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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 3.07.0 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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SoftCopy Name: HerculesReferenceSummary
Revision Number: HERS030700-01
Date: June 28, 2010

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@yahoogroups.com
## 2. Hercules Configuration File

### 2.1 System Parameters

<table>
<thead>
<tr>
<th>System Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td># or *</td>
<td>Comment line</td>
</tr>
<tr>
<td>ARCHMODE</td>
<td>Initial architecture mode</td>
</tr>
<tr>
<td>ASN_AND_LX_REUSE (ALRF)</td>
<td>ESAME ASN and LX REUSE feature</td>
</tr>
<tr>
<td>AUTOMOUNT</td>
<td>Tape automount root directory</td>
</tr>
<tr>
<td>AUTO_SCSI_MOUNT</td>
<td>Automatic SCSI tape mounts</td>
</tr>
<tr>
<td>CCKD</td>
<td>Compressed CKD DASD options</td>
</tr>
<tr>
<td>CNSLPORT</td>
<td>Telnet client port</td>
</tr>
<tr>
<td>CODEPAGE</td>
<td>Codepage conversion table</td>
</tr>
<tr>
<td>CONKPALV</td>
<td>Console and telnet clients keep-alive option</td>
</tr>
<tr>
<td>CPUMODEL</td>
<td>CPU model</td>
</tr>
<tr>
<td>CPUPRIO</td>
<td>CPU thread process priority</td>
</tr>
<tr>
<td>CPUSERIAL</td>
<td>CPU serial number</td>
</tr>
<tr>
<td>CPUVERID</td>
<td>CPU version code</td>
</tr>
<tr>
<td>DEFSYM</td>
<td>Define symbol</td>
</tr>
<tr>
<td>DEVPRIOR</td>
<td>Device threads process priority</td>
</tr>
<tr>
<td>DEVTMAX</td>
<td>Maximum number of device threads</td>
</tr>
<tr>
<td>DIAG8CMD</td>
<td>DIAGNOSE 8 cmd setting</td>
</tr>
<tr>
<td>System Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>------------------------------------------------------</td>
</tr>
<tr>
<td>ECPSVM</td>
<td>ECPS:VM support status (VM)</td>
</tr>
<tr>
<td>ENGINES</td>
<td>Processor engine type</td>
</tr>
<tr>
<td>HERCLOGO</td>
<td>Hercules 3270 logo</td>
</tr>
<tr>
<td>HERCPRIOR</td>
<td>Hercules process priority</td>
</tr>
<tr>
<td>HTTPPORT</td>
<td>HTTP server port</td>
</tr>
<tr>
<td>HTTPROOT</td>
<td>HTTP server root directory</td>
</tr>
<tr>
<td>IGNORE</td>
<td>Ignore subsequent INCLUDE errors</td>
</tr>
<tr>
<td>INCLUDE</td>
<td>Include configuration file</td>
</tr>
<tr>
<td>IODELAY</td>
<td>I/O interrupt wait time (LINUX)</td>
</tr>
<tr>
<td>LDMOD</td>
<td>Additional dynamic load modules</td>
</tr>
<tr>
<td>LEGACYSENSEID</td>
<td>SENSE ID CCW (x’E4’) feature</td>
</tr>
<tr>
<td>LOADPARM</td>
<td>IPL parameter</td>
</tr>
<tr>
<td>LOGOPT</td>
<td>Log options</td>
</tr>
<tr>
<td>LPARNAME</td>
<td>LPAR name returned by DIAG x’204’</td>
</tr>
<tr>
<td>LPARNUM</td>
<td>LPAR identification number</td>
</tr>
<tr>
<td>MAINSIZE</td>
<td>Main storage in MB</td>
</tr>
<tr>
<td>MANUFACTURER</td>
<td>Manufacturer name returned by STSI instruction</td>
</tr>
<tr>
<td>MAXCPU</td>
<td>Maximum number of CPUs</td>
</tr>
<tr>
<td>MODEL</td>
<td>Model names returned by STSI instruction</td>
</tr>
<tr>
<td>MODPATH</td>
<td>Dynamic load module path</td>
</tr>
<tr>
<td>MOUNTED_TAPE_REINIT</td>
<td>Control tape initialization</td>
</tr>
<tr>
<td>System Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>NUMCPU</td>
<td>Number of emulated CPUs</td>
</tr>
<tr>
<td>NUMVEC</td>
<td>Number of vector facilities</td>
</tr>
<tr>
<td>OSTAILOR</td>
<td>Intended operating system</td>
</tr>
<tr>
<td>PANRATE</td>
<td>Panel refresh rate</td>
</tr>
<tr>
<td>PANTITLE</td>
<td>Hercules console panel title</td>
</tr>
<tr>
<td>PGMPRDOS</td>
<td>Emulation of IFL HW</td>
</tr>
<tr>
<td>PLANT</td>
<td>Plant name returned by STSI instruction</td>
</tr>
<tr>
<td>SCLPROOT</td>
<td>SCLP base directory</td>
</tr>
<tr>
<td>SHCMDOPT</td>
<td>Shell command option</td>
</tr>
<tr>
<td>SHRDPORT</td>
<td>Shared device server port</td>
</tr>
<tr>
<td>SYSEPOCH</td>
<td>Base date for TOD clock</td>
</tr>
<tr>
<td>TIMERINT</td>
<td>Internal timer update interval</td>
</tr>
<tr>
<td>TODDRAG</td>
<td>TOD clock drag factor</td>
</tr>
<tr>
<td>TODPrio</td>
<td>Timer thread process priority</td>
</tr>
<tr>
<td>TRACEOPT</td>
<td>Instruction trace display option</td>
</tr>
<tr>
<td>TZOFFSET</td>
<td>TOD clock offset from GMT</td>
</tr>
<tr>
<td>XPNDSIZE</td>
<td>Expanded storage in MB</td>
</tr>
<tr>
<td>YROFFSET</td>
<td>TOD clock offset from actual date</td>
</tr>
</tbody>
</table>

Table 1: Hercules System Parameters
## 2.2 Device Definitions

<table>
<thead>
<tr>
<th>Device Type</th>
<th>Device</th>
<th>Emulated by</th>
</tr>
</thead>
<tbody>
<tr>
<td>3270, 3278</td>
<td>Local non-SNA display or printer</td>
<td>TN3270 client connection</td>
</tr>
<tr>
<td>SYSG</td>
<td>Integrated 3270 (SYSG) console</td>
<td>TN3270 client connection</td>
</tr>
<tr>
<td>1052, 3215</td>
<td>Console printer-keyboards</td>
<td>Telnet client connection</td>
</tr>
<tr>
<td>1052-C, 3215-C</td>
<td>Integrated console printer-keyboards</td>
<td>Integrated on Hercules console</td>
</tr>
<tr>
<td>1442, 2501, 3505</td>
<td>Card readers</td>
<td>Disk file(s), ASCII or EBCDIC</td>
</tr>
<tr>
<td>3525</td>
<td>Card punch</td>
<td>Disk file, ASCII or EBCDIC</td>
</tr>
<tr>
<td>1403, 3211</td>
<td>Line printers</td>
<td>Disk file, ASCII</td>
</tr>
<tr>
<td>3410, 3420, 3422, 3430, 3480, 3490, 3590, 9347, 8809</td>
<td>Tape drives</td>
<td>Disk file, CD-ROM or SCSI tape</td>
</tr>
<tr>
<td>3088</td>
<td>Channel-to-Channel Adapter</td>
<td>“CTCT” driver</td>
</tr>
<tr>
<td>(( CTCI ))</td>
<td>Channel-to-Channel link to host TCP/IP stack</td>
<td>“CTCI” TUN/TAP driver</td>
</tr>
<tr>
<td>(( LCS ))</td>
<td>IBM 2216 router, IBM 3172 running ICP, IBM 8232 LCS device, LCS3172 driver of a P/390, IBM Open Systems Adapter (OSA)</td>
<td>“LCS” (LAN channel station) TUN/TAP driver</td>
</tr>
<tr>
<td>3310, 3370, 9332, 9335, 9336, 0671</td>
<td>FBA direct access storage devices</td>
<td>Disk file</td>
</tr>
<tr>
<td>Device Type</td>
<td>Device</td>
<td>Emulated by</td>
</tr>
<tr>
<td>-------------</td>
<td>--------</td>
<td>----------------------</td>
</tr>
<tr>
<td>2305, 2311, 2314, 3330, 3340, 3350, 3375, 3380, 3390, 9345</td>
<td>CKD direct access storage devices</td>
<td>Disk file</td>
</tr>
<tr>
<td>2703</td>
<td>Communication line</td>
<td>TCP socket</td>
</tr>
</tbody>
</table>

Table 2: Hercules Device Definitions
3. System Parameter Descriptions

# or * (Comment lines)

Descriptive

# [anything]

or

* [anything]

Diagram

```
#  anything

or

*  anything
```

ARCHMODE (Initial architecture mode)

Descriptive

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

Diagram

```
ARCHMODE  
S/370
ESA/390
ESAME
z/ARCH
```

ASN_AND_LX_REUSE / ALRF (ESAME ASN and LX REUSE feature)

Descriptive

ASN_AND_LX_REUSE {DISABLE | ENABLE}

or

ALRF {DISABLE | ENABLE}

Diagram

```
ASN_AND_LX_REUSE  
DISABLE
ENABLE
```
AUTOMOUNT (Tape automount root directory)

Descriptive

AUTOMOUNT [+ | -]directory

or

AUTOMOUNT {ADD directory | DEL directory}

Diagram

![Diagram of AUTOMOUNT](image)

AUTO_SCSI_MOUNT (Automatic SCSI tape mounts)

Descriptive

AUTO_SCSI_MOUNT {NO | YES | n}

Diagram

![Diagram of AUTO_SCSI_MOUNT](image)

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=5 | n]
[,GCPARM=0 | n]
[,NOSTRESS=0 | 1]
[,FREEPEND=-1 | n]
[,FSYNC=0 | 1]
[,TRACE=0 | n]
[,LINUXNULL=0 | 1]
[,GCSTART=0 | 1]

Diagram

```plaintext
Diagram

```

where option can be:

```
[ , option=value ]
```

```
| COMP= | -1 |
| COMPPARM= | -1 |
| RA= | 2 |
| RAQ= | 4 |
| RAT= | 2 |
| WR= | 2 |
| GCINT= | 5 |
| GCPARM= | 0 |
| NOSTRESS= | 0 |
| FREEPEND= | -1 |
| FSYNC= | 0 |
```
CNSLPORT (Telnet client port)

Descriptive
CNSLPORT {port | host:port}

Diagram

```
   CNSLPORT  ─── port
             host:port
```

CODEPAGE (Codepage conversion table)

Descriptive
CODEPAGE {DEFAULT | codepage}

Diagram

```
   CODEPAGE  ─── DEFAULT
             codepage
```

CONKPALV (Console and telnet clients keep-alive option)

Descriptive
CONKPALV (idle, intv, count)

Diagram

```
   CONKPALV  ─── (idle, intv, count)
```

CPUMODEL (CPU model)

Descriptive
CPUMODEL model

Diagram

```
   CPUMODEL  ─── model
```
CPUPRIO (CPU thread process priority)

Descriptive
CPUPRIO \{15 \mid nn\}

Diagram

```
  ▶◀ CPUPRIO  ───> 15
                  \nn\n```

CPU SERIAL (CPU serial number)

Descriptive
CPUSERIAL serial

Diagram

```
  ▶◀ CPUSERIAL  ─→ serial
```

CPUVERID (CPU version code)

Descriptive
CPUVERID verid

Diagram

```
  ▶◀ CPUVERID  ─→ verid
```

DEFSYM (Define symbol)

Descriptive
DEFSYM symbol value

Diagram

```
  ▶◀ DEFSYM  ───> symbol ───> value
```

DEVPRIO (Device threads process priority)

Descriptive
DEVPRIO \{8 \mid nn\}
DEVPTMAX (Maximum number of device threads)

**Descriptive**

\[
\text{DEVPTMAX} \{0 \mid -1 \mid 1-n\}
\]

**Diagram**

```
Diagram
DEVPRIØ 8 nn
```

DIAG8CMD (DIAGNOSE 8 command setting)

**Descriptive**

\[
\text{DIAG8CMD} \\{\text{DISABLE} \mid \text{ENABLE} \left[\text{ECHO} \mid \text{NOECHO}\right]\}
\]

**Diagram**

```
Diagram
DIAG8CMD DISABLE ENABLE ECHO NOECHO
```

ECPSVM (ECPS:VM support status (VM))

**Descriptive**

\[
\text{ECPSVM} \{\text{NO} \mid \text{YES} \mid \text{LEVEL } nn\}
\]

**Diagram**

```
Diagram
ECPSVM NO YES LEVEL nn
```

ENGINES (Processor engines type)

**Descriptive**

\[
\text{ENGINES} \left[nn^*\right] \{\text{CP} \mid \text{IL} \mid \text{AP} \mid \text{IP}\} [, \ldots ]
\]

---

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HERCLOGO (Hercules 3270 logo)

Descriptive
HERCLOGO filename

Diagram

HERCPRIO (Hercules process priority)

Descriptive
HERCPRIO \{0 | nn\}

Diagram

HTTPPORT (HTTP server port)

Descriptive
HTTPPORT NONE | port \{NOAUTH | AUTH userid password\}

Diagram

HTTPROOT (HTTP server root directory)

Descriptive
HTTPROOT path
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 usecs [NOWARN]

Diagram

LDMOD (Additional dynamic load modules)

Descriptive

LMOD module module module ...

Diagram
LEGACYSENSEID (SENSE ID CCW (x’E40) feature)

**Descriptive**

LEGACYSENSEID [{OFF | DISABLE} | {ON | ENABLE}]

**Diagram**

```
LEGACYSENSEID
```

LOADPARM (IPL parameter)

**Descriptive**

LOADPARM iplparm

**Diagram**

```
LOADPARM — iplparm
```

LOGOPT (Log options)

**Descriptive**

LOGOPT {TIMESTAMP | TIME | NOTIMESTAMP | NOTIME}

**Diagram**

```
LOGOPT
```

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

**Descriptive**

LPARNAME {HERCULES | lparname}

**Diagram**

```
LPARNAME
```

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LPARNUM (LPAR identification number)

Descriptive
LPARNUM \( xx \)

Diagram

\[ \text{LPARNUM} \quad \xrightarrow{} \quad \text{xx} \]

MAINSIZE (Main storage in MB)

Descriptive
MAINSIZE \( nnnnnnn \)

Diagram

\[ \text{MAINSIZE} \quad \xrightarrow{} \quad \text{nnnnnnn} \]

MANUFACTURER (Manufacturer name returned STSI instruction)

Descriptive
MANUFACTURER \( \{\text{HRC} \mid \text{name}\} \)

Diagram

\[ \text{MANUFACTURER} \quad \xrightarrow{} \quad \text{HRC} \quad \text{name} \]

MAXCPU (Maximum number of CPUs)

Descriptive
MAXCPU \( nn \)

Diagram

\[ \text{MAXCPU} \quad \xrightarrow{} \quad \text{nn} \]

MODEL (Model names returned by STSI instruction)

Descriptive
MODEL \( \{\text{EMULATOR} \mid \text{hardware_model}\} \quad [\text{capacity_model}] \)
MODPATH (Dynamic load module path)

Descriptive
MODPATH path

Diagram

MOUNTED_TAPE_REINIT (Control tape initialization)

Descriptive
MOUNTED_TAPE_REINIT \{ALLOW | DISALLOW\}

Diagram

NUMCPU (Number of emulated CPUs)

Descriptive
NUMCPU number

Diagram
NUMVEC (Number of vector facilities)

Descriptive

NUMVEC number

Diagram

OSTAILOR (Intended operating system)

Descriptive

OSTAILOR {z/OS | OS/390 | VM | VSE | LINUX | OpenSolaris | QUIET | NULL}

Diagram

PANRATE (Panel refresh rate)

Descriptive

PANRATE {SLOW | FAST | rate}

Diagram

PANTITLE (Hercules console window title)

Descriptive

PANTITLE {text | "text text text"}
**PGMPRDOS (Emulation of IFL HW)**

**Descriptive**

PGMPRDOS {RESTRICTED | LICENSED}

**Diagram**

```
PGMPRDOS ─── RESTRICTED
          ─── LICENSED
```

**PLANT (Plant name returned by STSI instruction)**

**Descriptive**

PLANT {ZZ | name}

**Diagram**

```
PLANT ─── ZZ
       ─── name
```

**SCLPROOT (SCLP base directory)**

**Descriptive**

SCLPROOT {NONE | directory}

**Diagram**

```
SCLPROOT ─── NONE
           ─── directory
```

**SHCMDOPT (Shell command option)**

**Descriptive**

SHCMDOPT {DISABLE | NODIAG8}

**Diagram**

```
SHCMDOPT ─── DISABLE
            ─── NODIAG8
```
SHRDPORT (Shared device server port)

**Descriptive**

\[
\text{SHRDPORT} \{3990 \mid \text{port}\}
\]

**Diagram**

```
\[<-- \text{SHRDPORT} \quad 3990 \quad \text{port} \quad -->\]
```

SYSEPOCH (Base date for TOD clock)

**Descriptive**

\[
\text{SYSEPOCH} \{1900 \mid 1960 \mid \text{year} \; [+]\text{years} \mid -\text{years}\}
\]

**Diagram**

```
\[<-- \text{SYSEPOCH} \quad 1900 \quad \text{year} \quad +\text{years} \quad -\text{years} \quad -->\]
```

TIMERINT (Internal timer update interval)

**Descriptive**

\[
\text{TIMERINT} \{50 \mid \text{interval}\}
\]

**Diagram**

```
\[<-- \text{TIMERINT} \quad 50 \quad \text{interval} \quad -->\]
```

TODDRAG (TOD clock drag factor)

**Descriptive**

\[
\text{TODDRAG} \quad \text{factor}
\]

**Diagram**

```
\[<-- \text{TODDRAG} \quad \text{factor} \quad -->\]
```
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 | +hh:mm | -hh:mm}

Diagram

XPNDSIZE (Expanded storage in MB)

Descriptive
XPNDSIZE nnnnnnn
YROFFSET (TOD clock offset from actual date)

Descriptive

YROFFSET \{+years \mid -years\}

Diagram

\[ YROFFSET \quad +years \quad -years \]
### Process and Thread Priorities

#### Process Priorities

<table>
<thead>
<tr>
<th>Unix Process Priority</th>
<th>Windows Priority Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>-20 to -16</td>
<td>Realtime</td>
</tr>
<tr>
<td>-15 to -9</td>
<td>High</td>
</tr>
<tr>
<td>-8 to -1</td>
<td>Above Normal</td>
</tr>
<tr>
<td>0 to 7</td>
<td>Normal</td>
</tr>
<tr>
<td>8 to 15</td>
<td>Below Normal</td>
</tr>
<tr>
<td>16 to 20</td>
<td>Low</td>
</tr>
</tbody>
</table>

**Table 3: Process Priority Conversions**

#### Thread Priorities

<table>
<thead>
<tr>
<th>Unix Thread Priority</th>
<th>Windows Thread Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>-20 to -16</td>
<td>Time Critical</td>
</tr>
<tr>
<td>-15 to -9</td>
<td>Highest</td>
</tr>
<tr>
<td>-8 to -1</td>
<td>Above Normal</td>
</tr>
<tr>
<td>0 to 7</td>
<td>Normal</td>
</tr>
<tr>
<td>8 to 15</td>
<td>Below Normal</td>
</tr>
<tr>
<td>16 to 19</td>
<td>Lowest</td>
</tr>
<tr>
<td>20</td>
<td>Idle</td>
</tr>
</tbody>
</table>

**Table 4: Thread Priority Conversions**
4. Device Definition Descriptions

Local non-SNA 3270 Devices

Descriptive
\[ \text{devaddr devtype [groupname] [ipaddr [mask]]} \]

Diagram

```
  devaddr -- devtype
     \   /   groupname
      \_/   /   
     ipaddr    mask
```

Integrated 3270 (SYSG) Console

Descriptive
\[ \text{devaddr SYSG [groupname] [ipaddr [mask]]} \]

Diagram

```
  devaddr -- SYSG
     \   /   groupname
      \_/   /   
     ipaddr    mask
```

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

Console Printer-Keyboard Devices

Descriptive
\[ \text{devaddr devtype [NOPROMPT] [groupname] [ipaddr [mask]]} \]

Diagram

```
  devaddr -- devtype
         \   /   NOPROMPT
          \_/   /   
         ipaddr    mask
```
Integrated Console Printer-Keyboard Devices

Descriptive

devaddr devtype [prefix | / ]

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]
```

or

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

**Diagram**

```
/devaddr — devtype — filename/ — CRLF —
```

or

```
/devaddr — devtype — host: — port —— SOCKDEV
```

Emulated Tape Devices

**SCSI Tapes**

**Descriptive**

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

**Diagram**

```
/devaddr — devtype — devname/
```

Optical Media Attach (OMA) virtual files

**Descriptive**

```
devaddr devtype tdf
```
AWSTAPE virtual files

Descriptive

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

where arguments are:

- \([\text{MAXSIZE}={\{n \mid 0\}}] \mid \text{MAXSIZEK}={\{n \mid 0\}} \mid \text{MAXSIZEM}={\{n \mid 0\}}\]
- \([\text{EOTMARGIN}=n]\]
- \([\text{READONLY}={0 \mid 1}]\]
- \([\text{RO} \mid \text{NORING} \mid \text{RW} \mid \text{RING}]\]
- \([\text{DEONIRQ}={0 \mid 1}]\]
- \([\text{NOAUTOMOUNT}]\]
Fake Tape virtual files

Descriptive
devaddr devtype {fakefile | *} [arguments]

where arguments are:

[MAXSIZE={n | 0} | MAXSIZEK={n | 0} | MAXSIZEM={n | 0}]
[EOTMARGIN=n]
[READONLY={0 | 1}]
[RO | NORING | RW | RING]
[DEONIRQ={0 | 1}]
[NOAUTOMOUNT]

Diagram

```
         devaddr — devtype — fakefile

         arguments

where arguments are:

         MAXSIZE= — 0 — n

         MAXSIZEK= — 0 — n

         MAXSIZEM= — 0 — n

         EOTMARGIN=n

         READONLY= — 0 — 1

         RO — NORING — RW — RING

         DEONIRQ= — 0 — 1

         NOAUTOMOUNT
```
**HET virtual files**

**Descriptive**

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

where arguments are:

- \[\text{[AWSTAPE]}\]
- \[\text{[COMPRESS=\{0 | 1\}]}\]
- \[\text{[IDRC=\{0 | 1\}]}\]
- \[\text{[METHOD=\{1 | 2\}]}\]
- \[\text{[LEVEL=\{n | 4\}]}\]
- \[\text{[CHUNKSIZE=\{n | 65535\}]}\]
- \[\text{[MAXSIZE=\{n | 0\} | MAXSIZEK=\{n | 0\} | MAXSIZEM=\{n | 0\}]}\]
- \[\text{[EOTMARGIN=n]}\]
- \[\text{[READONLY=\{0 | 1\}]}\]
- \[\text{[STRICTSIZE=\{0 | 1\}]}\]
- \[\text{[RO | NORING | RW | RING]}\]
- \[\text{[DEONIRQ=\{0 | 1\}]}\]
- \[\text{[NOAUTOMOUNT]}\]

**Diagram**

```
  devaddr — devtype — hetfile — *
    \[\text{arguments}\]
```

where arguments are:

```
AWSTAPE
COMPRESS=   0   1
IDRC=       0   1
METHOD=     1   2
LEVEL=      4   n
CHUNKSIZE=  65535  nnnnn
```
Channel-to-Channel Adapters

CTCI (Channel-to-Channel link to Linux TCP/IP stack)

Descriptive
devaddr CTCI [{-n | --dev} name] [-d | --debug]

guestip hostip

Diagram

CTCI (Channel-to-Channel link to Win32 TCP/IP stack)

Descriptive
devaddr CTCI [{-n | --dev} {ipaddr | macaddr}]

[-d | --debug]
CTCT (Channel-to-Channel emulation via TCP connection)

Descriptive

devaddr CTCT lport rhost rport bufsize

LCS (LAN Channel Station, Linux)

Descriptive

devaddr LCS [{-n | --dev} devname]

[-k {nnnn | 1024}]

[-i {nnnn | 64}]

guestip hostip

Diagram

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

Descriptive
devaddr CTCT lport rhost rport bufsize

Diagram

LCS (LAN Channel Station, Linux)

Descriptive
devaddr LCS [{-n | --dev} devname]

[-o | --oat] file

[-m | --mac] macaddr

[guestip]

Diagram
LCS (LAN Channel Station, Windows)

Descriptive

devaddr LCS [{-n | --dev} {ipaddr | macaddr}]
[{-o | --oat} file]
[{-m | --mac} macaddr]
[{-k {nnnn | 1024}}]
[{-i {nnnn | 64}}]
[guestip]

Diagram

```
  devaddr --- LCS
     -n ---dev ipaddr macaddr
     -o ---oat file
     -m ---mac
     -k 1024 nnnn
     -i 64 nnnn guestip
```

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
```
FBA DASD Devices

Descriptive

devaddr devtype filename [origin | 0] [numblks]
    [sf=shadowfile] [SYNCIO]

or

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

Diagram

```
devaddr — devtype — filename
```

```
0
```

```
origin — numblks
```

```
SF=shadowfile — SYNCIO
```

or

```
devaddr — devtype — ipname
```

```
:3990
```

```
:port — :devnum — COMP=n
```

CKD DASD Devices

Descriptive

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

or

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

Diagram

```
devaddr — devtype — filename
```

```
SF=shadowfile — NOSYNCIO — SYNCIO
```

```
READONLY — FAKEWRITE
```

```
CU=type
```

Page 36
Default CU Types

<table>
<thead>
<tr>
<th>Device Type</th>
<th>Default CU Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>2305, 2311, 2314</td>
<td>2841</td>
</tr>
<tr>
<td>3330, 3340, 3350,</td>
<td>3880</td>
</tr>
<tr>
<td>3375, 3380</td>
<td></td>
</tr>
<tr>
<td>3390</td>
<td>3990</td>
</tr>
<tr>
<td>9345</td>
<td>9343</td>
</tr>
</tbody>
</table>

Table 5: Default CU Types

Communication Lines (Preliminary 2703 BSC Support)

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

```
  devaddr — devtype — DIAL= — IN — OUT — INOUT — NO
```

Page 37
## 5. Hercules Console Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>!message</td>
<td>SCP priority message</td>
</tr>
<tr>
<td># or *</td>
<td>Log comment to syslog</td>
</tr>
<tr>
<td>.reply</td>
<td>SCP command</td>
</tr>
<tr>
<td>?</td>
<td>List all commands / command specific help (alias for help)</td>
</tr>
<tr>
<td>aea</td>
<td>Display AEA tables</td>
</tr>
<tr>
<td>aia</td>
<td>Display AIA tables</td>
</tr>
<tr>
<td>ar</td>
<td>Display access registers</td>
</tr>
<tr>
<td>archmode</td>
<td>Set architecture mode</td>
</tr>
<tr>
<td>attach</td>
<td>Configure device</td>
</tr>
<tr>
<td>auto_scsi_mount</td>
<td>Automatic SCSI tape mounts</td>
</tr>
<tr>
<td>automount</td>
<td>Show or update allowable tape automount directories</td>
</tr>
<tr>
<td>b</td>
<td>Set breakpoint</td>
</tr>
<tr>
<td>b+</td>
<td>Set breakpoint</td>
</tr>
<tr>
<td>b-</td>
<td>Delete breakpoint</td>
</tr>
<tr>
<td>cache</td>
<td>Cache command</td>
</tr>
<tr>
<td>cckd</td>
<td>CCKD command</td>
</tr>
<tr>
<td>cd</td>
<td>Change directory</td>
</tr>
<tr>
<td>cf</td>
<td>Configure CPU online or offline</td>
</tr>
<tr>
<td>cfall</td>
<td>Configure all CPU’s online or offline</td>
</tr>
<tr>
<td>clocks</td>
<td>Display TOD clock and CPU timer</td>
</tr>
<tr>
<td>Command</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>------------------------------------------------------------------</td>
</tr>
<tr>
<td>cmdtgt</td>
<td>Specify the command target</td>
</tr>
<tr>
<td>conkpav</td>
<td>Display / alter console TCP/IP keep-alive settings</td>
</tr>
<tr>
<td>cpu</td>
<td>Define target CPU for console display and commands</td>
</tr>
<tr>
<td>cr</td>
<td>Display or alter control registers</td>
</tr>
<tr>
<td>cscript</td>
<td>Cancel a running script thread</td>
</tr>
<tr>
<td>ctc</td>
<td>Enable / disable CTC debugging</td>
</tr>
<tr>
<td>define</td>
<td>Rename device</td>
</tr>
<tr>
<td>defsym</td>
<td>Define symbol</td>
</tr>
<tr>
<td>detach</td>
<td>Remove device</td>
</tr>
<tr>
<td>devinit</td>
<td>Reinitialize device</td>
</tr>
<tr>
<td>devlist</td>
<td>List device or all devices</td>
</tr>
<tr>
<td>devtmax</td>
<td>Display or set max device threads</td>
</tr>
<tr>
<td>ds</td>
<td>Display subchannel</td>
</tr>
<tr>
<td>ecpsvm</td>
<td>ECPS:VM commands</td>
</tr>
<tr>
<td>exit</td>
<td>Terminate the emulator</td>
</tr>
<tr>
<td>ext</td>
<td>Generate external interrupt</td>
</tr>
<tr>
<td>f{+/-} addr</td>
<td>Mark frames usable / unusable</td>
</tr>
<tr>
<td>fpc</td>
<td>Display floating point control registers</td>
</tr>
<tr>
<td>fpr</td>
<td>Display floating point register</td>
</tr>
<tr>
<td>g</td>
<td>Turn off instruction stepping and start CPU</td>
</tr>
<tr>
<td>gpr</td>
<td>Display or alter general purpose registers</td>
</tr>
<tr>
<td>Command</td>
<td>Description</td>
</tr>
<tr>
<td>----------</td>
<td>-------------</td>
</tr>
<tr>
<td>hao</td>
<td>Hercules Automated Operator (HAO)</td>
</tr>
<tr>
<td>help</td>
<td>List all commands / command specific help</td>
</tr>
<tr>
<td>herc</td>
<td>Send Hercules command</td>
</tr>
<tr>
<td>herclogo</td>
<td>Read a new logo file</td>
</tr>
<tr>
<td>hst</td>
<td>History of commands</td>
</tr>
<tr>
<td>i</td>
<td>Generate I/O attention interrupt for device</td>
</tr>
<tr>
<td>iodelay</td>
<td>Display or set I/O delay value</td>
</tr>
<tr>
<td>ipending</td>
<td>Display pending interrupts</td>
</tr>
<tr>
<td>ipl</td>
<td>IPL normal from device xxxx</td>
</tr>
<tr>
<td>iplc</td>
<td>IPL clear from device xxxx</td>
</tr>
<tr>
<td>k</td>
<td>Display CCKD internal trace</td>
</tr>
<tr>
<td>ldmod</td>
<td>Load a module</td>
</tr>
<tr>
<td>loadcore</td>
<td>Load a core image file</td>
</tr>
<tr>
<td>loadparm</td>
<td>Set IPL parameter</td>
</tr>
<tr>
<td>loadtext</td>
<td>Load a text deck file</td>
</tr>
<tr>
<td>log</td>
<td>Direct log output</td>
</tr>
<tr>
<td>logopt</td>
<td>Change log options</td>
</tr>
<tr>
<td>lparname</td>
<td>Display or define LPAR name</td>
</tr>
<tr>
<td>lparnum</td>
<td>Display or set LPAR identification number</td>
</tr>
<tr>
<td>lsdep</td>
<td>List module dependencies</td>
</tr>
<tr>
<td>lsmod</td>
<td>List dynamic modules</td>
</tr>
<tr>
<td>maxrates</td>
<td>Display maximum observed MIPS/SIO</td>
</tr>
<tr>
<td>Command</td>
<td>Description</td>
</tr>
<tr>
<td>------------------</td>
<td>------------------------------------------------------------------</td>
</tr>
<tr>
<td>rate</td>
<td>rate or define new reporting interval</td>
</tr>
<tr>
<td>define</td>
<td>message Display message on console like VM</td>
</tr>
<tr>
<td>new</td>
<td>mounted_tape_reinit Control tape initialization</td>
</tr>
<tr>
<td>reporting</td>
<td>msg Display message on console like VM</td>
</tr>
<tr>
<td>interval</td>
<td>msgghld Display or set timeout value of held messages</td>
</tr>
<tr>
<td></td>
<td>msgnoh Display message on console like VM, but without header</td>
</tr>
<tr>
<td></td>
<td>ostailor Specify intended operating system</td>
</tr>
<tr>
<td></td>
<td>panrate Display or set console refresh rate</td>
</tr>
<tr>
<td></td>
<td>pgmtrace Trace program interrupts</td>
</tr>
<tr>
<td></td>
<td>pr Display prefix register</td>
</tr>
<tr>
<td></td>
<td>pscp Send system control program priority message</td>
</tr>
<tr>
<td></td>
<td>psw Display or alter program status word</td>
</tr>
<tr>
<td></td>
<td>ptt Set / display pthread trace</td>
</tr>
<tr>
<td></td>
<td>pwd Print working directory</td>
</tr>
<tr>
<td></td>
<td>qd Query DASD</td>
</tr>
<tr>
<td></td>
<td>quiet Toggle automatic refresh of console display data</td>
</tr>
<tr>
<td></td>
<td>quit Terminate the emulator</td>
</tr>
<tr>
<td></td>
<td>r Display or alter real storage</td>
</tr>
<tr>
<td></td>
<td>restart Generate restart interrupt</td>
</tr>
<tr>
<td></td>
<td>resume Resume Hercules</td>
</tr>
<tr>
<td></td>
<td>rmmod Delete a module</td>
</tr>
<tr>
<td></td>
<td>s Instruction stepping</td>
</tr>
<tr>
<td>Command</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>s+</td>
<td>Instruction stepping on</td>
</tr>
<tr>
<td>s-</td>
<td>Instruction stepping off</td>
</tr>
<tr>
<td>s?</td>
<td>Instruction stepping query</td>
</tr>
<tr>
<td>s{+/-} dev</td>
<td>Turn CCW stepping on / off</td>
</tr>
<tr>
<td>savecore</td>
<td>Save a core image file</td>
</tr>
<tr>
<td>sclproot</td>
<td>Set or display SCLP base directory</td>
</tr>
<tr>
<td>scp</td>
<td>Send system control program command</td>
</tr>
<tr>
<td>script</td>
<td>Run a sequence of console commands contained in a file</td>
</tr>
<tr>
<td>scsimount</td>
<td>Automatic SCSI tape mounts</td>
</tr>
<tr>
<td>sf+</td>
<td>Create a new shadow file</td>
</tr>
<tr>
<td>sf-</td>
<td>Remove a shadow file</td>
</tr>
<tr>
<td>sf=</td>
<td>Rename a shadow file</td>
</tr>
<tr>
<td>sfc</td>
<td>Compress a shadow file</td>
</tr>
<tr>
<td>sfd</td>
<td>Display shadow file statistics</td>
</tr>
<tr>
<td>sfk</td>
<td>Perform a chkdsk on the active shadow file</td>
</tr>
<tr>
<td>sh</td>
<td>Shell command</td>
</tr>
<tr>
<td>shrd</td>
<td>SHRD command</td>
</tr>
<tr>
<td>sizeof</td>
<td>Display size of structures</td>
</tr>
<tr>
<td>ssd</td>
<td>Signal Shutdown</td>
</tr>
<tr>
<td>start</td>
<td>Start CPU or printer device</td>
</tr>
<tr>
<td>startall</td>
<td>Start all CPU’s</td>
</tr>
<tr>
<td>stop</td>
<td>Stop CPU or printer device</td>
</tr>
</tbody>
</table>
### Table 6: Hercules Console Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>stopall</td>
<td>Stop all CPU’s</td>
</tr>
<tr>
<td>store</td>
<td>Store CPU status at absolute zero</td>
</tr>
<tr>
<td>suspend</td>
<td>Suspend Hercules</td>
</tr>
<tr>
<td>syncio</td>
<td>Display syncio device statistics</td>
</tr>
<tr>
<td>sysclear</td>
<td>Issue SYSTEM CLEAR RESET manual operation</td>
</tr>
<tr>
<td>sysreset</td>
<td>Issue SYSTEM RESET manual operation</td>
</tr>
<tr>
<td>t</td>
<td>Instruction trace</td>
</tr>
<tr>
<td>t+</td>
<td>Instruction trace on</td>
</tr>
<tr>
<td>t-</td>
<td>Instruction trace off</td>
</tr>
<tr>
<td>t?</td>
<td>Instruction trace query</td>
</tr>
<tr>
<td>t{+/-}</td>
<td>Turn CKD_KEY tracing on / off</td>
</tr>
<tr>
<td>t{+/-}</td>
<td>Turn CCW tracing on / off</td>
</tr>
<tr>
<td>timerint</td>
<td>Display or set timers update interval</td>
</tr>
<tr>
<td>tlb</td>
<td>Display TLB tables</td>
</tr>
<tr>
<td>toddrag</td>
<td>Display or set TOD clock drag factor</td>
</tr>
<tr>
<td>traceopt</td>
<td>Instruction trace display option</td>
</tr>
<tr>
<td>tt32</td>
<td>Control / query CTCI-W32 functionality</td>
</tr>
<tr>
<td>u</td>
<td>Disassemble storage</td>
</tr>
<tr>
<td>uptime</td>
<td>Display Hercules Emulator uptime</td>
</tr>
<tr>
<td>v</td>
<td>Display or alter virtual storage</td>
</tr>
<tr>
<td>version</td>
<td>Display version information</td>
</tr>
</tbody>
</table>
6. Console Command Descriptions

!message (SCP priority message)

Descriptive
!prio_msg

Diagram

# or * (Log comment to syslog)

Descriptive
# anytext

or

* anytext

Diagram

.reply (SCP command)

Descriptive
.any_reply

Diagram

? (List all commands / command specific help)

Descriptive
? [command]
AEA (Display AEA tables)

Descriptive

AEA

Diagram

AEA

AIA (List AIA fields)

Descriptive

AIA

Diagram

AIA

AR (Display access registers)

Descriptive

AR

Diagram

AR

ARCHMODE (Set architecture mode)

Descriptive

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

Diagram

ARCHMODE  

S/370

ESA/390

ESAME

z/ARCH

Page 46
ATTACH (Configure device)

Descriptive
ATTACH devn type [arguments [arguments ... ]]

Diagram

AUTOMOUNT (Show or update allowable tape automount directories)

Descriptive
AUTOMOUNT {ADD directory | DEL directory | LIST}

or
AUTOMOUNT [+ | -]directory

Diagram

AUTO_SCSI_MOUNT (Automatic SCSI tape mounts)

Descriptive
AUTO_SCSI_MOUNT [NO | YES | n]
B (Set breakpoint)

Descriptive
B \{addr | addr\to addr\}

Diagram

B \quad addr \quad addr\to addr

B+ (Set breakpoint)

Descriptive
B+ \{addr | addr\to addr\}

Diagram

B+ \quad addr \quad addr\to addr

B- (Delete breakpoint)

Descriptive
B-

Diagram

B-

CACHE (Cache command)

Descriptive
CACHE

Diagram

CACHE

CCKD (CCKD command)

Descriptive
CCKD [HELP | STATS | OPTS |
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
CD (Change directory)

Descriptive
CD path

Diagram
CD \( \rightarrow \) path

CF (Configure CPU online or offline)

Descriptive
CF [ON | OFF]

Diagram
CF \( \left\{ \begin{array}{c} \text{ON} \\ \text{OFF} \end{array} \right. \)

CFALL (Configure all CPUs online or offline)

Descriptive
CFALL [ON | OFF]
CLOCKS (Display TOD clock and CPU timer)

**Descriptive**

CLOCKS

**Diagram**

```
Diagram
êê ÊÇìû Çàëîã ñëîæíèõ ñîðîñòÿíûõ ñëîæíèçîâàëüíûõ ñëà÷àíèé
```

CMDTGT (Specify command target)

**Descriptive**

CMDTGT \{HERC | SCP | PSCP | ?\}

**Diagram**

```
Diagram
êê ÊÇìû Çàëîã ñëîæíèõ ñîðîñòÿíûõ ñëîæíèçîâàëüíûõ ñëà÷àíèé
```

CONKPALV (Specify TCP/IP keep alive settings)

**Descriptive**

CONKPALV \(idle,intv,count\)

**Diagram**

```
Diagram
êê ÊÇìû Çàëîã ñëîæíèõ ñîðîñòÿíûõ ñëîæíèçîâàëüíûõ ñëà÷àíèé
```

CPU (Define target CPU for console displays and commands)

**Descriptive**

CPU \(hh\)
CR (Display or alter control registers)

Descriptive
CR \[nn=xxxxxxx | nn=xxxxxxxxxxxxxxxx\]

Diagram

CSCRIPT (Cancel a running script thread)

Descriptive
CSCRIPT

Diagram

CTC (Enable / disable debug packet tracing)

Descriptive
CTC DEBUG \{ON | OFF\} \[devnum | ALL\]

Diagram

DEFINE (Rename device)

Descriptive
DEFINE olddevice newdevice

Diagram
DEFSYM (Define symbol)

**Descriptive**

DEFSYM [symbol [value]]

**Diagram**

```
DEFSYM  symbol  value
```

DETACH (Remove device)

**Descriptive**

DETACH device

**Diagram**

```
DETACH  device
```

DEVINIT (Reinitialize device)

**Descriptive**

DEVINIT devnum [argument [argument ...]]

**Diagram**

```
DEVINIT  devnum  argument
```

DEVLIST (List all devices)

**Descriptive**

DEVLIST

**Diagram**

```
DEVLIST
```
DEVTMAX (Display or set maximum device threads)

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

Diagram

DS (Display subchannel)

Descriptive
DS devnum

Diagram

ECPSVM (ECPS:VM commands)

Descriptive
ECPSVM [HELP | STATS | DISABLE | ENABLE | DEBUG | NODEBUG | LEVEL [nn]]

or (with abbreviated arguments)

ECPSVM [H | ST | DIS | EN | DEBUG | NO | L [nn]]

Diagram

or (with abbreviated arguments)
EXIT (Terminate the emulator)

Descriptive
EXIT

Diagram

EXT (Generate external interrupt)

Descriptive
EXT

Diagram

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

Descriptive
F{+ | -} addr

Diagram

FPC (Display floating point control register)

Descriptive
FPC
FPC (Display floating point registers)

G (Turn off instruction stepping and start CPU)

GPR (Display or alter general purpose registers)

HAO (Hercules Automatic Operator)
HELP (List all commands / command specific help)

Descriptive
HELP [command]

Diagram

HERC (Send Hercules command)

Descriptive
HERC [cmd]

Diagram

HERCLOGO (Load new logo file)

Descriptive
HERCLOGO [filename]

Diagram

Page 57
**HST (History of commands)**

**Descriptive**

HST [-1]
HST [-] \( n \)
HST \{L | 0\}

**Diagram**

![Diagram of HST commands]

---

**I (Generate I/O attention interrupt for device)**

**Descriptive**

I \( device \)

**Diagram**

![Diagram of I command]

---

**IODELAY (Display or set I/O delay value)**

**Descriptive**

IODELAY [\( usecs \ [NOWARN] \)]

**Diagram**

![Diagram of IODELAY command]

---

**IPENDING (Display pending interrupts)**

**Descriptive**

IPENDING

**Diagram**

![Diagram of IPENDING command]
IPL (IPL normal from device xxxx)

Descriptive
IPL \{devnum | filename\} [PARM string]

Diagram

IPLC (IPL clear from device xxxx)

Descriptive
IPLC \{devnum | filename\} [PARM string]

Diagram

K (Display CCKD internal trace)

Descriptive
K

Diagram

LDMOD (Load a module)

Descriptive
LDMOD module

Diagram

LOADCORE (Load a core image file)

Descriptive
LOADCORE filename [address | 0]
LOADCORE

Diagram

```
loadcore — filename 0 address
```

LOADPARM (Set IPL parameter)

Descriptive

LOADPARM \([ipl\_parameter]\)

Diagram

```
loadparm — ipl parameter
```

LOADTEXT (Load a text deck file)

Descriptive

LOADTEXT \(filename \ [address]\)

Diagram

```
loadtext — filename address
```

LOG (Direct log output)

Descriptive

LOG \(newfile\)

Diagram

```
log — newfile
```

LOGOPT (Change logging options)

Descriptive

LOGOPT \([\text{TIMESTAMP} \mid \text{NOTIMESTAMP} \mid \text{TIME} \mid \text{NOTIME}]\)
LPARNAME (Display or define LPAR name)

Descriptive
LPARNAME [lparname]

Diagram

LPARNAME [lparname]

LPARNUM (Display or set LPAR identification number)

Descriptive
LPARNUM [xx]

Diagram

LPARNUM [xx]

LSDEP (List module dependencies)

Descriptive
LSDEP

Diagram

LSDEP

LSMOD (List dynamic modules)

Descriptive
LSMOD
MAXRATES (Display maximum observed MIPS/SIO rate or define new reporting interval)

Descriptive
MAXRATES [interval]

MESSAGE (Display message on console like VM)

Descriptive
MESSAGE parms

MOUNTED_TAPE_REINIT (Control tape initialization)

Descriptive
MOUNTED_TAPE_REINIT [ALLOW | DISALLOW]

MSG (Display message on console like VM)

Descriptive
MSG parms
MSGHLD (Display or set timeout of held messages)

Descriptive

MSGHLD [nnn | INFO | CLEAR]

Diagram

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

Descriptive

MSG parms

Diagram

OSTAILOR (Specify intended operating system)

Descriptive

OSTAILOR [z/OS | OS/390 | VM | VSE | LINUX | OpenSolaris | QUIET | NULL]
PANRATE (Display or set pamel refresh rate)

Descriptive
PANRATE [SLOW | FAST | rate]

Diagram

PGMTRACE (Trace program interrupts)

Descriptive
PGMTRACE [[-] intcode]

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 \[\text{operand=value [operand=value ... ]}\]

where operand is one of the following:

- \(SM=xx\)
- \(PK=nn\)
- \(CMWP=x\)
- \(AS=[PRI \mid SEC \mid HOME]\)
- \(CC=n\)
- \(PM=x\)
- \(IA=xxxxxxxx\)
- \(AM=[24 \mid 31 \mid 64]\)

**Diagram**

![Diagram of PSW structure]

where operand is one of the following:

- \(SM=xx\)
- \(PK=nn\)
- \(CMWP=x\)
- \(AS=[PRI \mid SEC \mid HOME]\)
- \(CC=n\)
- \(PM=x\)
- \(IA=xxxxxxxx\)
- \(AM=[24 \mid 31 \mid 64]\)
PTT (Set / display pthread 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**

```
└── PWD
```

QD (Query DASD)

**Descriptive**

QD [address]

**Diagram**

```
└── QD [address]
```

QUIET (Toggle automatic refresh of console display data)

**Descriptive**

QUIET

**Diagram**

```
└── QUIET
```

QUIT (Terminate the emulator)

**Descriptive**

QUIT

**Diagram**

```
└── QUIT
```

R (Display or alter real storage)

**Descriptive**

R {addr | addr.length | addr=addr | addr=value}
RESTART (Generate restart interrupt)

Descriptive
RESTART

Diagram

RESUME (Resume Hercules)

Descriptive
RESUME

Diagram

RMMOD (Delete a module)

Descriptive
RMMOD 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

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

Descriptive
S{+ | -} devaddr

Diagram
SAVCORE (Save a core image to a file)

**Descriptive**
SAVCORE *filename [start | *] [end | *]*

**Diagram**

```
     +-------------------+
     |                  |
  +------------+      +-------------------+
  | filename   |      |                  |
  +------------+      +-------------------+
       *      |      |                  |
       +      |      +-------------------+
       **start** | *                   |
       +      |      +-------------------+
     
```

SCLPROOT (Set or display SCLP base directory)

**Descriptive**
SCLPROOT [NONE | directory]

**Diagram**

```
     +-------------------+
     |                  |
  +------------+      +-------------------+
  | SCLPROOT    |      |                  |
  +------------+      +-------------------+
       NONE      |      |                  |
       +      |      +-------------------+
       directory |                  |
```

SCP (Send system control program command)

**Descriptive**
SCP [cmd]

**Diagram**

```
     +-------------------+
     |                  |
  +------------+      +-------------------+
  | SCP        |      |                  |
  +------------+      +-------------------+
       cmd      |      |                  |
       +      |      +-------------------+
```

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

**Descriptive**
SCRIPT *filename [filename ...]*
SCSIMOUNT (Automatic SCSI tape mounts)

Descriptive
SCSIMOUNT [NO | YES | n]

Diagram

SF+ (Create a new shadow file)

Descriptive
SF+ {device | *}

Diagram

SF- (Remove a shadow file)

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

Diagram

SF= (Rename a shadow file)

Descriptive
SF= device newfile
SFC (Compress a shadow file)

Descriptive

SFC \{device \mid *

Diagram

\[\text{SFC} - \text{device} \rightarrow \text{newfile}\]

SFD (Display shadow file statistics)

Descriptive

SFD \{device \mid *

Diagram

\[\text{SFD} - \text{device} \rightarrow \text{fl}\]

SFK (Perform a chkdsk on the active shadow file)

Descriptive

SFK \{device \mid * \} \[n\]

Diagram

\[\text{SFK} - \text{device} \rightarrow \text{fl} - \text{n}\]

SH (Shell command)

Descriptive

SH \text{command} [\text{arg} [\text{arg} ...]]

Diagram

\[\text{SH} - \text{command} \rightarrow \text{arg} \rightarrow \text{fl}\]
SHRD (SHRD Command)

Descriptive

SHRD TRACE[=n]

Diagram

```
SHRD → TRACE [=n]
```

SIZEOF (Display size of structures)

Descriptive

SIZEOF

Diagram

```
SIZEOF
```

SSD (Signal shutdown)

Descriptive

SSD

Diagram

```
SSD
```

START (Start CPU or printer device)

Descriptive

START [devicenum]

Diagram

```
START [devicenum]
```

STARTALL (Start all CPUs)

Descriptive

STARTALL
STOP (Stop CPU or printer device)

Descriptive
STOP \([\text{devicenum}]\)

Diagram

```
\[\text{STOP} \quad \text{devicenum} \]
```
SYNCIO (Display SYNCIO device statistics)

Descriptive
SYNCIO

Diagram

SYSCLEAR (Issue SYSTEM CLEAR RESET manual operation)

Descriptive
SYSCLEAR

Diagram

SYSRESET (Issue SYSTEM RESET manual operation)

Descriptive
SYSRESET

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

```
+-------+-------
   T     devaddr
```

TIMERINT (Display or set timers update interval)

Descriptive
TIMERINT [interval]

Diagram

```
+------------------+
| TIMERINT         |
|                  |
| interval         |
```

TLB (Display TLB tables)

Descriptive
TLB

Diagram

```
+-----+
| TLB  |
```

TODDRAG (Display or set TOD clock drag factor)

Descriptive
TODDRAG [factor]

Diagram

```
+-------+
| TODDRAG |
|        |
| factor  |
```
TRACEOPT (Instruction trace display options)

Descriptive
TRACEOPT [TRADITIONAL | REGSFIRST | NOREGS]

Diagram

TT32 (Control / query CTCl-W32 functionality)

Descriptive
TT32 {DEBUG | NODEBUG | STATS devnum}

Diagram

U (Disassemble storage)

Descriptive
U address [.length]

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
...................................................................................................................
<table>
<thead>
<tr>
<th>V</th>
<th>addr</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>addr.length</td>
</tr>
<tr>
<td>S</td>
<td>addr-addr</td>
</tr>
<tr>
<td>H</td>
<td>addr=value</td>
</tr>
</tbody>
</table>
...................................................................................................................

VERSION (Display version information)

Descriptive
VERSION

Diagram
...................................................................................................................
| VERSION |
...................................................................................................................
# 7. Hercules Utilities

## DASD Utilities

<table>
<thead>
<tr>
<th>Utility Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCKDCDSK</td>
<td>CCKD DASD file integrity verification, recovery and repair utility</td>
</tr>
<tr>
<td>CCKDCOMP</td>
<td>CCKD DASD file compression utility</td>
</tr>
<tr>
<td>CCKDDIAOG</td>
<td>CCKD DASD file diagnostics utility</td>
</tr>
<tr>
<td>CCKDSWAP</td>
<td>CCKD DASD file swap-endian program</td>
</tr>
<tr>
<td>CKD2CCKD</td>
<td>Copy CKD DASD file to CCKD DASD file</td>
</tr>
<tr>
<td>CCKD2CKD</td>
<td>Copy CCKD DASD file to CKD DASD file</td>
</tr>
<tr>
<td>DASDCAT</td>
<td>Display PDS datasets and members</td>
</tr>
<tr>
<td>DASDCONV</td>
<td>DASD image file conversion program</td>
</tr>
<tr>
<td>DASDCOPY</td>
<td>Copy DASD file to another DASD file</td>
</tr>
<tr>
<td>DASDINIT</td>
<td>DASD image file creation</td>
</tr>
<tr>
<td>DASDISUP</td>
<td>Fix XCTL tables in SVCLIB</td>
</tr>
<tr>
<td>DASDLOAD</td>
<td>DASD loader program</td>
</tr>
<tr>
<td>DASDLS</td>
<td>List datasets on a volume</td>
</tr>
<tr>
<td>DASDPDSU</td>
<td>PDS unload utility</td>
</tr>
<tr>
<td>DASDSEQ</td>
<td>Display sequential datasets</td>
</tr>
</tbody>
</table>

Table 7: DASD Utilities
### TAPE Utilities

<table>
<thead>
<tr>
<th>Utility Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>HETGET</td>
<td>Extract files from an AWS or HET tape file</td>
</tr>
<tr>
<td>HETINIT</td>
<td>Initialize an AWS or HET tape file</td>
</tr>
<tr>
<td>HETMAP</td>
<td>Show information about a HET or AWS tape file</td>
</tr>
<tr>
<td>HETUPD</td>
<td>Update and/or copy an AWS or HET tape file</td>
</tr>
<tr>
<td>TAPECOPY</td>
<td>Copy a SCSI tape to or from an AWSTAPE disk file</td>
</tr>
<tr>
<td>TAPEMAP</td>
<td>Show information about an AWS tape file</td>
</tr>
<tr>
<td>TAPESPLT</td>
<td>Split an AWS tape file</td>
</tr>
</tbody>
</table>

Table 8: TAPE Utilities

### Miscellaneous Utilities

<table>
<thead>
<tr>
<th>Utility Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMAP2HRC</td>
<td>P/390 DEVMAP conversion program</td>
</tr>
</tbody>
</table>

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

CCKDDIA\(\text{-}\text{option}\) filename

Options

- \(-v\) (display version info and exit)
- \(-d\) (display DEVHDR)
- \(-c\) (display CDEVHDR)
- \(-l\) (display L1TAB \([l = \text{numeric one}]\))
- \(-g\) (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

<Diagram showing CCKDSWAP filename>

DASDCAT (Display PDS datasets and members)

Descriptive

DASDCAT \([-i image [SF=shadowfile] pdsname/spec:flags]\)
Diagram

```
<table>
<thead>
<tr>
<th>DASDCAT</th>
<th>-i image</th>
<th>SF=shadowfile</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>pdsname/spec:flags</td>
</tr>
</tbody>
</table>
```

**DASDCONV** (DASD image file conversion program)

**Descriptive**

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

**Diagram**

```
<table>
<thead>
<tr>
<th>DASDCONV</th>
</tr>
</thead>
<tbody>
<tr>
<td>-option</td>
</tr>
<tr>
<td>infile</td>
</tr>
<tr>
<td>outfile</td>
</tr>
</tbody>
</table>
```

**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**

```
<table>
<thead>
<tr>
<th>DASDCOPY</th>
</tr>
</thead>
<tbody>
<tr>
<td>-option</td>
</tr>
<tr>
<td>infile</td>
</tr>
<tr>
<td>SF=shadowfile</td>
</tr>
<tr>
<td>outfile</td>
</tr>
</tbody>
</table>
```
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[-model] volser [size]

Diagram

```
  DASDINIT
    `-option

    filename -- devtype[-model] volser [size]
      `-size

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)
-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)

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**

\textit{volser devtype[-model] [cyls [ipltext]]}

**Diagram**

\begin{align*}
\begin{array}{c}
\text{volser} \\
\text{devtype} \\
\text{-model} \\
\text{cyls} \\
\text{ipltext}
\end{array}
\end{align*}

Dataset Statement

**Descriptive**

\textit{dsname method units pri sec dir dsorg recfm lrecl ...}

\textit{... blksize keylen}

**Diagram**

\begin{align*}
\begin{array}{c}
\text{dsname} \\
\text{method} \\
\text{units} \\
\text{pri} \\
\text{sec} \\
\text{dir} \\
\text{dsorg} \\
\text{recfm} \\
\text{lrecl} \\
\text{blksize} \\
\text{keylen}
\end{array}
\end{align*}

DASDLS (List datasets on a volume)

**Descriptive**

\textit{DASDLS filename [SF=shadowfile]}

**Diagram**

\begin{align*}
\begin{array}{c}
\text{DASDLS} \\
\text{filename} \\
\text{SF=shadowfile}
\end{array}
\end{align*}

DASDPDSU (PDS unload utility)

**Descriptive**

\textit{DASDPDSU filename [SF=shadowfile] pdsname [ASCII]}

**Diagram**

\begin{align*}
\begin{array}{c}
\text{DASDPDSU} \\
\text{filename} \\
\text{SF=shadowfile}
\end{array}
\end{align*}
DASDSEQ (Display sequential datasets)

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

Diagram

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

Descriptive
HETGET tapefile outfile filenum

Diagram

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 IEHINITT 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**

```
  ┌───────────┐
  │ HETMAP    │
  └───────────┘
      ^        ^
      |        |
      -option

    filename
```

**Options**

- `a` (print all label and file information, default)
- `d` (print only dataset information)
- `f` (print only file information)
- `h` (display usage summary)
- `l` (print only label information)
- `t` (print TAPEMAP-compatible format output)

---

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

**Descriptive**

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

**Diagram**

```
  ┌───────────┐
  │ HETUPD    │
  └───────────┘
      ^        ^
      |        |
      -option

    source [destination]
```
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

```
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TAPECOPY</td>
<td></td>
</tr>
<tr>
<td>tapedrive</td>
<td></td>
</tr>
<tr>
<td>awsfile</td>
<td></td>
</tr>
</tbody>
</table>
```

or

```
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TAPECOPY</td>
<td></td>
</tr>
<tr>
<td>awsfile</td>
<td></td>
</tr>
<tr>
<td>tapedrive</td>
<td></td>
</tr>
</tbody>
</table>
```

TAPEMAP (Show information about an AWS tape file)

Descriptive
TAPEMAP filename

Diagram

```
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TAPEMAP</td>
</tr>
<tr>
<td>filename</td>
</tr>
</tbody>
</table>
```
TAPESPLT (Split an AWS tape file)

**Descriptive**

TAPESPLT *infile outfile count*

**Diagram**

 niên --- TAPESPLT --- *infile --- outfile --- count* --- niên

DMAP2HRC (P/390 DEVMAP conversion program)

**Descriptive**

DMAP2HRC *filename*

**Diagram**

 niên --- DMAP2HRC --- *filename* --- niên
8. Shared Device Support

**Descriptive**

`loc_devnum devtype host[:port] [:rem_devnum] [COMP=n]`

**Diagram**

![Diagram of shared device support](image_url)
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).
$(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] [-d] [-b logfile] [-p dyndir]
[[[-l dynmod] ... ] [>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).

<table>
<thead>
<tr>
<th>Key</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Esc</td>
<td>Erases the contents of the command input area. If the command input area is already empty, switches to semi-graphical New Panel.</td>
</tr>
<tr>
<td>Del</td>
<td>Deletes the character at the cursor position.</td>
</tr>
<tr>
<td>Backspace</td>
<td>Erases the previous character.</td>
</tr>
<tr>
<td>Insert</td>
<td>Toggles between insert mode and overlay mode.</td>
</tr>
<tr>
<td>Tab</td>
<td>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.</td>
</tr>
<tr>
<td>Home</td>
<td>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.</td>
</tr>
<tr>
<td>End</td>
<td>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.</td>
</tr>
<tr>
<td>Page Up</td>
<td>Scrolls the message area up one screen.</td>
</tr>
<tr>
<td>Page Down</td>
<td>Scrolls the message area down one screen.</td>
</tr>
<tr>
<td>Up arrow</td>
<td>Recalls the previous command into the input area.</td>
</tr>
</tbody>
</table>
### 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>
<thead>
<tr>
<th>Key</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alt + Up arrow</td>
<td>Moves cursor up one row.</td>
</tr>
<tr>
<td>Alt + Down arrow</td>
<td>Moves cursor down one row.</td>
</tr>
<tr>
<td>Alt + Right arrow</td>
<td>Moves cursor right one column.</td>
</tr>
<tr>
<td>Alt + Left arrow</td>
<td>Moves cursor left one column.</td>
</tr>
</tbody>
</table>

**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.

### 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.
<table>
<thead>
<tr>
<th>Key</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home</td>
<td>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.</td>
</tr>
<tr>
<td>End</td>
<td>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.</td>
</tr>
</tbody>
</table>

Table 11: Extended cursor handling
### 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

<table>
<thead>
<tr>
<th>Devicetype-Model</th>
<th>Cylinders</th>
<th>Alternate Cylinders</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM 2311</td>
<td>[*]</td>
<td></td>
</tr>
<tr>
<td>IBM 2311-1</td>
<td>200</td>
<td>2</td>
</tr>
<tr>
<td>IBM 2314</td>
<td>[*]</td>
<td></td>
</tr>
<tr>
<td>IBM 2314</td>
<td>200</td>
<td>3</td>
</tr>
<tr>
<td>IBM 3330</td>
<td>[*]</td>
<td></td>
</tr>
<tr>
<td>IBM 3330-1</td>
<td>404</td>
<td>7</td>
</tr>
<tr>
<td>IBM 3330-2</td>
<td>808</td>
<td>7</td>
</tr>
<tr>
<td>IBM 3330-11</td>
<td>808</td>
<td>7</td>
</tr>
<tr>
<td>IBM 3340</td>
<td>[*]</td>
<td></td>
</tr>
<tr>
<td>IBM 3340-1</td>
<td>348</td>
<td>1</td>
</tr>
<tr>
<td>IBM 3340-35</td>
<td>348</td>
<td>1</td>
</tr>
<tr>
<td>IBM 3340-2</td>
<td>696</td>
<td>2</td>
</tr>
<tr>
<td>IBM 3340-70</td>
<td>696</td>
<td>2</td>
</tr>
<tr>
<td>IBM 3350</td>
<td>[*]</td>
<td></td>
</tr>
<tr>
<td>IBM 3350-1</td>
<td>555</td>
<td>5</td>
</tr>
<tr>
<td>IBM 3375</td>
<td>[*]</td>
<td></td>
</tr>
<tr>
<td>IBM 3375-1</td>
<td>959</td>
<td>1</td>
</tr>
<tr>
<td>IBM 3380</td>
<td>[*]</td>
<td></td>
</tr>
<tr>
<td>IBM 3380-1</td>
<td>885</td>
<td>1</td>
</tr>
<tr>
<td>Devicetype-Model</td>
<td>Cylinders</td>
<td>Alternate Cylinders</td>
</tr>
<tr>
<td>------------------</td>
<td>-----------</td>
<td>--------------------</td>
</tr>
<tr>
<td>IBM 3380-A</td>
<td>885</td>
<td>1</td>
</tr>
<tr>
<td>IBM 3380-B</td>
<td>885</td>
<td>1</td>
</tr>
<tr>
<td>IBM 3380-D</td>
<td>885</td>
<td>1</td>
</tr>
<tr>
<td>IBM 3380-J</td>
<td>885</td>
<td>1</td>
</tr>
<tr>
<td>IBM 3380-2</td>
<td>1770</td>
<td>2</td>
</tr>
<tr>
<td>IBM 3380-E</td>
<td>1770</td>
<td>2</td>
</tr>
<tr>
<td>IBM 3380-3</td>
<td>2665</td>
<td>3</td>
</tr>
<tr>
<td>IBM 3380-K</td>
<td>2665</td>
<td>3</td>
</tr>
<tr>
<td>EMC 3380 K+</td>
<td>3339</td>
<td>3</td>
</tr>
<tr>
<td>EMC 3380 K++</td>
<td>3993</td>
<td>3</td>
</tr>
<tr>
<td>IBM 3390</td>
<td>[*]</td>
<td>1</td>
</tr>
<tr>
<td>IBM 3390-1</td>
<td>1113</td>
<td>1</td>
</tr>
<tr>
<td>IBM 3390-2</td>
<td>2226</td>
<td>2</td>
</tr>
<tr>
<td>IBM 3390-3</td>
<td>3339</td>
<td>1</td>
</tr>
<tr>
<td>IBM 3390-9</td>
<td>10017</td>
<td>3</td>
</tr>
<tr>
<td>IBM 3390-27</td>
<td>32760</td>
<td>3</td>
</tr>
<tr>
<td>IBM 3390-54</td>
<td>65520</td>
<td>3</td>
</tr>
<tr>
<td>IBM 9345</td>
<td>[*]</td>
<td></td>
</tr>
<tr>
<td>IBM 9345-1</td>
<td>1440</td>
<td>0</td>
</tr>
<tr>
<td>IBM 9345-2</td>
<td>2156</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 12: Supported CKD DASD Devices
## FBA Devices

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

Table 13: 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

<table>
<thead>
<tr>
<th><strong>KEYWORDS</strong></th>
<th>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.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>variables</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>{ }</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>[ ]</strong></td>
<td>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.</td>
</tr>
<tr>
<td>**</td>
<td>**</td>
</tr>
</tbody>
</table>
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.

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 14: Reading Syntax Descriptions

B2. Reading Syntax Diagrams

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Symbol" /></td>
<td>This symbol indicates the beginning of a statement.</td>
</tr>
<tr>
<td><img src="image" alt="Symbol" /></td>
<td>This symbol indicates the end of a statement.</td>
</tr>
<tr>
<td><img src="image" alt="Symbol" /></td>
<td>This symbol indicates that the statement is continued on the next line.</td>
</tr>
<tr>
<td><img src="image" alt="Symbol" /></td>
<td>This symbol indicates that the statement is a continuation from the previous line.</td>
</tr>
<tr>
<td><img src="image" alt="Symbol" /></td>
<td>A required element (keyword or variable) appears on the main path.</td>
</tr>
<tr>
<td><img src="image" alt="Symbol" /></td>
<td>An optional element (keyword or variable) appears below the main path.</td>
</tr>
<tr>
<td>Required element</td>
<td>Optional elements</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>(keyword or variable) with selection. Only one of the available options may be specified.</td>
<td>(keyword or variable) with selection are shown below the main line. Only one of the available options may be specified.</td>
</tr>
<tr>
<td>A required element (keyword or variable) with selection. Only one of the available options may be specified.</td>
<td>Optional elements (keyword or variable) with selection are shown below the main line. Only one of the available options may be specified.</td>
</tr>
<tr>
<td>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.</td>
<td>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.</td>
</tr>
<tr>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>required element</td>
<td>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.</td>
</tr>
<tr>
<td>SEGMENT</td>
<td>Reference to a syntax segment, which is described separately.</td>
</tr>
<tr>
<td>SEGMENT= value_1 value_2</td>
<td>This symbol indicates a syntax segment which is referenced from the main syntax diagram.</td>
</tr>
</tbody>
</table>

### Keywords

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.

### Variables

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.

---

**Table 15: Reading Syntax Diagrams**

---

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