IBM Workload Scheduler for z/OS
Version 9 Release 3

Quick Reference

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Version 9 Release 3

Quick Reference

Note
Before using this information and the product it supports, read the information in "Notices" on page 39.

This edition applies to version 9, release 3, modification level 0 of IBM Workload Scheduler (program number 5698-WSH) and to all subsequent releases and modifications until otherwise indicated in new editions.

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Figures

1. EQQSOPFP - Selecting Operations 1

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About this publication

IBM Workload Scheduler for z/OS: Quick Reference is a handy guide to the more commonly used dialogs, commands, and directives of IBM Workload Scheduler for z/OS.

The term *scheduler*, when used in this publication, refers to IBM Workload Scheduler for z/OS. The term DB2®, when used in this publication, refers to DATABASE 2 and DB2 Universal Database™.

The term *z/OS*® is used in this publication to mean z/OS and OS/390® operating systems. Where the term *OS/390* appears, the related information applies only to OS/390 operating systems.

Support information

IBM provides several ways for you to obtain support when you encounter a problem.

If you have a problem with your IBM software, you want to resolve it quickly. IBM provides the following ways for you to obtain the support you need:

- Searching knowledge bases: You can search across a large collection of known problems and workarounds, Technotes, and other information.
- Obtaining fixes: You can locate the latest fixes that are already available for your product.
- Contacting IBM Software Support: If you still cannot solve your problem, and you need to work with someone from IBM, you can use a variety of ways to contact IBM Software Support.

For more information about these three ways of resolving problems, see the appendix on support information in *IBM Workload Scheduler: Troubleshooting Guide*.

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Chapter 1. Using the ISPF dialogs

Table 1. Some primary commands for panels

Command	Action
RETURN	Return to main menu. An end operation is run for each panel in the sequence leading back to the main menu (all changes on the individual panels are saved).
CANCEL	Return to the previous panel without making any changes.
RIGHT	Display the right part of the data. This is available only from panels that have the text `LEFT PART` in the panel title.
LEFT	Display the left part of the data. This is available only from panels that have the text `RIGHT PART` in the panel title.
HELP	Display help information.
SORT	Sort information in a list.
LOCATE *lparm*	Scroll to the field specified. If the field is not found, the list is displayed starting with the entry before which the specified field would have occurred. If the list is sorted by application name, *lparm* is the name of the application; if sorted by job name, *lparm* is a job name.
GRAPH	Display a network of dependencies.
GDDM	Execute Graphical Data Display Manager (GDDM) functions on a graphically displayed network.
ATTR	Set graphic attributes.

Specifying list criteria

Limit the length of lists by using filter panels like the SELECTING OPERATIONS panel:

```
EQQSOPFP ------------------- SELECTING OPERATIONS --------------------------
Command ===>

Specify selection criteria below and press ENTER to create an operation list.

JOBNAME            => P*______            WORK STATION NAME  => ____
APPLICATION ID     => ____________________ OWNER ID          => ________________
AUTHORITY GROUP    => ________            PRIORITY           => _
GROUP DEFINITION   => ________________    STATUS             => ________________
CLEAN UP TYPE      => ____                CLEAN UP RESULT    => __
OP. EXTENDED NAME  => ____________________________________________________
OP. SE NAME        => ________________
Input arrival in format YY/MM/DD  HH.MM
 FROM              => ________  _____
 TO                => ________  _____

Additional Options ( Y N )
FAST PATH          => Y                Valid only along with jobname
MANUALLY HELD      => _
WAITING FOR SE     => _                Leave blank to select all
STARTED ON WAIT WS => _                Leave blank to select all
```

Figure 1. EQQSOPFP - Selecting Operations

You can use blanks, complete names, IDs, or search arguments in the input fields.

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On some selection panels you can choose the *fastpath* option, so that IBM Workload Scheduler for z/OS searches for matching job names on automatic workstations. If there is a matching job name, IBM Workload Scheduler for z/OS includes all operations with that job name, whether on an automatic workstation or not.

Using generic search arguments

Many of the input fields in the dialog accept generic search arguments. Use an asterisk (*) to represent any character string or a null string. Use a percent sign (%) for any single character.

To select all application identifiers whose first three letters are PAY, enter this in the input field:

```
APPLICATION ID ===> PAY*________
```

To select all applications where P is the first letter and Y is the third letter, enter this:

```
APPLICATION ID ===> P%Y*________
```

Sorting list output

In all list displays, enter the `SORT` command to display a panel where you can specify the order of the list items. The sort order you request remains in effect for that specific list type until changed.

If you sort on date fields, take into account the date format that has been specified, because this can affect the order.

Locating data strings in list output

Enter `LOCATE` on any list display panel to find a data string in the list. The command also supports generic search strings. For example, you can enter `LOCATE ABC*` to find any item in the list beginning with ABC. Locate scrolls to the field specified.

If the list is sorted by application name, request `LOCATE applname`; similarly, if sorted by job name, request `LOCATE jobname`. If you need to issue a locate command on a list that is not sorted by the item you want to locate, change the order with the `SORT` command.

Graphically displaying lists

If you have GDDM installed and have a terminal capable of displaying graphics, you can also display lists of applications, occurrences, and operations graphically. Graphic displays contain the same information as edit or selection lists, but the format is different; you can see dependency connections that might be hard to see from a conventional list.

To see a graphically displayed list, enter `GRAPH` at the command prompt of a panel on which graph is an option.

PF key assignment

The dialog maintains separate program function (PF) keys from your normal ISPF key assignments. Enter `KEYS` at the command prompt to display or change the current assignment.

You can define PF keys to run a command that you use regularly, for example, to display the ready list. To ensure that the command will be run correctly, regardless of the panel it is entered from, define the PF key like this:

```
PF5  ===> ;=4.1.cpu1
```

Where ; is your ISPF command delimiter.

You can define unique PF key assignments for different panels. For example, if you regularly use the application description dialog, you can define PF keys for the OPER and RUN commands.

It is recommended that you do not alter the key assignments for PF1 (HELP), or PF12 (RETRIEVE). The retrieve PF key returns the command you last run to the command prompt. A stack of approximately 25 commands is maintained.

The PF KEY DEFINITIONS AND LABELS panel lets you assign labels to the PF key definitions. When you enter the `PFSHOW` command from a panel, the PF key labels are displayed. To remove the display, enter `PFSHOW OFF`.

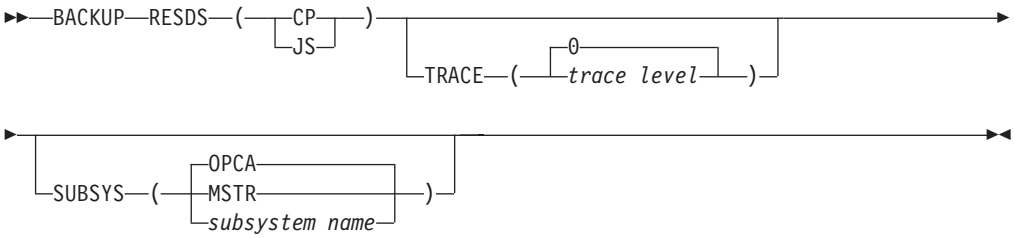
Chapter 2. TSO commands

This chapter describes the syntax for the IBM Workload Scheduler for z/OS TSO commands, BACKUP, BULKDISC, JSUACT, OPINFO, OPSTAT, SRSTAT, and WSSTAT.

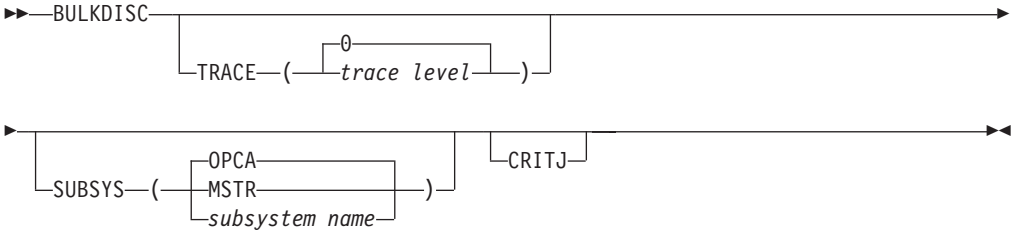
You can abbreviate keywords to their shortest unambiguous form. For example, you can shorten the AVAIL keyword to an 'A'. Before you invoke an IBM Workload Scheduler for z/OS TSO command, you must allocate the EQQMLIB data set to the TSO address space, either by adding DD statements to the logon procedure, or by using the ALLOC command after TSO logon. Error messages are sent directly to the terminal.

The TSO commands can be directed to a specific IBM Workload Scheduler for z/OS subsystem (tracker). The tracker does not have to be active when you issue the command. An event is generated and queued in ECSA along with other job-tracking events.

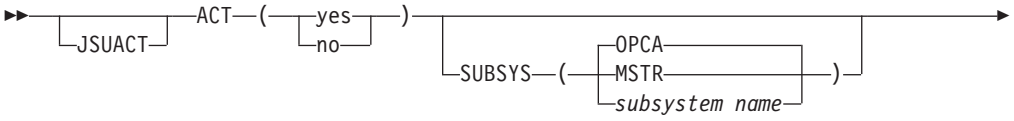
BACKUP



BULKDISC



JSUACT



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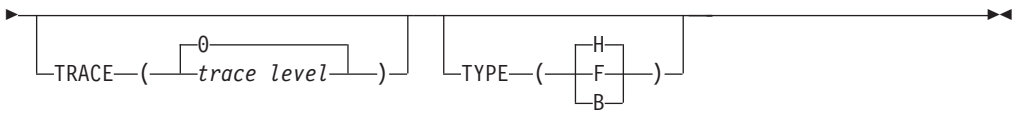
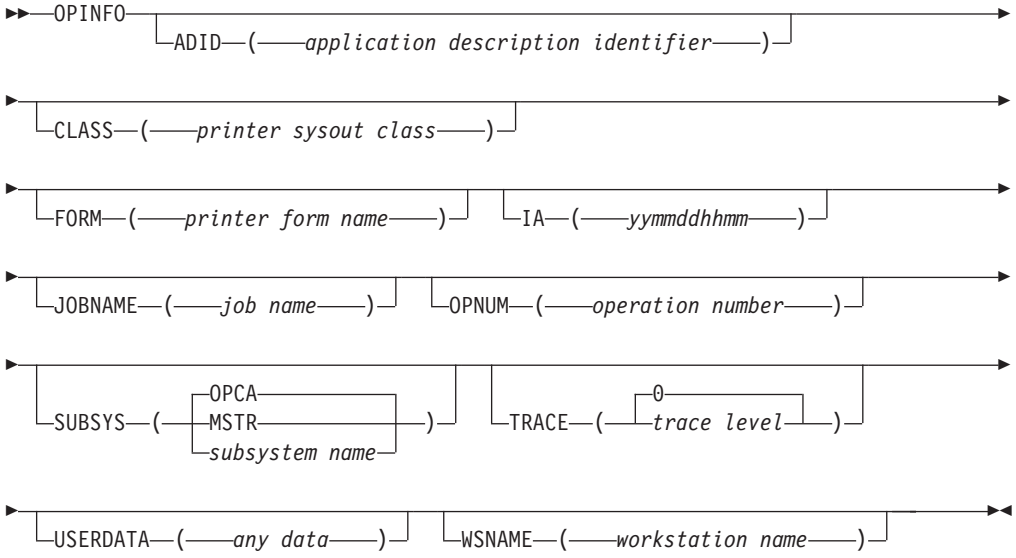
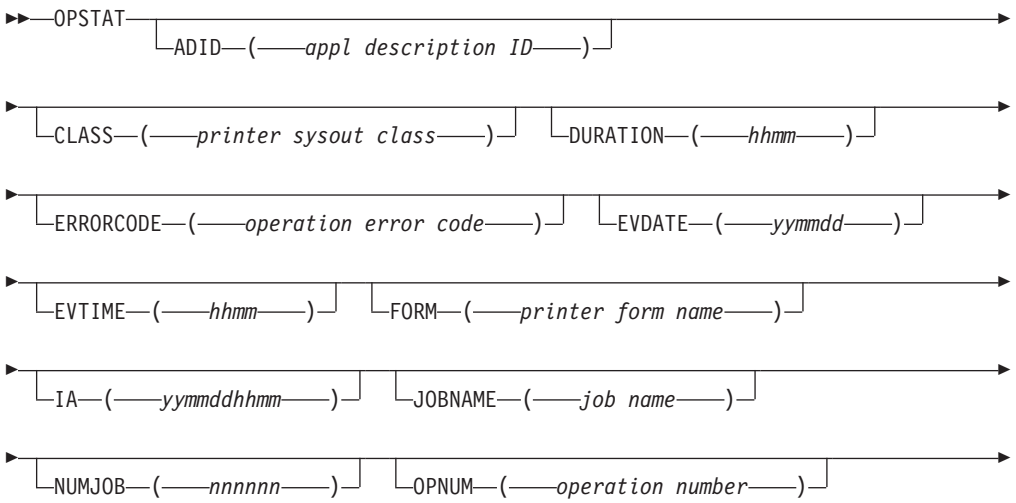
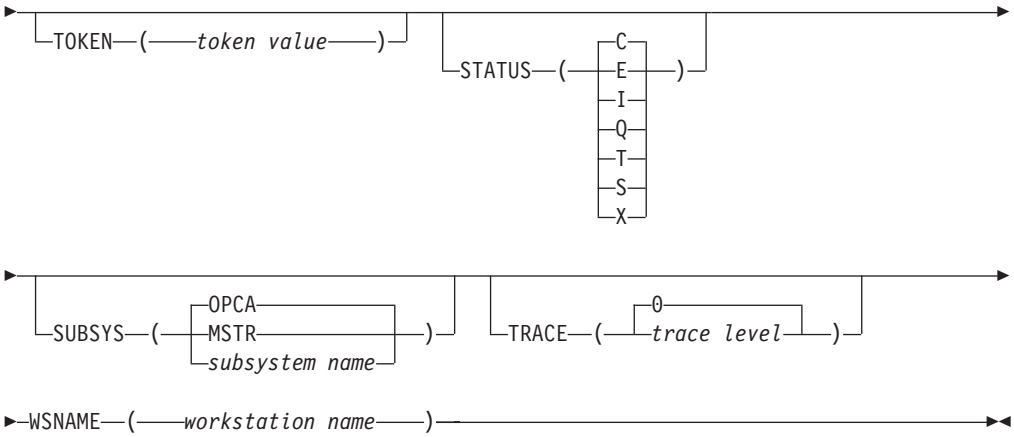


OPINFO

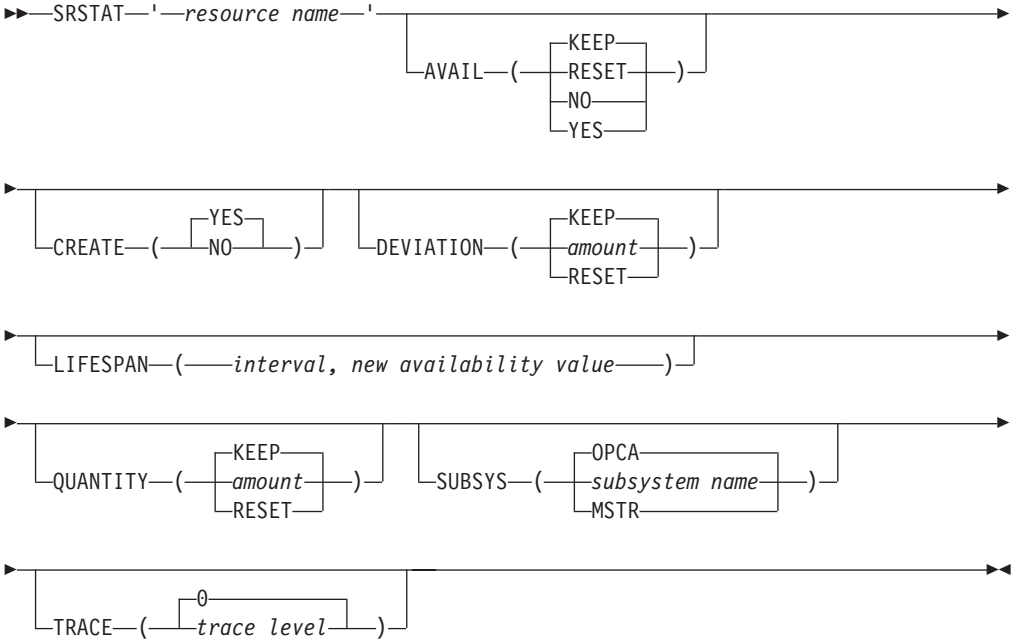


OPSTAT

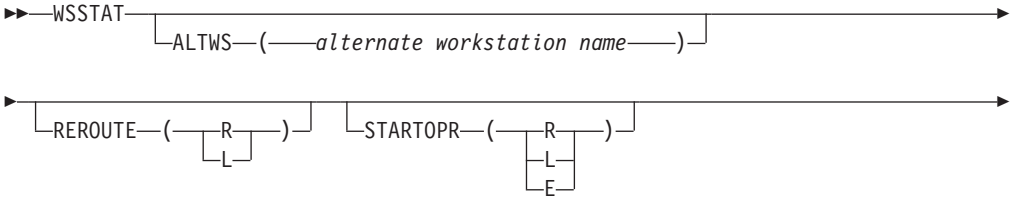


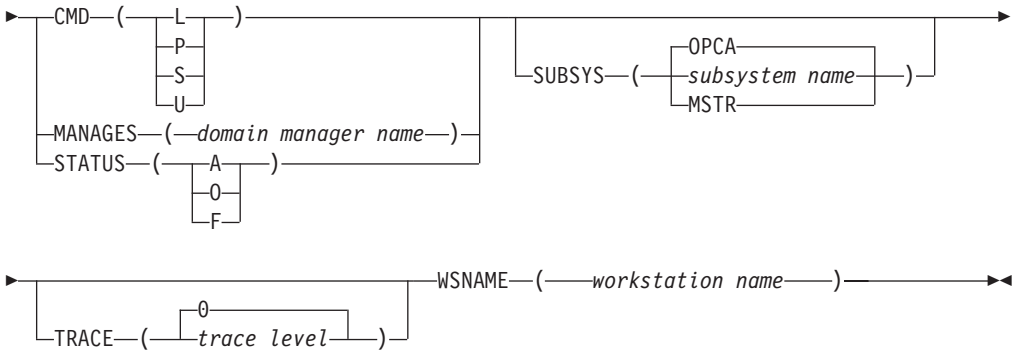


SRSTAT



WSSTAT




CMD
L
P
S
U
MANAGES
domain manager name
STATUS
A
O
F
SUBSYS
OPCA
subsystem name
MSTR
WSNAME
workstation name
TRACE
0
trace level

Chapter 3. Commands to control the scheduler

You can start, stop, cancel, or modify the scheduler by using the following operator commands:

S START
P STOP
C CANCEL
F MODIFY

In addition, you can use the MODIFY (F) command to start and stop individual subtasks.

You can enter these commands from a multiple console support (MCS) console or from a program such as the spool display and search facility (SDSF). In both cases, the terminal or console operator must have the required authority to enter operator commands.

Starting the scheduler

To start IBM Workload Scheduler for z/OS, enter the following z/OS operator command:

```
/S procname
```

where *procname* is the IBM Workload Scheduler for z/OS JCL procedure name.

If a started task with this name is already active, the second attempt to invoke it ends with an error message. If this happens, the started task in error cannot write an error message to the message log (ddname EQQMLOG) because the message log is already being used by the active started task. If IBM Workload Scheduler for z/OS is to run as a batch job, do not start it with an operator command. Instead, submit a batch job with the same name as IBM Workload Scheduler for z/OS subsystem. JES starts this job in the same manner as any ordinary job.

Note: Because IBM Workload Scheduler for z/OS uses JES exits, among other things, to track the progress of z/OS jobs, it does not start before JES is active.

Stopping the scheduler

To stop IBM Workload Scheduler for z/OS, enter the following z/OS operator command:

```
/P procname
```

where *procname* is the IBM Workload Scheduler for z/OS JCL procedure name.

If you are stopping a controller, the controller creates a backup copy of the current plan data set (if required) and ends all active functions.

When IBM Workload Scheduler for z/OS ends, it writes this message to the message log:

```
EQQZ086I NO ACTIVE OPC SUBTASKS.
OPC IS ENDING
```

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Canceling the scheduler

If IBM Workload Scheduler for z/OS is still active 5 minutes after you enter the STOP operator command, you must cancel IBM Workload Scheduler for z/OS.

You may also need to cancel IBM Workload Scheduler for z/OS if the current plan is corrupt, because a normal shutdown causes a backup to the alternate file (refer to *Customization and Tuning* for details of current plan recovery). There are two ways to do this. The first is to enter the following operator command:

```
/C procname,DUMP
```

where *procname* is the IBM Workload Scheduler for z/OS JCL procedure name.

This causes IBM Workload Scheduler for z/OS to end with a dump on the SYSMDUMP file (if the ddname is in the started-task JCL). The second way is to enter:

```
/C procname
```

where *procname* is the IBM Workload Scheduler for z/OS JCL procedure name.

This causes IBM Workload Scheduler for z/OS to end without a dump.

If the STOP command is ineffective and you have no earlier documentation of the problem, cancel IBM Workload Scheduler for z/OS with a dump so that the error can be located.

Modifying the scheduler

By using the MODIFY command, you can supply information to IBM Workload Scheduler for z/OS after it has started. The syntax of the MODIFY command is:

```
/F procname,modifyoption
```

where:

procname
: Is the IBM Workload Scheduler for z/OS JCL procedure name.

modifyoption
: Can be one of the following:

  S=*taskname*
  : Starts the specified subtask.

  P=*taskname*
  : Stops the specified subtask.

    taskname can be one of the following:

    APPC APPC subtask.

    AR Automatic recovery subtask.

    A4 APPC tracker router subtask.

    CPH Critical path handler subtask.

    DRT Data router subtask.

    EMGR
    : Event manager subtask.

ERDR All active event-reader subtasks.

EWTR Event writer subtask.

EXA External router subtask.

FL Fetch job log task.

GEN General service subtask.

IP TCP/IP router subtask.

JCC Job-completion-checker subtask.

NMM Normal-mode-manager subtask. The normal mode manager must be restarted as soon as possible after it has stopped. Many functions of IBM Workload Scheduler for z/OS require an active NMM task to execute successfully.

PENF53
Deactivates the ENF mechanism implemented for the ENF 53 event. In this way, a dynamic time change for all the IBM Workload Scheduler for z/OS subsystems cannot be performed. By default, the ENF 53 mechanism is automatically deactivated when the controller is stopped.

PSU Pre-submit task.

RODM
RODM subtask.

SENF53
Activates the ENF mechanism implemented for the ENF 53 event, so that a dynamic time change for all the IBM Workload Scheduler for z/OS subsystems can be performed. By default, the ENF 53 mechanism is automatically activated at controller startup.

SUB Submit subtask.

TWS End-to-end with fault tolerance capabilities task.

VTAM®
Network communication function (NCF) subtask.

WSA Workstation analyzer subtask.

Only the tasks in IBM Workload Scheduler for z/OS subtask table can be activated by a MODIFY command. The subtask table is built when IBM Workload Scheduler for z/OS is started. This means that you can only start a task that has stopped earlier in the current session. If you attempt to start a started subtask or stop a stopped subtask, error message EQQZ049W is issued, and no action is taken.

CPQSTA=ON
Activates the STATMSG(CPLOCK) message.

CPQSTA=OFF
Deactivates the STATMSG(CPLOCK) message.

DEPLOYCF
Use this keyword to manually start the deployment process that

refreshes the trackers event configuration file (member EQQEVLST of the EQQJCLIB data set) according to the current content of the controller EQQEVLIB data set.

The process can update the event configuration file for the trackers that are currently connected. At the end of the deployment process, each connected tracker monitors for the events that match the refreshed data, based on an in-storage copy of the configuration file.

If a tracker destination is referenced in the controller routing options (ROUTOPTS initialization statement), but it is not currently connected, the tracker acquires the configuration file data when the connection is restored.

DSPDEST
Lists the HTTP destinations that are currently used by the controller. The list is stored in the message log.

DSPPRODD
Lists the DD names for data sets that cannot be discarded. The list can be obtained in one of the following ways:

- In the initial parameter statements: RCLOPTS DDPROT or DDPRMEM
- With the MODIFY command `/F procname,PROT(DD=member)`

DSPPRODS
Lists the data sets that cannot be discarded. The list can be obtained in one of the following ways:

- In the initial parameter statements: RCLOPTS DSNPROT or DSNPRMEM
- With the MODIFY command `/F procname,PROT(DS=member)`

DSPSTA
Displays, in message EQQZ095, the status of statistics messaging. The message indicates whether messaging is active for EVENTS, CPLOCKS, GENSERV, and WSATASK. It also gives the values currently set for EVELIM and STATIM. For details, refer to *Messages and Codes*.

EVELIM=*nnnn*
Sets the new value of the EVELIM keyword of the JTOPTS statement. Allowed values are 0 to 9999.

EVESTA=ON
Activates the STATMSG(EVENTS) message.

EVESTA=OFF
Deactivates the STATMSG(EVENTS) message.

GENSTA=ON
Activates the STATMSG(GENSERV) message.

GENSTA=OFF
Deactivates the STATMSG(GENSERV) message.

JCLDBG=ON
Activates the single JCL trace. For each job handled by WSA task information, such as the elapsed time in milliseconds needed to handle the job, retrieve the JCL, access the JS VSAM, or whatever else, will be shown.

This is a powerful trace and should be activated only for short periods of time to identify possible performance problems.

JCLDBG=OFF
Deactivates the single JCL trace.

LSTNOERR
The controller lists the NOERROR table content. An example of the command output follows:

```
EQQZ024I Current NOERROR table content:
EQQZ024I !-----------------------------------------!----------!
EQQZ024I ! Statement                               ! Member   !
EQQZ024I !-----------------------------------------!----------!
EQQN067I ! ABC123.*.*.0016.GE                      ! STDCWSN  !
EQQN067I ! ABC123.*.*.0012.NE                      ! STDCWSN  !
EQQN067I ! ABC123.*.*.0016.EQ                      ! STDCWSN  !
EQQN067I ! ABC123.*.*.0500.TO.0610                 ! NOERR2   !
EQQN067I ! ABC123.*.*.0200.TO.0210                 ! NOERR2   !
EQQN067I ! ABC123.*.*.0005.LT                      ! NOERR    !
EQQZ024I !-----------------------------------------!----------!
```

The information returned in the `Member` column can help you locate members to be updated.

NEWDSLST
Use this keyword on the tracker side to rebuild the triggering selection table. The new table is read from member EQQEVLST (or EQQDSLST, if EQQEVLST does not exist) of the data set referenced by the EQQJCLIB DD name in the started task JCL for the tracker. The new table replaces the table in ECSA.

Note: If EQQJCLIB contains both EQQEVLST and EQQDSLST member, the resulting triggering selection table is the union of EQQEVLST and EQQDSLST. In this case, EQQEVLST data is processed first.

NOERROR
You can use the commands NEWNOERR and NOERRMEM() only if NOERROR entries are coded under the LIST() keyword of the NOERROR init statement. For more details, refer to *IBM Workload Scheduler for z/OS: Customization and Tuning*.

When you enter a NEWNOERR command, the program searches the controller PARMLIB member only for NOERROR init statements. If none are found, an empty table is created, thus deleting the entries which were loaded when the CONTROLLER started. Do not use the NEWNOERR command if the NOERROR list is coded under the NOERROR() keyword of the JTOPTS initialization statement. If you enter a NOERRMEM(*membername*) command, the current table is deleted and created again. The entries that had already been specified for *membername* are replaced with the entries found in the updated member of the EQQPARM library.

When using NOERROR, consider the following:
- Use this keyword only if you are sure you can stop the controller before updating the NOERROR data.
- Initialization statements cannot exceed 32 KB or 455 72-character lines. The available space for NOERROR entries in the initialization statement is more limited compared with using this keyword in the JTOPTS statement.

- Do not mix the three options for defining NOERROR entries:
  - JTOPTS NOERROR ()
  - NOERROR LIST () in the main parmlib member
  - NOERROR LIST () in separate parmlib members identified by the INCLUDE() initialization statement

  The options for dynamically updating controller data are mutually exclusive and using them incorrectly might cause the deletion of the active table.
- If you must dynamically update the NOERROR data without stopping the controller, and the NOERROR entries are defined in a separate parmlib member, place all NOERROR entries in a single parmlib member. In this way, you can use only one member name in the NOERRMEM command.

NEWNOERR
Orders a controller to rebuild the NOERROR table, in the case NOERROR statements have been modified in the parameter library member that contains the JTOPTS statement.

NOERRMEM(*member***)**
Orders a controller to rebuild the NOERROR table, in the case NOERROR statements have been modified in a parameter library member that was specified in an INCLUDE statement.

NOERRMEM(M1)
Order a controller to delete all NOERROR codes defined by member M1, once you have previously changed M1 to contain only comments. The modified member can contain a different number of NOERROR codes than the original member.

Note: The scheduler opens the EQQPARM library when IBM Workload Scheduler for z/OS is started and parameter library members (residing in library extents), that have been created, cannot be accessed, after have been opened. To avoid this problem, the data sets that define the EQQPARM library should be allocated without any secondary extents.

PROT ([DD=*mem1***], [DS=***mem2***])**
Replaces the currently used list contents of the members (*mem1* and *mem2*) inside the PDS parameter library, if DD or DSN is protected. At least one of the two keywords DD or DS must be specified. The list of protected DD and DSN is dropped when *mem1* or *mem2* is blank. Also, the keywords DD and DS remove the list of protected DD names and DS names.

For example, if DDPROT is used in the parameter library at startup of the controller, the command drops this list and replaces it with the contents of *mem1*.

RFRDEST
If you modify, add, or delete a z-centric agent destination while IBM Workload Scheduler for z/OS is running, makes your changes immediately effective. This command manages up to a total of 100 new destinations, regardless if you add them at once or at different times. For detailed information, see *Scheduling End-to-end with z-centric Capabilities*.

RFRUSER
If you modify the USRREC statement while IBM Workload

Scheduler for z/OS is running, makes your changes immediately effective. For detailed information, see *Scheduling End-to-end with z-centric Capabilities*.

QUELEN=*nnnn*
Sets the new value of the QUEUELEN keyword of the JTOPTS statement. Allowed values are 0 to 9999, but a minimum value of 5 is forced.

SKIPINC(*member name***)**
Replaces the currently used list of INCLUDEs that are to be left at the beginning of a JCL by the JCL tailoring process of Restart and Cleanup (see the RCLOPTS SKIPINCLUDE section in the *Customization and Tuning* guide for details). *member name* can be:

- The name of a member inside the PDS parameter library
- Blank or absent

When a member name is specified, the current SKIPINCLUDE list is deleted and a new SKIPINCLUDE list is built by applying the syntax described for the RCLSKIP statement to the specified member (see the *Customization and Tuning* guide for reference.) When no member name is specified, the current SKIPINCLUDE list is removed.

STATIM=*nn*
Sets the new value of the STATIM keyword of the JTOPTS statement. Allowed values are 0 to 99.

STATUS
Returns a message on the system log with the status of IBM Workload Scheduler for z/OS subsystem. The status can be one of the following:

FULLY_OPERATIONAL
Everything is active and is working properly.

PARTIALLY_OPERATIONAL
The scheduler subsystem has limited functionality. For example, if a controller ER is stopped, the controller can still schedule jobs but cannot receive their statuses.

NOT_OPERATIONAL
The major subsystem functionality is not available. For example, a controller is not able to execute a plan or to submit a job.

STATUS, DD=*ddname*
Checks for the status of IBM Workload Scheduler for z/OS data set associated with the specified *ddname*. *ddname* can be a specific DD name, such as EQQWSDS, EQQCP1DS, or EQQLTDS, or it can assume the value ALL, CP, DB, LTP, or JTL. It returns the return code of the last I/O operation performed on that *ddname*. The status of the data set can be one of the following:
NORMAL
WARNING
SEVERE
CRITICAL
UNKNOWN

STATUS, {OP_COMP | OP_ERR}, "*destination name***"**
Returns the number of completed operations (OP_COMP) or the number of ended-in-error operations (OP_ERR) for the specified tracker (*destination name*).

Note:

1. If more than one workstation is defined for tracker *tracker name*, the number of completed or in-error operations is the sum of the operations on all the workstations defined on that tracker.
2. *destination name* is the destination name of a tracker, as specified in the ROUTOPTS keyword in the initialization statements.

STATUS, SUBTASK
Lists all subtasks with their statuses. The status can be ACTIVE or INACTIVE.

TAKEOVER
Orders a standby controller to take over the functions of the controller. This command is valid only when both systems are part of the same XCF group, and no controller is active. You can use this command only for IBM Workload Scheduler for z/OS address spaces where OPCHOST(STANDBY) is specified on the OPCOPTS initialization statement.

Note: Takeover can occur automatically if you have specified the TAKEOVER keyword on the XCFOPTS initialization statement of a standby system. Refer to *Customization and Tuning* for more information.

TRYNOERR(*member name***)**
Start a trial processing of the NOERROR statements contained in *member name*. The controller issues all the normal processing messages in EQQMLOG. At the end of the trial processing, the controller issues message EQQN099I, leaving unchanged the NOERROR table.

member name is a member of the EQQPARM library.

VSTRC=START
Starts a trace on the message log of all VSAM I/O requests. In a busy scheduler system, you will need a large message-log data set, and the trace will affect the performance of IBM Workload Scheduler for z/OS system.

VSTRC=STOP
Stops a VSAM I/O request trace on the message log.

WSASTA=ON
Activates the STATMSG(WSATASK) message.

WSASTA=OFF
Deactivates the STATMSG(WSATASK) message.

After the STOP command is entered, the MODIFY command no longer functions, and issues the following message on SYSLOG:

```
IEE324I MODIFY REJECTED - TASK BUSY
```

Modifying the data store

Using the MODIFY command, you can supply information to IBM Workload Scheduler for z/OS data store after it has started. The syntax of the MODIFY command is:

```
F procname,modifyoption
```

where:

modifyoption
Is one of the following:

S=*taskname*
Start the specified data store subtask.

P=*taskname*
Stop the specified data store subtask.

taskname can be one of the following:

ARRD
Reader task.

ARCU Cleanup task.

ARCM
Communication.

ARDYWR
Display number of active writers.

ARDYTW
Display WINTERVAL value.

ARDYNY
Display MAXSTOL value.

ARDYNS
Display MAXSYSL value.

ARDYTU
Display CINTERVAL value.

ARDYNS
Display MAXSYSL value.

ARDYPM
Display all initialization parameters values.

ARSTKW O=[owner],K=[keyword]
Display the statistical data for a specific owner or single keyword. The following describes the keyword and owner combinations:

Owner	Keyword	Meaning
JESQUEUE	COUNTJOB	Number of jobs still in the JES Queue control block
JESQUEUE	JOBINSQU	Number of jobs inserted in the JES Queue control block
JESQUEUE	DSIDINSQ	Number of DS IDs (sysout) inserted in the JES Queue control block

Owner	Keyword	Meaning
JESQUEUE	JOBRQUEU	Number of jobs re-queued: deleted from the JES Queue control block after the store
JESQUEUE	JOBDISCA	Number of jobs discarded: deleted from the JES Queue control block because of an error during the store in the database
DATAFILEnnnn	CNTDPAGE	Number of data pages for the data file specified
READER	JOBRQSDB	Number of jobs requested directly to the data base
READER	JOBRQJES	Number of jobs requested to JES Queue because they are not stored in the database yet
COMMUNICATION	INPUTMSG	Number of input messages received
COMMUNICATION	OUTPTMSG	Number of output messages sent

ARSTGN
Display all the statistics for the data store.

ARMDWR
Modify number of active writers.

ARMDTW=n
Modify WINTERVAL value (seconds).

ARMDNY=n
Modify MAXSTOL value (number of lines).

ARMDNS=n
Modify MAXSYSL value (number of lines).

ARMDTU=n
Modify CINTERVAL value (seconds).

ARMDNS=n
Modify MAXSYSL value (number of lines).

ARDGCM=on/off
Activate/deactivate Communication task traces.

ARDGWR=on/off
Activate/deactivate Writer task traces.

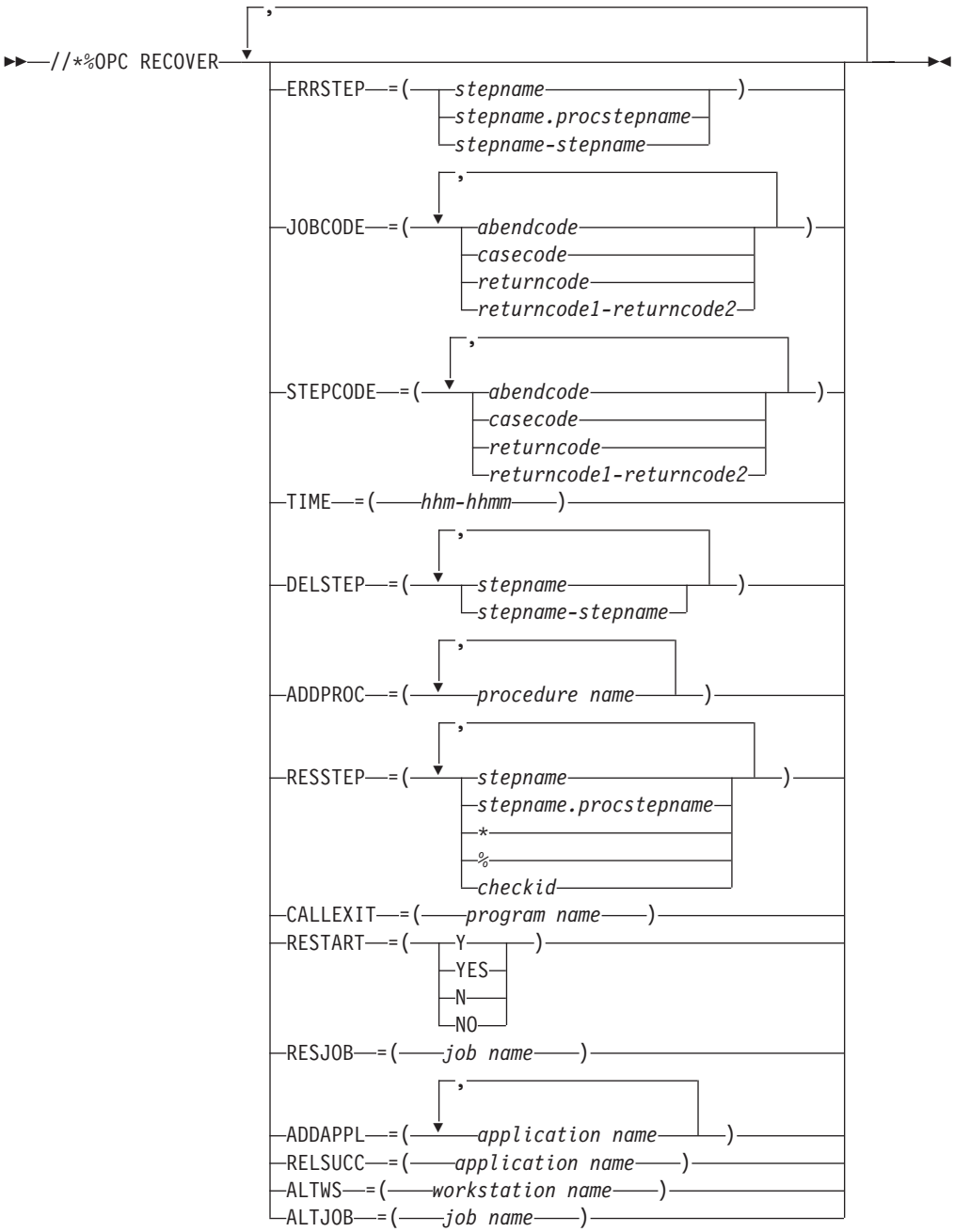
ARDGRD=on/off
Activate/deactivate Reader task traces.

ARDGJQ=on/off
Activate/deactivate JES Queue task traces.

ARDGDB=on/off
Activate/deactivate Database task traces.

Chapter 4. Automatic recovery

RECOVER statement



You cannot have JCL variables on the RECOVER statement.

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Chapter 5. JCL directives

NOP directive

SCAN directive

SEARCH directive

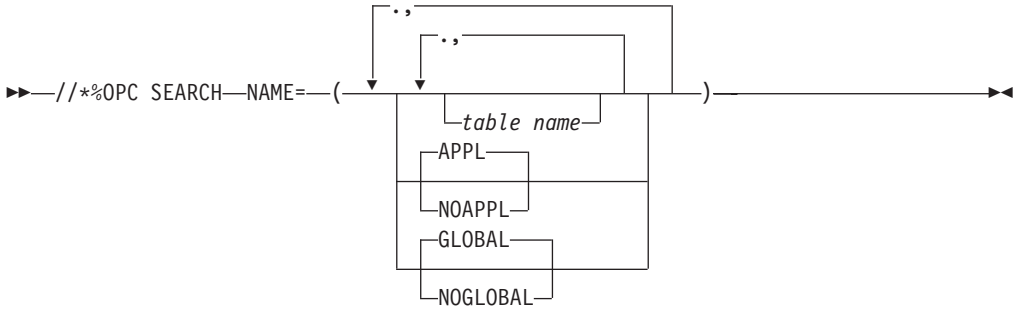
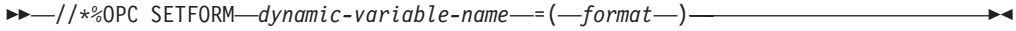


TABLE directive

SETFORM directive



Usage notes

- Choose the variable from Table 5 on page 27.
- Compose the format from one or more of these keywords and any other characters except &, %, ?, =, (, and):
  CC Century (2 digits)
  YY Year (2 digits)
  MM Month
  DDD Day in year (Julian)
  DD Day in month
  HH Hour (time variables only)
  MM Minutes (time variables only)

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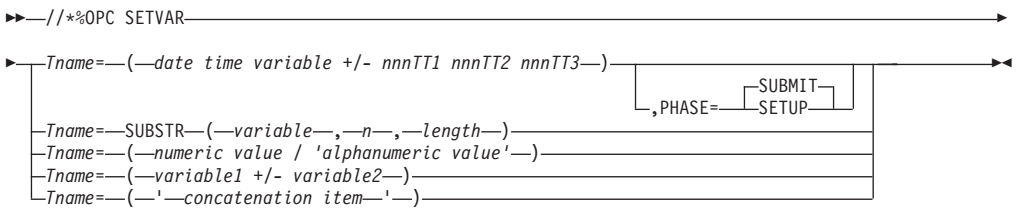
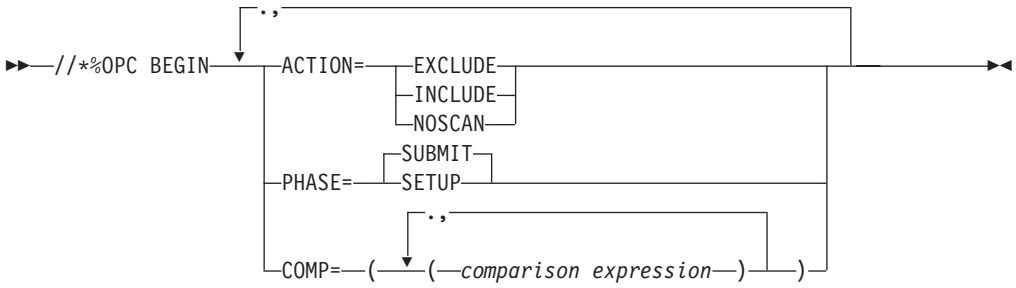
SETVAR directive



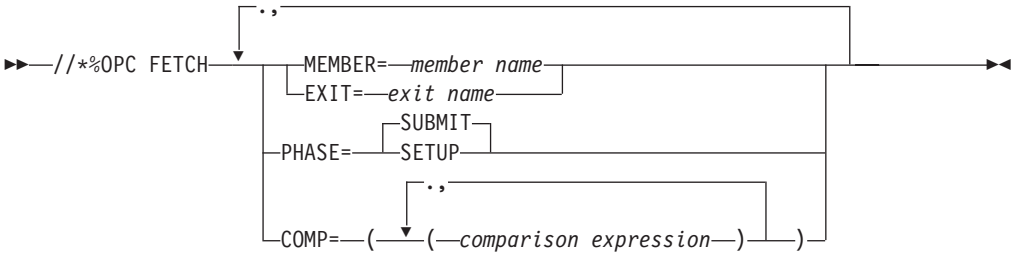
Usage notes

- Use parentheses around the expression for the temporary variable Tname.
- Begin the variable Tname with the letter T.
- *TT1* is the first possible type and can be one of the following values:
  WD Work days
  CD Calendar days
  WK Weeks
  MO Months
  YR Years
  HH Hours
  MM Minutes
  SS Seconds
- *TT2* and *TT3* are additional types allowed only for time-related variables. They can be one of the following values:
  HH Hours
  MM Minutes
  SS Seconds

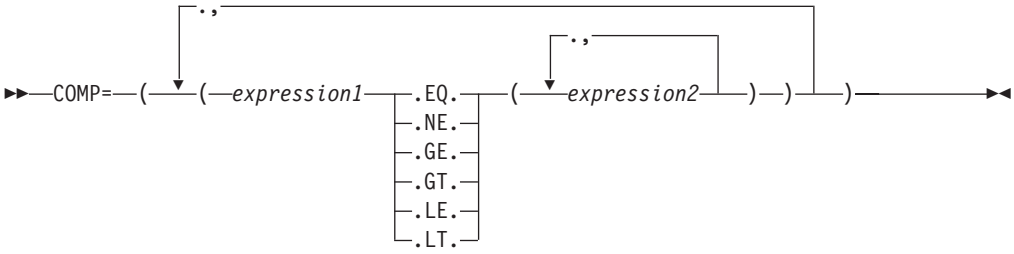
BEGIN and END directives



FETCH directive



COMP keyword on BEGIN and FETCH directives



Usage notes

Only & (ampersand) variables are valid in the COMP expressions, and embedded blanks are not allowed.

Chapter 6. Supplied JCL variables

Note: IA = input arrival

Occurrence-related JCL variables

Table 2. Occurrence-related supplied JCL variables

Variable name	Length (bytes)	Description
OADID	16	Application ID
OADOWNER	16	Occurrence owner
OAUGROUP	8	Authority group
OCALID	16	Calendar name
ODAY	1	Occurrence IA day of the week (1–7); 1 represents Monday
ODD	2	Occurrence IA day of month, in DD format
ODDD	3	Occurrence IA day of the year, in DDD format
ODMY1	6	Occurrence IA date in DDMMYY format
ODMY2	8	Occurrence IA date in DD/MM/YY format
OFREEDAY	1	Denotes whether the occurrence IA date is a free day (F), or a workday (W)
OHH	2	Occurrence IA hour in HH format
OHHMM	4	Occurrence IA hour and minute in HHMM format
OMM	2	Occurrence IA month in MM format
OMMYY	4	Occurrence IA month and year in MMYY format
OWW	2	Occurrence IA week of the year in WW format
OWWD	3	Occurrence IA week, and day within week, in WWD format, where WW is the week number within the year, and D is the day within the week
OWWLAST	1	A value, Y (yes) or N (no), that indicates whether the occurrence IA date is in the last week of the month
OWWMONTH	1	A value between 1 and 6 that indicates the occurrence IA week-in-month, where each new week begins on a Monday. For example, consider these occurrence IA dates for the month of January in 1996: **Date Value** **Monday 1st** 1 **Monday 8th** 2 **Wednesday 31st** 5
OYMD	8	Occurrence IA date in YYYYMMDD format
OYM	6	Occurrence IA month within year in YYYYMM format
OYMD1	6	Occurrence IA date in YYMMDD format
OYMD2	8	Occurrence IA date in YY/MM/DD format

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Table 2. Occurrence-related supplied JCL variables (continued)

Variable name	Length (bytes)	Description
OYMD3	10	Occurrence IA date in YYYY/MM/DD format
OYY	2	Occurrence IA year in YY format
OYYDDD	5	Occurrence IA date as a Julian date in YYDDD format
OYYMM	4	Occurrence IA month within year in YYMM format
OYYYY	4	Occurrence IA year in YYYY format, for example, 1996

Operation-related JCL variables

Table 3. Operation-related JCL variables

Variable name	Length (bytes)	Description
OJOBNAME	8	Operation job name
OLDAY	1	Operation latest start day (1–7); 1 represents Monday, 7 represents Sunday
OLDD	2	Operation latest start day (day in the month)
OLHH	2	Operation latest start hour
OLHHMM	4	Operation latest start in hours and minutes
OLMD	4	Operation latest start time (month and day), in MMDD format
OLMM	2	Operation latest start time in month, in MM format
OLWK	2	Operation latest start week (week in the year), WW format
OLYMD	6	Operation latest start date in YYMMDD format
OLYYDDD	5	Operation latest start in Julian date format (YYDDD)
OOPNO	3	Operation number within the occurrence, right-justified and padded with zeros
OWSID	4	Workstation ID for current operation
OXJOBNAM	54	Extended job name set in the current plan at operation level. If you entered any blank character in the Extended Job Name field, the OXJOBNAM value is truncated at the first blank.

Date-related JCL variables

Table 4. Date-related JCL variables

Variable name	Length (bytes)	Description
CDAY	1	Current day of the week; 1 represents Monday, 7 represents Sunday
CDD	2	Current day of month in DD format
CDDD	3	Day number in the current year
CDDMMYY	6	Current date in DDMMYY format
CHH	2	Current time in HH format
CHHMM	4	Current hour and minute in HHMM format

Table 4. Date-related JCL variables (continued)

Variable name	Length (bytes)	Description
CHHMMSSX	8	Current hour, minute, second, and hundredths of seconds in HHMMSSXX format
CMM	2	Current month in MM format
CMMYY	4	Current month within year in MMYY format
CWW	2	Week number in the current year
CWWD	3	Current day within week in WWD format, where WW is the week number within the year and D is the day within the week
CYMD	8	Current date in YYYYMMDD format
CYY	2	Current year in YY format
CYYDDD	5	Current Julian date in YYDDD format
CYYMM	4	Current month within year in YYMM format
CYYMMDD	6	Current date in YYMMDD format
CYYYY	4	Current year in YYYY format, for example, 1990
CYYYYMM	6	Current month within year in YYYYMM format

Dynamic-format supplied variables

Table 5. Dynamic-format date-related supplied variables

Variable name	Description
CDATE	Current date
CTIME	Current time
OCDATE	Occurrence IA date
OCFRSTC	First calendar day in month of the occurrence IA date
OCFRSTW	First work day in the month of the occurrence IA date
OCFRSTWY	First work day in the year of the occurrence IA date
OCLASTC	Last calendar day in the month of the occurrence IA date
OCLASTW	Last work day in the month of the occurrence IA date
OCLASTWY	Last work day in the year of the occurrence IA date
OCTIME	Occurrence IA time (hours and minutes)
OPIADATE	Operation IA date (if blank, this takes the value of the occurrence IA date)
OPIATIME	Operation IA time (if blank, this takes the value of the occurrence IA time)
OPLSDATE	Operation latest start date
OPLSTIME	Operation latest start time

Chapter 7. Codes

The following is a list of the occurrence status codes:

C Complete
D Deleted
E An operation in the occurrence has ended-in-error
P A pending predecessor exists for the occurrence
S Started
U Undecided (the status is not known)
W No operations in the occurrence have started.

Operation status codes

When the scheduler displays the status of an operation, it uses the format *xy*, where *x* is the status code and *y*, if present, is the extended status code. The following is a list of the operation status codes:

A Arriving. The operation is ready for processing; no predecessors were defined

C Complete

D Deleted

E The operation has ended-in-error

I The operation is interrupted

R Ready for processing; all predecessors are complete

S Started

U Undecided. The operation status is not known.

W The operation is waiting for a predecessor to complete

X The operation is suppressed by condition.

***** Ready. At least one predecessor is defined on a non-reporting workstation; all predecessors are complete

Extended status codes

Together with the normal status codes, the scheduler maintains extended status codes that provide additional information about the status of operations. The extended status code is not always present.

The following is a list of the extended status codes:

3 The scheduler is sending an HTTP or HTTPS request to bind the shadow job to a real instance in the remote plan.

4 The scheduler is waiting to receive the result of the HTTP or HTTPS request that was sent to bind the shadow job to a real instance in the remote plan.

5 The bind between the shadow job and a real instance in the remote plan was established.

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A The job is waiting for a manual cleanup action to be initiated or discarded by a panel user (the cleanup type is manual).

B The job is waiting for a cleanup action to be started (the cleanup type is automatic or immediate).

C A restart and cleanup process is in progress (data set cleanup or step restart, or both). The job is waiting for the process to be completed.

D Close down is in progress.

E An error occurred during job submission or release.

G The operation is running on a WAIT workstation (it is a dummy operation waiting for the delay period to elapse).

H A panel user has used the HOLD command on the operation.

L The operation is a late time-dependent operation with the suppress-if-late attribute.

M The status of the operation has been manually set.

N A panel user has used the NOP command on the operation.

O Workstation is offline.

Q For z/OS jobs the job has been added to the JES job queue. For fault-tolerant workstations, it is waiting for submission.

R The operation has ended in error but was automatically reset (the completion code is defined in the installation options to be automatically reset).

S The job or started task is executing.

T Waiting until a particular time.

U Submit is in progress.

V The limit value of this fault-tolerant workstation was reached.

W Waiting for scheduling environment.

X Waiting for resource.

Y The job ended with an error code matching a NOERROR entry.

For operations on computer workstations, a blank extended status has a particular meaning for the following statuses:

Arrived (A) or Ready (* or R)
The scheduler is in the process of submitting this job. The scheduler is waiting for the availability of a parallel server or a critical resource, or the operation is not to be submitted automatically.

Started (S)
The job has been successfully submitted but has not yet been reported as added to the JES job queue.

Error codes

The scheduler assigns error codes to certain operations and to job and started task steps. These codes are used by the automatic job recovery function to decide a recovery action.

CAN The job or started task was canceled by the operator or by a TSO user before execution. This code is also possible if the job-termination event (type 3P) is missing.

CCUN
The completion code is unknown. The job or started task has ended, but no completion code is available. This code is also possible if the job-end event (type 3J) is missing.

Check the job log and SYSLOG.

CLNA
A failure occurred when IBM Workload Scheduler for z/OS attempted to complete the JCL tailoring during the restart and cleanup process.

CLNC
A failure occurred when IBM Workload Scheduler for z/OS attempted to run the data set cleanup during the restart and cleanup process.

CLNO
A failure occurred when IBM Workload Scheduler for z/OS attempted to retrieve the historical job log data during the restart and cleanup process. *nnnn* Step return code. **S** *xxx* System abend code. **U** *xxx* User abend code in hexadecimal notation. For example, user abend 2750 is represented in IBM Workload Scheduler for z/OS as UABE. *xxxx* User-defined error code.

CLNP A failure occurred in the EQQCLEAN step, during the run of a restarted job.

JCCE An error during JCC (job completion checker) processing prevented the JCC from determining an error code for the operation.

FBND
The request to bind the shadow job with a real instance of the remote plan failed.

JCL A JCL error was recognized after the job or started task began to execute, or a JCL error was recognized after syntax checking in the internal reader.

JCLI A JCL error occurred immediately; that is, the error was detected before the job or started task began. This code is also possible when both the job-start event (type 2) and the job-end event (type 3J) are missing. On z-centric agent workstations, this code is returned when a parsing error occurs in the JOBREC statement.

LOOP
The workstation analyzer task has tried to start the same operation repeatedly and message EQQW534E has been stored in the controller MLOG to signal a loop. To stop the loop, the operation was set to error with error code LOOP.

MCP The operation was manually set to error in the MCP panel. **OF***xx* The system that the operation is defined on has gone offline. The WSOFFLINE parameter on the JTOPTS initialization statement specifies that started operations should be marked as ended-in-error. xx is the status and extended status of the failing operation. Operations that were running (status SS) have a step-code error status of OFFL.

nnnn Step return code.

OAUT
While running the System Automation command specified with the operation, the System Automation exit EQQUXSAZ issued a return code

different from 0. The operation status is set to E. Check for System Automation messages in the log specified in the AUTOMATIONMSG parameter of the OPCOPTS statement.

OF*xx* The system that the operation is defined on has gone offline. The WSOFFLINE parameter on the JTOPTS initialization statement specifies that started operations should be marked as ended-in-error. *xx* is the status and extended status of the failing operation. Operations that were running (status SS) have a step-code error status of OFFL.

OJCV

An error occurred during JCL-variable substitution when the job or started task was submitted, or IBM Workload Scheduler for z/OS detected an error in the RECOVER statement during automatic recovery. Browse the JCL for the operation or the EQQMLOG data set to find more information about the failure.

This error code can also be issued when an error occurred during variable substitution in a System Automation command text. The operation status could be set to E, based on the SAVARFAIL parameter set in the OPCOPTS initialization statement. To identify the variables not resolved and the type of error occurred, check for the messages related to occurrence variable substitution in EQQMLOG.

OSEQ

A job or started task began to execute before all its predecessors have completed. This can occur only if the job was not submitted by IBM Workload Scheduler for z/OS and if either HOLDJOB(NO) or HOLDJOB(USER) is specified for IBM Workload Scheduler for z/OS event writer options. For fault-tolerant workstations, the OSEQ code can indicate that a dependency on another operation or a special resource was added after the job started, but before the event reached the controller. See *Customization and Tuning*.

OSUB

A failure occurred when IBM Workload Scheduler for z/OS attempted to submit a job or start a started task. In the case of a started task, it could be that the started task is a subsystem that is not started by JES, or IBM Workload Scheduler for z/OS subsystem EQQSTC ddname is not allocated to a JES-defined procedure library. The operation should be marked as ended-in-error.

For jobs running on z-centric agent workstations and z/OS shadow jobs, OSUB indicates that the job submission failed.

OSUF

A failure occurred when IBM Workload Scheduler for z/OS attempted to retrieve the JCL for a job or started task. This code is set if the SUBFAILACTION keyword of the JTOPTS initialization statement specifies that the operation should be marked as ended-in-error. This code is also caused if you have JOBCHECK(SAME) and the job name in the application description does not match the one on the job card. Another reason for this code is a job is missing JCL that was packed by ISPF in EQQJBLIB.

In end-to-end scheduling with fault tolerance capabilities, this code indicates that an error occurred while the scheduler was queuing the submission event for the job. For jobs with centralized scripts it might also show that IBM Workload Scheduler for z/OS could not download the script to the distributed agent.

OSUP
A time operation is late, and the SUPPRESSACTION parameter of the JTOPTS initialization statement specified that the operation should be marked as ended-in-error.

OS*xx* The system on which the operation is defined has failed. The WSFAILURE parameter on the JTOPTS initialization statement specifies that started operations should be marked as ended-in-error. *xx* is the status and extended status of the failing operation. Operations that were running (status SS) have a step-code error of OSYS.

PCAN
A print operation was canceled by the operator.

nnnn Step return code.

SERC An operation submitted in a Restart and Clean up path (through a dialog but also automatically, for example, when clean up was set to AUTOMATIC) was not submitted because the required scheduling environment was not available..

SEUN An operation required a scheduling environment that is unknown to WLM; for this reason it was not submitted.

SHPF The request to bind the shadow job is rejected.

S*xxx* System abend code.

U*xxx* User abend code in hexadecimal notation. For example user abend 2750 is represented in IBM Workload Scheduler for z/OS as UABE.

xxxx User-defined error code.

Job log retrieval status codes

When the job log retrieval function is used, the scheduler maintains status information to report on the retrieval of the log. The following is a list of the status codes:

C Completed. The controller has received the log.

E Error. There was an error retrieving the log.

I Initiated. The controller has sent a retrieval request to the tracker, but the tracker has not yet processed the request.

S Started. The controller has sent a retrieval request to the tracker, and the tracker has started to retrieve the log.

blank The controller has not sent any retrieval request to the tracker.

Operation reason codes

If you include the RSNC field in the ready list, you get these operation reason codes. The codes are listed in hierarchical order. For example, if job submission failed, and job submission is deactivated, code `D` is obtained, not code `F`.

1 Not enough free WS resource 1

2 Not enough free WS resource 2

A Automatic reset error condition

C Workstation is closed

D Job submission deactivated

F Job submission failed

H Closedown in progress

J No automatic job submission

L Job is late

O Work station is offline

P All parallel servers in use

S Special resource is unavailable

T Start time not reached

U Work station is unlinked

Chapter 8. Free-day rule

The possible values of the free-day rule are:

E Count only work days when using the rule or offset. That is, free days are excluded. This option ensures that the scheduled day will always be a work day. This is the default for offset-based run cycles.

1 Count work days and free days when using the rule or offset. If this gives a free day, schedule the application on the closest work day *before* the free day.

2 Count work days and free days when using the rule or offset. If this gives a free day, schedule the application on the closest work day *after* the free day.

3 Count work days and free days when using the rule or offset. If this gives a free day, schedule the application *on* the free day. This is the default for rule-based run cycles.

4 Count work days and free days when using the rule or offset. If this gives a free day, *do not* schedule the application at all.

The free-day rule provides the flexibility to schedule your applications precisely when they are required. Sometimes you will find that you must work out on paper which free-day rule you should select. When you do this, consider what would happen if a normal work day is declared a holiday and, therefore, is defined in the calendar as a free day.

When an application is normally due to run but the calendar definition identifies the day as free, the free-day rule in the run cycle for that application determines the effect.

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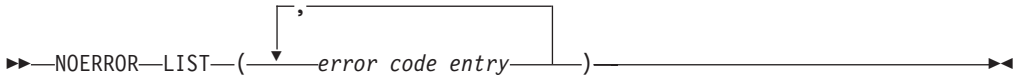
Chapter 9. Defining day to day workload

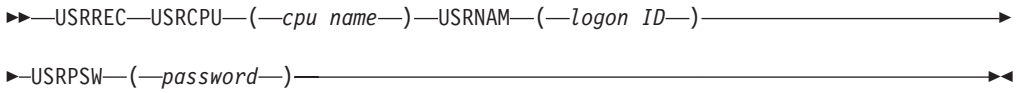
Job related

NOERROR syntax for JCL return code management



For the parameter descriptions, refer to *Customization and Tuning*.

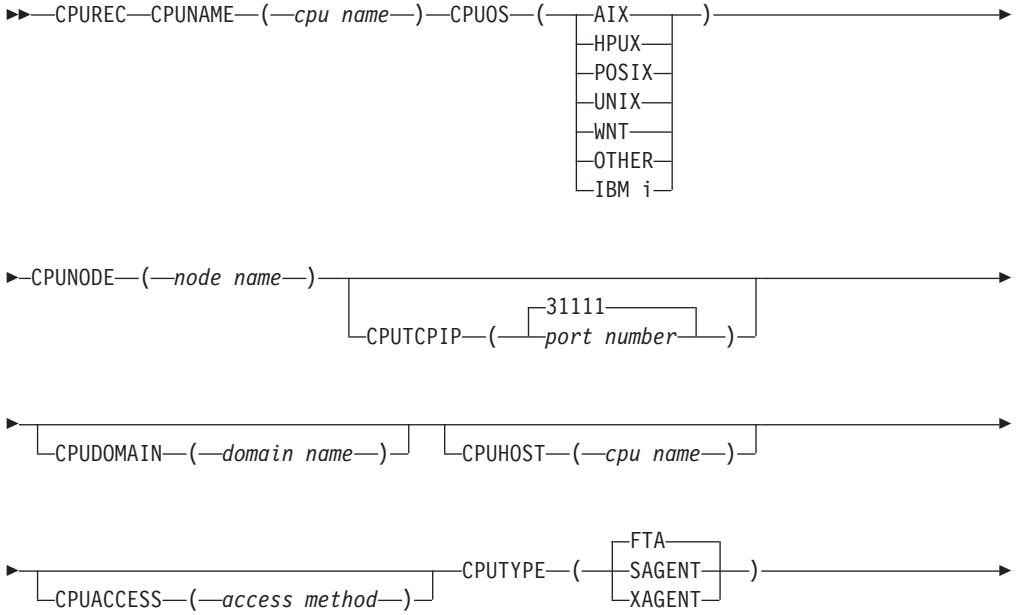
USRREC syntax for end-to-end scheduling



For the parameter descriptions, refer to *Scheduling End-to-end with Fault Tolerance Capabilities*.

Modeling related for end-to-end scheduling

CPUREC



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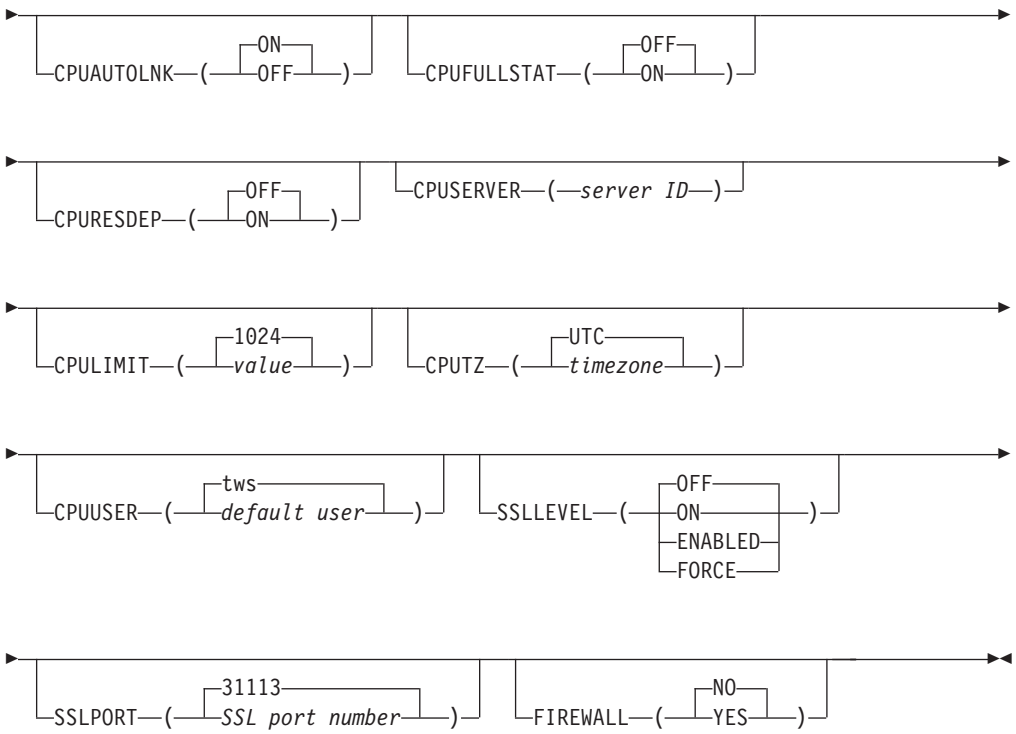

For the parameter descriptions, refer to *Scheduling End-to-end with Fault Tolerance Capabilities*.

DOMREC

For the parameter description, refer to *Scheduling End-to-end with Fault Tolerance Capabilities*.

Notices

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