). Messages cannot be sent to the VTAM application.
88	CLOSE	ACB error flag	An error occurred while closing the ACB. The error flag indicates the specific reason for the failure.
92	INVREQ		An invalid request from the KOA session handler caused an internal error.

Appendix C

List of Commands for Which Dealiasing Is Supported

Dealiasing of the MVS command aliases in Table 206 is supported.

Table 206 MVS Command Aliases that can be Dealiased (part 1 of 2)

Alias	Full Name
C	CANCEL
CD	CHNGDUMP
CF	CONFIG
K	CONTROL
D	DISPLAY
DS	DEVSERV
DD	DUMPDS
E	RESET
F	MODIFY
G	SWAP
I	SWITCH
L	LOG
M	MOUNT
MN	MONITOR
MR	MSGRT
P	STOP
PA	PAGEADD
PD	PAGEDEL
PM	STOPMN
PT	STOPTR
R	REPLY
S	START

Table 206 MVS Command Aliases that can be Dealiased (part 2 of 2)

Alias	Full Name
SD	SETDMN
SE	SEND
SL	SLIP
SS	SETSMF
T	SET
TR	TRACK
U	UNLOAD
V	VARY
W	WRITELOG
Z	HALT

Dealiasing of the JES3 command aliases in Table 207 is supported.

Table 207 JES3 Command Aliases that can be Dealiased

Alias	Full Name
*C	*CANCEL
*D	*DELAY
*E	*ERASE
*F	*MODIFY
*H	*DISABLE
*I	*INQUIRY
*N	*ENABLE
*R	*RESTART
*S	*START
*T	*SEND
*V	*VARY
*X	*CALL
*Z	*MESSAGE

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%%$DBMAXRW
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