

Hercules System/370, ESA/390, z/Architecture Emulator

Hercules – Reference Summary

Version 4 Release 00



Draft - November 21, 2015

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Version 4 Release 00



First Edition, November 21, 2015

HERS040000-00

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1. Preface

1.1 Edition information

This edition applies to the Hercules S/370, ESA/390 and z/Architecture Emulator, Release 4.00.0 and to all subsequent versions, releases and modifications until otherwise indicated in new editions. Make sure you are using the correct edition for the level of software you are using.

1.2 Revision Notice

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Date: November 21, 2015

1.3 Readers Comments

If you like or dislike anything of this book please send a mail or email to the address below. Feel free to comment any errors or lack of clarity. Please limit your comments on the information in this specific book and also include the "Revision Notice" just above. Thank you for your help.

Send your comments by email to the Hercules-390 discussion group:

hercules-390@yahogroups.com

2. Hercules Configuration File

2.1 System Parameters

System Parameter	Description
#	Comment line
*	Comment line
ARCHLVL	Set architecture level
ARCHMODE	Initial architecture mode (alias for ARCHLVL system parameter)
ASN_AND_LX_REUSE (ALRF)	ESAME ASN and LX REUSE feature (deprecated, use ARCHLVL instead)
AUTO_SCSI_MOUNT	Automatic SCSI tape mounts (deprecated, use SCSIMOUNT instead)
AUTOINIT	Automatic creation of empty tape files
AUTOMOUNT	Tape automount root directory
CAPPING	CPU capping feature
CCKD	Compressed CKD DASD options
CMDLEVEL	Set command group
CMDLVL	Alias for CMDLEVEL
CMDSEP	Command line separator
CNSLPORT	Console port
CODEPAGE	Codepage conversion table

System Parameter	Description
CONKPALV	Console and telnet clients keep-alive option
CP_UPDT	User character conversion table
CPUIDFMT	Set format BASIC / 0 / 1 STIDP generation
CPUMODEL	CPU model number
CPUPRIO	CPU thread process priority
CPUSERIAL	CPU serial number
CPUVERID	CPU version code
DEFSTORE	Define main and expanded storage
DEFSYM	Define a symbol
DEVPRIO	Device threads process priority
DEVTMAX	Maximum number of device threads
DIAG8CMD	DIAGNOSE 8 cmd option
ECPSVM	ECPS:VM support status (VM)
ENGINES	Processor engines type
HAO	Hercules Automatic Operator
HERCLOGO	Hercules logo file
HERCPRIO	Hercules process priority
HTTP	HTTP server configuration
HTTPPORT	HTTP server port (deprecated, use HTTP instead)

System Parameter	Description
HTTPROOT	HTTP server root directory (deprecated, use HTTP instead)
IGNORE	Ignore subsequent INCLUDE errors
INCLUDE	Include configuration file
IODELAY	I/O interrupt wait time (LINUX)
LDMOD	Additional dynamic load modules
LEGACYSENSEID	SENSE ID CCW (x'E4') feature
LOADPARAM	IPL parameter
LOGOPT	Logging options
LPARNAME	LPAR name returned by DIAG x'204'
LPARNUM	LPAR identification number
MAINSIZE	Main storage size
MANUFACTURER	STSI manufacturer code
MAXCPU	Maximum number of CPUs
MAXRATES	MIPS/SIO rate reporting interval
MEMLOCK	Lock Hercules memory
MODEL	STSI model code
MODPATH	Dynamic load module path
MOUNTED_TAPE_REINIT	Control tape initialization
MSGHLD	Timeout value of held messages
MSGLEVEL	Message display output

System Parameter	Description
MSGLVL	Message display output (alias for MSGLEVEL)
NUMCPU	Number of emulated CPUs
NUMVEC	Number of vector facilities
OSTAILOR	Tailor trace information for specific operating system
PANRATE	Console refresh rate
PANTITLE	Console panel title
PGMPRDOS	LPP license setting
PLANT	STSI plant code
QUITMOUT	Quit timeout value
REXX	REXX interpreter settings
SCLPROOT	SCLP base directory
SCPECHO	Echo to console and history of SCP replies
SCPIPLY	Pass non-Hercules commands to the SCP
SCSIMOUNT	Automatic SCSI tape mounts
SHCMDOPT	Shell command option
SHOWDVOL1	Enable showing of DASD volsers in device list
SHRDPORT	Shared device server port
SRVPRIO	Server threads priority
SYMPTOM	Alias for TRACEOPT
SYSEPOCH	Base date for TOD clock
TIMERINT	Internal timer update interval

System Parameter	Description
TODDRAG	TOD clock drag factor
TODPRIO	Timer thread process priority
TRACEOPT	Instruction trace display option
TZOFFSET	TOD clock offset from GMT
XPNDSIZE	Expanded storage size
YROFFSET	TOD clock offset from actual date

Table 1: Hercules System Parameters

2.2 Device Definitions

Device Type	Device	Emulated by
3270, 3278	Local non-SNA display or printer	TN3270 client connection
SYSG	Integrated 3270 (SYSG) console	TN3270 client connection
1052, 3215	Console printer-keyboards	Telnet client connection
1052-C, 3215-C	Integrated console printer-keyboards	Integrated on Hercules console
1442, 2501, 3505	Card readers	Disk file(s), ASCII or EBCDIC
3525	Card punch	Disk file, ASCII or EBCDIC
1403, 3211	Line printers	Disk file, ASCII
3410, 3420, 3422, 3430, 3480, 3490, 3590, 9347, 8809	Tape drives	Disk file, CD-ROM or SCSI tape
3088	Channel-to-Channel Adapter	"CTCT" driver
((CTCI))	Channel-to-Channel link to host TCP/IP stack	"CTCI" TUN/TAP driver
((LCS))	IBM 2216 router, IBM 3172 running ICP, IBM 8232 LCS device, LCS3172 driver of a P/390, IBM Open Systems Adapter (OSA)	"LCS" (LAN channel station) TUN/TAP driver

Device Type	Device	Emulated by
((QETH))	OSA Express IP Layer 2 support only. Supported only for Linux guests. TAP adapter must be bridged to a local LAN	"QETH" (OSA/QDIO Ethernet Adapter) TUN/TAP driver
3310, 3370, 9332, 9335, 9336, 0671	FBA direct access storage devices	Disk file
2305, 2311, 2314, 3330, 3340, 3350, 3375, 3380, 3390, 9345	CKD direct access storage devices	Disk file
2703	Communication line	TCP socket

Table 2: Hercules Device Definitions

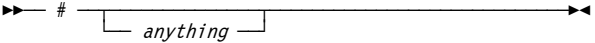
3. System Parameter Descriptions

(Comment line)

Descriptive

[*anything*]

Diagram

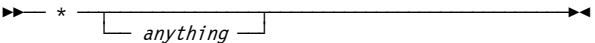


* (Comment line)

Descriptive

* [*anything*]

Diagram



ARCHLVL (Set architecture level)

Descriptive

ARCHLVL {S/370 | ESA/390 | ESAME | z/ARCH}

or

ARCHLVL {ENABLE | DISABLE} *facility*

[S/370 | ESA/390 | z/ARCH]

or

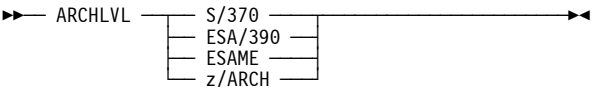
ARCHLVL {ENABLE | DISABLE} *bitno*

[S/370 | ESA/390 | z/ARCH]

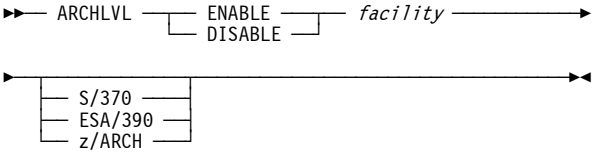
or

ARCHLVL QUERY [*facility* | ALL]

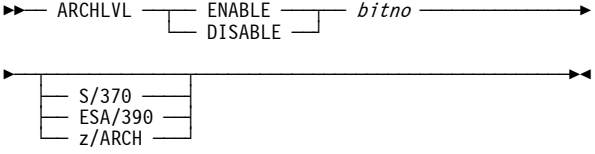
Diagram



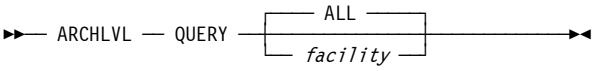
or



or



or



ARCHMODE (Initial architecture mode)

ARCHMODE is an alias for the ARCHLVL system parameter. Please see ARCHLVL for details.

ASN_AND_LX_REUSE / ALRF (ESAME ASN and LX REUSE feature)

The ASN_AND_LX_REUSE (ALRF) system parameter has been deprecated.

Use “ARCHLVL ENABLE | DISABLE ASN_LX_REUSE” instead.

AUTO_SCSI_MOUNT (Automatic SCSI tape mounts)

The AUTO_SCSI_MOUNT system parameter has been deprecated. Use “SCSIMOUNT” instead.

AUTOMOUNT (Tape automount root directory)

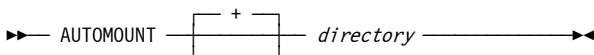
Descriptive

AUTOMOUNT [\pm | -] *directory*

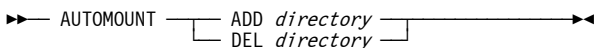
or

AUTOMOUNT {ADD *directory* | DEL *directory*}

Diagram



or

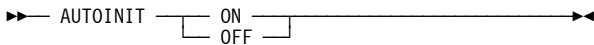


AUTOINIT (Automatic creation of empty tape files)

Descriptive

AUTOINIT {ON | OFF}

Diagram

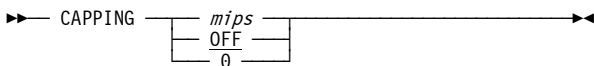


CAPPING (CPU capping feature)

Descriptive

CAPPING {*mips* | OFF | 0}

Diagram



CCKD (Compressed CKD DASD options)

Descriptive

CCKD *option=value* [,*option=value* ...]

where *option* can be:

[COMP={-1 | *n*}]

[,COMPPARM={-1 | *n*}]

[,RA={2 | *n*}]

[,RAQ={4 | *n*}]

[,RAT={2 | *n*}]

[,WR={2 | *n*}]

[,GCINT={10 | *n*}]

[,GCPARM={0 | *n*}]

[,NOSTRESS={0 | 1}]

[,FREEPEND={-1 | *n*}]

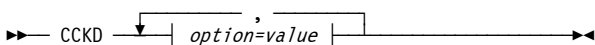
[,FSYNC={0 | 1}]

[,TRACE={0 | *n*}]

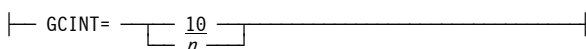
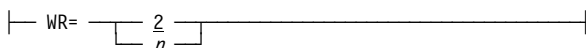
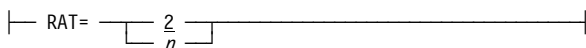
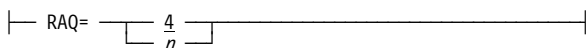
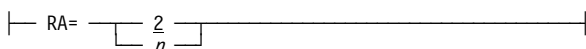
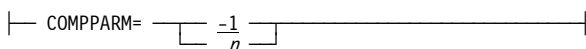
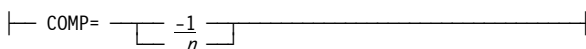
[,LINUXNULL={0 | 1}]

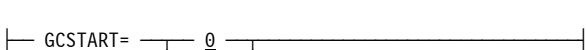
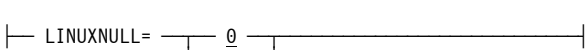
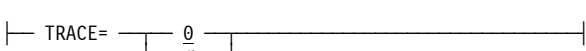
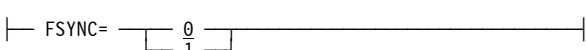
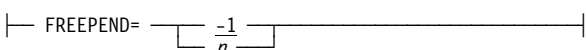
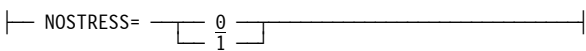
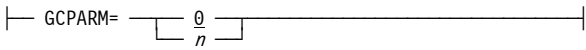
[,GCSTART={0 | 1}]

Diagram



where *option* can be:



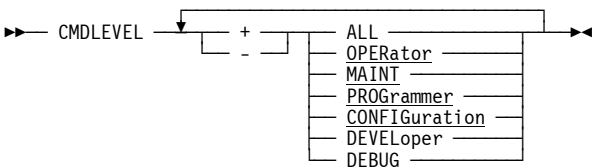


CMDLEVEL (Set command group)

Descriptive

CMDLEVEL {{+ | -} {ALL | OPERator | MAINT |
PROGramer | CONFIGuration | DEVELOper |
DEBUG} [...]}

Diagram



CMDLVL (Set command group)

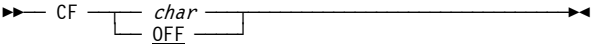
CMDLVL is an alias for CMDLEVEL. See CMDLEVEL system parameter for details.

CMDSEP (Command line separator)

Descriptive

CMDSEP { *char* | OFF }

Diagram

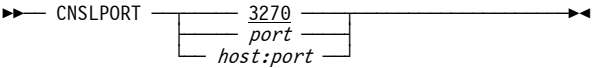


CNSLPORT (Console port)

Descriptive

CNSLPORT { 3270 | *port* | *host:port* }

Diagram

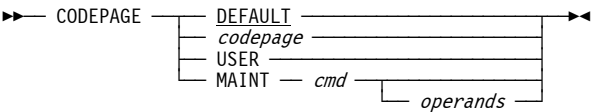


CODEPAGE (Codepage conversion table)

Descriptive

CODEPAGE { DEFAULT | *codepage* | USER |
MAINT *cmd* [*operands*] }

Diagram

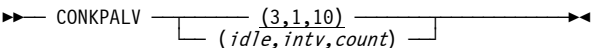


CONKPALV (Console and telnet clients keep-alive option)

Descriptive

CONKPALV { (3,1,10) | (*idle, intv, count*) }

Diagram



CP_UPDT (User character conversion table)

Descriptive

CP_UPDT *command* [*operands*]

where *command* can be:

ALTER {EBCDIC | ASCII | G2H | H2G}

(*pos*, *val* [, *pos*, *val*] ...)

DISPLAY {EBCDIC | ASCII | G2H | H2G }

EXPORT {EBCDIC | ASCII | G2H | H2G } *filename*

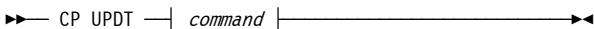
IMPORT {EBCDIC | ASCII | G2H | H2G } *filename*

REFERENCE [*codepage*]

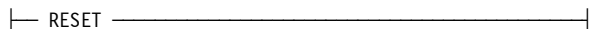
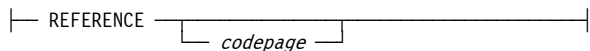
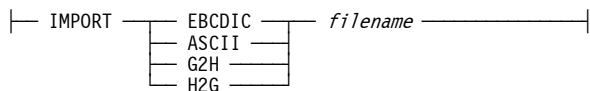
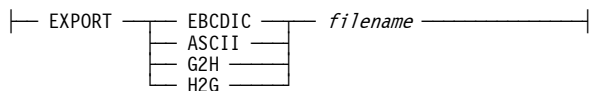
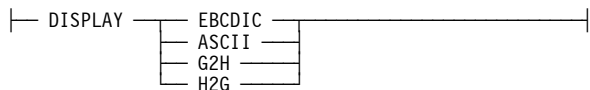
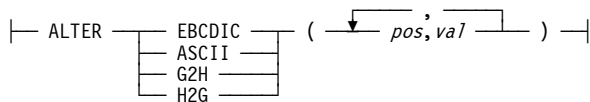
RESET

TEST

Diagram



where *command* can be:

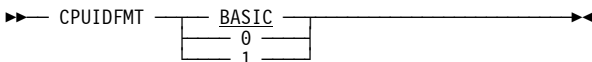


CPUIDFMT (Set format BASIC / 0 / 1 STIDP generation)

Descriptive

CPUIDFMT {BASIC | 0 | 1}

Diagram

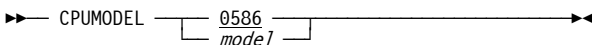


CPUMODEL (CPU model number)

Descriptive

CPUMODEL {0586 | *model*}

Diagram

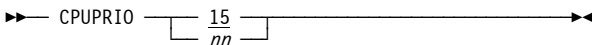


CPUPRIO (CPU thread process priority)

Descriptive

CPUPRIO {15 | *nn*}

Diagram

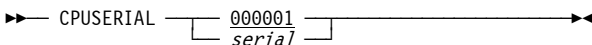


CPUSERIAL (CPU serial number)

Descriptive

CPUSERIAL {000001 | *serial*}

Diagram



CPUVERID (CPU version code)

Descriptive

CPUVERID 00 (For z/ARCH and ESAME)

or

CPUVERID {FD | *verid*} (For S/370 and ESA/390)

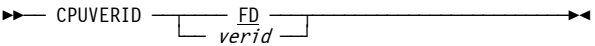
Diagram

For z/ARCH and ESAME:



or

For S/370 and ESA/390:

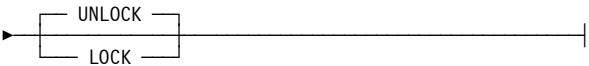
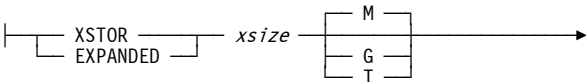
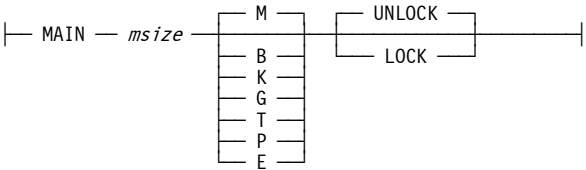
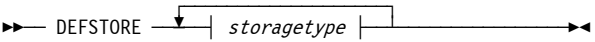


DEFSTORE (Define main and expanded storage)

Descriptive

DEFSTORE {[MAIN *msize*[B | K | M | G | T | P | E]
 [UNLOCK | LOCK]]
 [{XSTOR | EXPANDED} *xsize*[M | G | T]
 [UNLOCK | LOCK]]}

Diagram

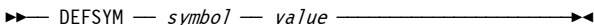


DEFSYM (Define a symbol)

Descriptive

DEFSYM *symbol value*

Diagram

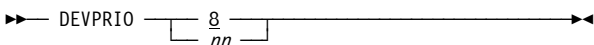


DEVPRIO (Device threads process priority)

Descriptive

DEVPRIO {8 | *nn*}

Diagram

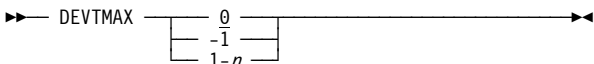


DEVTMAX (Maximum number of device threads)

Descriptive

DEVTMAX {0 | -1 | 1-*n*}

Diagram

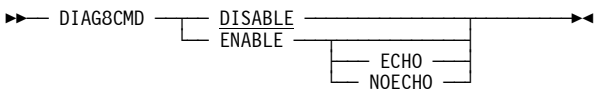


DIAG8CMD (DIAGNOSE 8 command option)

Descriptive

DIAG8CMD {DISABLE | ENABLE [ECHO | NOECHO]}

Diagram

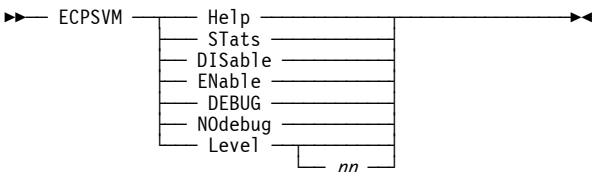


ECPSVM (ECPS:VM support status (VM))

Descriptive

ECPSVM {Help | STats | DISable | ENable | DEBUG |
NOdebug | Level [nn]}

Diagram

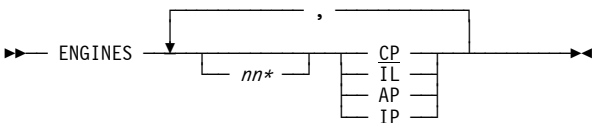


ENGINES (Processor engines type)

Descriptive

ENGINES [nn*] {CP | IL | AP | IP} [, ...]

Diagram



HAO (Hercules Automatic Operator)

Descriptive

HAO *command* [*operands*]

where *command* can be:

TGT *target*

CMD *consolecmd*

DEL *nn*

CLEAR

LIST [*nn*]

Diagram

▶— HAO —| command |—————▶

where *command* can be:

|— TGT — *target* —————|

|— CMD — *consolecmd* —————|

|— DEL — *nn* —————|

|— CLEAR —————|

|— LIST —————|
 └─ *nn* ─┘

HERCLOGO (Hercules logo file)

Descriptive

HERCLOGO *filename*

Diagram

▶— HERCLOGO — *filename* —————▶

HERCPRIO (Hercules process priority)

Descriptive

HERCPRIO {0 | *nn*}

Diagram

▶— HERCPRIO —┬─ 0 ─┘—————▶
 └─ *nn* ─┘

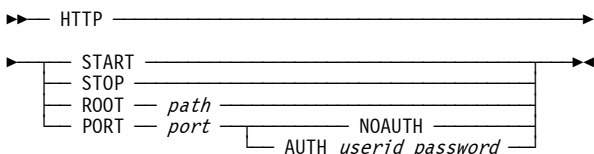
HTTP (HTTP server configuration)

Descriptive

HTTP {START | STOP | ROOT *path* |

PORT *port* {NOAUTH | AUTH *userid password*}

Diagram



HTTPPORT (HTTP server port)

The HTTPPORT system parameter has been deprecated. Use "HTTP PORT" instead.

HTTPROOT (HTTP server root directory)

The HTTPROOT system parameter has been deprecated. Use "HTTP ROOT" instead.

IGNORE (Ignore subsequent INCLUDE errors)

Descriptive

IGNORE INCLUDE_ERRORS

Diagram

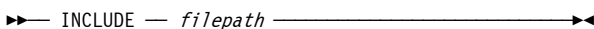


INCLUDE (Include configuration file)

Descriptive

INCLUDE *filepath*

Diagram

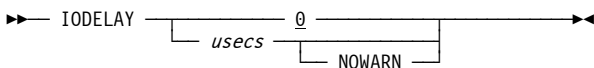


IODELAY (I/O interrupt wait time (LINUX))

Descriptive

IODELAY {0 | *usecs* [NOWARN]}

Diagram

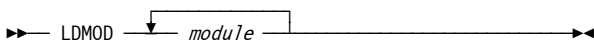


LDMOD (Additional dynamic load modules)

Descriptive

LDMOD *module* [*module* [*module* ...]]

Diagram

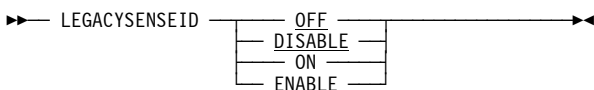


LEGACYSENSEID (SENSE ID CCW (x'E40) feature)

Descriptive

LEGACYSENSEID {OFF | DISABLE | ON | ENABLE}

Diagram

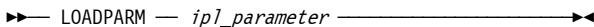


LOADPARAM (IPL parameter)

Descriptive

LOADPARAM *ipl_parameter*

Diagram

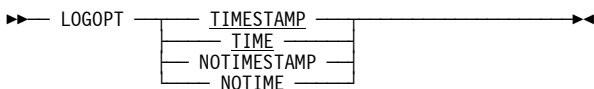


LOGOPT (Logging options)

Descriptive

LOGOPT {TIMESTAMP | TIME | NOTIMESTAMP | NOTIME}

Diagram

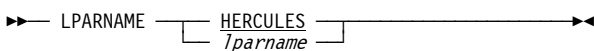


LPARNAME (LPAR name returned by DIAG x'204')

Descriptive

LPARNAME {HERCULES | *lparname*}

Diagram

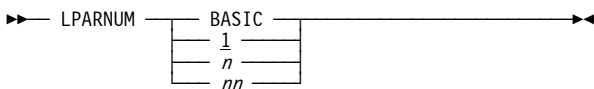


LPARNUM (LPAR identification number)

Descriptive

LPARNUM {BASIC | 1 | *n* | *nn*}

Diagram

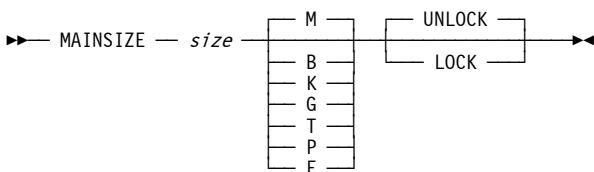


MAINSIZE (Main storage size)

Descriptive

MAINSIZE *size*[B | K | M | G | T | P | E]
[UNLOCK | LOCK]

Diagram

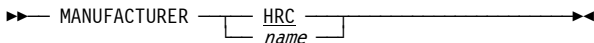


MANUFACTURER (STSI manufacturer code)

Descriptive

MANUFACTURER {HRC | *name*}

Diagram

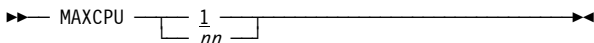


MAXCPU (Maximum number of CPUs)

Descriptive

MAXCPU {1 | *nn*}

Diagram

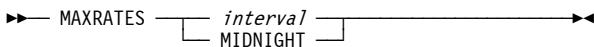


MAXRATES (MIPS/SIO rate reporting interval)

Descriptive

MAXRATES {*interval* | MIDNIGHT}

Diagram

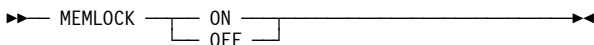


MEMLOCK (Lock Hercules memory)

Descriptive

MEMLOCK {ON | OFF}

Diagram

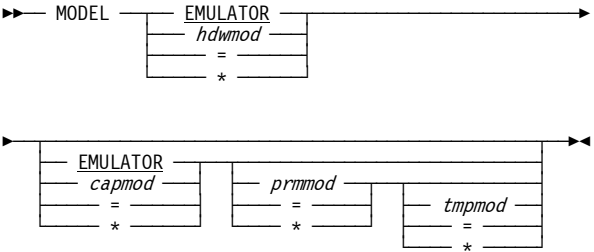


MODEL (STSI model code)

Descriptive

MODEL {EMULATOR | *hdwmod* | = | *}
[EMULATOR | *capmod* | = | *
[*prmmod* | = | *
[*tmpmod* | = | *]]]

Diagram

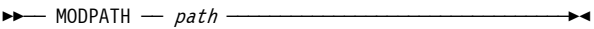


MODPATH (Dynamic load module path)

Descriptive

MODPATH *path*

Diagram

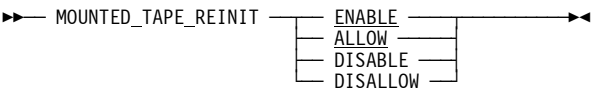


MOUNTED_TAPE_REINIT (Control tape initialization)

Descriptive

MOUNTED_TAPE_REINIT {ENABLE | ALLOW |
DISABLE | DISALLOW}

Diagram

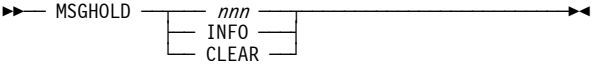


MSGHLD (Timeout of held messages)

Descriptive

MSGHLD { *nnn* | INFO | CLEAR }

Diagram



MSGLEVEL (Message display output)

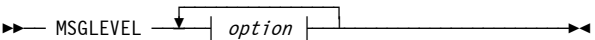
Descriptive

MSGLEVEL { *option option ...* }

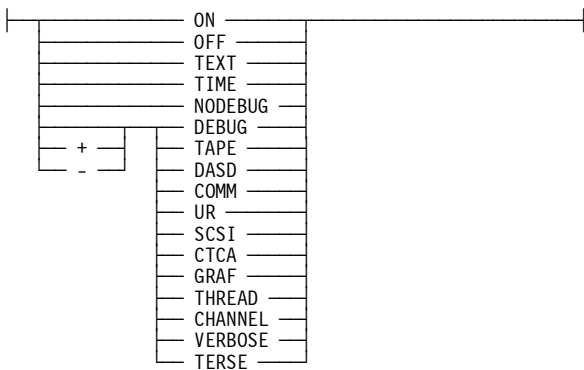
where *option* can be:

ON | OFF | TEXT | TIME | NODEBUG |
[+ | -] DEBUG |
[+ | -] TAPE |
[+ | -] DASD |
[+ | -] COMM |
[+ | -] UR |
[+ | -] SCSI |
[+ | -] CTCA |
[+ | -] GRAF |
[+ | -] THREAD |
[+ | -] CHANNEL |
[+ | -] VERBOSE |
[+ | -] TERSE

Diagram



where *option* can be:



MSGLVL (Message display output)

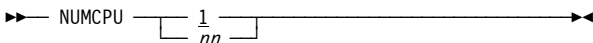
MSGLVL is an alias for MSGLEVEL. See MSGLEVEL for details.

NUMCPU (Number of emulated CPUs)

Descriptive

NUMCPU {1 | *nn*}

Diagram

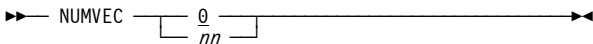


NUMVEC (Number of vector facilities)

Descriptive

NUMVEC {0 | *nn*}

Diagram

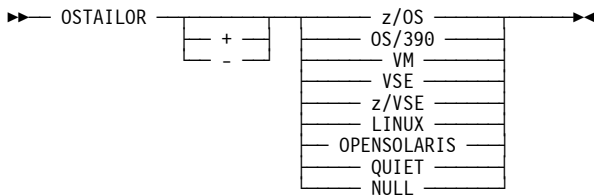


OSTAILOR (Tailor trace information for specific operating system)

Descriptive

OSTAILOR {[+ | -] z/OS | OS/390 | VM | VSE | zVSE |
 LINUX | OPENSOLARIS | QUIET | NULL}

Diagram

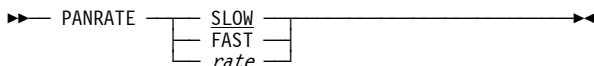


PANRATE (Console refresh rate)

Descriptive

PANRATE {SLOW | FAST | *rate*}

Diagram

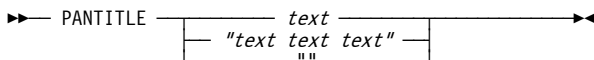


PANTITLE (Console window title)

Descriptive

PANTITLE {*text* | "*text text text*" | ""}

Diagram



PGMPRDOS (LPP license setting)

Descriptive

PGMPRDOS {RESTRICTED | LICENSED}

Diagram

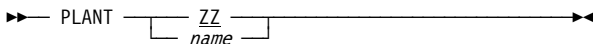


PLANT (STSI plant code)

Descriptive

PLANT {ZZ | *name*}

Diagram

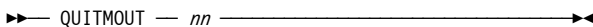


QUITMOUT (Quit timeout value)

Descriptive

QUITMOUT *nn*

Diagram



REXX (REXX interpreter settings)

Descriptive

REXX *option*

where *option* can be:

ENABLE | START [REGINA | OOREXX]

DISABLE | STOP

PATHS | REXXPATHS {*path* [*delimiter path ...*] | RESET}

SYSPATH {ON | OFF | RESET}

EXTENSIONS | SUFFIXES {*suffix*

[*delimiter suffix ...*] | RESET}

RESOLVER {ON | OFF | RESET}

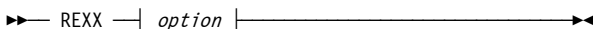
MSGLEVEL {0 | 1 | RESET}

MSGPREFIX {*messageprefix* | OFF | RESET}

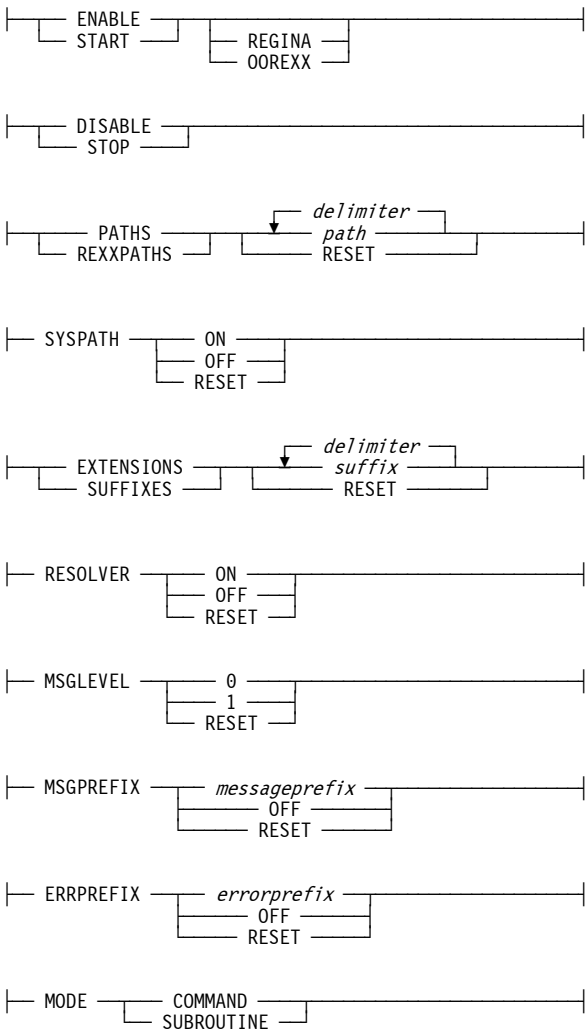
ERRPREFIX {*errorprefix* | OFF | RESET}

MODE {COMMAND | SUBROUTINE}

Diagram



where *option* can be:

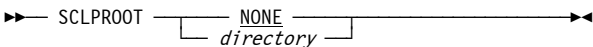


SCLPROOT (SCLP base directory)

Descriptive

SCLPROOT {NONE | *directory*}

Diagram

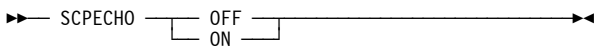


SCPECHO (Echo to console and history of SCP replies)

Descriptive

SCPECHO {OFF | ON}

Diagram

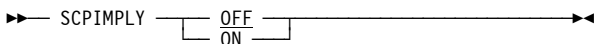


SCPIPLY (Pass non-Hercules commands to the SCP)

Descriptive

SCPIPLY {OFF | ON}

Diagram

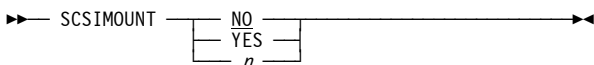


SCSIMOUNT (Automatic SCSI tape mounts)

Descriptive

SCSIMOUNT {NO | YES | *n*}

Diagram

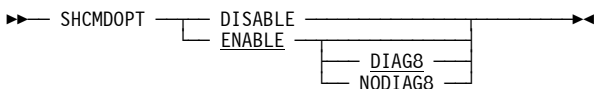


SHCMDOPT (Shell command option)

Descriptive

SHCMDOPT {DISABLE | ENABLE [DIAG8 | NODIAG8]}

Diagram

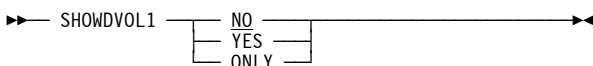


SHOWDVOL1 (Enable showing of DASD vol- sers in device list)

Descriptive

SHOWDVOL1 {NO | YES | ONLY}

Diagram

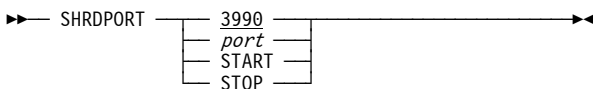


SHRDPOR (Shared device server port)

Descriptive

SHRDPOR [3990 | *port* | START | STOP]

Diagram



SRVPRIO (Server threads priority)

Descriptive

SRVPRIO {4 | *nn*}

Diagram

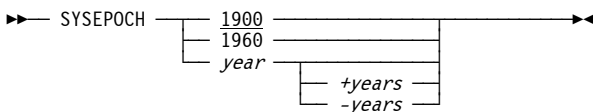


SYSEPOCH (Base date for TOD clock)

Descriptive

SYSEPOCH {1900 | 1960 | *year* [*+years* | *-years*]}

Diagram



SYMPTOM (Instruction trace display option)

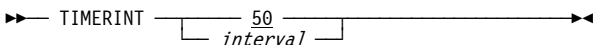
SYMPTOM is an alias for the TRACEOPT system parameter. Please see TRACEOPT for details.

TIMERINT (Internal timer update interval)

Descriptive

TIMERINT {50 | *interval*}

Diagram

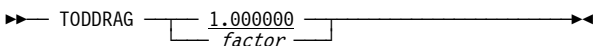


TODDRAG (TOD clock drag factor)

Descriptive

TODDRAG {1.000000 | *factor*}

Diagram

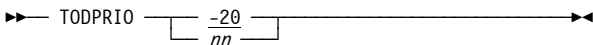


TODPRIO (Timer thread process priority)

Descriptive

TODPRIO {-20 | *nn*}

Diagram



TRACEOPT (Instruction trace display option)

Descriptive

TRACEOPT {TRADITIONAL | REGSFIRST | NOREGS}

Diagram

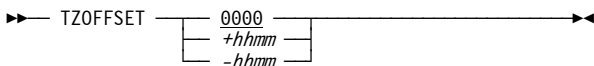


TZOFFSET (TOD clock offset from GMT)

Descriptive

TZOFFSET {0000 | *+hhmm* | *-hhmm*}

Diagram

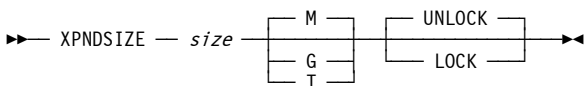


XPNDSIZE (Expanded storage size)

Descriptive

XPNDSIZE *size*[M | G | T] [UNLOCK | LOCK]

Diagram

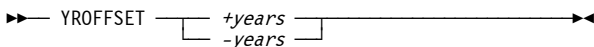


YROFFSET (TOD clock offset from actual date)

Descriptive

YROFFSET {*+years* | *-years*}

Diagram



Process and Thread Priorities

Process Priorities

Unix Process Priority	Windows Priority Class
-20 to -16	Realtime
-15 to -9	High
-8 to -1	Above Normal
0 to 7	Normal
8 to 15	Below Normal
16 to 20	Low

Table 3: Process Priority Conversions

Thread Priorities

Unix Thread Priority	Windows Thread Priority
-20 to -16	Time Critical
-15 to -9	Highest
-8 to -1	Above Normal
0 to 7	Normal
8 to 15	Below Normal
16 to 19	Lowest
20	Idle

Table 4: Thread Priority Conversions

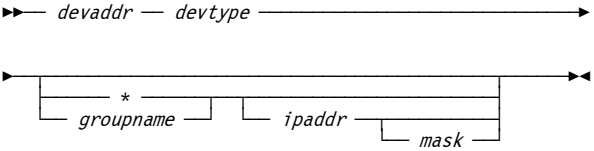
4. Device Definition Descriptions

Local non-SNA 3270 Devices

Descriptive

devaddr devtype [{*groupname* | *} [*ipaddr* [*mask*]]]

Diagram

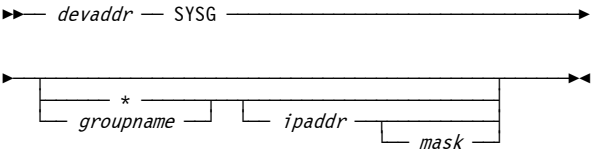


Integrated 3270 (SYSG) Console

Descriptive

devaddr SYSG [{*groupname* | *} [*ipaddr* [*mask*]]]

Diagram



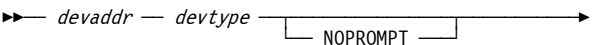
Note: The device address is ignored for the integrated 3270 (SYSG) console.

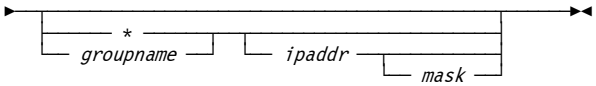
Console Printer-Keyboard Devices

Descriptive

devaddr devtype [NOPROMPT]
 [*groupname* | *} [*ipaddr* [*mask*]]]

Diagram



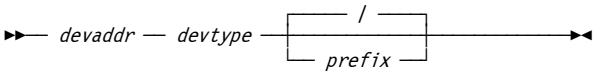


Integrated Console Printer-Keyboard Devices

Descriptive

devaddr devtype [prefix | L]

Diagram

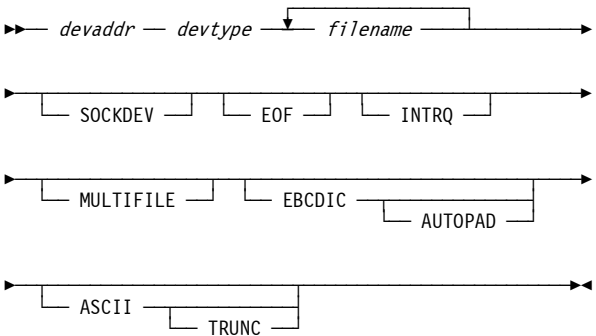


Card Reader Devices

Descriptive

devaddr devtype filename [filename ...]
 [SOCKDEV] [EOF] [INTRQ] [MULTIFILE]
 [EBCDIC [AUTOPAD]] [ASCII [TRUNC]]

Diagram

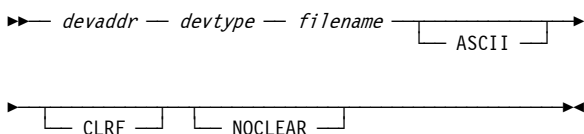


Card Punch Devices

Descriptive

devaddr devtype filename [ASCII] [CRLF] [NOCLEAR]

Diagram



Line Printer Devices

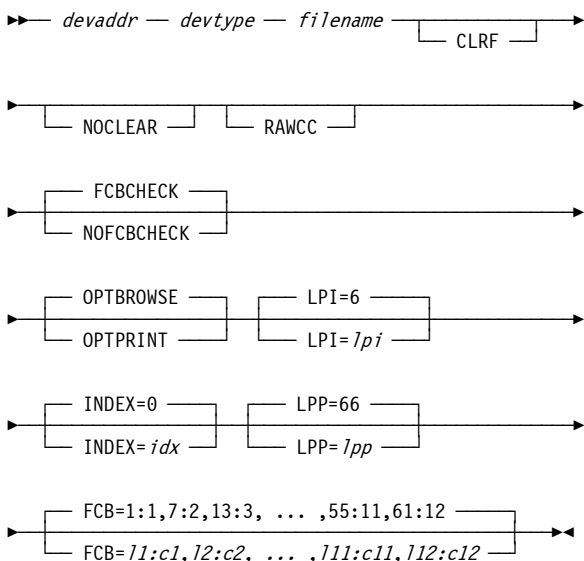
Descriptive

devaddr devtype filename [CRLF] [NOCLEAR] [RAWCC]
[FCBCHECK | NOFCBCHECK] [OPTBROWSE | OPTPRINT]
[LPI={6 | *lpi*}] [INDEX={0 | *idx*}]
[LPP={66 | *lpp*}]
[FCB={1:1,07:2,13:3,...,49:10,55:11,61:12 |
11:c1,12:c2,13:c3,...,111:c11,112:c12}]

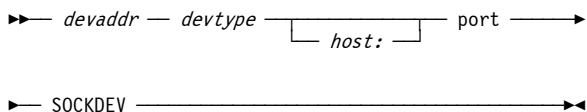
or

devaddr devtype [*host:*]*port* SOCKDEV

Diagram



or



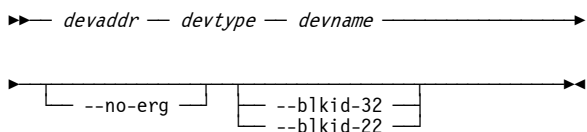
Emulated Tape Devices

SCSI Tapes

Descriptive

devaddr devtype devname [--no-erg]
 [--blkid-32 | --blkid-22]

Diagram

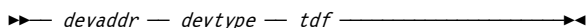


Optical Media Attach (OMA) virtual files

Descriptive

devaddr devtype tdf

Diagram



AWSTAPE virtual files

Descriptive

*devaddr devtype {awsfile | *} [arguments]*

where arguments can be:

[MAXSIZE={*n*[K | M | G | T] | 0} |

MAXSIZEK={*n* | 0} |

MAXSIZEM={*n* | 0}]

[EOTMARGIN=*n*[K | M | G | T]]

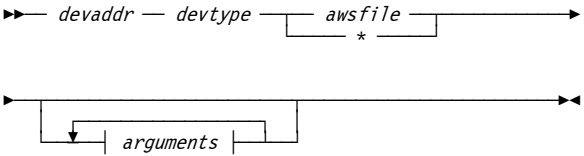
[READONLY={0 | 1}]

[RO | NORING | RW | RING]

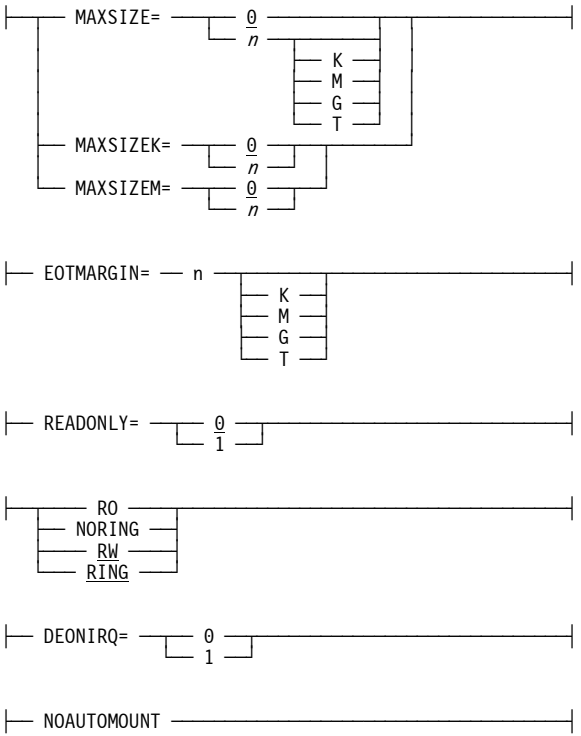
[DEONIRQ={0 | 1}]

[NOAUTOMOUNT]

Diagram



where arguments can be:



HET virtual files

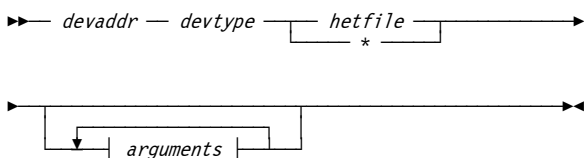
Descriptive

*devaddr devtype {hetfile | *} [arguments]*

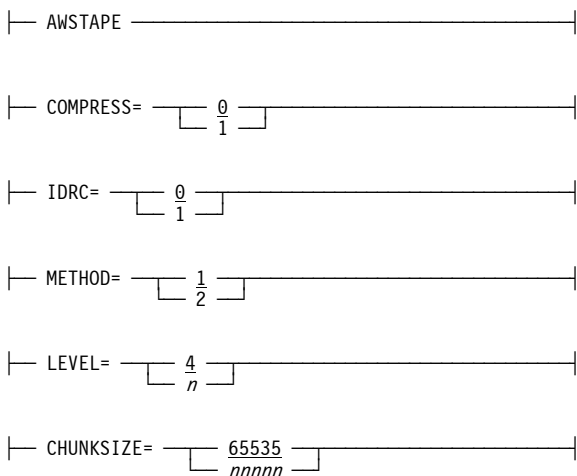
where arguments can be:

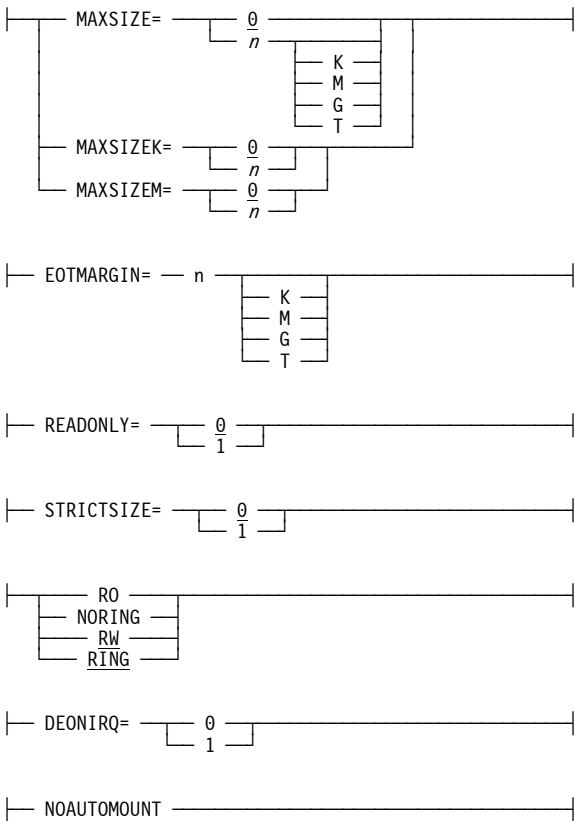
[AWSTAPE]
 [COMPRESS={0 | 1}]
 [IDRC={0 | 1}]
 [METHOD={1 | 2}]
 [LEVEL={*n* | 4}]
 [CHUNKSIZE={*nnnnn* | 65535}]
 [MAXSIZE={*n*[K | M | G | T] | 0] |
 MAXSIZEK={*n* | 0] |
 MAXSIZEM={*n* | 0}]
 [EOTMARGIN=*n*[K | M | G | T]]
 [READONLY={0 | 1}]
 [STRICTSIZE={0 | 1}]
 [RO | NORING | RW | RING]
 [DEONIRQ={0 | 1}]
 [NOAUTOMOUNT]

Diagram



where arguments can be:





Fake Tape virtual files

Descriptive

*devaddr devtype { fakefile | *} [arguments]*

where arguments can be:

[MAXSIZE={*n*[K | M | G | T] | 0} |

MAXSIZEK={*n* | 0} |

MAXSIZEM={*n* | 0}]

[EOTMARGIN=*n*[K | M | G | T]]

[READONLY={0 | 1}]

[RO | NORING | RW | RING]

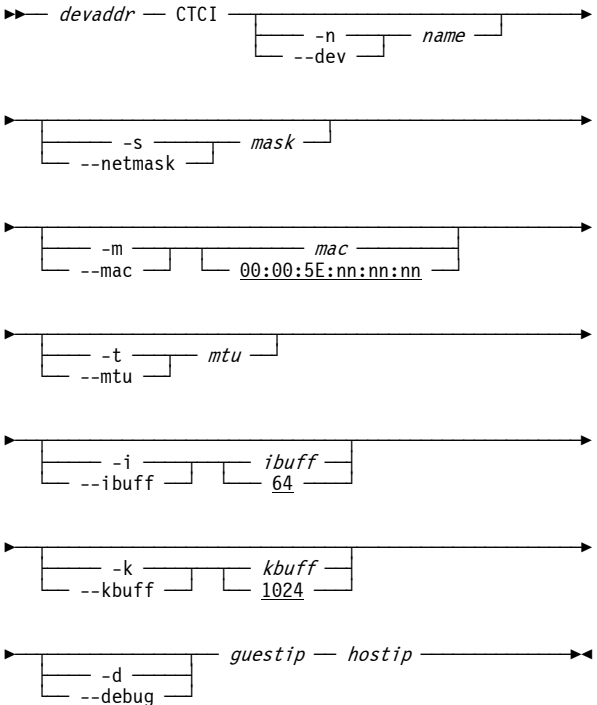
[DEONIRQ={0 | 1}]


```

[{-m | --macaddr}
    mac | 00:00:5E:nn:nn:nn]
[{-t | --mtu} mtu | 1500]
[{-i | --ibuff} {ibuff | 64}]
[{-k | --kbuff} {kbuff | 1024}]
[-d | --debug]
guestip hostip

```

Diagram

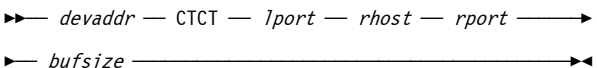


CTCT (Channel-to-Channel emulation via TCP connection)

Descriptive

devaddr CTCT lport rhost rport bufsize

Diagram

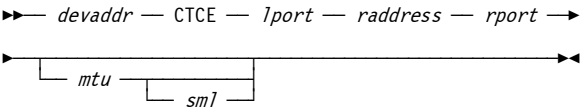


CTCE (Enhanced Channel-to-Channel emulation via TCP connection)

Descriptive

devaddr CTCE lport raddress rport [mtu [smf]]

Diagram

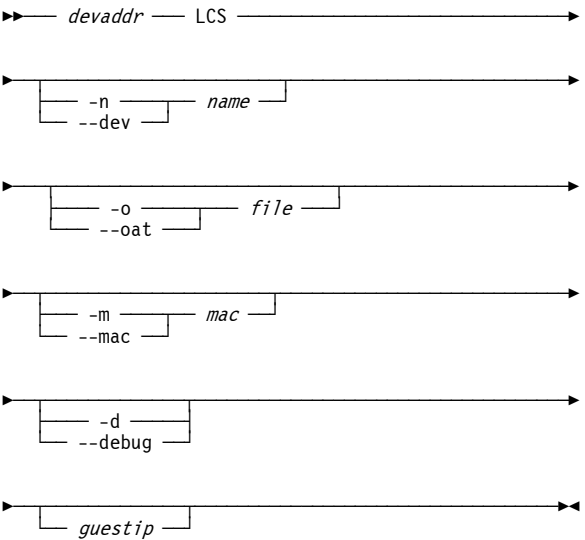


LCS (LAN Channel Station)

Descriptive

*devaddr LCS [{-n | --dev} name]
 [{-o | --oat} file]
 [{-m | --mac} mac]
 [-d | --debug]
 [*guestip*]*

Diagram



OAT File Syntax

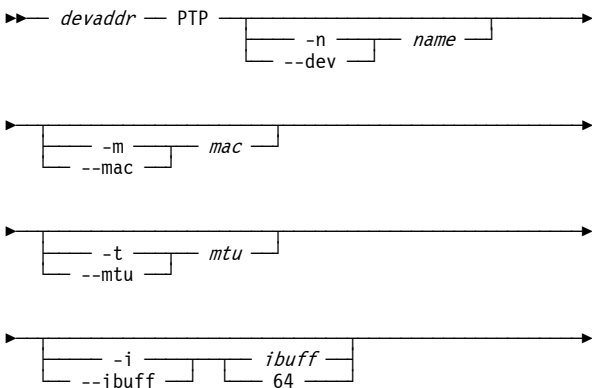
```
*****
* Dev   Mode  Port  Entry specific information
*****
 0400  IP    00    PRI   172.021.003.032
 0402  IP    00    SEC   172.021.003.033
 0404  IP    00    NO    172.021.003.038
 0406  IP    01    NO    172.021.002.016
 040E  SNA   00
HWADD  00   02:00:FE:DF:00:42
HWADD  01   02:00:FE:DF:00:43
ROUTE  00   172.021.003.032  255.255.255.224
```

PTP (MPCPTP / PCPTP6 Channel-to-Channel link)

Descriptive

```
devaddr PTP [{-n | --dev} name]
             [{-m | --mac} mac]
             [{-t | --mtu} mtu | 1500]
             [{-i | --ibuff} {ibuff | 64}]
             [{-k | --kbuff} {kbuff | 1024}]
             [-4 | --inet]
             [-6 | --inet6]
             [-d | --debug]
             guest1 host1
             [guest2 host2]
```

Diagram



4.1 CKD DASD Devices

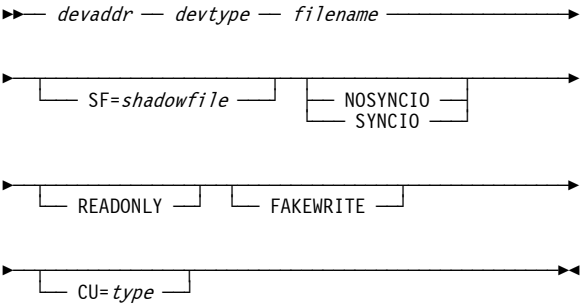
Descriptive

devaddr devtype filename [sf=shadowfile]
 [{NOSYNCIO | SYNCIO}] [READONLY]
 [FAKEWRITE] [CU=type]

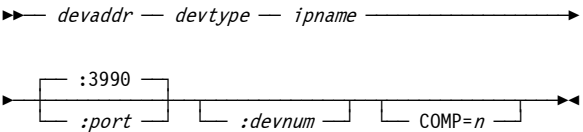
or

devaddr devtype ipname [:port | :3990] [:devnum]

Diagram



or



Default CU Types

Device Type	Default CU Type
2305, 2311, 2314	2841
3330, 3340, 3350, 3375, 3380	3880
3390	3990
9345	9343

Table 5: Default CU Types

Communication Lines

Communication Line - BSC

Descriptive

devaddr devtype

DIAL={IN | OUT | INOUT | NO}

LHOST={*hostname* | *ipaddress* | *}

LPORT={*servicename* | *port*}

RHOST={*hostname* | *ipaddress*}

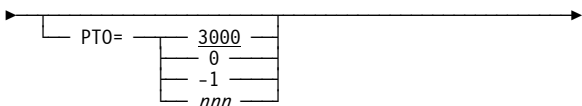
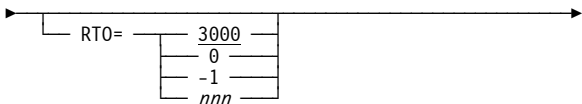
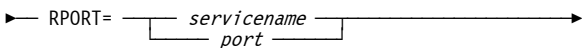
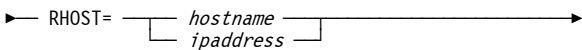
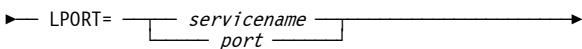
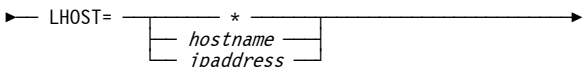
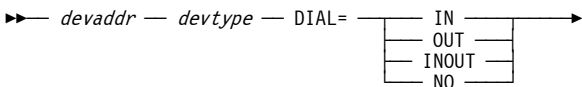
RPORT={*servicename* | *port*}

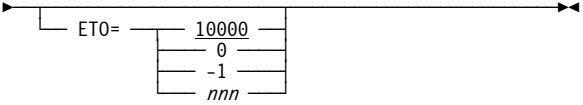
[RTO={0 | -1 | *nnn* | 3000}]

[PTO={0 | -1 | *nnn* | 3000}]

[ETO={0 | -1 | *nnn* | 10000}]

Diagram



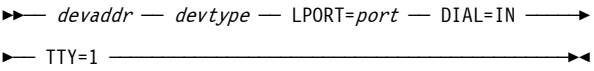


Communication Line - TTY

Descriptive

devaddr devtype LPORT=port DIAL=IN TTY=1

Diagram



5. Hercules Console Commands

Command	Description
!message	SCP priority message
#	Silent comment
\$locate	Display and verify Hercules control blocks
\$test	Custom test command
\$zapcmd	Enable or disable system parameters and console commands
*	Loud comment
.reply	SCP command
?	List all commands / command specific help (alias for help)
abs	Display or alter absolute storage
aea	Display AEA (absolute-effective-address) tables
aia	Display AIA (absolute-instruction-address) fields
ar	Display access registers
archlvl	Set architecture level
archmode	Set architecture mode (alias for ARCHLVL command)
attach	Configure device
auto_scsi_mount	Automatic SCSI tape mounts (deprecated, use SCSIMOUNT instead)
autoinit	Display or set automatic creation of empty tape files

Command	Description
automount	Display or update allowable tape automount directories
b	Set breakpoint
b+	Set breakpoint
b-	Delete breakpoint
cache	Execute cache related commands
cachestats	Display cache statistics
capping	Display or set CPU capping value
cckd	CCKD command
cd	Change directory
cf	Configure current CPU online or offline
cfall	Configure all CPU's online or offline
clocks	Display TOD clock and CPU timer
cmdlevel	Display or set current command group
cmdlvl	Alias for cmdlevel command
cmdsep	Display or set command line separator
cmdtgt	Specify the command target
cnslport	Display or set telnet client port
codepage	Display or set codepage conversion table
conkpalv	Display / alter console TCP/IP keep-alive settings
cp_updt	Create or modify user character conversion table

Command	Description
cpu	Define target CPU for console display and commands
cpuidfmt	Display or set format BASIC / 0 / 1 STIDP generation
cpumodel	Display or set CPU model number
cpuprio	Display or set CPU thread process priority
cpuserial	Display or set CPU serial number
cpuverid	Display or set CPU version code
cr	Display or alter control registers
cscript	Cancel a running script thread
ctc	Enable / disable CTC debugging
define	Rename device
defstore	Display or define main and expanded storage values
defsym	Define a symbol
delsym	Delete a symbol
detach	Remove device
devinit	Reinitialize device
devlist	List device, device class or all devices
devprio	Display or set device threads process priority
devtmax	Display or set max device threads
diag8cmd	Display or set DIAGNOSE 8 command option
dir	Display file and directory listing

Command	Description
ds	Display subchannel
ecpsvm	ECPS:VM commands
engines	Set processor engines type
exec	Execute a REXX script
exit	Terminate the emulator
ext	Generate external interrupt
fcb	Display current FCB or load new FCB image
fpc	Display or alter floating point control register
fpr	Display or alter floating point registers
f{+/-} addr	Mark frames usable / unusable
g	Turn off instruction stepping and start all CPUs
gpr	Display or alter general purpose registers
hao	Hercules Automatic Operator (HAO)
help	List all commands / command specific help
herc	Send Hercules command
herclogo	Read a new Hercules logo file
hercprio	Display or set Hercules process priority
hst	History of commands
http	Start, stop, modify or display HTTP server

Command	Description
i	Generate I/O attention interrupt for device
icount	Display individual instruction counts
iodelay	Display or set I/O delay value
ipending	Display pending interrupts
ipl	IPL Normal from device xxxx
iplc	IPL Clear from device xxxx (deprecated, use IPL with CLEAR option instead)
k	Display CCKD internal trace
kd	Clear held messages
ldmod	Load a module
legacysenseid	Display or set SENSE ID CCW (x'E4') feature
loadcore	Load a core image from a file
loadparm	Set IPL parameter
loadtext	Load a text deck file
log	Direct logger output
logopt	Display or set logging options
lparname	Display or define LPAR name
lparnum	Display or set LPAR identification number
ls	Display file and directory listing
lsdep	List module dependencies
lsmmod	List dynamic modules
mainsize	Display or set main storage size

Command	Description
manufacturer	Display or set STSI manufacturer code
maxcpu	Display or set maximum number of CPUs
maxrates	Display highest MIPS/SIO rate or set a new reporting interval
memlock	Lock Hercules memory
message	Display message on console like VM
model	Display or set STSI model code
modpath	Display or set dynamic load module path
mounted_tape_reinit	Control tape initialization
msg	Display message on console like VM
msghld	Display or set timeout value of held messages
msglevel	Display or set the current message display output
msglvl	Display or set the current message display output (alias for msglevel command)
msgnoh	Display message on console like VM, but without header
mt	Control magnetic tape operation
numcpu	Display or set number of emulated CPUs
numvec	Display or set number of vector facilities
ostailor	Tailor trace information for specific operating system
panrate	Display or set console refresh rate

Command	Description
panitle	Display or set console window title
pgmprdos	Set LPP license setting
pgmtrace	Trace program interrupts
plant	Display or set STSI plant code
pr	Display prefix register
pscp	Send system control program priority message
psw	Display or alter program status word
ptp	Enable / disable PTP debugging
ptt	Display or set internal trace
pwd	Print working directory
qcpuid	Display CPU ID
qd	Query device information
qpfkeys	Display the current PF key settings
qpid	Display process ID of Hercules
qports	Display TCP/IP ports in use
qproc	Display processors type and utilization
qstor	Display main and expanded storage values
quiet	Toggle automatic refresh of console display data
quit	Terminate the emulator
quitmout	Display or set quit timeout value
r	Display or alter real storage

Command	Description
restart	Generate restart interrupt
resume	Resume Hercules
rexx	Display or set REXX interpreter settings
rmmod	Delete a module
s	Instruction stepping
s+	Instruction stepping on
s-	Instruction stepping off
s?	Instruction stepping query
savecore	Save a core image to a file
sclpboot	Set or display SCLP base directory
scp	Send system control program command
scpecho	Display or set option to echo to console and history of SCP replies
scpimply	Display or set option to pass non-Hercules commands to the SCP
script	Run a sequence of console commands contained in a file
scsimount	Automatic SCSI tape mounts
sf+	Create a new shadow file
sf-	Delete a shadow file
sfc	Compress a shadow file
sfd	Display shadow file statistics
sfk	Perform a chkdsk on the active shadow file

Command	Description
sh	Shell command
shcmdopt	Display or set shell command option
showdvol1	Enable showing of DASD volsers in device list
shrd	Display or set shared device server trace
shrdport	Set shared device server port
sizeof	Display size of structures
srvprio	Display or set server threads priority
ssd	Signal Shutdown
start	Start CPU or printer / punch device
startall	Start all CPU's
stop	Stop CPU or printer / punch device
stopall	Stop all CPU's
store	Store CPU status at absolute zero
suspend	Suspend Hercules
symptom	Instruction trace display option (alias for TRACEOPT command)
syncio	Display syncio device statistics
sysclear	SYSTEM CLEAR RESET manual operation
sysePOCH	Set base date for TOD clock
sysreset	SYSTEM RESET manual operation
s{+/-} dev	Turn CCW stepping on / off
t	Instruction trace

Command	Description
t+	Instruction trace on
t-	Instruction trace off
t?	Instruction trace query
timerint	Display or set timers update interval
tlb	Display TLB tables
toddrag	Display or set TOD clock drag factor
todprio	Display or set timer thread process priority
traceopt	Instruction trace display option
tt32	Control / query CTCI-WIN functionality
tzoffset	Set TOD clock offset from GMT
t{+/-} CKD	Turn CKD_KEY tracing on / off
t{+/-} dev	Turn CCW tracing on / off
u	Disassemble storage
uptime	Display Hercules Emulator uptime
v	Display or alter virtual storage
version	Display version information
xpndsize	Display or set expanded storage size
yroffset	Set TOD clock offset from actual date

Table 6: Hercules Console Commands

6. Console Command Descriptions

!message (SCP priority message)

Descriptive

!prio_msg

Diagram

▶— *!prio message* —————▶◀

(Silent comment)

Descriptive

anytext

Diagram

▶— # — *anytext* —————▶◀

\$LOCATE (Display and verify Hercules control blocks)

Descriptive

\$LOCATE controlblock

Diagram

▶— \$LOCATE — *controlblock* —————▶◀

\$TEST (Custom test command)

Descriptive

\$TEST req_parms [opt_parms]

Diagram

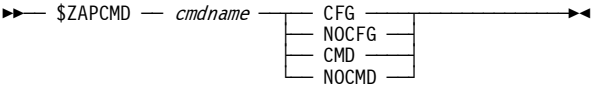
▶— \$TEST — *req_parms* —————▶◀
 └─ *opt_parms* ─┘

\$ZAPCMD (Enable or disable system parameters and console commands)

Descriptive

\$ZAPCMD *cmdname* [CFG | NOCFG | CMD | NOCMD]

Diagram

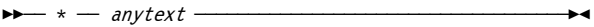


* (Loud comment)

Descriptive

* *anytext*

Diagram

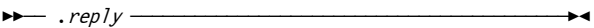


.reply (SCP command)

Descriptive

.*any_reply*

Diagram

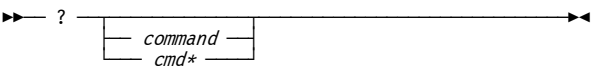


? (List all commands / command specific help)

Descriptive

? [*command* | *cmd**]

Diagram

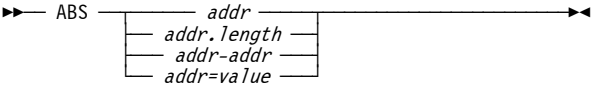


ABS (Display or alter absolute storage)

Descriptive

ABS { *addr* | *addr.length* | *addr-addr* | *addr=value* }

Diagram

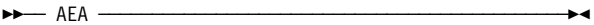


AEA (Display AEA absolute-effective-address tables)

Descriptive

AEA

Diagram



AIA (List AIA absolute-instruction-address fields)

Descriptive

AIA

Diagram

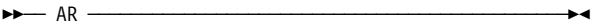


AR (Display access registers)

Descriptive

AR

Diagram



ARCHLVL (Set architecture level)

Descriptive

ARCHLVL [S/370 | ESA/390 | ESAME | z/ARCH]

or

ARCHLVL {ENABLE | DISABLE} *facility*
[S/370 | ESA/390 | z/ARCH]

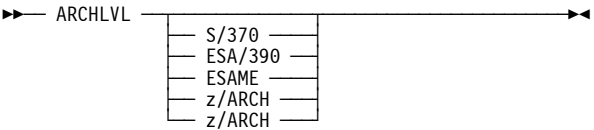
or

ARCHLVL {ENABLE | DISABLE} *bitno*
[S/370 | ESA/390 | z/ARCH]

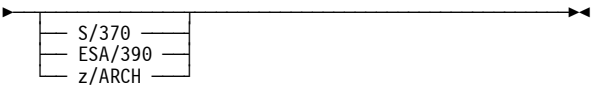
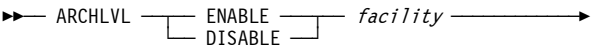
or

ARCHLVL QUERY [*facility* | ALL]

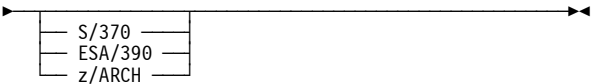
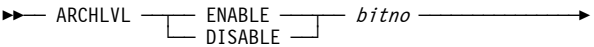
Diagram



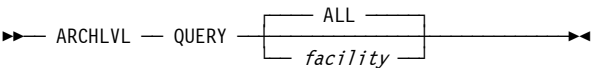
or



or



or



ARCHMODE (Set architecture mode)

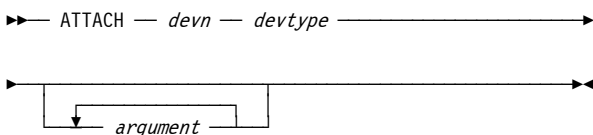
ARCHMODE is an alias for the ARCHLVL console command. Please see ARCHLVL for details.

ATTACH (Configure device)

Descriptive

ATTACH *devn type* [*argument* [*argument* ...]]

Diagram



AUTO_SCSI_MOUNT (Automatic SCSI tape mounts)

The AUTO_SCSI_MOUNT console command has been deprecated.

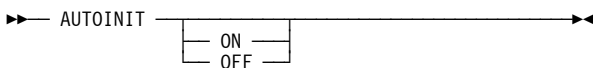
Use "SCSIMOUNT" instead.

AUTOINIT (Display or set automatic creation of empty tape files)

Descriptive

AUTOINIT [ON | OFF]

Diagram



AUTOMOUNT (Display or update allowable tape automount directories)

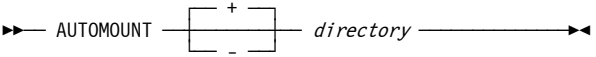
Descriptive

AUTOMOUNT {ADD *directory* | DEL *directory* | LIST}

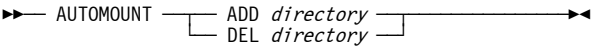
or

AUTOMOUNT [\pm | -] *directory*

Diagram



or

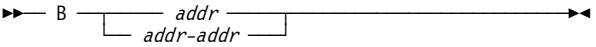


B (Set breakpoint)

Descriptive

B {*addr* | *addr*▲*addr*}

Diagram

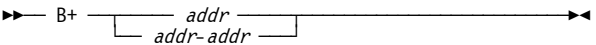


B+ (Set breakpoint)

Descriptive

B+ {*addr* | *addr*▲*addr*}

Diagram

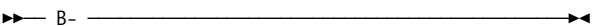


B- (Delete breakpoint)

Descriptive

B-

Diagram

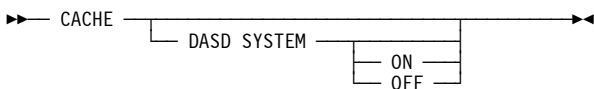


CACHE (Execute cache related commands)

Descriptive

CACHE [DASD SYSTEM [ON | OFF]]

Diagram

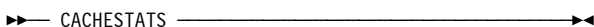


CACHESTATS (Display cache statistics)

Descriptive

CACHESTATS

Diagram

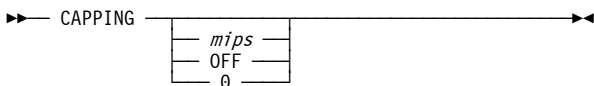


CAPPING (Display or set CPU capping value)

Descriptive

CAPPING [*mips* | OFF | 0]

Diagram



CCKD (CCKD command)

Descriptive

CCKD [HELP | STATS | OPTS |

option=value [,*option=value ...*]]

where *option* can be:

[COMP={-1 | *n*}]

[,COMPPARM={-1 | *n*}]

[,RA={2 | *n*}]

[,RAQ={4 | *n*}]

[,RAT={2 | *n*}]

[,WR={2 | *n*}]

[,GCINT={5 | *n*}]

[,GCPARM={0 | n}]

[,NOSTRESS={0 | 1}]

[,FREEPEND={-1 | n}]

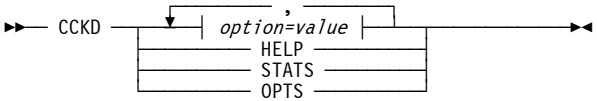
[,FSYNC={0 | 1}]

[,TRACE={0 | n}]

[,LINUXNULL={0 | 1}]

[,GCSTART={0 | 1}]

Diagram



where *option* can be:

COMP= $\begin{matrix} -1 \\ n \end{matrix}$

COMPPARM= $\begin{matrix} -1 \\ n \end{matrix}$

RA= $\begin{matrix} 2 \\ n \end{matrix}$

RAQ= $\begin{matrix} 4 \\ n \end{matrix}$

RAT= $\begin{matrix} 2 \\ n \end{matrix}$

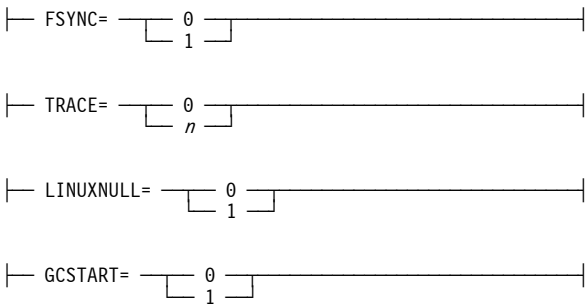
WR= $\begin{matrix} 2 \\ n \end{matrix}$

GCINT= $\begin{matrix} 5 \\ n \end{matrix}$

GCPARM= $\begin{matrix} 0 \\ n \end{matrix}$

NOSTRESS= $\begin{matrix} 0 \\ 1 \end{matrix}$

FREEPEND= $\begin{matrix} -1 \\ n \end{matrix}$



CD (Change directory)

Descriptive

CD *path*

Diagram

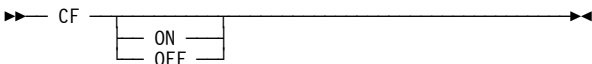


CF (Configure current CPU online or offline)

Descriptive

CF [ON | OFF]

Diagram

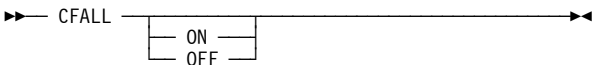


CFALL (Configure all CPUs online or offline)

Descriptive

CFALL [ON | OFF]

Diagram



CLOCKS (Display TOD clock and CPU timer)

Descriptive

CLOCKS

Diagram

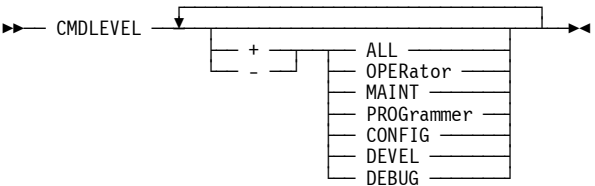


CMDLEVEL (Display or set current command group)

Descriptive

CMDLEVEL [{+ | -} {ALL | OPERator | MAINT |
PROGRAMmer | CONFIG | DEVELoper |
DEBUG} [...]]

Diagram



CMDLVL (Display or set current command group)

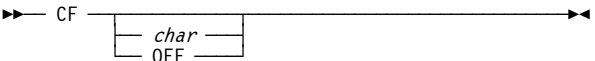
CMDLVL is an alias for CMDLEVEL. See CMDLEVEL for details.

CMDSEP (Display or set command line separator)

Descriptive

CMDSEP [*char* | OFF]

Diagram

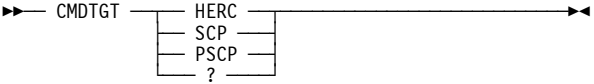


CMDTGT (Specify command target)

Descriptive

CMDTGT {HERC | SCP | PSCP | ?}

Diagram

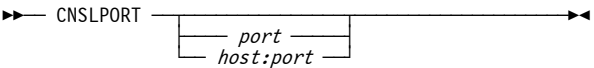


CNSLPORT (Display or set telnet client port)

Descriptive

CNSLPORT [*port* | *host:port*]

Diagram

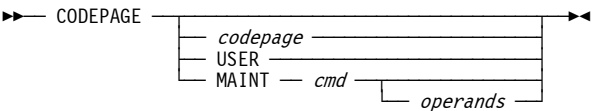


CODEPAGE (Display or set codepage conversion table)

Descriptive

CODEPAGE [*codepage* | USER | MAINT *cmd* [*operands*]]

Diagram

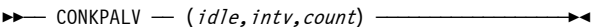


CONKPALV (Specify TCP/IP keep alive settings)

Descriptive

CONKPALV (*idle, intv, count*)

Diagram



CP_UPDT (Create or modify user character conversion table)

Descriptive

CP_UPDT *command* [*operands*]

where *command* can be:

ALTER {EBCDIC | ASCII | G2H | H2G}

(*pos, val* [, *pos, val*] ...)

DISPLAY {EBCDIC | ASCII | G2H | H2G }

EXPORT {EBCDIC | ASCII | G2H | H2G } *filename*

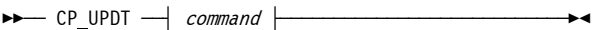
IMPORT {EBCDIC | ASCII | G2H | H2G } *filename*

REFERENCE [*codepage*]

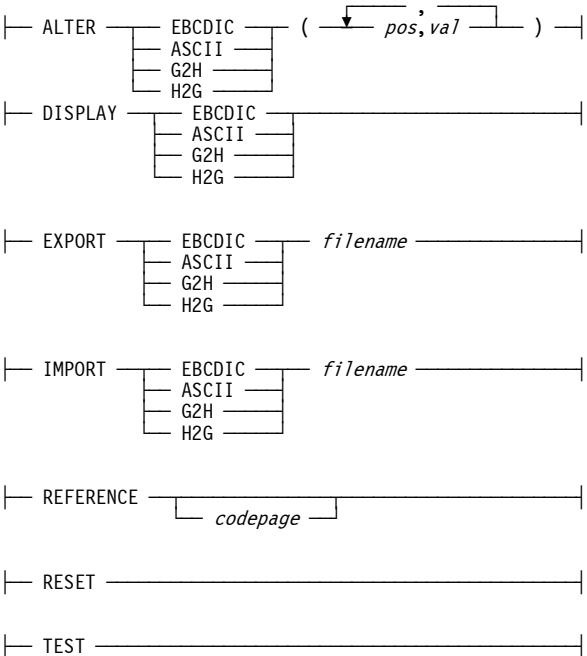
RESET

TEST

Diagram



where *command* can be:

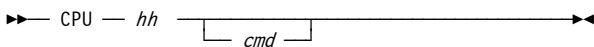


CPU (Define target CPU for console displays and commands)

Descriptive

CPU *hh* [*cmd*]

Diagram

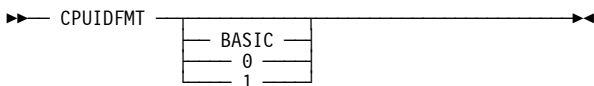


CPUIDFMT (Display or set format BASIC / 0 / 1 STIDP generation)

Descriptive

CPUIDFMT [BASIC | 0 | 1]

Diagram

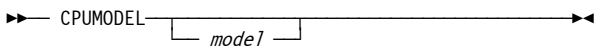


CPUMODEL (Display or set CPU model number)

Descriptive

CPUMODEL [*model*]

Diagram



CPUPRIO (Display or set CPU thread process priority)

Descriptive

CPUPRIO [*nn*]

Diagram

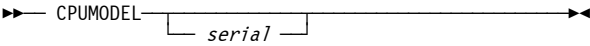


CPUSERIAL (Display or set CPU serial number)

Descriptive

CPUMODEL [*serial*]

Diagram

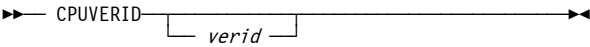


CPUVERID (Display or set CPU version code)

Descriptive

CPUVERID [*verid*]

Diagram

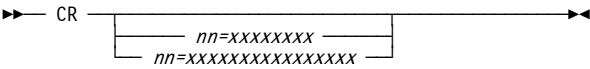


CR (Display or alter control registers)

Descriptive

CR [*nn=xxxxxxxx* | *nn=xxxxxxxxxxxxxxxxxxxx*]

Diagram

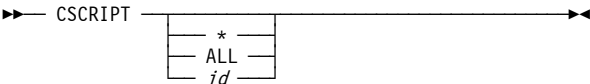


CSCRIPT (Cancel a running script thread)

Descriptive

CSCRIPT [*** | ALL | *id*]

Diagram

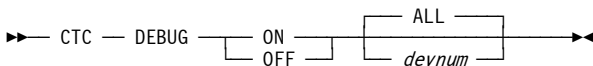


CTC (Enable / disable debug packet tracing)

Descriptive

CTC DEBUG {ON | OFF} [*devnum* | ALL]

Diagram

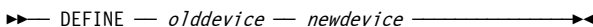


DEFINE (Rename device)

Descriptive

DEFINE *olddevice newdevice*

Diagram

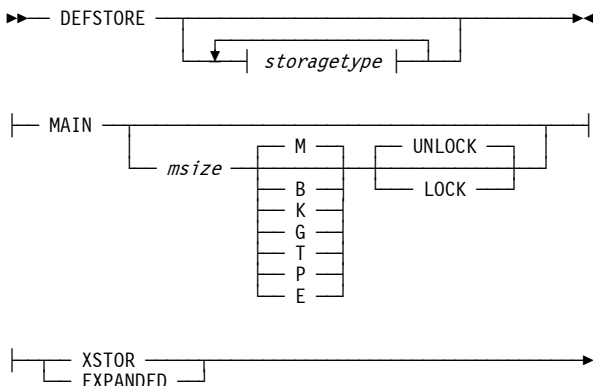


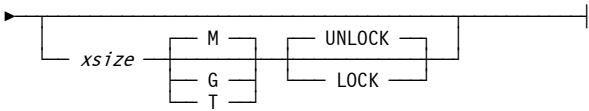
DEFSTORE (Display or define main and expanded storage values)

Descriptive

DEFSTORE [MAIN [*msize*[B | K | M | G | T | P | E]
[UNLOCK | LOCK]]]
[XSTOR | EXPANDED] [*msize*[M | G | T]
[UNLOCK | LOCK]]]

Diagram



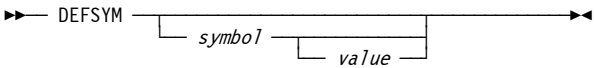


DEFSYM (Define a symbol)

Descriptive

DEFSYM [*symbol* [*value*]]

Diagram

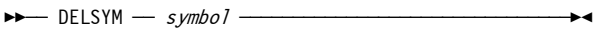


DELSYM (Delete a symbol)

Descriptive

DELSYM *symbol*

Diagram

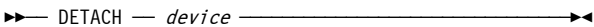


DETACH (Remove device)

Descriptive

DETACH *device*

Diagram

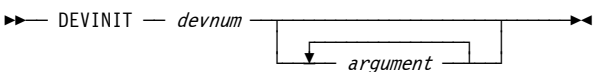


DEVINIT (Reinitialize device)

Descriptive

DEVINIT *devnum* [*argument* [*argument* ...]]

Diagram

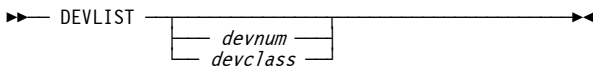


DEVLIST (List device, device class or all devices)

Descriptive

DEVLIST [*devnum* | *devclass*]

Diagram

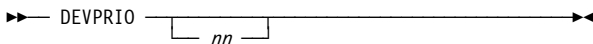


DEVPRIO (Display or set device threads process priority)

Descriptive

DEVPRIO [*nn*]

Diagram

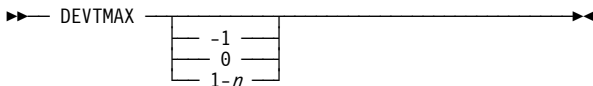


DEVTMAX (Display or set maximum device threads)

Descriptive

DEVTMAX [-1 | 0 | 1-*n*]

Diagram

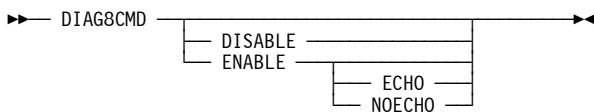


DIAG8CMD (Display or set DIAGNOSE 8 command option)

Descriptive

DIAG8CMD [DISABLE | ENABLE [ECHO | NOECHO]]

Diagram



DIR (Display file and directory listing)

Descriptive

DIR

Diagram

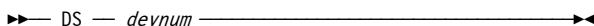


DS (Display subchannel)

Descriptive

DS *devnum*

Diagram

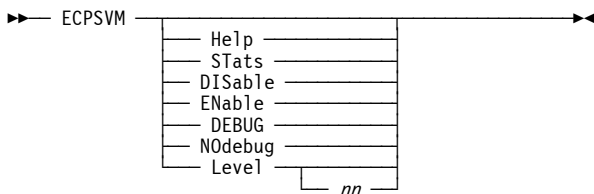


ECPSVM (ECPS:VM commands)

Descriptive

ECPSVM [Help | S**T**ats | DIS**A**ble | EN**A**ble | DE**U**GG |
NO**d**ebug | Level [*nn*]]

Diagram

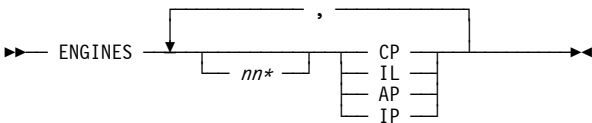


ENGINES (Set processor engines type)

Descriptive

ENGINES [*nn**] {CP | IL | AP | IP} [, ...]

Diagram

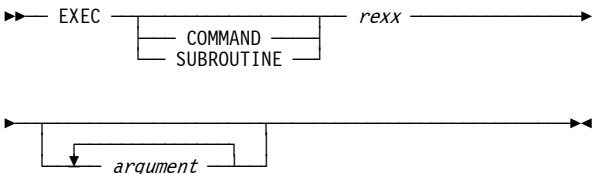


EXEC (Execute a REXX script)

Descriptive

EXEC [COMMAND | SUBROUTINE] *rexx*
[*argument* [*argument* ...]]

Diagram

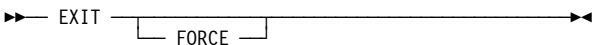


EXIT (Terminate the emulator)

Descriptive

EXIT [FORCE]

Diagram

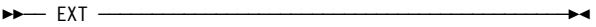


EXT (Generate external interrupt)

Descriptive

EXT

Diagram

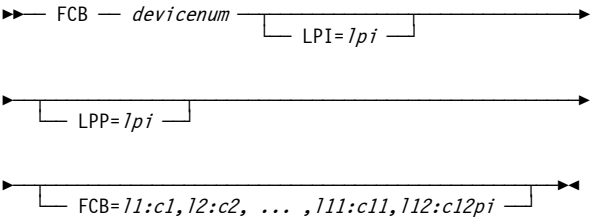


FCB (Display current FCB or load new FCB image)

Descriptive

FCB *devicenum* [LPI=*lpi*] [LPP=*lpp*]
[FCB=*l1:c1,l2:c2, ... ,l11:c11,l12:c12*]

Diagram

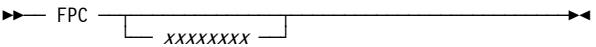


FPC (Display or alter floating point control register)

Descriptive

FPC [*xxxxxxxx*]

Diagram

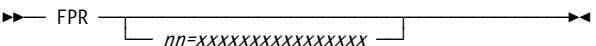


FPR (Display or alter floating point registers)

Descriptive

FPR [*nn=xxxxxxxxxxxxxxxxxxxx*]

Diagram

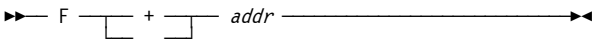


F{+/-} (Mark frames usable or unusable)

Descriptive

F{+ | -} *addr*

Diagram

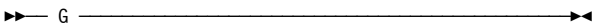


G (Turn off instruction stepping and start all CPUs)

Descriptive

G

Diagram

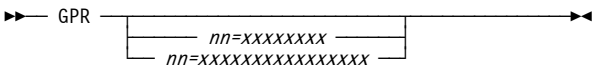


GPR (Display or alter general purpose registers)

Descriptive

GPR [*nn=XXXXXXXX* | *nn=XXXXXXXXXXXXXXXXXXXX*]

Diagram



HAO (Hercules Automatic Operator)

Descriptive

HAO *command* [*operands*]

where *command* can be:

TGT *target*

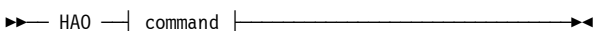
CMD *consolecmd*

DEL *nn*

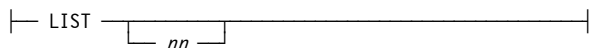
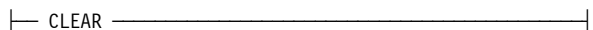
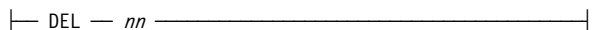
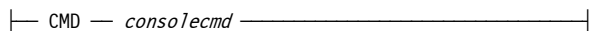
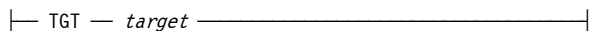
CLEAR

LIST [*nn*]

Diagram



where *command* can be:

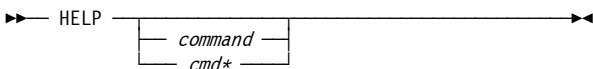


HELP (List all commands / command specific help)

Descriptive

HELP [*command* | *cmd**]

Diagram

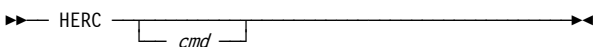


HERC (Send Hercules command)

Descriptive

HERC [*cmd*]

Diagram

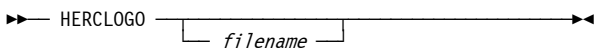


HERCLOGO (Read a new Hercules logo file)

Descriptive

HERCLOGO [*filename*]

Diagram

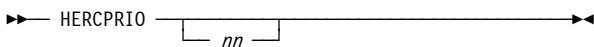


HERCPRIO (Display or set Hercules process priority)

Descriptive

HERCPRIO [*nn*]

Diagram



HST (History of commands)

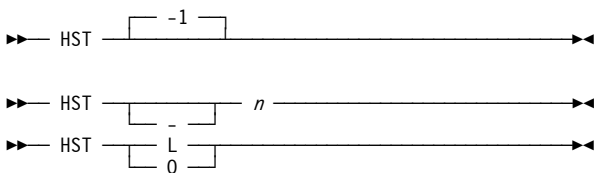
Descriptive

HST [-1]

HST [-] *n*

HST {L | 0}

Diagram



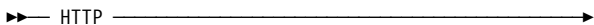
HTTP (Start, stop, modify or display HTTP server)

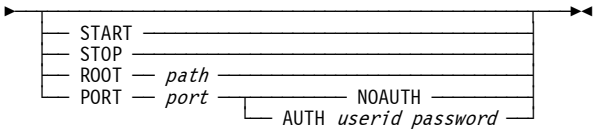
Descriptive

HTTP [START | STOP | ROOT *path* |

PORT *port* {NOAUTH | AUTH *userid password*}]

Diagram





I (Generate I/O attention interrupt for device)

Descriptive

I *device*

Diagram

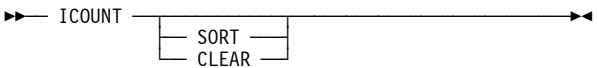


ICOUNT (Display individual instruction counts)

Descriptive

ICOUNT [SORT | CLEAR]

Diagram

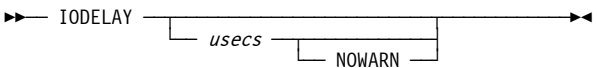


IODELAY (Display or set I/O delay value)

Descriptive

IODELAY [*usecs* [NOWARN]]

Diagram

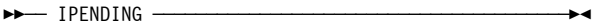


IPENDING (Display pending interrupts)

Descriptive

IPENDING

Diagram



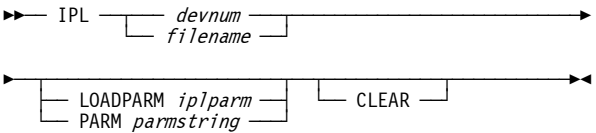
IPL (IPL Normal from device xxxx)

Descriptive

IPL { *devnum* | *filename* }

[LOADPARM *iplparm* | PARM *parmstring*] [CLEAR]

Diagram



IPLC (IPL Clear from device xxxx)

The IPLC console command has been deprecated.

Use "IPL CLEAR" instead.

K (Display CCKD internal trace)

Descriptive

K

Diagram



KD (Alias of 'MSGHLD CLEAR')

Descriptive

KD

Diagram

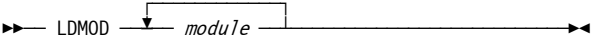


LDMOD (Load a module)

Descriptive

LDMOD *module* [*module* [*module* ...]]

Diagram

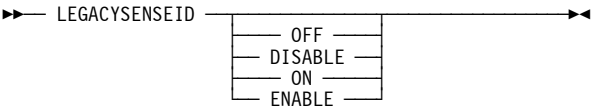


LEGACYSENSEID (Display or set SENSE ID CCW (x'E40) feature)

Descriptive

LEGACYSENSEID [OFF | DISABLE | ON | ENABLE]

Diagram

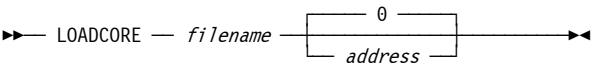


LOADCORE (Load a core image from a file)

Descriptive

LOADCORE *filename* [*address* | 0]

Diagram

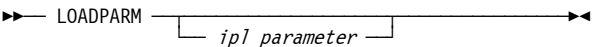


LOADPARAM (Set IPL parameter)

Descriptive

LOADPARAM [*ipl_parameter*]

Diagram

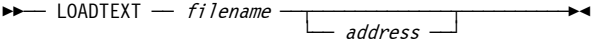


LOADTEXT (Load a text deck file)

Descriptive

LOADTEXT *filename* [*address*]

Diagram

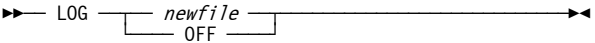


LOG (Direct logger output)

Descriptive

LOG [*newfile* | OFF]

Diagram

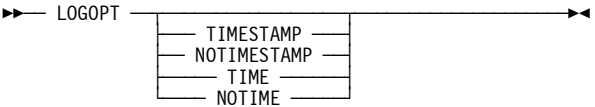


LOGOPT (Display or set logging options)

Descriptive

LOGOPT [TIMESTAMP | NOTIMESTAMP | TIME | NOTIME]

Diagram

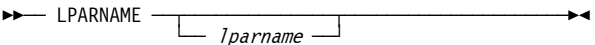


LPARNAME (Display or define LPAR name)

Descriptive

LPARNAME [*lparname*]

Diagram

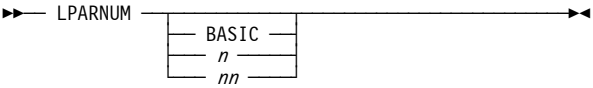


LPARNUM (Display or set LPAR identification number)

Descriptive

LPARNUM [BASIC | *n* | *nn*]

Diagram



LS (Display file and directory listing)

Descriptive

LS

Diagram

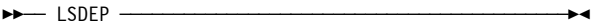


LSDEP (List module dependencies)

Descriptive

LSDEP

Diagram

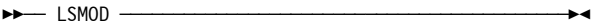


LSMOD (List dynamic modules)

Descriptive

LSMOD

Diagram

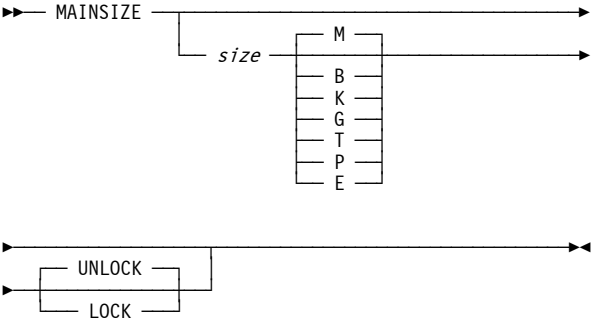


MAINSIZE (Display or set main storage size)

Descriptive

MAINSIZE [*size*[B | K | M | G | T | P | E]
[UNLOCK | LOCK]]

Diagram

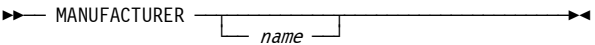


MANUFACTURER (Display or set STSI manufacturer code)

Descriptive

MANUFACTURER [*name*]

Diagram

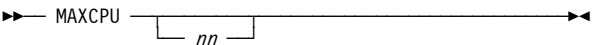


MAXCPU (Display or set maximum number of CPUs)

Descriptive

MAXCPU [*nn*]

Diagram

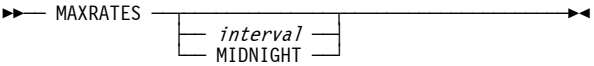


MAXRATES (Display highest MIPS/SIO rate or set new reporting interval)

Descriptive

MAXRATES [*interval* | MIDNIGHT]

Diagram

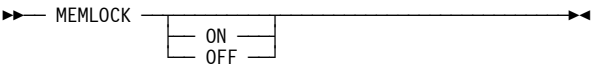


MEMLOCK (Lock Hercules memory)

Descriptive

MEMLOCK [ON | OFF]

Diagram

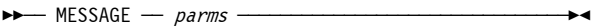


MESSAGE (Display message on console like VM)

Descriptive

MESSAGE *parms*

Diagram

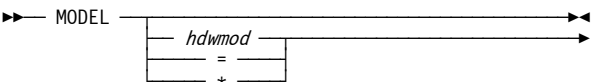


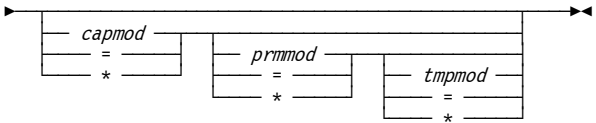
MODEL (Display or set STSI model code)

Descriptive

MODEL [*hdwmod* | = | * [*capmod* | = | *
[*prmmod* | = | * [*tmpmod* | = | *]]]]

Diagram



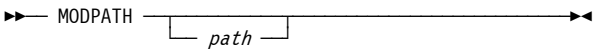


MODPATH (Display or set dynamic load module path)

Descriptive

MODPATH [*path*]

Diagram

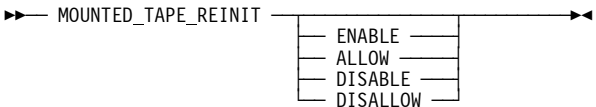


MOUNTED_TAPE_REINIT (Control tape initialization)

Descriptive

MOUNTED_TAPE_REINIT [ENABLE | ALLOW |
DISABLE | DISALLOW]

Diagram

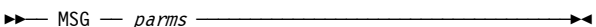


MSG (Display message on console like VM)

Descriptive

MSG *parms*

Diagram

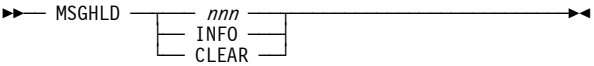


MSGHLD (Display or set timeout of held messages)

Descriptive

MSGHLD {*nnn* | INFO | CLEAR}

Diagram



MSGLEVEL (Display or set the current message display output)

Descriptive

MSGLEVEL [*option option ...*]

where *option* can be:

ON | OFF | TEXT | TIME | NODEBUG |

[+ | -] DEBUG |

[+ | -] TAPE |

[+ | -] DASD |

[+ | -] COMM |

[+ | -] UR |

[+ | -] SCSI |

[+ | -] CTCA |

[+ | -] GRAF |

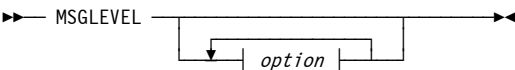
[+ | -] THREAD |

[+ | -] CHANNEL |

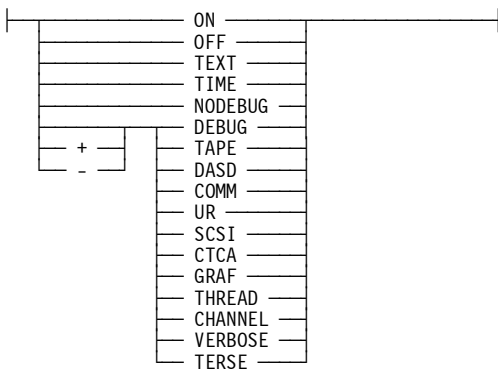
[+ | -] VERBOSE |

[+ | -] TERSE

Diagram



where *option* can be:



MSGLVL (Display or set the current message display output)

MSGLVL is an alias for MSGLEVEL.

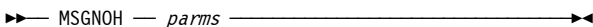
See MSGLEVEL for details.

MSGNOH (Display message on console like VM, but without header)

Descriptive

MSG *parms*

Diagram



MT (Control magnetic tape operation)

Descriptive

MT *device operation*

where *operation* can be:

REW

ASF [*nnnn* | 1]

FSF [*nnnn* | 1]

BSF [*nnnn* | 1]

FSR [*nnnn* | 1]

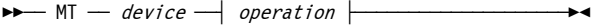
BSR [*nnnn* | 1]

WTM [*nnnn* | 1]

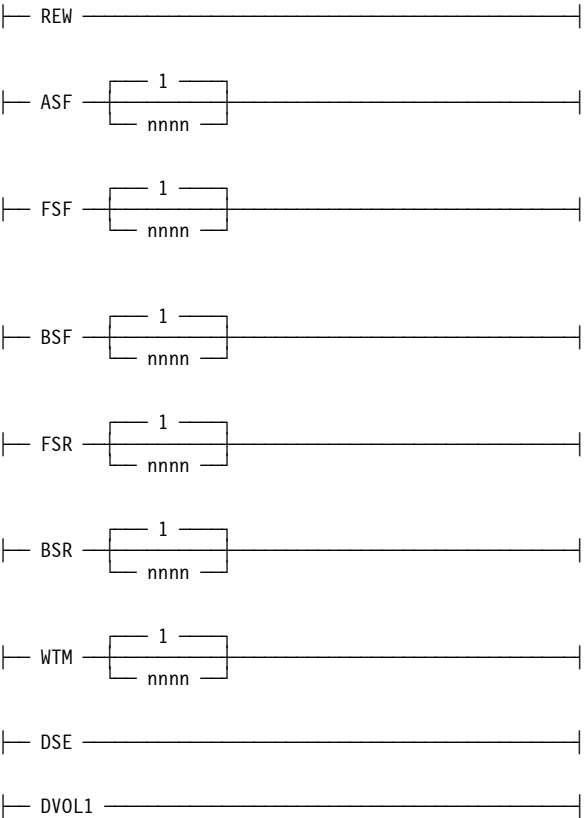
DSE

DVOL1

Diagram



where *operation* can be:

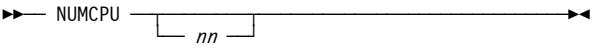


NUMCPU (Display or set number of emulated CPUs)

Descriptive

NUMCPU [*nn*]

Diagram

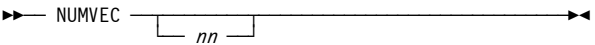


NUMVEC (Display or set number of vector facilities)

Descriptive

NUMVEC [*nn*]

Diagram

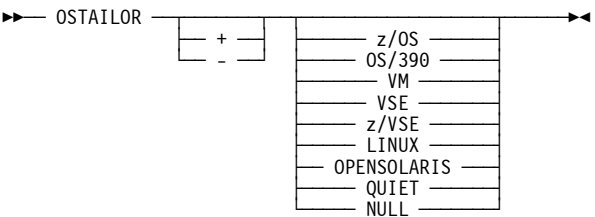


OSTAILOR (Tailor trace information for specific operating system)

Descriptive

OSTAILOR [[+ | -] z/OS | OS/390 | VM | VSE | z/VSE |
LINUX | OPENSOLARIS | QUIET | NULL]

Diagram

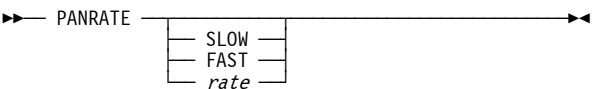


PANRATE (Display or set panel refresh rate)

Descriptive

PANRATE [SLOW | FAST | *rate*]

Diagram

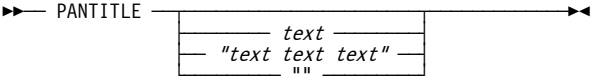


PANTITLE (Hercules console window title)

Descriptive

PANTITLE [*text* | "*text text text*" | ""]

Diagram



PGMPRDOS (Set LPP license setting)

Descriptive

PGMPRDOS {RESTRICTED | LICENSED}

Diagram

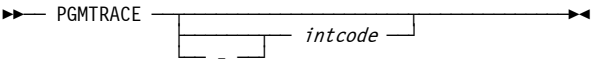


PGMTRACE (Trace program interrupts)

Descriptive

PGMTRACE [[-] *intcode*]

Diagram

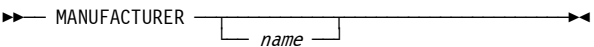


PLANT (Display or set STSI plant code)

Descriptive

MANUFACTURER [*name*]

Diagram

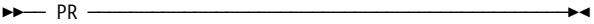


PR (Display prefix register)

Descriptive

PR

Diagram

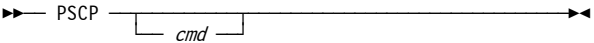


PSCP (Send system control program priority message)

Descriptive

PSCP [*cmd*]

Diagram



PSW (Display or alter program status word)

Descriptive

PSW [*operand=value* [*operand=value ...*]]

where *operand* can be:

SM=*xx*

PK=*nn*

CMWP=*x*

AS=[PRI | SEC | HOME]

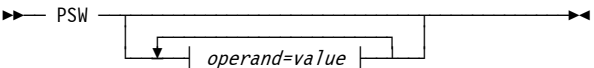
CC=*n*

PM=*x*

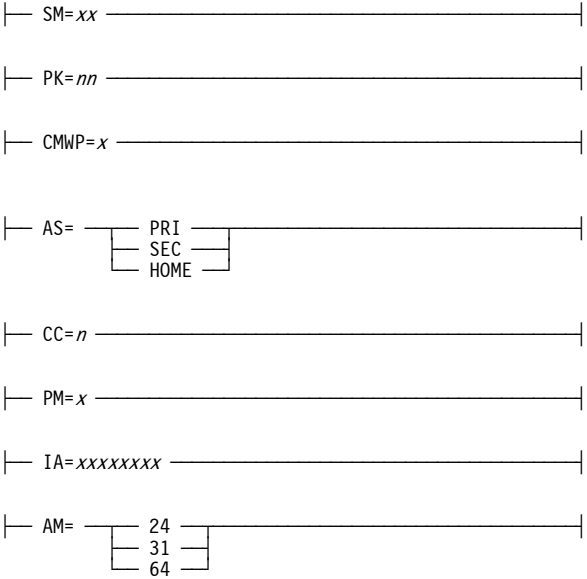
IA=*xxxxxxxx*

AM=[24 | 31 | 64]

Diagram



where *operand* can be:

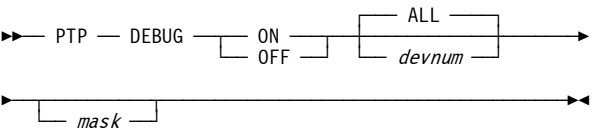


PTP (Enable / disable PTP debugging)

Descriptive

PTP DEBUG {ON | OFF} [[*devnum* | ALL] [*mask*]]

Diagram



PTT (Display or set internal trace)

Descriptive

PTT [NOERROR | ERROR]
[NOCONTROL | CONTROL]
[NOPROG | PROG]
[NOINTER | INTER]
[NOSIE | SIE]

[NOSIGNAL | SIGNAL]

[NOIO | IO]

[NOTIMER | TIMER]

[NOTHREADS | THREADS]

[NOLOCK | LOCK]

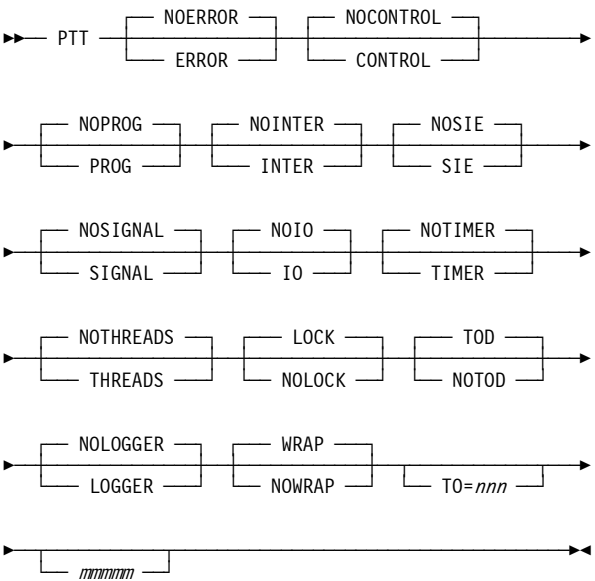
[NOTOD | TOD]

[NOLOGGER | LOGGER]

[NOWRAP | WRAP]

[TO=*nnn*] [*mmmmm*]

Diagram

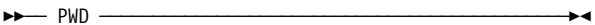


PWD (Print working directory)

Descriptive

PWD

Diagram

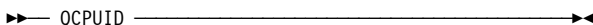


QCPUID (Display CPU ID)

Descriptive

QCPUID

Diagram

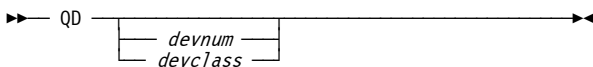


QD (Query device information)

Descriptive

QD [*devnum* | *devclass*]

Diagram

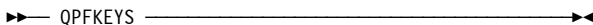


QPFKEYS (Display the current PF key settings)

Descriptive

QPFKEYS

Diagram

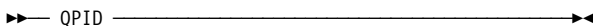


QPID (Display process ID of Hercules)

Descriptive

QPID

Diagram

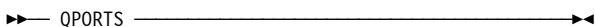


QPORTS (Display TCP/IP ports in use)

Descriptive

QPORTS

Diagram

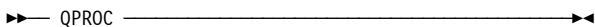


QPROC (Display processors type and utilization)

Descriptive

QPROC

Diagram

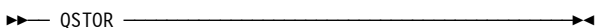


QSTOR (Query main and expanded storage values)

Descriptive

QSTOR

Diagram

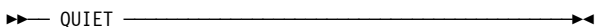


QUIET (Toggle automatic refresh of console display data)

Descriptive

QUIET

Diagram



QUIT (Terminate the emulator)

Descriptive

QUIT [FORCE]

Diagram

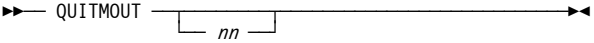


QUITMOUT (Display or set quit timeout value)

Descriptive

QUITMOUT [*nn*]

Diagram

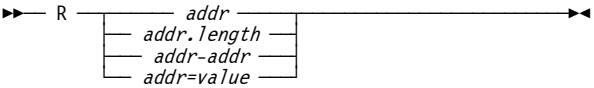


R (Display or alter real storage)

Descriptive

R {*addr* | *addr.length* | *addr-addr* | *addr=value*}

Diagram

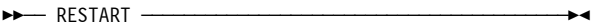


RESTART (Generate restart interrupt)

Descriptive

RESTART

Diagram



RESUME (Resume Hercules)

Descriptive

RESUME

Diagram



REXX (Display or set REXX interpreter settings)

Descriptive

REXX [*option*]

where *option* can be:

ENABLE | START [REGINA | OOREXX]

DISABLE | STOP

PATHS | REXXPATHS {*path* [*delimiter path ...*] | RESET}

SYSPATH {ON | OFF | RESET}

EXTENSIONS | SUFFIXES {*suffix*
[*delimiter suffix ...*] | RESET}

RESOLVER {ON | OFF | RESET}

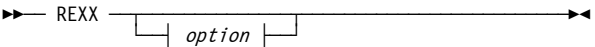
MSGLEVEL {0 | 1 | RESET}

MSGPREFIX {*messageprefix* | OFF | RESET}

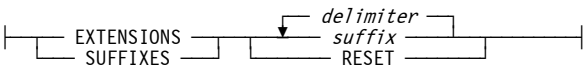
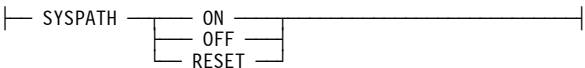
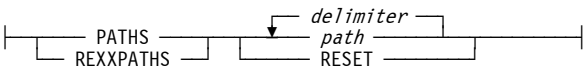
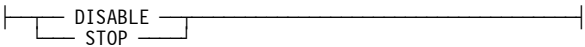
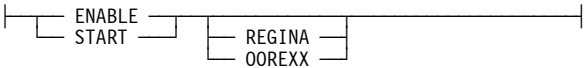
ERRPREFIX {*errorprefix* | OFF | RESET}

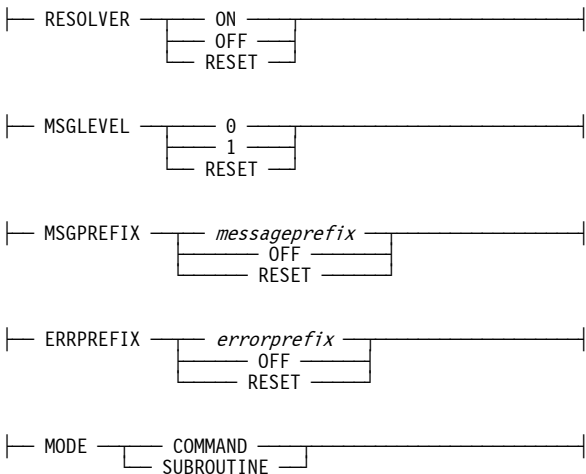
MODE {COMMAND | SUBROUTINE}

Diagram



where *option* can be:



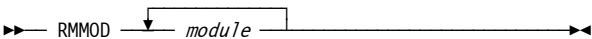


RMMOD (Delete a module)

Descriptive

RMMOD *module* [*module* [*module* ...]]

Diagram

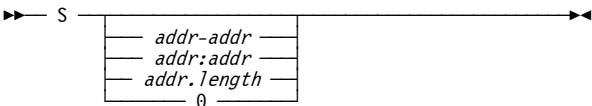


S (Instruction stepping)

Descriptive

S [*addr-addr* | *addr:addr* | *addr.length* | 0]

Diagram

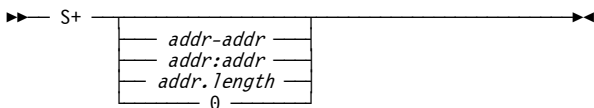


S+ (Instruction stepping on)

Descriptive

S+ [*addr-addr* | *addr:addr* | *addr.length* | 0]

Diagram



S- (Instruction stepping off)

Descriptive

S-

Diagram

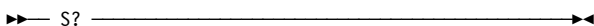


S? (Instruction stepping query)

Descriptive

S?

Diagram

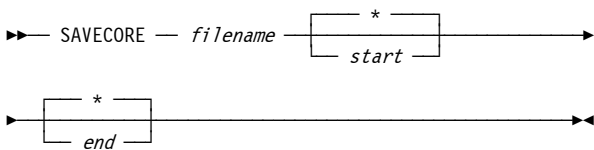


SAVECORE (Save a core image to a file)

Descriptive

SAVECORE *filename* [*start* | *] [*end* | *]

Diagram

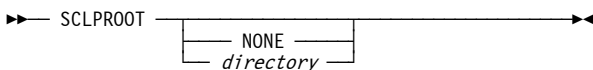


SCLPROOT (Set or display SCLP base directory)

Descriptive

SCLPROOT [NONE | *directory*]

Diagram

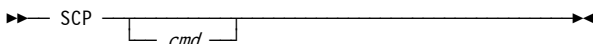


SCP (Send system control program command)

Descriptive

SCP [*cmd*]

Diagram

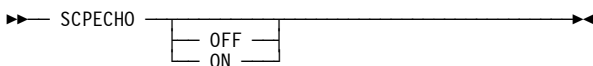


SCPECHO (Display or set option to echo to console and history of SCP replies)

Descriptive

SCPECHO [OFF | ON]

Diagram

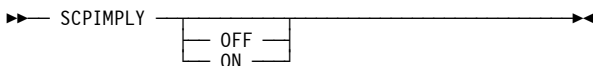


SCPIMPLY (Display or set option to pass non-Hercules commands to the SCP)

Descriptive

SCPIMPLY [OFF | ON]

Diagram

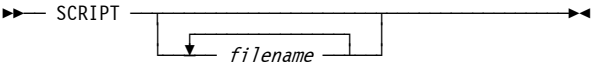


6.1 SCRIPT (Run a sequence of commands contained in a file)

Descriptive

SCRIPT [*filename* [*filename* ...]]

Diagram

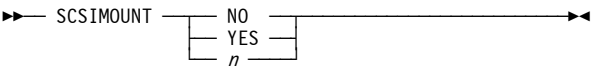


SCSIMOUNT (Automatic SCSI tape mounts)

Descriptive

SCSIMOUNT [NO | YES | *n*]

Diagram

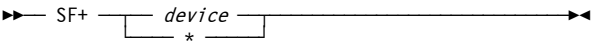


SF+ (Create a new shadow file)

Descriptive

SF+ {*device* | *}

Diagram

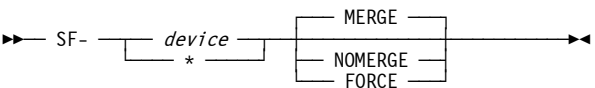


SF- (Delete a shadow file)

Descriptive

SF- {*device* | *} [MERGE | NOMERGE | FORCE]

Diagram

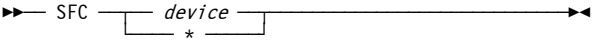


SFC (Compress a shadow file)

Descriptive

SFC {*device* | *}

Diagram

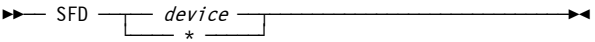


SFD (Display shadow file statistics)

Descriptive

SFD {*device* | *}

Diagram

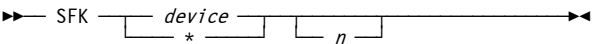


SFK (Perform a chkdsk on the active shadow file)

Descriptive

SFK {*device* | *} [*n*]

Diagram

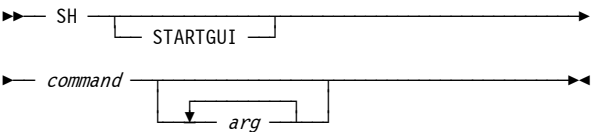


SH (Shell command)

Descriptive

SH [STARTGUI] *command* [*arg* [*arg* ...]]

Diagram

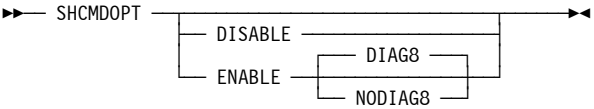


SHCMDOPT (Display or set shell command option)

Descriptive

SHCMDOPT [DISABLE | ENABLE [DIAG8 | NODIAG8]]

Diagram

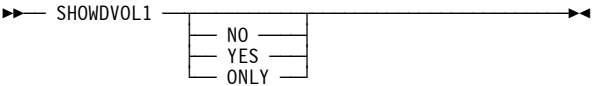


SHOWDVOL1 (Enable showing of DASD volumes in device list)

Descriptive

SHOWDVOL1 [NO | YES | ONLY]

Diagram

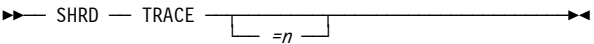


SHRD (Display or set shared device server trace)

Descriptive

SHRD TRACE [=n]

Diagram

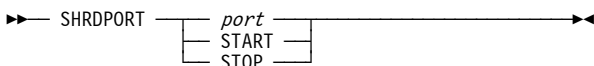


SHRDPORT (Set shared device server port)

Descriptive

SHRDPORT [*port* | START | STOP]

Diagram

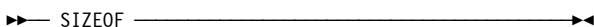


SIZEOF (Display size of structures)

Descriptive

SIZEOF

Diagram

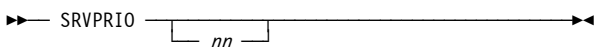


SRVPRIO (Display or set server threads process priority)

Descriptive

SRVPRIO [*nn*]

Diagram

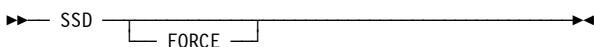


SSD (Signal shutdown)

Descriptive

SSD [FORCE]

Diagram

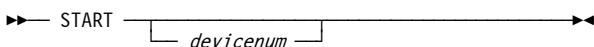


START (Start CPU or printer / punch device)

Descriptive

START [*devicenum*]

Diagram

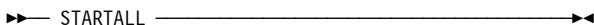


STARTALL (Start all CPUs)

Descriptive

STARTALL

Diagram

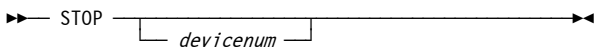


STOP (Stop CPU or printer / punch device)

Descriptive

STOP [*devicenum*]

Diagram

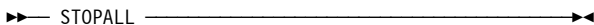


STOPALL (Stop all CPUs)

Descriptive

STOPALL

Diagram

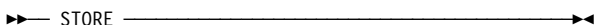


STORE (Store CPU status)

Descriptive

STORE

Diagram

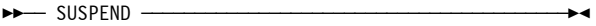


SUSPEND (Suspend Hercules)

Descriptive

SUSPEND

Diagram



SYMPTOM (Instruction trace display options)

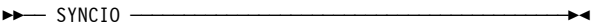
SYMPTOM is an alias for the TRACEOPT console command. Please see TRACEOPT for details.

SYNCIO (Display SYNCIO device statistics)

Descriptive

SYNCIO

Diagram



SYSCLEAR (SYSTEM CLEAR RESET manual operation)

Descriptive

SYSCLEAR

Diagram

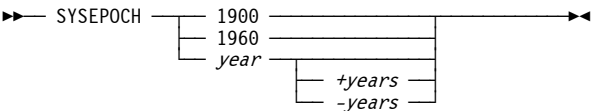


SYSEPOCH (Set base date for TOD clock)

Descriptive

SYSEPOCH {1900 | 1960 | *year* [*+years* | *-years*] }

Diagram

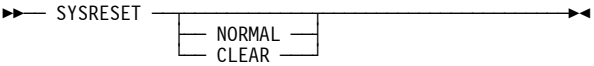


SYSRESET (SYSTEM RESET manual operation)

Descriptive

SYSRESET [NORMAL | CLEAR]

Diagram

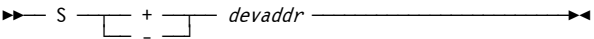


S{+/-} dev (Turn CCW stepping on or off)

Descriptive

S{+ | -} devaddr

Diagram

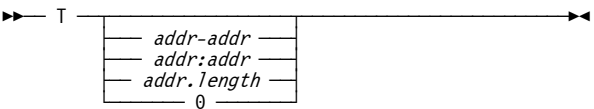


T (Instruction trace)

Descriptive

T [addr-addr | addr:addr | addr.length | 0]

Diagram

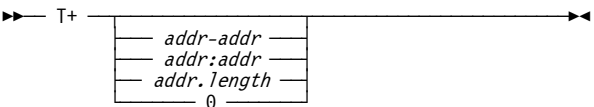


T+ (Instruction trace on)

Descriptive

T+ [addr-addr | addr:addr | addr.length | 0]

Diagram

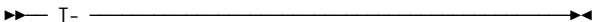


T- (Instruction trace off)

Descriptive

T-

Diagram



T? (Instruction trace query)

Descriptive

T?

Diagram

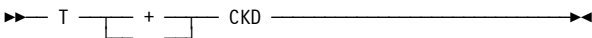


T{+/-} CKD (Turn CKD_KEY tracing on or off)

Descriptive

T{+ | -}CKD

Diagram

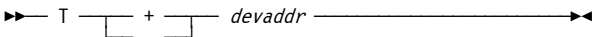


T{+/-} dev (Turn CCW tracing on or off)

Descriptive

T{+ | -}devaddr

Diagram

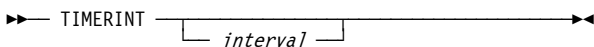


TIMERINT (Display or set timers update interval)

Descriptive

TIMERINT [interval]

Diagram

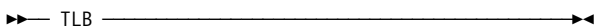


TLB (Display TLB tables)

Descriptive

TLB

Diagram

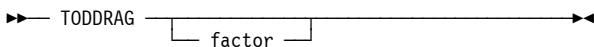


TODDRAG (Display or set TOD clock drag factor)

Descriptive

TODDRAG [*factor*]

Diagram

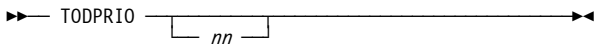


TODPRIO (Display or set timer thread process priority)

Descriptive

TODPRIO [*nn*]

Diagram

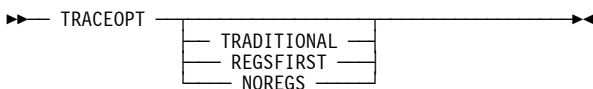


TRACEOPT (Instruction trace display options)

Descriptive

TRACEOPT [TRADITIONAL | REGSFIRST | NOREGS]

Diagram

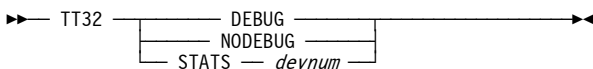


TT32 (Control / query CTCI-WIN functionality)

Descriptive

TT32 {DEBUG | NODEBUG | STATS *devnum*}

Diagram

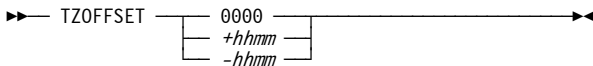


TZOFFSET (Set TOD clock offset from GMT)

Descriptive

TZOFFSET {0000 | +*hhmm* | -*hhmm*}

Diagram

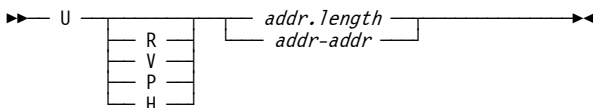


U (Disassemble storage)

Descriptive

U [R | V | P | H] {*addr.length* | *addr-addr*}

Diagram

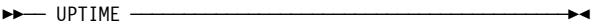


UPTIME (Display Hercules Emulator uptime)

Descriptive

UPTIME

Diagram

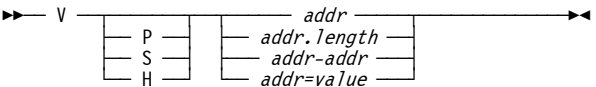


V (Display or alter virtual storage)

Descriptive

V [P | S | H] {*addr* | *addr.length* | *addr-addr* |
addr=value}

Diagram



VERSION (Display version information)

Descriptive

VERSION

Diagram

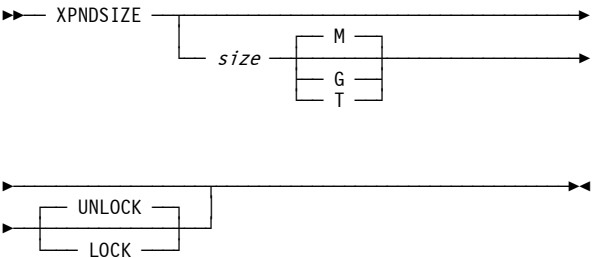


XPNDSIZE (Display or set expanded storage size)

Descriptive

XPNDSIZE [*size*[M | G | T] [UNLOCK | LOCK]]

Diagram

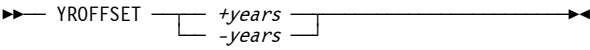


YROFFSET (Set TOD clock offset from actual date)

Descriptive

YROFFSET {+years | -years}

Diagram



7. Hercules Utilities

DASD Utilities

Utility Name	Function
CCKDCDSK	CCKD DASD file integrity verification, recovery and repair utility
CCKDCOMP	CCKD DASD file compression utility
CCKDDIAG	CCKD DASD file diagnostics utility
CCKDSWAP	CCKD DASD file swap-endian program
DASDCAT	Display PDS datasets and members
DASDCONV	DASD image file conversion program
DASDCOPY	Copy DASD file to another DASD file
DASDINIT	DASD image file creation
DASDISUP	Fix XCTL tables in SVCLIB
DASDLOAD	DASD loader program
DASDLS	List datasets on a volume
DASDPDSU	PDS unload utility
DASDSEQ	Display sequential datasets

Table 7: DASD Utilities

TAPE Utilities

Utility Name	Function
HETGET	Extract files from an AWS or HET tape file
HETINIT	Initialize an AWS or HET tape file
HETMAP	Show information about a HET or AWS tape file
HETUPD	Update and/or copy an AWS or HET tape file
TAPECOPY	Copy a SCSI tape to or from an AWSTAPE disk file
TAPEMAP	Show information about an AWS tape file
TAPESPLT	Split an AWS tape file
VMFPLC2	VM formatted tape utility

Table 8: TAPE Utilities

Miscellaneous Utilities

Utility Name	Function
DMAP2HRC	P/390 DEVMAP conversion program

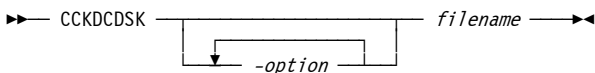
Table 9: Miscellaneous Utilities

CCKDCDSK (CCKD DASD file integrity verification, recovery and repair utility)

Descriptive

CCKDCDSK [-option [-option ...]] filename

Diagram



Options

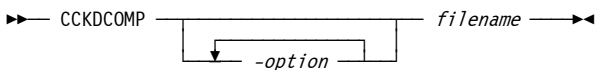
- v (display version info and exit)
- f (force check even if OPENED bit is on)
- ro (open file read-only, no repairs)
- level (level of checking, 1-4)

CCKDCOMP (CCKD DASD file compression utility)

Descriptive

CCKDCOMP [-option [-option ...]] filename

Diagram



Options

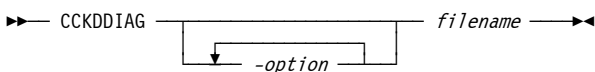
- v (display version info and exit)
- f (force check even if OPENED bit is on)
- level (level of checking, 1-4)

CCKDDIAG (CCKD DASD file diagnostics utility)

Descriptive

CCKDDIAG [-option [-option ...]] filename

Diagram



Options

- v (display version info and exit)
- d (display DEVHDR)
- c (display CDEVHDR)
- l (display L1TAB [l = numeric one])
- g (enable debug output)

CKD track related options:

- a *cc hh* (display absolute CCHH data)
- r *tt* (display relative TT data)
- 2 (display L2TAB related to -a or -r)
- t (display track data)
- x (hex display track / key data)
- o *oo ll* (hex display data at offset *oo* of length *ll*)

CCKDSWAP (CCKD DASD file swap-endian program)

Descriptive

CCKDSWAP *filename*

Diagram

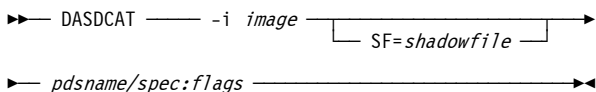


DASDCAT (Display PDS datasets and members)

Descriptive

DASDCAT -i *image* [*SF=shadowfile*] *pdsname/spec:flags*

Diagram

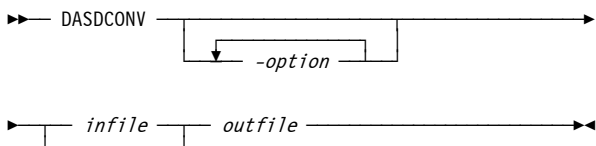


DASDCONV (DASD image file conversion program)

Descriptive

DASDCONV [-option [-option ...]] {infile | -} outfile

Diagram



Options

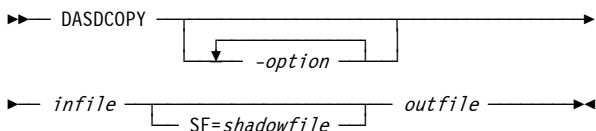
- r (replace output file)
- lfs (create single file even if > 2GB)
- q (quiet option, suppress progress messages)

DASDCOPY (Copy DASD file to another DASD file)

Descriptive

DASDCOPY [-option [-option ...]] infile
[SF=shadowfile] outfile

Diagram



Options

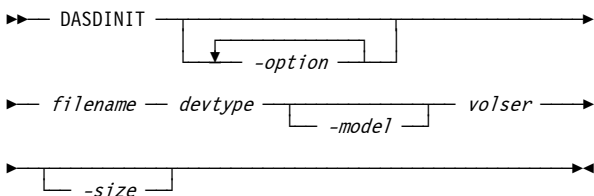
- v (display version info and help text)
- h (display help text and quit)
- q (quiet mode, suppress status)
- r (replace output file)
- z (compress using zlib (default))
- bz2 (compress using bzip2)
- 0 (do not compress output [0 = zero])
- blks *n* (size of output FBA file)
- cyls *n* (size of output CKD file)
- a (create output CKD file with alternate cylinders)
- lfs (create single file even if > 2GB)
- o *type* (output file type: CKD, CCKD, FBA, CFBA)

DASDINIT (DASD image file creation)

Descriptive

DASDINIT [-option [-option ...]] *filename*
devtype[-mode] *volser* [*size*]

Diagram



Options

- v (display version info and help text)
- z (build compressed DASD using zlib)
- bz2 (build compressed DASD using bzip2)
- 0 (build image file with no compression [0 = zero])
- lfs (create single file even if > 2GB)

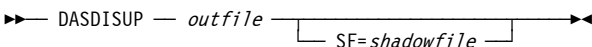
- a (include alternate cylinders)
- r (build raw DASD image file)
- b (make the wait PSW in the IPL1 record a BC-mode PSW. If not specified the wait PSW will be an EC-mode PSW)
- m (enable the wait PSW in the IPL1 record for machine check interruptions)
- linux (null track images will look like linux DASDFMT'ed images)

DASDISUP (Fix XCTL tables in SVCLIB)

Descriptive

DASDISUP *outfile* [SF=*shadowfile*]

Diagram

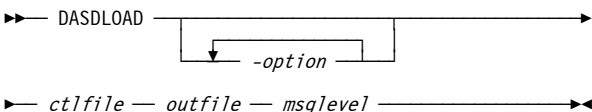


DASDLOAD (DASD loader program)

Descriptive

DASDLOAD [-*option* [-*option* ...]]
ctlfile outfile msglevel

Diagram



Options

- z (compress using zlib)
- bz2 (compress using bzip2)
- 0 (do not compress output [0 = zero])
- lfs (create single file even if > 2GB)
- a (include alternate cylinders)
- b (for a volume without IPL text, make the wait PSW written to the IPL1 record a

BC-mode PSW. If not specified the wait PSW will be an EC-mode PSW)

-m (for a volume without IPL text, make the wait PSW written to the IPL1 record enabled for machine checks)

Control File

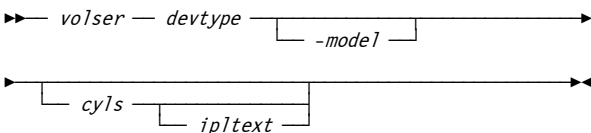
The control file is an ASCII text file consisting of a volume statement followed by one dataset statement for each dataset to be created.

Volume Statement

Descriptive

volser devtype[-mode] [cyls [ipltext]]

Diagram

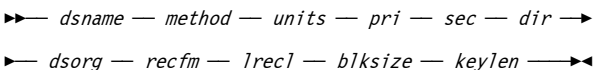


Dataset Statement

Descriptive

*dsname method units pri sec dir dsorg recfm lrecl ...
... blksize keylen*

Diagram

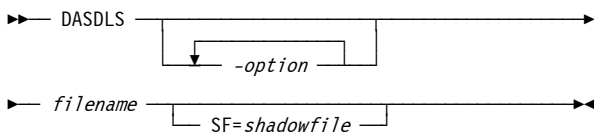


DASDLS (List datasets on a volume)

Descriptive

DASDLS [-option [-option ...]]
filename [SF=shadowfile]

Diagram



Options

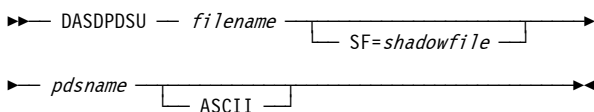
- info (Show Format 1 DSCB information)
- caldt (Display dates as YYYYMMDD)
- refdt (Display last-referenced date)
- expdt (Display expiry date)
- hdr (Display column headers)
- dsnl[=n] (Reserve space for dataset names up to *n* characters)
- yroffs[=n] (Add the year offset *n* to dates before displaying them)

DASDPDSU (PDS unload utility)

Descriptive

DASDPDSU *filename* [SF=shadowfile] *pdsname* [ASCII]

Diagram

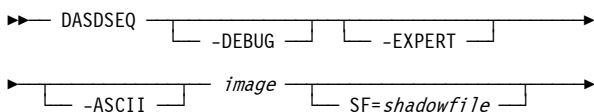


DASDSEQ (Display sequential datasets)

Descriptive

DASDSEQ [-DEBUG] [-EXPERT] [-ASCII] *image*
[SF=shadowfile] *filespec*

Diagram



► *filespec* ◄

HETGET (Extract files from an AWS or HET tape file)

Descriptive

HETGET *tapefile outfile filename*

Diagram

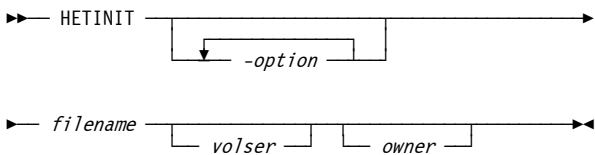
► HETGET — *tapefile* — *outfile* — *filename* ◄

HETINIT (Initialize an AWS or HET tape file)

Descriptive

HETINIT [-*option* [-*option* ...]] *filename*
 [*volser*] [*owner*]

Diagram



Options

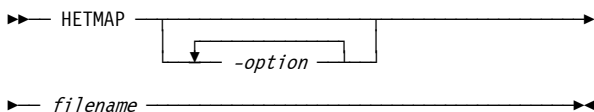
- d (disable compression, create AWSTAPE file)
- h (display usage summary)
- i (create IEHINITTT formatted tape, default)
- n (create NL (non labeled) tape)

HETMAP (Show information about a HET or AWS tape file)

Descriptive

HETMAP [-*option* [-*option* ...]] *filename*

Diagram



Options

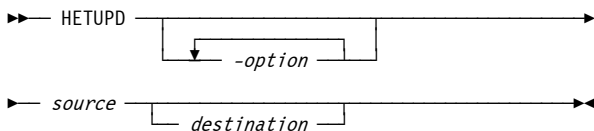
- a (print all label and file information, default)
- bn (Print 'n' bytes per file, implies -s)
- d (print only dataset information)
- f (print only file information)
- h (display usage summary)
- l (print only label information)
- s (print dump of each data file in SLANAL format)
- t (print TAPEMAP-compatible format output)

HETUPD (Update and/or copy an AWS or HET tape file)

Descriptive

HETUPD [-option [-option ...]] source [destination]

Diagram



Options

- 1...9 (compression level (1=fast, 9=best))
- b (use bzlib compression)
- c n (set chunk size to n)
- d (decompress source tape file)
- h (display usage summary)
- r (rechunk tape file)
- s (strict AWSTAPE specification)
- v (verbose information)

-z (use zlib compression)

TAPECOPY (Copy a SCSI tape to or from an AWSTAPE disk file)

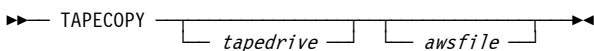
Descriptive

TAPECOPY [*tapedrive*] [*awsfile*]

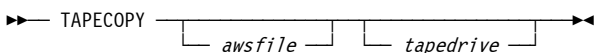
or

TAPECOPY [*awsfile*] [*tapedrive*]

Diagram



or

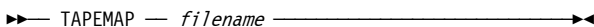


TAPEMAP (Show information about an AWS tape file)

Descriptive

TAPEMAP *filename*

Diagram

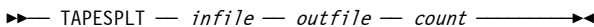


TAPESPLT (Split an AWS tape file)

Descriptive

TAPESPLT *infile outfile count*

Diagram

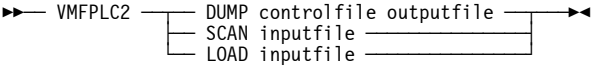


VMFPLC2 (VM formatted tape utility)

Descriptive

VMFPLC2 {DUMP *controlfile* *outputfile* | SCAN *inputfile* |
LOAD *inputfile*}

Diagram



Control File

Each line of the control file has the following format:

filename filetype filemode recfm lrecl type tapefile

DMAP2HRC (P/390 DEVMAP conversion program)

Descriptive

DMAP2HRC *filename*

Diagram

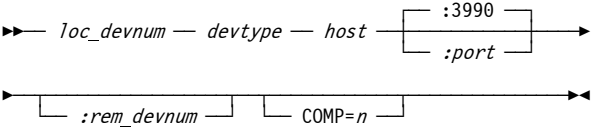


8. Shared Device Support

Descriptive

loc_devnum devtype host[:port | :3990]
*[:rem_devnum] [COMP=*n*]*

Diagram



9. Hercules 3270 Logo

Set Buffer Address

Set Buffer Address to row x and column y.

@SBA x,y

Set Field

Set Field to highlight ("H") and/or protected ("P").

@SF {H | P | HP }

New Line

Force a skip to a new line.

@NL

Align

Specify text alignment.

@ALIGN {NONE | LEFT | RIGHT | CENTER }

Variables

\$(VERSION)

The Hercules version.

\$(HOSTNAME)

The host name, on which Hercules is running.

\$(HOSTOS)

The host operating system.

\$(HOSTOSREL)

The release of the host operating system.

\$(HOSTOSVER)

The version of the host operating system.

\$(HOSTARCH)

The host architecture.

\$(HOSTNUMCPUS)

The number of host CPUs. UP (Uniprocessor for one CPU), or MP=n (Multiprocessor for more than one CPUs).

\$(LPARNAME)

The LPAR name specified in the configuration file.

\$(CSS)

The logical channel subsystem set or channel set for the terminal.

\$(SUBCHAN)

The subchannel number for the terminal.

\$(CCUU), \$(ccuu), \$(CUU), \$(cuu)

Various forms of the device number of the terminal.

10. Starting the Hercules Emulator

Starting Hercules in Native Mode

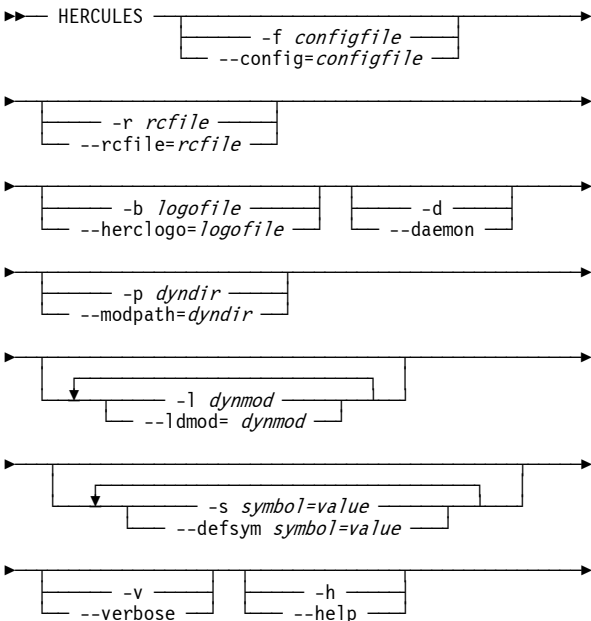
Descriptive

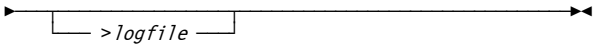
HERCULES

```
[{-f configfile          | --config=configfile}]
[{-r rcfile             | --rcfile=rcfile}]
[{-b logfile           | --herclogo=logfile}]
[{-d                     | --daemon}]
[{-p dyndir            | --modpath=dyndir}]
[{-l dynmod [...]     | --ldmod=dynmod [...]}]
[{-s symbol=value [...] | --defsym=symbol=value [...]}]
[{-v                     | --verbose}]
[{-h                     | --help}]

[>logfile]
```

Diagram



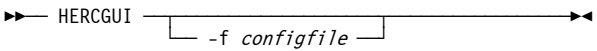


Starting Hercules with the Windows GUI

Descriptive

HERCGUI [-f *configfile*]

Diagram

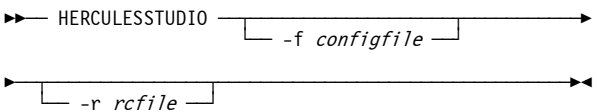


Starting Hercules with the Hercules Studio

Descriptive

HERCULESSTUDIO [-f *configfile*] [-r *rcfile*]

Diagram



11. Using the keyboard

Normal cursor handling

The normal cursor handling is available on all platforms (Windows and Unix).

Key	Action
Esc	Erases the contents of the command input area. If the command input area is already empty, switches to semi-graphical New Panel.
Del	Deletes the character at the cursor position.
Backspace	Erases the previous character.
Insert	Toggles between insert mode and overlay mode.
Tab	Attempts to complete the partial file name at the cursor position in the command input area. If more than one possible file exists, a list of matching file names is displayed.
Home	Moves the cursor to the start of the input in the command input area. If the command input area is empty, scrolls the message area to the top.
End	Moves the cursor to the start of the input in the command input area. If the command input area is empty, scrolls the message area to the bottom.
Page Up	Scrolls the message area up one screen.
Page Down	Scrolls the message area down one screen.
Up arrow	Recalls the previous command into the input area.

Key	Action
Down arrow	Recalls the next command into the input area.
Right arrow	Moves cursor to the next character of the input area.
Left arrow	Moves cursor to the previous character of the input area.
Ctrl + Up arrow	Scrolls the message area up one line.
Ctrl + Down arrow	Scrolls the message area down one line.
Ctrl + Home	Scrolls the message area to the top.
Ctrl + End	Scrolls the message area to the bottom.

Table 10: Normal cursor handling

Extended cursor handling

The following additional keyboard functions are effective when the Hercules Extended Cursor Handling feature is activated at compile time. At present, this feature is activated on the Windows platform only.

Key	Action
Alt + Up arrow	Moves cursor up one row.
Alt + Down arrow	Moves cursor down one row.
Alt + Right arrow	Moves cursor right one column.
Alt + Left arrow	Moves cursor left one column.
Tab	If the cursor is outside the command input area, moves cursor to the start of the input in the command input area. Otherwise behaves like as described in the previous table.

Key	Action
Home	If the cursor is outside the command input area, moves cursor to the start of the input in the command input area. Otherwise behaves like as described in the previous table.
End	If the cursor is outside the command input area, moves cursor to the end of the input in the command input area. Otherwise behaves like as described in the previous table.

Table 11: Extended cursor handling

Windows event handler

The following table shows the trapped Windows events.

Key	Action
CTRL-Break	Simulates the External Interrupt key being pressed.
CTRL-C	CTRL-C is currently caught, but there is no action taken.
Close	The normal close button (the red "X" box) has been disabled to prevent an unintended shutdown of Hercules. The close function via the Windows menu ("File -> Exit") however is still available. In this case Hercules initiates an immediate shutdown.
Shutdown	Shutdown ("Start -> Shut down -> Shut down") initiates an immediate shutdown of Hercules.
Logoff	Logoff ("Start -> Shut down -> Log off") initiates an immediate shutdown of Hercules.

Table 12: Extended cursor handling

Programmed Function Keys (PF Keys)

The Hercules console supports the usage of PF keys. The command to be assigned to the PF key has to be defined with a DEFSYM statement. This can be done through a DEFSYM system parameter statement in the Hercules configuration file or through a console command.

On Windows systems PF keys PF01 to PF48 are assignable, on non-Windows systems PF01 to PF20. The following special keys must be used to access the PF keys:

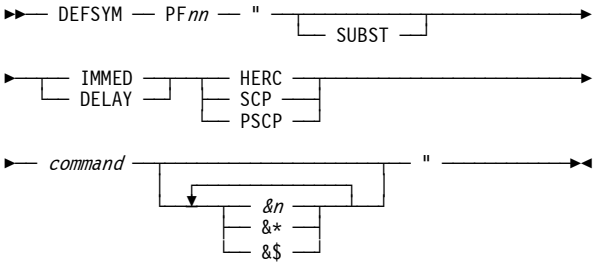
PF01-PF12	Press PF key only
PF13-PF24	Press SHIFT and PF key
PF25-PF36	Press CTRL and PF key
PF37-PF48	Press ALT and PF key

PF keys can be defined as follows:

Descriptive

```
DEFSYM PFnn "[SUBST] {IMMED | DELAY}
           {HERC | SCP | PSCP}
           command [&n | &* | &$ [...]]"
```

Diagram



Appendix A: Supported DASD Device Types

The symbol “[*]” in the size column means that any size can be specified, else the size defaults to the first listed model.

CKD Devices

Devicetype-Model	Cylinders	Alternate Cylinders
IBM 2311	[*]	
IBM 2311-1	200	2
IBM 2314	[*]	
IBM 2314	200	3
IBM 3330	[*]	
IBM 3330-1	404	7
IBM 3330-2	808	7
IBM 3330-11	808	7
IBM 3340	[*]	
IBM 3340-1	348	1
IBM 3340-35	348	1
IBM 3340-2	696	2
IBM 3340-70	696	2
IBM 3350	[*]	
IBM 3350-1	555	5
IBM 3375	[*]	
IBM 3375-1	959	1
IBM 3380	[*]	

Devicetype-Model	Cylinders	Alternate Cylinders
IBM 3380-1	885	1
IBM 3380-A	885	1
IBM 3380-B	885	1
IBM 3380-D	885	1
IBM 3380-J	885	1
IBM 3380-2	1770	2
IBM 3380-E	1770	2
IBM 3380-3	2665	3
IBM 3380-K	2665	3
EMC 3380 K+	3339	3
EMC 3380 K++	3993	3
IBM 3390	[*]	1
IBM 3390-1	1113	1
IBM 3390-2	2226	2
IBM 3390-3	3339	1
IBM 3390-9	10017	3
IBM 3390-27	32760	3
IBM 3390-54	65520	3
IBM 9345	[*]	
IBM 9345-1	1440	0
IBM 9345-2	2156	0

Table 13: Supported CKD DASD Devices

FBA Devices

Devicetype-Model	Blocks
IBM 3310	[*]
IBM 3310-1	125664
IBM 3370	[*]
IBM 3370-A1	558000
IBM 3370-B1	558000
IBM 3370-A2	712752
IBM 3370-B2	712752
IBM 9313	[*]
IBM 9313-1	246240
IBM 9332	[*]
IBM 9332-200	360036
IBM 9332-400	360036
IBM 9336-600	554800
IBM 9335	[*]
IBM 9335-1	804714
IBM 9336	[*]
IBM 9336-10	920115
IBM 9336-20	1672881
IBM 9336-25	1672881
IBM 0671-08	513072
IBM 0671	574560
IBM 0671-04	624456

Table 14: Supported FBA DASD Devices

Appendix B. Syntax

This book uses two kinds of describing the syntax of configuration statements, console commands and utilities. These are syntax descriptions and syntax diagrams.



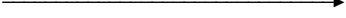

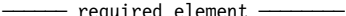
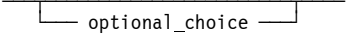
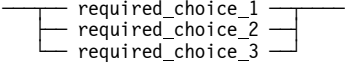
B1. Reading Syntax Descriptions

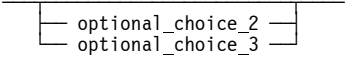
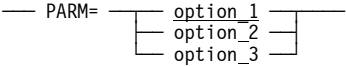
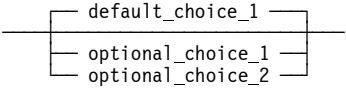
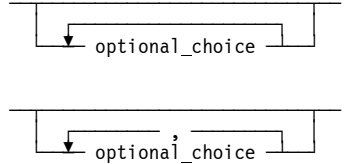
Syntax Element	Description
KEYWORDS	Keywords are denoted with upper case letters. Obey the spelling. In the actual statements or commands they can be coded in upper case or lower case letters.
<i>variables</i>	All user defined values are denoted with lower case italic letters. In the actual statements or commands they can be coded in upper case or lower case letters.
{ }	Signifies that all, or some portion, of the code elements between the braces are required elements. Note that the braces are not part of the statements and must be not coded.
[]	Signifies that all or some portion of the code elements between the square brackets can optionally appear but are not required elements. Note that the square brackets are not part of the statements and must be not coded.
	The OR symbol signifies that you may use only one of the code elements or values from the possible choices. Note that the OR symbol is not part of the statements and must be not coded.
xxx , ...	Signifies that there can be more than one value in a comma delimited list. Note that the dots are not part of the statements and must be not coded.

Syntax Element	Description
xxx ...	Signifies that there can be more than one value in a blank space delimited list. Note that the dots are not part of the statements and must be not coded.

Table 15: Reading Syntax Descriptions

B2. Reading Syntax Diagrams

Symbol	Description
	This symbol indicates the beginning of a statement.
	This symbol indicates the end of a statement.
	This symbol indicates that the statement is continued on the next line.
	This symbol indicates that the statement is a continuation from the previous line.
	A required element (keyword or variable) appears on the main path.
	An optional element (keyword or variable) appears below the main path.
	A required element (keyword or variable) with selection. Only one of the available options may be specified.

Symbol	Description
	<p>Optional elements (keyword or variable) with selection are shown below the main line. Only one of the available options may be specified.</p>
	<p>A keyword with options. Only one of the available options may be specified. The underscored option is the default if the whole keyword statement is not coded.</p>
	<p>Optional elements (keyword or variable) with selection are shown below the main line. If one element is the default, it appears above the main line. Only one of the available options may be specified. If none of these elements is explicitly specified, the default above the main line is taken.</p>
	<p>This is an optional, repeatable element. Specifying several elements is allowed. A character within the arrow path means that repeated items have to be separated by that character. Otherwise the items are separated by a blank.</p>

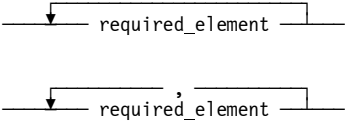

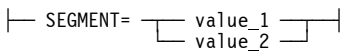
Symbol	Description
	<p>This is a required, repeatable element. Specifying several elements is allowed. A character within the arrow path means that repeated items have to be separated by that character. Otherwise the items are separated by a blank.</p>
	<p>Reference to a syntax segment, which is described separately.</p>
	<p>This symbol indicates a syntax segment which is referenced from the main syntax diagram.</p>
<p>KEYWORDS</p>	<p>Keywords are denoted with upper case letters. Obey the spelling. Lower case letters are optional and can be omitted (for example DISable). In the actual statements or commands they can be coded in upper case or lower case letters.</p>
<p><i>variables</i></p>	<p>All user defined values are denoted with lower case italic letters. They represent user supplied names or values. In the actual statements or commands they can be coded in upper case or lower case letters.</p>

Table 16: Reading Syntax Diagrams

Hercules Emulator



**Hercules System/370, ESA/390,
z/Architecture Emulator**

Reference Summary

Version 4 Release 00

HERS040000-00