Management Central Monitors: OS/400 Command Substitution Parameters

Management Central Monitors allow for OS/400 commands to be run based upon threshold or reset actions. When special keyword parameters are used in the commands, Management Central will substitute values for these keywords, enabling the user to construct more meaningful commands or messages. This document expands upon the information found in the online help text for these special OS/400 command keyword substitution parameters.

System Monitor support:

Param.(1)	Passed Data
&DATE	Date
&INTVL	Collection interval
&MON	Monitor name
&RDUR	Reset duration
&RVAL	Reset value
&SEQ	Sequence number
&TDUR	Trigger duration
&TIME	Time
&TVAL	Trigger value
&VAL	Current value (2)

System Monitor substitution parameter Notes:

(1) The dollar sign ($) that was available in previous releases is still supported, for example, $TIME.

(2) Batch IO is shown as I/O operations rather than transactions per second. Transaction rates are shown as transactions rather than transactions per second. Interactive response times (both average and maximum) are shown in milliseconds rather than seconds.

(3) Parameters must be upper case

Job Monitor support:

(first 4 below are common with System and Message Monitors)

Parameter	Passed Data
&DATE	Date
&INTVL	Collection interval length in seconds
&MON	Monitor name
&TIME	Time
&ENDPOINT	Endpoint system name
&EVENTTYPE	Event type and defined as follows: (4)
	Triggered Event = 1
	Auto Reset Event = 2
	Manual Reset Event = 3
&JOBNAME	Job name of the job causing the trigger/reset
&JOBNUMBER	Job number of the job causing the trigger/reset
&JOBSTATUS	Job status causing a trigger/reset (7)
&JOBTYPE	Job type of the job causing the trigger/reset
&JOBUSER	Job user of the job causing the trigger/reset
&METRICTYPE	Category of metric. For Job Monitor is defined as follows:
	Status Metric = 10010

	Message Metric	= 10020
	Numeric Metric	= 10030
&METRIC	Metric that has triggered/reset and defined as follows:	
	Job Cpu Util	= 1010
	Job Logical IO	= 1020
	Job Disk IO	= 1030
	Job Com IO	= 1040
	Job Trans Rate	= 1050
	Job Trans Time	= 1060
	Job Thread Count	= 1070
	Job Page Faults	= 1080
	Sum Cpu Util	= 2010
	Sum Logical IO	= 2020
	Sum Disk IO	= 2030
	Sum Com IO	= 2040
	Sum Trans Rate	= 2050
	Sum Trans Time	= 2060
	Sum Thread Count	= 2070
	Sum Page Faults	= 2080
	Job Status	= 3010
	Job Log Messages	= 3020
	Sum Job Count	= 4010
&NUMCURRENT	Current numeric value (5, 6)	
&NUMRESET	Threshold value to cause auto-reset of numeric metric (1, 6)	
&NUMTRIGGER	Threshold value to cause trigger of a numeric metric (5, 6)	
&OWNER	Monitor owner	
&RDUR	Reset duration, in intervals, as set in the threshold (1)	
&RESETTYPE	Reset type and defined as follows: (3)	
	manual reset = 1	
	automatic reset = 2	
&SBS	Subsystem of the job causing the trigger/reset	
&SERVER	Server type of the job causing the trigger/reset.	
	Not supported for summary metrics.	
&TDUR	Trigger duration, in intervals, as set in the threshold (5)	
&THRESHOLD	Threshold number causing the trigger	
&MSGID	Message ID causing the trigger/reset (2)	
&MSGSEV	Message severity causing the trigger/reset (2)	
&MSGTYPE	Message type causing the trigger/reset (2)	

Job Monitor substitution parameter notes:

(1) If a monitor is triggered and the user performs a manual reset ("Reset with Commands" or "Reset Only"), there is no substitution value for the Parm &NUMRESET, &RDUR. It will only have a value if the reset is automated.

(2) &MSGID, &MSGSEV, or &MSGTYPE you need to be monitoring the 'Job Log Message' metric - otherwise there is no substitution value for these. Additionally, these are only valid in the trigger and reset commands of Job Log Messages thresholds.

(3) &RESETTYPE only has a valid substitution value on an OS/400 reset command. Constant values are used to determine whether the reset type is manual or automated.

(4) &EVENTTYPE is valid for all substitution and has constant values that are used to determine the type of monitor event that occurred (automated trigger, automated reset, or manual reset). In an OS/400 trigger command, the value is always the trigger constant; in a reset command, it can either be the automated reset or manual reset constant.

(5) &TDUR, &NUMTRIGGER, and &NUMCURRENT only have valid substitution when a trigger occurs, in the OS/400 trigger command.

(6) &NUMTRIGGER, &NUMCURRENT, and &NUMRESET only have valid substitution when a "numeric" metric is being monitored, in the trigger and reset commands of numeric metric thresholds.

(7) &JOBSTATUS only has valid substitution when the Job Status metric is monitored, in the trigger and reset commands of Job Status thresholds.

Invalid combinations of Job Monitor metric with substitution parameters:

(A) Job Count metric not valid with: &JOBNAME, &JOBUSER, &JOBNUMBER, &JOBTYPE, &SBS, &SERER, &MSGID, &MSGSEV, &MSGTYPE, AND &JOBSTATUS

(B) Job Log Message metric not valid with: &RDUR, &NUMRESET, &TDUR, &NUMTRIGGER, &NUMCURRENT, and &JOBSTATUS

(C) Job Status metric not valid with: &NUMRESET, &NUMTRIGGER, &NUMCURRENT, &MSGID, &MSGSEV, AND &MSGTYPE

(D) The 'Job Numeric Values' metrics of CPU Percent Utilization, Logical I/) Rate, Disk I/O Rate, Communications I/) Rate, Transaction Rate, Transaction Time, Thread Count, and Page Fault Rate are not valid with: &MSGID, &MSGSEV, &MSGTYPE AND &JOBSTATUS

(E) The 'Summary Numeric Values' metrics of CPU Percent Utilization, Logical I/) Rate, Disk I/O Rate, Communications I/) Rate, Transaction Rate, Transaction Time, Thread Count, and Page Fault Rate are not valid with: &JOBNAME, &JOBUSER, &JOBNUMBER, &JOBTYPE, &SBS, &SERVER &MSGID, &MSGSEV, &MSGTYPE AND &JOBSTATUS

Message Monitor support:

(first 4 below are common with System and Job Monitors)

Parameter	Passed Data
&DATE	Date
&MON	Monitor name
&INTVL	Collection interval length in seconds
&TIME	Time
&ENDPOINT	Endpoint system name
&EVENTTYPE	Event type and defined as follows:
	Triggered Event = 1
	Manual Reset Event = 3
&FRMJOBNUMBER	"From job number" for the message causing the trigger
&FRMJOBNAME	"From job name" for the message causing the trigger
&FRMPROGRAM	"From program" for the message causing the trigger
&FRMUSER	"From job user" for the message causing the trigger
&MSGKEY	4-byte message key for the message causing the trigger (as a hex string)
&MSGID	Message ID causing the trigger
&MSGSEV	Message severity causing the trigger
&MSGTYPE	Message type causing the trigger
&MSGCOUNT	Current message count (that caused the trigger)
&OWNER	Monitor owner

&THRESHOLD	Threshold number causing the trigger
&TOLIB	Message queue's library to which this message was sent (the library of the queue being monitored)
&TOMSGQ	Message queue name to which this message was sent (the queue being monitored)

B2B Monitor Support:

Parameter	*Passed Data*
&NAME	Name
&OWNER	Owner (user id)
&OPERATOR	User id

&TYPE	Type of action of the threshold:
	   NONE, TRIGGER, TRIGGER_RUNCMD, RESET, RESET_RUNCMD,
	   MANUAL_RESET, or MANUAL_RESET_RUNCMD

&TARGET_VALUE	Target value set by user to monitor
&ACTUAL_VALUE	Actual value that occurred when trigger happened

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Examples of Parameter Substitution for System Monitors

1. The following command uses the &TIME and &TVAL parameters to pass to the program the time that the threshold was triggered and the trigger value:
CALL LIB01/PROG02 PARM('&TIME' '&TVAL').
2. The following command uses the &MON, &TVAL, &TDUR, and &VAL parameters on the Send Message command to send a message to the system operator when the threshold has been triggered:
SNDMSG MSG('Monitor &MON exceeded threshold &TVAL for &TDUR interval(s); current value is &VAL.') TOUSR(*SYSOPR)

   The message displayed to the system operator is:
   Monitor MyMonitor exceeded threshold 50 for 1 interval(s); current value is 61.

   Note: Lengths subject to change across releases   last updated 8/14/2003

System Monitor Command Substitution Parameter Lengths

&DATE	Date (length 8) MMDDYYYY
&MON	Monitor name (length 1-64)
&TIME	Time (length 6) HHMMSS
&INTVL	Collection interval (length 1-4)
&RDUR	Reset duration (length 1-3)
&RVAL	Reset value (length 1-3)
&SEQ	Sequence number (length 10)
&TDUR	Trigger duration (length 1-3)
&TVAL	Trigger value (length 1-5)
&VAL	Current value (2) (length 1-5)

Message Monitor Command Substitution Parameter Lengths

&DATE	Date (length 8) one possible format: MMDDYYYY
&MON	Monitor name (length 1-64)
&TIME	Time (length 6) HHMMSS
&ENDPOINT	Endpoint system name (length 1-256)
&EVENTTYPE	Event type and defined as follows: (length 1)
	Triggered Event = 1
	Manual Reset Event = 3
&FRMJOBNUMBER	"From job number" for the message causing the trigger (length 6)
&FRMJOBNAME	"From job name" for the message causing the trigger (length 1-10)
&FRMPROGRAM	"From program" for the message causing the trigger (length 1-10)
&FRMUSER	"From job user" for the message causing the trigger (length 1-10)
&INTVL	Collection interval length in seconds (length 1-4)
&MSGKEY	4-byte message key for the message causing the trigger as a hex string (length 11, format example x'000002A0')
&MSGID	Message ID causing the trigger (length 7)
&MSGSEV	Message severity causing the trigger (length 1-2)
&MSGTYPE	Message type causing the trigger (length 1)
&MSGCOUNT	Current message count (that caused the trigger) (length 1-3)
&OWNER	Monitor owner (length 1-10)
&THRESHOLD	Threshold number causing the trigger (length 1-3)
&TOLIB	Message queue's library to which this message was sent (the library of the queue being monitored) (length 1-10)
&TOMSGQ	Message queue name to which this message was sent (the queue being monitored) (length 1-10)

Job Monitor Command Substitution Parameter Lengths

&DATE	Date (length 8) one possible format: MMDDYYYY
&MON	Monitor name (length 1-64)
&TIME	Time (length 6) HHMMSS
&ENDPOINT	Endpoint system name (length 1-256)
&EVENTTYPE	Event type and defined as follows: (4) (length 1)
	Triggered Event = 1
	Auto Reset Event = 2
	Manual Reset Event = 3

&INTVL	Collection interval length in seconds (length 0-4)
&JOBNAME	Job name of the job causing the trigger/reset (length 1-10)
&JOBNUMBER	Job number of the job causing the trigger/reset (length 6)
&JOBSTATUS	Job status causing a trigger/reset (7) (length 0-4)
&JOBTYPE	Job type of the job causing the trigger/reset (length 1)
&JOBUSER	Job user of the job causing the trigger/reset (length 1-10)
&METRICTYPE	Category of metric. For Job Monitor is defined as follows: (length 5)

      Status Metric   = 10010
      Message Metric   = 10020
      Numeric Metric   = 10030

&METRIC   Metric that has triggered/reset and defined as follows: (length 4)
      Job Cpu Util   = 1010
      Job Logical IO   = 1020
      Job Disk IO   = 1030
      Job Com IO   = 1040
      Job Trans Rate   = 1050
      Job Trans Time   = 1060
      Job Thread Count = 1070
      Job Page Faults   = 1080
      Sum Cpu Util   = 2010
      Sum Logical IO   = 2020
      Sum Disk IO   = 2030
      Sum Com IO   = 2040
      Sum Trans Rate   = 2050
      Sum Trans Time   = 2060
      Sum Thread Count = 2070
      Sum Page Faults   = 2080
      Job Status   = 3010
      Job Log Messages = 3020
      Sum Job Count   = 4010

&NUMCURRENT	Current numeric value (5, 6) (length 0-6)
&NUMRESET	Threshold value to cause auto-reset of numeric metric (1, 6) (length 0-4)
&NUMTRIGGER	Threshold value to cause trigger of a numeric metric (5, 6) (length 0-6)
&OWNER	Monitor owner (length 1-10)
&RDUR	Reset duration, in intervals, as set in the threshold (1) (length 0-3)
&RESETTYPE	Reset type and defined as follows: (3) (length 0-1)

      manual reset   = 1
      automatic reset = 2

&SBS	Subsystem of the job causing the trigger/reset (length 1-10)
&SERVER	Server type of the job causing the trigger/reset (length 0-32) Not supported for summary metrics.
&TDUR	Trigger duration, in intervals, as set in the threshold (5) (length 0-3)
&THRESHOLD	Threshold number causing the trigger (length 1-3)
&MSGID	Message ID causing the trigger/reset (2) (length 0-7)
&MSGSEV	Message severity causing the trigger/reset (2) (length 0-2)
&MSGTYPE	Message type causing the trigger/reset (2) (length 0-2)