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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
Hercules Release: Version 4 Release 00 Modification 0
Publication Number: HERS040000
SoftCopy Name: HerculesReferenceSummary
Revision Number: HERS040000-00
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@yahoogroups.com
2. Hercules Configuration File

2.1 System Parameters

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</tr>
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<td>Comment line</td>
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<td>Set architecture level</td>
</tr>
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</tr>
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<td>ESAME ASN and LX REUSE feature (deprecated, use ARCHLVL instead)</td>
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<td>Automatic SCSI tape mounts (deprecated, use SCSIMOUNT instead)</td>
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<td>CPU capping feature</td>
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<td>CONKPALV</td>
<td>Console and telnet clients keep-alive option</td>
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<td>User character conversion table</td>
</tr>
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<td>CPUIDFMT</td>
<td>Set format BASIC / 0 / 1 STIDP generation</td>
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<tr>
<td>CPUMODEL</td>
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</tr>
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</tr>
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<td>DIAG8CMD</td>
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<td>HTTP</td>
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<td>Description</td>
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<td>--------------------</td>
<td>------------------------------------------------------------------------------</td>
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<td>HTTPROOT</td>
<td>HTTP server root directory (deprecated, use HTTP instead)</td>
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<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>
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<td>LDMOD</td>
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<td>LEGACYSENSEID</td>
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<td>MAINSIZE</td>
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<td>MANUFACTURER</td>
<td>STSI manufacturer code</td>
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<td>MAXCPU</td>
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<td>MODPATH</td>
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<td>MSGLEVEL</td>
<td>Message display output</td>
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<tr>
<td>System Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>MSGLVL</td>
<td>Message display output (alias for MSGLEVEL)</td>
</tr>
<tr>
<td>NUMCPU</td>
<td>Number of emulated CPUs</td>
</tr>
<tr>
<td>NUMVEC</td>
<td>Number of vector facilities</td>
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<tr>
<td>OSTAILOR</td>
<td>Tailor trace information for specific operating system</td>
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<tr>
<td>PANRATE</td>
<td>Console refresh rate</td>
</tr>
<tr>
<td>PANTITLE</td>
<td>Console panel title</td>
</tr>
<tr>
<td>PGMPRDOS</td>
<td>LPP license setting</td>
</tr>
<tr>
<td>PLANT</td>
<td>STSI plant code</td>
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<td>QUITMOUT</td>
<td>Quit timeout value</td>
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<tr>
<td>REXX</td>
<td>REXX interpreter settings</td>
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<td>SCLPROOT</td>
<td>SCLP base directory</td>
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<tr>
<td>SCPECHO</td>
<td>Echo to console and history of SCP replies</td>
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<td>SCPIMPLY</td>
<td>Pass non-Hercules commands to the SCP</td>
</tr>
<tr>
<td>SCSIMOUNT</td>
<td>Automatic SCSI tape mounts</td>
</tr>
<tr>
<td>SHCMDOPT</td>
<td>Shell command option</td>
</tr>
<tr>
<td>SHOWDVOL1</td>
<td>Enable showing of DASD volsers in device list</td>
</tr>
<tr>
<td>SHRDPORT</td>
<td>Shared device server port</td>
</tr>
<tr>
<td>SRVPRIO</td>
<td>Server threads priority</td>
</tr>
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<td>SYMPTOM</td>
<td>Alias for TRACEOPT</td>
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<tr>
<td>SYSEPOCH</td>
<td>Base date for TOD clock</td>
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<tr>
<td>TIMERINT</td>
<td>Internal timer update interval</td>
</tr>
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</table>
## System Parameter Description

<table>
<thead>
<tr>
<th>System Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<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 size</td>
</tr>
<tr>
<td>YROFFSET</td>
<td>TOD clock offset from actual date</td>
</tr>
</tbody>
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### Table 1: Hercules System Parameters
## 2.2 Device Definitions

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<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>Device Type</td>
<td>Device</td>
<td>Emulated by</td>
</tr>
<tr>
<td>-------------</td>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>((QETH))</td>
<td>OSA Express IP Layer 2 support only. Supported only for Linux guests. TAP adapter must be bridged to a local LAN</td>
<td>“QETH” (OSA/QDIO Ethernet Adapter) 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>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

# (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

ARCHLVL

S/370

ESA/390

ESAME

z/ARCH
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 [+ | -] directory

or

AUTOMOUNT {ADD directory | DEL directory}

Diagram

\[\begin{array}{c}
\text{AUTOMOUNT} \\
+ \\
\text{directory} \\
\hline
\end{array}\]

or

\[\begin{array}{c}
\text{AUTOMOUNT} \\
\text{ADD directory} \\
\text{DEL directory} \\
\hline
\end{array}\]

AUTOINIT (Automatic creation of empty tape files)

Descriptive

AUTOINIT {ON | OFF}

Diagram

\[\begin{array}{c}
\text{AUTOINIT} \\
\text{ON} \\
\text{OFF} \\
\hline
\end{array}\]

CAPPING (CPU capping feature)

Descriptive

CAPPING {mips | OFF | 0}

Diagram

\[\begin{array}{c}
\text{CAPPING} \\
mips \\
\text{OFF} \\
0 \\
\hline
\end{array}\]

CCKD (Compressed CKD DASD options)

Descriptive

CCKD \text{ option=value [ ,option=value ... ]}
where option can be:

- \( \text{COMP} = (-1 | \ n) \)
- \( \text{COMPPARM} = (-1 | \ n) \)
- \( \text{RA} = (2 | \ n) \)
- \( \text{RAQ} = (4 | \ n) \)
- \( \text{RAT} = (2 | \ n) \)
- \( \text{WR} = (2 | \ n) \)
- \( \text{GCINT} = (10 | \ n) \)
- \( \text{GCPARM} = (0 | \ n) \)
- \( \text{NOSTRESS} = (0 | 1) \)
- \( \text{FREEPEND} = (-1 | \ n) \)
- \( \text{FSYNC} = (0 | 1) \)
- \( \text{TRACE} = (0 | \ n) \)
- \( \text{LINUXNULL} = (0 | 1) \)
- \( \text{GCSTART} = (0 | 1) \)

Diagram

![Diagram](image-url)
GCPARM=  \[ \begin{array}{c} 0 \\ \hline n \end{array} \]

NOSTRESS=  \[ \begin{array}{c} 0 \\ \hline 1 \end{array} \]

FREEPEND=  \[ \begin{array}{c} -1 \\ \hline n \end{array} \]

FSYNC=  \[ \begin{array}{c} 0 \\ \hline 1 \end{array} \]

TRACE=  \[ \begin{array}{c} 0 \\ \hline n \end{array} \]

LINUXNULL=  \[ \begin{array}{c} 0 \\ \hline 1 \end{array} \]

GCSTART=  \[ \begin{array}{c} 0 \\ \hline 1 \end{array} \]

---

**CMDLEVEL (Set command group)**

**Descriptive**

CMDLEVEL \{+ | -\} \{ALL | OPERator | MAINT | PROGrammer | CONFIGuration | DEVELoper | DEBUG\} [...]

**Diagram**

```
+         -
+----------+----------+
| CMDLEVEL  |
| ALL       |
| OPERator  |
| MAINT     |
| PROGrammer|
| CONFIGuration|
| DEVELoper |
| DEBUG     |
```

**CMDLVL (Set command group)**

CMDLVL is an alias for CMDLEVEL. See CMDLEVEL system parameter for details.
CMDSEP (Command line seperator)

Descriptive
CMDSEP \(\{\text{char} \mid \text{OFF}\}\)

Diagram

CNSLPORT (Console port)

Descriptive
CNSLPORT \(\{3270 \mid \text{port} \mid \text{host:port}\}\)

Diagram

CODEPAGE (Codepage conversion table)

Descriptive
CODEPAGE \(\{\text{DEFAULT} \mid \text{codepage} \mid \text{USER} \mid \text{MAINT cmd [operands]}\}\)

Diagram

CONKPALV (Console and telnet clients keep-alive option)

Descriptive
CONKPALV \(\{(3,1,10) \mid (\text{idle, intv, count})\}\)

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

--- CP_UPDT command ----

where command can be:

ALTER EBCDIC ASCII G2H H2G

(pos, val)

DISPLAY EBCDIC ASCII G2H H2G

EXPORT EBCDIC ASCII G2H H2G filename

IMPORT EBCDIC ASCII G2H H2G filename

REFERENCE codepage

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

**Descriptive**

CPUIDFMT \{BASIC \mid 0 \mid 1\}

**Diagram**

```
+------------------+
| CPUIDFMT         |
+------------------+
|                  |
| BASIC            |
| 0               |
| 1               |
+------------------+
```

CPUMODEL (CPU model number)

**Descriptive**

CPUMODEL \{0586 \mid model\}

**Diagram**

```
+---------------+
| CPUMODEL      |
+---------------+
| 0586          |
| model         |
+---------------+
```

CPUPRIO (CPU thread process priority)

**Descriptive**

CPUPRIO \{15 \mid nn\}

**Diagram**

```
+---------------+
| CPUPRIO       |
+---------------+
| 15            |
| nn            |
+---------------+
```

CPUSERIAL (CPU serial number)

**Descriptive**

CPUSERIAL \{000001 \mid serial\}

**Diagram**

```
+---------------+
| CPUSERIAL     |
+---------------+
| 000001        |
| serial        |
+---------------+
```
**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:

\[
\text{CPUVERID} \rightarrow 00
\]

or

For S/370 and ESA/390:

\[
\text{CPUVERID} \rightarrow \text{FD} \rightarrow \text{verid}
\]

**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**

\[
\text{DEFSTORE} \rightarrow \text{storagetype}
\]

\[
\text{MAIN} \rightarrow msize
\]

\[
\text{XSTOR} \rightarrow \text{EXPANDED} \rightarrow xsize
\]
DEFSYM (Define a symbol)

Descriptive
DEFSYM symbol value

Diagram
\[ \text{DEFSYM} \quad \text{symbol} \quad \text{value} \]

DEVPRIO (Device threads process priority)

Descriptive
DEVPRIO \{8 \mid nn\}

Diagram
\[ \text{DEVPRIO} \quad 8 \quad nn \]

DEVTMAX (Maximum number of device threads)

Descriptive
DEVTMAX \{0 \mid -1 \mid 1-n\}

Diagram
\[ \text{DEVTMAX} \quad 0 \quad -1 \quad 1-n \]

DIAG8CMD (DIAGNOSE 8 command option)

Descriptive
DIAG8CMD \{DISABLE \mid ENABLE \{ECHO \mid NOECHO\}\}

Diagram
\[ \text{DIAG8CMD} \quad \text{DISABLE} \quad \text{ENABLE} \quad \text{ECHO} \quad \text{NOECHO} \]
ECPSVM (ECPS:VM support status (VM))

**Descriptive**

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

**Diagram**

```
  +-----------------------+                +-----------------------+
  | ECPSVM                |                | ENGINES                |
  |                       |                | [nn] {CP | IL | AP | IP} [, ... ] |
  |                       |                |                       |
  |                       | Help           | CP                      |
  |                       | STats          | IL                      |
  |                       | DISable        | AP                      |
  |                       | ENable         | IP                      |
  |                       | DEBUG          |                         |
  |                       | NOdebug        |                         |
  |                       | Level [nn]     |                         |
```

ENGINES (Processor engines type)

**Descriptive**

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

**Diagram**

```
  +-----------------------+                +-----------------------+
  | ENGINES               |                | ENGINES               |
  |                       | [nn*]         |                       |
  |                       | CP            |                         |
  |                       | IL            |                         |
  |                       | AP            |                         |
  |                       | IP            |                         |
```

HAO (Hercules Automatic Operator)

**Descriptive**

HAO command [operands]

where command can be:

TGT target

CMD consolecmd

DEL nn

CLEAR

LIST [nn]
Diagram

\[ \text{HAO} \rightarrow \text{command} \rightarrow \]

where \text{command} can be:

\[ \text{TGT} \rightarrow \text{target} \]
\[ \text{CMD} \rightarrow \text{consolecmd} \]
\[ \text{DEL} \rightarrow \text{nn} \]
\[ \text{CLEAR} \]
\[ \text{LIST} \rightarrow \text{nn} \]

---

**HERCLOGO (Hercules logo file)**

**Descriptive**

\[ \text{HERCLOGO} \rightarrow \text{filename} \]

**Diagram**

\[ \text{HERCLOGO} \rightarrow \text{filename} \rightarrow \]

---

**HERCPRIO (Hercules process priority)**

**Descriptive**

\[ \text{HERCPRIO} \rightarrow \text{\{0 | nn\}} \]

**Diagram**

\[ \text{HERCPRIO} \rightarrow \text{\{0 | nn\}} \rightarrow \]

---

**HTTP (HTTP server configuration)**

**Descriptive**

\[ \text{HTTP} \rightarrow \text{\{START | STOP | ROOT path | PORT port \{NOAUTH | AUTH userid password\}\}} \]
HTTPPORT (HTTP server port)

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

HTTROOT (HTTP server root directory)

The HTTROOT system parameter has been deprecated. Use “HTTP ROOT” instead.

IGNORE (Ignore subsequent INCLUDE errors)

Descriptive

IGNORE INCLUDE_ERRORS

INCLUDE (Include configuration file)

Descriptive

INCLUDE filepath

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

Descriptive

IODELAY {0 | usecs [NOWARN]}
Diagram

![Diagram](image)

**LDMOD (Additional dynamic load modules)**

**Descriptive**

LMOD module [module [module ...]]

**Diagram**

![Diagram](image)

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

**Descriptive**

LEGACYSENSEID {OFF | DISABLE | ON | ENABLE}

**Diagram**

![Diagram](image)

**LOADPARM (IPL parameter)**

**Descriptive**

LOADPARM ipl_parameter

**Diagram**

![Diagram](image)

**LOGOPT (Logging options)**

**Descriptive**

LOGOPT {TIMESTAMP | TIME | NOTIMESTAMP | NOTIME}
Diagram

**LOGOPT**

- **TIMESTAMP**
  - **TIME**
  - **NOTIMESTAMP**
  - **NOMTIME**

---

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

**Descriptive**

```
LPARNAME {HERCULES | lparname}
```

**Diagram**

- **LPARNAME**
  - **HERCULES**
  - **lparname**

---

**LPARNUM** (LPAR identification number)

**Descriptive**

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

**Diagram**

- **LPARNUM**
  - **BASIC**
  - **1**
  - **n**
  - **nn**

---

**MAINSIZE** (Main storage size)

**Descriptive**

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

**Diagram**

- **MAINSIZE**
  - **size**
  - **M**
  - **B**
  - **K**
  - **G**
  - **T**
  - **P**
  - **E**
  - **UNLOCK**
  - **LOCK**
MANUFACTURER (STSI manufacturer code)

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

Diagram

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

MAXCPU (Maximum number of CPUs)

Descriptive
MAXCPU \( \{ 1 \mid nn \} \)

Diagram

\[ \text{MAXCPU} \quad 1 \quad nn \]

MAXRATES (MIPS/SIO rate reporting interval)

Descriptive
MAXRATES \( \{ \text{interval} \mid \text{MIDNIGHT} \} \)

Diagram

\[ \text{MAXRATES} \quad \text{interval} \quad \text{MIDNIGHT} \]

MEMLOCK (Lock Hercules memory)

Descriptive
MEMLOCK \( \{ \text{ON} \mid \text{OFF} \} \)

Diagram

\[ \text{MEMLOCK} \quad \text{ON} \quad \text{OFF} \]
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

```
  MSGHLD     nnn
   INFO
   CLEAR
```

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

```
  MSGLEVEL     option
```

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

NUMCPU 1 nn

NUMVEC (Number of vector facilities)

Descriptive

NUMVEC {0 | nn}

Diagram

NUMVEC 0 nn

OSTAILOR (Tailor trace information for specific operating system)

Descriptive

OSTAILOR { [+ | -] z/OS | OS/390 | VM | VSE | zVSE | LINUX | OPENSOLARIS | QUIET | NULL}
PANRATE (Console refresh rate)

**Descriptive**

PANRATE \{SLOW | FAST | rate\}

**Diagram**

```
  ++-- PANRATE --+-- SLOW
            --+-- FAST
                   --+-- rate
```

PANTITLE (Console window title)

**Descriptive**

PANTITLE \{text | "text text text" | ""\}

**Diagram**

```
  ++-- PANTITLE --+-- "text text text"
                    --+-- ""
```

PGMPRDOS (LPP license setting)

**Descriptive**

PGMPRDOS \{RESTRICTED | LICENSED\}

**Diagram**

```
  ++-- PGMPRDOS --+-- RESTRICTED
                    --+-- LICENSED
```
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**

```
  SCLPROOT  \[NONE \| directory\]
```
SCPECHO (Echo to console and history of SCP replies)

Descriptive
SCPECHO {OFF | ON}

Diagram

SCPIMPLY (Pass non-Hercules commands to the SCP)

Descriptive
SCPIMPLY {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 volumes in device list)

Descriptive
SHOWDVOL1 {NO | YES | ONLY}

Diagram

```
  ┌───┐
  │ NO │
  │    │
  │ YES│
  │    │
  └───┘
```

SHRDPORT (Shared device server port)

Descriptive
SHRDPORT [3990 | port | START | STOP]

Diagram

```
  ┌───┐
  │ 3990 │
  │     │
  │ port │
  │     │
  │ START│
  │     │
  │ STOP │
  └───┘
```

SRVPRIO (Server threads priority)

Descriptive
SRVPRIO {4 | nn}

Diagram

```
  ┌───┐
  │ 4  │
  │    │
  │ nn │
  └───┘
```

SYSEPOCH (Base date for TOD clock)

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

Diagram

```
  ┌───┐
  │ 1900 │
  │ 1960 │
  │ year │
  │     │
  │ +years │
  │ -years │
  └───┘
```
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

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

TODDRAG (TOD clock drag factor)

Descriptive

TODDRAG \{ 1.000000 | factor \}

Diagram

\[
\text{TODDRAG} \quad 1.000000 \quad \text{factor}
\]

TODPRIO (Timer thread process priority)

Descriptive

TODPRIO \{ -20 | nn \}

Diagram

\[
\text{TODPRIO} \quad -20 \quad nn
\]

TRACEOPT (Instruction trace display option)

Descriptive

TRACEOPT \{ TRADITIONAL | REGSFIRST | NOREGS \}

Diagram

\[
\text{TRACEOPT} \quad \text{TRADITIONAL} \quad \text{REGSFIRST} \quad \text{NOREGS}
\]
TZOFFSET (TOD clock offset from GMT)

**Descriptive**

TZOFFSET {0000 | +hmm | -hmm}

**Diagram**

```
<table>
<thead>
<tr>
<th>TZOFFSET</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000</td>
</tr>
<tr>
<td>+hmm</td>
</tr>
<tr>
<td>-hmm</td>
</tr>
</tbody>
</table>
```

XPNSIZE (Expanded storage size)

**Descriptive**

XPNSIZE size[M | G | T] [UNLOCK | LOCK]

**Diagram**

```
<table>
<thead>
<tr>
<th>XPNSIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>size</td>
</tr>
<tr>
<td>M</td>
</tr>
<tr>
<td>G</td>
</tr>
<tr>
<td>T</td>
</tr>
<tr>
<td>UNLOCK</td>
</tr>
<tr>
<td>LOCK</td>
</tr>
</tbody>
</table>
```

YROFFSET (TOD clock offset from actual date)

**Descriptive**

YROFFSET {+years | -years}

**Diagram**

```
<table>
<thead>
<tr>
<th>YROFFSET</th>
</tr>
</thead>
<tbody>
<tr>
<td>+years</td>
</tr>
<tr>
<td>-years</td>
</tr>
</tbody>
</table>
```
### 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

\[
\text{devaddr \rightarrow devtype}
\]

\[
\text{groupname \hspace{1cm} ipaddr \hspace{1cm} mask}
\]

Integrated 3270 (SYSG) Console

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

Diagram

\[
\text{devaddr \rightarrow SYSG}
\]

\[
\text{groupname \hspace{1cm} ipaddr \hspace{1cm} mask}
\]

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

Console Printer-Keyboard Devices

Descriptive
\[
\text{devaddr devtype [NOPROMPT]} \hspace{1cm} [[groupname | *] [ipaddr [mask]]]
\]

Diagram

\[
\text{devaddr \rightarrow devtype}
\]

\[
\text{NOPROMPT}
\]
Integrated Console Printer-Keyboard Devices

**Descriptive**

\[\text{devaddr devtype \{prefix | / \}}\]

**Diagram**

```
/ \  
|   |
```

Card Reader Devices

**Descriptive**

\[\text{devaddr devtype filename \{filename ...\}}\]

\[
\begin{align*}
\text{[SOCKDEV]} & \quad \text{[EOF]} & \quad \text{[INTRQ]} & \quad \text{[MULTIFILE]} \\
\text{[EBCDIC [AUTOPAD]]} & \quad \text{[ASCII [TRUNC]]}
\end{align*}
\]

**Diagram**

```
\text{SOCKDEV} \quad \text{EOF} \quad \text{INTRQ} \\
\text{MULTIFILE} \quad \text{EBCDIC} \quad \text{AUTOPAD} \\
\text{ASCII} \quad \text{TRUNC}
```

Card Punch Devices

**Descriptive**

\[\text{devaddr devtype filename \{ASCII \{CRLF\} \{NOCLEAR\}}\]
Diagram

\[ \text{devaddr} \rightarrow \text{devtype} \rightarrow \text{filename} \rightarrow \text{ASCII} \rightarrow \text{CLRF} \rightarrow \text{NOCLEAR} \rightarrow \]

\[ \text{devaddr} \rightarrow \text{devtype} \rightarrow \text{filename} \rightarrow \text{ASCII} \rightarrow \text{CLRF} \rightarrow \text{NOCLEAR} \rightarrow \]

\[ \text{CLRF} \rightarrow \text{NOCLEAR} \rightarrow \text{RAWCC} \rightarrow \text{FCBCHECK} \rightarrow \text{NOFCBCHECK} \rightarrow \text{OPTBROWSE} \rightarrow \text{OPTPRINT} \rightarrow \text{LPI} = \{6, lpi\} \rightarrow \text{INDEX} = \{0, idx\} \rightarrow \text{LPP} = \{66, lpp\} \rightarrow \]  
\[ \text{FCB} = \{1:1, 0:7:2, 13:3, ..., 49:10, 55:11, 61:12 | 11:1c1, 12:c2, 13:c3, ..., 111:c11, 112:c12\} \]

or

\[ \text{devaddr} \rightarrow \text{devtype} \rightarrow \text{filename} \rightarrow \text{ASCII} \rightarrow \text{CLRF} \rightarrow \text{NOCLEAR} \rightarrow RAWCC \rightarrow \text{FCBCHECK} \rightarrow \text{NOFCBCHECK} \rightarrow \text{OPTBROWSE} \rightarrow \text{OPTPRINT} \rightarrow \text{LPI} = \{6, lpi\} \rightarrow \text{INDEX} = \{0, idx\} \rightarrow \text{LPP} = \{66, lpp\} \rightarrow \]

\[ \text{FCB} = \{1:1, 7:2, 13:3, ..., 55:11, 61:12 \}
\[ \text{FCB} = \{11:1c1, 12:c2, ..., 111:c11, 112:c12\} \]

or

\[ \text{devaddr} \rightarrow \text{devtype} \rightarrow \text{filename} \rightarrow \text{ASCII} \rightarrow \text{CLRF} \rightarrow \text{NOCLEAR} \rightarrow RAWCC \rightarrow \text{FCBCHECK} \rightarrow \text{NOFCBCHECK} \rightarrow \text{OPTBROWSE} \rightarrow \text{OPTPRINT} \rightarrow \text{LPI} = \{6, lpi\} \rightarrow \text{INDEX} = \{0, idx\} \rightarrow \text{LPP} = \{66, lpp\} \rightarrow \]

\[ \text{FCB} = \{1:1, 7:2, 13:3, ..., 55:11, 61:12 \}
\[ \text{FCB} = \{11:1c1, 12:c2, ..., 111:c11, 112:c12\} \]
Emulated Tape Devices

SCSI Tapes

Descriptive

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

Diagram

```
<table>
<thead>
<tr>
<th>devaddr</th>
<th>devtype</th>
<th>devname</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>--no-erg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>--blkid-32</td>
<td></td>
</tr>
<tr>
<td></td>
<td>--blkid-22</td>
<td></td>
</tr>
</tbody>
</table>
```

Optical Media Attach (OMA) virtual files

Descriptive

\[devaddr\ devtype\ tdf\]

Diagram

```
| devaddr | devtype | tdf |
```

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

```
devaddr — devtype — awsfie — *
```

where arguments can be:

```
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

```
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

\[\text{devaddr} \rightarrow \text{devtype} \rightarrow \text{hetfile} \rightarrow \]

\[\text{arguments}\]

where arguments can be:

- AWSTAPE
- COMPRESS= 0 I
- IDRC= 0 I
- METHOD= 1 2
- LEVEL= 4 n
- CHUNKSIZE= 65535 nnnnn
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}]
Diagram

\[ \text{devaddr} \rightarrow \text{devtype} \rightarrow \text{fakefile} \]

where arguments can be:

- \text{MAXSIZE=} \quad 0 \quad n
- \text{MAXSIZEK=} \quad 0 \quad n
- \text{MAXSIZEM=} \quad 0 \quad n
- \text{EOTMARGIN=} \quad n
- \text{READONLY=} \quad 0 \quad 1
- \text{RO} \quad \text{NORING} \quad \text{RW} \quad \text{RING}
- \text{DEONIRQ=} \quad 0 \quad 1
- \text{NOAUTOMOUNT}

Channel-to-Channel Adapters

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

Descriptive

\text{devaddr CTCI \{[-n | --dev] \text{name}\}}

\text{\{[-s | --netmask] \text{mask}\}}
[-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 [sml]]
```

Diagram

```
devaddr  CTCE  lport  raddress  rport

            mtu
```

LCS (LAN Channel Station)

Descriptive

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

Diagram

```
devaddr  LCS

    -n  --dev  name

    -o  --oat  file

    -m  --mac  mac

    -d  --debug

    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

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
Hercules Emulator V4.00

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
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

```
  devaddr — devtype — filename

  SF=shadowfile — NOSYNCIO — SYNCIO
  "=" — READONLY — FAKEWRITE
  "=" — CU=type

  or

  devaddr — devtype — ipname

  :3990 — :port — :devnum — COMP=n
```

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, 3375, 3380</td>
<td>3880</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

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**

```
 devaddr  ---  devtype  ---  LPORT=port  ---  DIAL=IN  ---
         TTY=1
```
### 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>#</td>
<td>Silent comment</td>
</tr>
<tr>
<td>$locate</td>
<td>Display and verify Hercules control blocks</td>
</tr>
<tr>
<td>$test</td>
<td>Custom test command</td>
</tr>
<tr>
<td>$zapcmd</td>
<td>Enable or disable system parameters and console commands</td>
</tr>
<tr>
<td>*</td>
<td>Loud comment</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>abs</td>
<td>Display or alter absolute storage</td>
</tr>
<tr>
<td>aea</td>
<td>Display AEA (absolute-effective-address) tables</td>
</tr>
<tr>
<td>aia</td>
<td>Display AIA (absolute-instruction-address) fields</td>
</tr>
<tr>
<td>ar</td>
<td>Display access registers</td>
</tr>
<tr>
<td>archlvl</td>
<td>Set architecture level</td>
</tr>
<tr>
<td>archmode</td>
<td>Set architecture mode (alias for ARCHLVL command)</td>
</tr>
<tr>
<td>attach</td>
<td>Configure device</td>
</tr>
<tr>
<td>auto_scsi_mount</td>
<td>Automatic SCSI tape mounts (deprecated, use SCSIMOUNT instead)</td>
</tr>
<tr>
<td>autoinit</td>
<td>Display or set automatic creation of empty tape files</td>
</tr>
<tr>
<td>Command</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>automount</td>
<td>Display 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>Execute cache related commands</td>
</tr>
<tr>
<td>cachestats</td>
<td>Display cache statistics</td>
</tr>
<tr>
<td>capping</td>
<td>Display or set CPU capping value</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 current 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>cmdlevel</td>
<td>Display or set current command group</td>
</tr>
<tr>
<td>cmdlvl</td>
<td>Alias for cmdlevel command</td>
</tr>
<tr>
<td>cmdsep</td>
<td>Display or set command line separator</td>
</tr>
<tr>
<td>cmdtgt</td>
<td>Specify the command target</td>
</tr>
<tr>
<td>cnslport</td>
<td>Display or set telnet client port</td>
</tr>
<tr>
<td>codepage</td>
<td>Display or set codepage conversion table</td>
</tr>
<tr>
<td>conkpavl</td>
<td>Display / alter console TCP/IP keep-alive settings</td>
</tr>
<tr>
<td>cp_updt</td>
<td>Create or modify user character conversion table</td>
</tr>
<tr>
<td>Command</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>cpu</td>
<td>Define target CPU for console display and commands</td>
</tr>
<tr>
<td>cpuidfmt</td>
<td>Display or set format BASIC / 0 / 1 STIDP generation</td>
</tr>
<tr>
<td>cpumodel</td>
<td>Display or set CPU model number</td>
</tr>
<tr>
<td>cpuprio</td>
<td>Display or set CPU thread process priority</td>
</tr>
<tr>
<td>cpuserial</td>
<td>Display or set CPU serial number</td>
</tr>
<tr>
<td>cpuverid</td>
<td>Display or set CPU version code</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>defstore</td>
<td>Display or define main and expanded storage values</td>
</tr>
<tr>
<td>defsym</td>
<td>Define a symbol</td>
</tr>
<tr>
<td>delsym</td>
<td>Delete a 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, device class or all devices</td>
</tr>
<tr>
<td>devprio</td>
<td>Display or set device threads process priority</td>
</tr>
<tr>
<td>devtmax</td>
<td>Display or set max device threads</td>
</tr>
<tr>
<td>diag8cmd</td>
<td>Display or set DIAGNOSE 8 command option</td>
</tr>
<tr>
<td>dir</td>
<td>Display file and directory listing</td>
</tr>
<tr>
<td>Command</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>ds</td>
<td>Display subchannel</td>
</tr>
<tr>
<td>ecpsvm</td>
<td>ECPS:VM commands</td>
</tr>
<tr>
<td>engines</td>
<td>Set processor engines type</td>
</tr>
<tr>
<td>exec</td>
<td>Execute a REXX script</td>
</tr>
<tr>
<td>exit</td>
<td>Terminate the emulator</td>
</tr>
<tr>
<td>ext</td>
<td>Generate external interrupt</td>
</tr>
<tr>
<td>fcb</td>
<td>Display current FCB or load new FCB image</td>
</tr>
<tr>
<td>fpc</td>
<td>Display or alter floating point control register</td>
</tr>
<tr>
<td>fpr</td>
<td>Display or alter floating point registers</td>
</tr>
<tr>
<td>f(+/-) addr</td>
<td>Mark frames usable / unusable</td>
</tr>
<tr>
<td>g</td>
<td>Turn off instruction stepping and start all CPUs</td>
</tr>
<tr>
<td>gpr</td>
<td>Display or alter general purpose registers</td>
</tr>
<tr>
<td>hao</td>
<td>Hercules Automatic 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 Hercules logo file</td>
</tr>
<tr>
<td>herc prio</td>
<td>Display or set Hercules process priority</td>
</tr>
<tr>
<td>hst</td>
<td>History of commands</td>
</tr>
<tr>
<td>http</td>
<td>Start, stop, modify or display HTTP server</td>
</tr>
<tr>
<td>Command</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>i</td>
<td>Generate I/O attention interrupt for device</td>
</tr>
<tr>
<td>icount</td>
<td>Display individual instruction counts</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 (deprecated, use IPL with CLEAR option instead)</td>
</tr>
<tr>
<td>k</td>
<td>Display CCKD internal trace</td>
</tr>
<tr>
<td>kd</td>
<td>Clear held messages</td>
</tr>
<tr>
<td>ldmod</td>
<td>Load a module</td>
</tr>
<tr>
<td>legsenseid</td>
<td>Display or set SENSE ID CCW (x'E4') feature</td>
</tr>
<tr>
<td>loadcore</td>
<td>Load a core image from a 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 logger output</td>
</tr>
<tr>
<td>logopt</td>
<td>Display or set logging 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>ls</td>
<td>Display file and directory listing</td>
</tr>
<tr>
<td>lsdep</td>
<td>List module dependencies</td>
</tr>
<tr>
<td>lsmod</td>
<td>List dynamic modules</td>
</tr>
<tr>
<td>mainsize</td>
<td>Display or set main storage size</td>
</tr>
<tr>
<td>Command</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>manufacturer</td>
<td>Display or set STSI manufacturer code</td>
</tr>
<tr>
<td>maxcpu</td>
<td>Display or set maximum number of CPUs</td>
</tr>
<tr>
<td>maxrates</td>
<td>Display highest MIPS/SIO rate or set a new reporting interval</td>
</tr>
<tr>
<td>memlock</td>
<td>Lock Hercules memory</td>
</tr>
<tr>
<td>message</td>
<td>Display message on console like VM</td>
</tr>
<tr>
<td>model</td>
<td>Display or set STSI model code</td>
</tr>
<tr>
<td>modpath</td>
<td>Display or set dynamic load module path</td>
</tr>
<tr>
<td>mounted_tape_reinit</td>
<td>Control tape initialization</td>
</tr>
<tr>
<td>msg</td>
<td>Display message on console like VM</td>
</tr>
<tr>
<td>msghld</td>
<td>Display or set timeout value of held messages</td>
</tr>
<tr>
<td>msglevel</td>
<td>Display or set the current message display output</td>
</tr>
<tr>
<td>msglvl</td>
<td>Display or set the current message display output (alias for msglevel command)</td>
</tr>
<tr>
<td>msgnoh</td>
<td>Display message on console like VM, but without header</td>
</tr>
<tr>
<td>mt</td>
<td>Control magnetic tape operation</td>
</tr>
<tr>
<td>numcpu</td>
<td>Display or set number of emulated CPUs</td>
</tr>
<tr>
<td>numvec</td>
<td>Display or set number of vector facilities</td>
</tr>
<tr>
<td>ostailor</td>
<td>Tailor trace information for specific operating system</td>
</tr>
<tr>
<td>panrate</td>
<td>Display or set console refresh rate</td>
</tr>
<tr>
<td>Command</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>pantitle</td>
<td>Display or set console window title</td>
</tr>
<tr>
<td>pgmprdos</td>
<td>Set LPP license setting</td>
</tr>
<tr>
<td>pgmtrace</td>
<td>Trace program interrupts</td>
</tr>
<tr>
<td>plant</td>
<td>Display or set STSI plant code</td>
</tr>
<tr>
<td>pr</td>
<td>Display prefix register</td>
</tr>
<tr>
<td>pscp</td>
<td>Send system control program priority message</td>
</tr>
<tr>
<td>psw</td>
<td>Display or alter program status word</td>
</tr>
<tr>
<td>ptp</td>
<td>Enable / disable PTP debugging</td>
</tr>
<tr>
<td>ptt</td>
<td>Display or set internal trace</td>
</tr>
<tr>
<td>pwd</td>
<td>Print working directory</td>
</tr>
<tr>
<td>qcpuid</td>
<td>Display CPU ID</td>
</tr>
<tr>
<td>qd</td>
<td>Query device information</td>
</tr>
<tr>
<td>qpfkeys</td>
<td>Display the current PF key settings</td>
</tr>
<tr>
<td>qpid</td>
<td>Display process ID of Hercules</td>
</tr>
<tr>
<td>qports</td>
<td>Display TCP/IP ports in use</td>
</tr>
<tr>
<td>qproc</td>
<td>Display processors type and utilization</td>
</tr>
<tr>
<td>qstor</td>
<td>Display main and expanded storage values</td>
</tr>
<tr>
<td>quiet</td>
<td>Toggle automatic refresh of console display data</td>
</tr>
<tr>
<td>quit</td>
<td>Terminate the emulator</td>
</tr>
<tr>
<td>quitmout</td>
<td>Display or set quit timeout value</td>
</tr>
<tr>
<td>r</td>
<td>Display or alter real storage</td>
</tr>
<tr>
<td>Command</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>restart</td>
<td>Generate restart interrupt</td>
</tr>
<tr>
<td>resume</td>
<td>Resume Hercules</td>
</tr>
<tr>
<td>rexx</td>
<td>Display or set REXX interpreter settings</td>
</tr>
<tr>
<td>rmmod</td>
<td>Delete a module</td>
</tr>
<tr>
<td>s</td>
<td>Instruction stepping</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>savecore</td>
<td>Save a core image to a 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>scpecho</td>
<td>Display or set option to echo to console and history of SCP replies</td>
</tr>
<tr>
<td>scpimply</td>
<td>Display or set option to pass non-Hercules commands to the SCP</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>Delete 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>Command</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>sh</td>
<td>Shell command</td>
</tr>
<tr>
<td>shcmdopt</td>
<td>Display or set shell command option</td>
</tr>
<tr>
<td>showdvol1</td>
<td>Enable showing of DASD volsers in device list</td>
</tr>
<tr>
<td>shrd</td>
<td>Display or set shared device server trace</td>
</tr>
<tr>
<td>shrdport</td>
<td>Set shared device server port</td>
</tr>
<tr>
<td>sizeof</td>
<td>Display size of structures</td>
</tr>
<tr>
<td>srvprio</td>
<td>Display or set server threads priority</td>
</tr>
<tr>
<td>ssd</td>
<td>Signal Shutdown</td>
</tr>
<tr>
<td>start</td>
<td>Start CPU or printer / punch device</td>
</tr>
<tr>
<td>startall</td>
<td>Start all CPU’s</td>
</tr>
<tr>
<td>stop</td>
<td>Stop CPU or printer / punch device</td>
</tr>
<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>symptom</td>
<td>Instruction trace display option (alias for TRACEOPT command)</td>
</tr>
<tr>
<td>syncio</td>
<td>Display syncio device statistics</td>
</tr>
<tr>
<td>sysclear</td>
<td>SYSTEM CLEAR RESET manual operation</td>
</tr>
<tr>
<td>sysepoch</td>
<td>Set base date for TOD clock</td>
</tr>
<tr>
<td>sysreset</td>
<td>SYSTEM RESET manual operation</td>
</tr>
<tr>
<td>s{+/-} dev</td>
<td>Turn CCW stepping on / off</td>
</tr>
<tr>
<td>t</td>
<td>Instruction trace</td>
</tr>
<tr>
<td>Command</td>
<td>Description</td>
</tr>
<tr>
<td>----------</td>
<td>--------------------------------------------------</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>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>todprio</td>
<td>Display or set timer thread process priority</td>
</tr>
<tr>
<td>traceopt</td>
<td>Instruction trace display option</td>
</tr>
<tr>
<td>tt32</td>
<td>Control / query CTCI-WIN functionality</td>
</tr>
<tr>
<td>tzoffset</td>
<td>Set TOD clock offset from GMT</td>
</tr>
<tr>
<td>t{+/-} CKD</td>
<td>Turn CKD_KEY tracing on / off</td>
</tr>
<tr>
<td>t{+/-} dev</td>
<td>Turn CCW tracing on / off</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>
<tr>
<td>xpndsize</td>
<td>Display or set expanded storage size</td>
</tr>
<tr>
<td>yroffset</td>
<td>Set TOD clock offset from actual date</td>
</tr>
</tbody>
</table>

Table 6: Hercules Console Commands
6. Console Command Descriptions

!message (SCP priority message)

Descriptive
!prio_msg

Diagram
\[ \rightarrow \text{!prio message} \]

# (Silent comment)

Descriptive
# anytext

Diagram
\[ \rightarrow \text{# anytext} \]

$LOCATE (Display and verify Hercules control blocks)

Descriptive
$LOCATE controlblock

Diagram
\[ \rightarrow \text{$LOCATE controlblock} \]

$TEST (Custom test command)

Descriptive
$TEST req_parms [opt parms]

Diagram
\[ \rightarrow \text{$TEST req_parms opt parms} \]
$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

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

or

         ARCHLVL
             ENABLE
             DISABLE
             facility

or

         ARCHLVL
             ENABLE
             DISABLE
             bitno

or

         ARCHLVL
             QUERY
             ALL
             facility
```
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

```
  ATTACH — devn — devtype
    argument
```

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

```
  AUTOINIT
    ON
    OFF
```

AUTOMOUNT (Display or update allowable tape automount directories)

Descriptive

AUTOMOUNT {ADD directory | DEL directory | LIST}
or
AUTOMOUNT [+ | -] directory

Diagram

\[\text{AUTOMOUNT} + \quad \text{directory} \]

\[\text{AUTOMOUNT} \quad \text{ADD directory} \quad \text{DEL directory} \]

---

B (Set breakpoint)

Descriptive
B \{addr | addr\land addr\}

Diagram

\[\text{B} \quad \text{addr} \quad \text{addr-addr} \]

---

B+ (Set breakpoint)

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

Diagram

\[\text{B+} \quad \text{addr} \quad \text{addr-addr} \]

---

B- (Delete breakpoint)

Descriptive
B-

Diagram

\[\text{B-} \]

---

CACHE (Execute cache related commands)

Descriptive
CACHE \[\text{DASD SYSTEM [ON | OFF]}\]

---
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= -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

TRACE

LINUXNULL

GCSTART

### CD (Change directory)

**Descriptive**

CD *path*

**Diagram**

```
CD  path
```  

### CF (Configure current CPU online or offline)

**Descriptive**

CF [ON | OFF]

**Diagram**

```
CF
ON
OFF
```  

### CFALL (Configure all CPUs online or offline)

**Descriptive**

CFALL [ON | OFF]

**Diagram**

```
CFALL
ON
OFF
```
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 seperator)

Descriptive
CMDSEP [char | OFF]

Diagram
CMDTGT (Specify command target)

**Descriptive**

CMDTGT {HERC | SCP | PSCP | ?}

**Diagram**

```
  | CMDTGT  |
  |   | HERC |
  |   | SCP  |
  |   | PSCP |
  |   | ?    |
```

CNSLPORT (Display or set telnet client port)

**Descriptive**

CNSLPORT [port | host:port]

**Diagram**

```
  | CNSLPORT  |
  |   | port |
  |   | host:port |
```

CODEPAGE (Display or set codepage conversion table)

**Descriptive**

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

**Diagram**

```
  | CODEPAGE  |
  |   | codepage |
  |   | USER     |
  |   | MAINT    |
  |   | cmd      |
  |     | operands |
```

CONKPALV (Specify TCP/IP keep alive settings)

**Descriptive**

CONKPALV (idle, intv, count)

**Diagram**

```
  | CONKPALV  |
  |   | (idle, intv, count) |
```
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:

ALTER EBCDIC ASCII G2H H2G
DISPLAY EBCDIC ASCII G2H H2G
EXPORT EBCDIC ASCII G2H H2G filename
IMPORT EBCDIC ASCII G2H H2G filename
REFERENCE codepage
RESET
TEST
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=xxxxxxxxxxxxxxxx]

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

```
  CTC -- DEBUG   ON       ALL
       |         | devnum
       OFF
```

DEFINE (Rename device)

Descriptive

DEFINE olddevice newdevice

Diagram

```
  DEFINE -- olddevice -- newdevice
```

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

```
  DEFSTORE
      storagetype

  MAIN
      msize
          B
          K
          M
      UNLOCK

  EXPANDED
```
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 ... ]]
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

DEVMAX (Display or set maximum device threads)

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

Diagram

DIAG8CMD (Display or set DIAGNOSE 8 command option)

Descriptive
DIAG8CMD [DISABLE | ENABLE [ECHO | NOECHO]]
**Diagram**

```
  DIAGBCMD
    DISABLE
    ENABLE
    ECHO
    NOECHO
```

**DIR (Display file and directory listing)**

**Descriptive**

`DIR`

**Diagram**

```
  DIR
```

**DS (Display subchannel)**

**Descriptive**

`DS devnum`

**Diagram**

```
  DS devnum
```

**ECPSVM (ECPS:VM commands)**

**Descriptive**

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

**Diagram**

```
  ECPSVM
    Help
    STats
    DISable
    ENable
    DEBUG
    NOdebug
    Level nn
```
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
FCB (Display current FCB or load new FCB image)

Descriptive
FCB devicenum [LPI=lp] [LPP=lp]
[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=xxxxxxxxxxxxxxxx]

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

**Descriptive**

F{+ | -} addr

**Diagram**

```
+---------- addr
```

G (Turn off instruction stepping and start all CPUs)

**Descriptive**

G

**Diagram**

```
G
```

GPR (Display or alter general purpose registers)

**Descriptive**

GPR [nn=xxxxxxxx | nn=xxxxxxxxxxxxxxxx]

**Diagram**

```
+-------------------
| nn=xxxxxxxxxx     |
| nn=xxxxxxxxxxxxxxx |
```

HAO (Hercules Automatic Operator)

**Descriptive**

HAO command [operands]

where command can be:

- TGT target
- CMD consolecmd
- DEL nn
- CLEAR
LIST \([nn]\)

**Diagram**

\[
\begin{align*}
\text{HAO} & \quad \text{command} \\
\end{align*}
\]

where \textit{command} can be:

\[
\begin{align*}
\text{TGT} & \quad \text{target} \\
\text{CMD} & \quad \text{consolecmd} \\
\text{DEL} & \quad \text{nn} \\
\text{CLEAR} & \\
\text{LIST} & \quad nn \\
\end{align*}
\]

**HELP** (List all commands / command specific help)

**Descriptive**

HELP \([\text{command} \mid \text{cmd*}]\)

**Diagram**

\[
\begin{align*}
\text{HELP} & \quad \text{command} \\
& \quad \text{cmd*} \\
\end{align*}
\]

**HERC** (Send Hercules command)

**Descriptive**

HERC \([\text{cmd}]\)

**Diagram**

\[
\begin{align*}
\text{HERC} & \quad \text{cmd} \\
\end{align*}
\]

**HERCLOGO** (Read a new Hercules logo file)

**Descriptive**

HERCLOGO \([\text{filename}]\)
HERCPRIO (Display or set Hercules process priority)

Descriptive
HERCPRIO \[nn\]

Diagram
```
\[HERCPRIO \[n\]]
```

HST (History of commands)

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

Diagram
```
\[HST \[-1\]]
\[HST \[-\]\[n\]]
\[HST \{L \| 0\}]
```

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

Descriptive
HTTP \[START | STOP | ROOT path | PORT port \{NOAUTH | AUTH userid password\}\]

Diagram
```
\[HTTP\]
```

Hercules Emulator V4.00
I (Generate I/O attention interrupt for device)

Descriptive

I device

Diagram

I — device

ICOUNT (Display individual instruction counts)

Descriptive

ICOUNT [SORT | CLEAR]

Diagram

ICOUNT — SORT
         CLEAR

IODELAY (Display or set I/O delay value)

Descriptive

IODELAY [usecs [NOWARN]]

Diagram

IODELAY — usecs
            NOWARN

IPENDING (Display pending interrupts)

Descriptive

IPENDING
IPL (IPL Normal from device xxxx)

Descriptive

IPL \{devnum | filename\}

[LOADPARM iplparm | PARM parmstring] [CLEAR]

Diagram

\[\text{IPL} \quad \text{devnum} \quad \text{filename} \quad \text{LOADPARM iplparm} \quad \text{PARM parmstring} \quad \text{CLEAR}\]

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

\[\text{K}\]

KD (Alias of 'MSGHLD CLEAR')

Descriptive

KD

Diagram

\[\text{KD}\]

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LDMOD (Load a module)

Descriptive
LMOD 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

LOADPARM (Set IPL parameter)

Descriptive
LOADPARM [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**

```
+----+-------+
<table>
<thead>
<tr>
<th></th>
<th>MODPATH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[path]</td>
</tr>
</tbody>
</table>
```

MOUNTED_TAPE_REINIT (Control tape initialization)

**Descriptive**
MOUNTED_TAPE_REINIT [ENABLE | ALLOW | DISABLE | DISALLOW]

**Diagram**

```
+----------------+
| MOUNTED_TAPE_REINIT |
| [ENABLE | ALLOW | DISABLE | DISALLOW] |
```

MSG (Display message on console like VM)

**Descriptive**
MSG parms

**Diagram**

```
+----+
| MSG |
| [parms] |
```
MSGHLD (Display or set timeout of held messages)

Descriptive

MSGHLD \( \{ nnn \mid \text{INFO} \mid \text{CLEAR} \} \)

Diagram

```
MSGHLD       \( nnn \)
     \( \text{INFO} \)
     \( \text{CLEAR} \)
```

MSGLEVEL (Display or set the current message display output)

Descriptive

MSGLEVEL [\( \text{option} \ \text{option} \ldots \)]

where \( \text{option} \) can be:

\[
\begin{array}{|c|c|}
\hline
\text{ON} & \text{OFF} & \text{TEXT} & \text{TIME} & \text{NODEBUG} \\
\text{[+]} & \text{[-]} & \text{DEBUG} & | & \\
\text{[+]} & \text{[-]} & \text{TAPE} & | & \\
\text{[+]} & \text{[-]} & \text{DASD} & | & \\
\text{[+]} & \text{[-]} & \text{COMM} & | & \\
\text{[+]} & \text{[-]} & \text{UR} & | & \\
\text{[+]} & \text{[-]} & \text{SCSI} & | & \\
\text{[+]} & \text{[-]} & \text{CTCA} & | & \\
\text{[+]} & \text{[-]} & \text{GRAF} & | & \\
\text{[+]} & \text{[-]} & \text{THREAD} & | & \\
\text{[+]} & \text{[-]} & \text{CHANNEL} & | & \\
\text{[+]} & \text{[-]} & \text{VERBOSE} & | & \\
\text{[+]} & \text{[-]} & \text{TERSE} & | & \\
\hline
\end{array}
\]

Diagram

```
MSGLEVEL \( \text{option} \)
```

where \( \text{option} \) 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

MT — device — operation

where operation can be:

REW

ASF

FSF

BSF

FSR

BSR

WTM

DSE

DVOL1

NUMCPU (Display or set number of emulated CPUs)

Descriptive

NUMCPU [nn]
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 pamel refresh rate)

**Descriptive**

PANRATE \([SLOW | FAST | rate]\)

**Diagram**

```
```
PANTITLE (Hercules console window title)

Descriptive
PANTITLE [text | "text text text" | ""]

Diagram

```
>>> PANTITLE
    text
    "text text text"
    ""
```

PGMPRDOS (Set LPP license setting)

Descriptive
PGMPRDOS {RESTRICTED | LICENSED}

Diagram

```
>>> PGMPRDOS
    RESTRICTED
    LICENSED
```

PGMTRACE (Trace program interrupts)

Descriptive
PGMTRACE [[-] intcode]

Diagram

```
>>> PGMTRACE
    intcode
```

PLANT (Display or set STSI plant code)

Descriptive
MANUFACTURER [name]

Diagram

```
>>> MANUFACTURER
    name
```
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:

- SM=xx
- PK=nn
- CMWP=x
- AS= PRI
  | SEC
  | HOME
- CC=n
- PM=x
- IA=xxxxxxxx
- AM= 24
  | 31
  | 32

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**

```
  QCPUID
```

QD (Query device information)

**Descriptive**

QD [devnum | devclass]

**Diagram**

```
  QD
    devnum
    devclass
```

QPFKEYS (Display the current PF key settings)

**Descriptive**

QPFKEYS

**Diagram**

```
  QPFKEYS
```

QPID (Display process ID of Hercules)

**Descriptive**

QPID

**Diagram**

```
  QPID
```

QPORTS (Display TCP/IP ports in use)

**Descriptive**

QPORTS
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**

![Diagram of REXX options]
**RESOLVER**

- **ON**
- **OFF**
- **RESET**

**MSGLEVEL**

- **0**
- **1**
- **RESET**

**MSGPREFIX**

- **messageprefix**
  - **OFF**
  - **RESET**

**ERRPREFIX**

- **errorprefix**
  - **OFF**
  - **RESET**

**MODE**

- **COMMAND**
- **SUBROUTINE**

---

**RMMOD (Delete a module)**

**Descriptive**

RMMOD module [module [module ...]]

**Diagram**

```plaintext
RMMOD  module
```

---

**S (Instruction stepping)**

**Descriptive**

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

**Diagram**

```plaintext
S
```

---

**S+ (Instruction stepping on)**

**Descriptive**

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

\[ S^+ \]

\[
\begin{array}{c}
\text{addr} - \text{addr} \\
\text{addr:addr} \\
\text{addr.length} \\
0
\end{array}
\]

---

**S- (Instruction stepping off)**

**Descriptive**

S-

**Diagram**

\[ S^- \]

---

**S? (Instruction stepping query)**

**Descriptive**

S?

**Diagram**

\[ S? \]

---

**SAVECORE (Save a core image to a file)**

**Descriptive**

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

**Diagram**

\[ SAVECORE \quad \text{filename} \quad \begin{array}{c}
\ast \\
\text{start}
\end{array} \quad \begin{array}{c}
\ast \\
\text{end}
\end{array} \]

---

**SCLPROOT (Set or display SCLP base directory)**

**Descriptive**

SCLPROOT [NONE | directory]
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**

```
  SCRIPT  
    filename
```

SCSIMOUNT (Automatic SCSI tape mounts)

**Descriptive**
SCSIMOUNT [NO | YES | n]

**Diagram**

```
  SCSIMOUNT  
    NO  
      YES  
        n
```

SF+ (Create a new shadow file)

**Descriptive**
SF+ {device | *}

**Diagram**

```
  SF+  
    device  
      *
```

SF- (Delete a shadow file)

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

**Diagram**

```
  SF-  
    device  
      *  
        MERGE  
          NOMERGE  
            FORCE
```
SFC (Compress a shadow file)

**Descriptive**

SFC \(\text{device} | *\)

**Diagram**

```
  +---+      +---+
  | SFC |      | device |
  +---+      +---+
```

SFD (Display shadow file statistics)

**Descriptive**

SFD \(\text{device} | *\)

**Diagram**

```
  +---+      +---+
  | SFD |      | device |
  +---+      +---+
```

SFK (Perform a chkdsk on the active shadow file)

**Descriptive**

SFK \(\text{device} | *\) \([n]\)

**Diagram**

```
  +---+      +---+      +---+
  | SFK |      | device |      | n |
  +---+      +---+      +---+
```

SH (Shell command)

**Descriptive**

SH \([\text{STARTGUI}] \text{command} \text{arg} [\text{arg} \ldots]\)

**Diagram**

```
  +---+      +---+      +---+
  | SH |      | STARTGUI |      | command |
  +---+      +---+      +---+
    |  |      | arg |
```
SHCMDOPT (Display or set shell command option)

Descriptive

\[
\text{SHCMDOPT [DISABLE | ENABLE [DIAG8 | NODIAG8]]}
\]

Diagram

```
  \[ \text{SHCMDOPT} \]
  \[ \text{DISABLE} \]
  \[ \text{ENABLE} \]
  \[ \text{DIAG8} \]
  \[ \text{NODIAG8} \]
```

SHOWDVOL1 (Enable showing of DASD volumes in device list)

Descriptive

\[
\text{SHOWDVOL1 [NO | YES | ONLY]}
\]

Diagram

```
  \[ \text{SHOWDVOL1} \]
  \[ \text{NO} \]
  \[ \text{YES} \]
  \[ \text{ONLY} \]
```

SHRD (Display or set shared device server trace)

Descriptive

\[
\text{SHRD TRACE[=n]}\]

Diagram

```
  \[ \text{SHRD} \]
  \[ \text{TRACE} \]
  \[ =n \]
```

SHRDPOR T (Set shared device server port)

Descriptive

\[
\text{SHRDPOR T [port | START | STOP]}
\]
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 \([\text{devicenum}]\)

Diagram

STOP \(\text{devicenum}\)

STOPALL (Stop all CPUs)

Descriptive
STOPALL

Diagram

STORE (Store CPU status)

Descriptive
STORE

Diagram

SUSPEND (Suspend Hercules)

Descriptive
SUSPEND
SYMPOTM (Instruction trace display options)

SYMPOTM 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**

![Diagram of T-]

---

**T? (Instruction trace query)**

**Descriptive**

T?

**Diagram**

![Diagram of T?]

---

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

**Descriptive**

T{+ | -}CKD

**Diagram**

![Diagram of T{+/-} CKD]

---

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

**Descriptive**

T{+ | -}dev

**Diagram**

![Diagram of T{+/-} dev]

---

**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

---

**TODPRIO (Display or set timer thread process priority)**

**Descriptive**

TODPRIO [nn]

**Diagram**

---

TODPRIO nn

---

**TRACEOPT (Instruction trace display options)**

**Descriptive**

TRACEOPT [TRADITIONAL | REGSFIRST | NOREGS]
**Diagram**

```
TRACOPT
    TRADITIONAL
    REGSFIRST
    NOREGS
```

**TT32 (Control / query CTCI-WIN functionality)**

**Descriptive**

TT32 {DEBUG | NODEBUG | STATS devnum}

**Diagram**

```
TT32
    DEBUG
    NODEBUG
    STATS devnum
```

**TZOFFSET (Set TOD clock offset from GMT)**

**Descriptive**

TZOFFSET {0000 | +hhmm | -hhmm}

**Diagram**

```
TZOFFSET
    0000
    +hhmm
    -hhmm
```

**U (Disassemble storage)**

**Descriptive**

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

**Diagram**

```
U
    addr.length
    addr-addr
```

**UPTIME (Display Hercules Emulator uptime)**

**Descriptive**

UPTIME
V (Display or alter virtual storage)

Descriptive

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

VERSION (Display version information)

Descriptive

VERSION

XPNDSIZE (Display or set expanded storage size)

Descriptive

\[ \text{XPNDSIZE} \ \{size[M \ | \ G \ | \ T] \ [UNLOCK \ | \ LOCK]\} \]
YROFFSET (Set TOD clock offset from actual date)

Descriptive

YROFFSET \{+years \mid -years\}

Diagram

\[
\begin{align*}
\text{YROFFSET} & \quad +\text{years} \\
& \quad -\text{years}
\end{align*}
\]
### 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>CCKDDIAG</td>
<td>CCKD DASD file diagnostics utility</td>
</tr>
<tr>
<td>CCKDSWAP</td>
<td>CCKD DASD file swap-endian program</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>
<tr>
<td>VMFPLC2</td>
<td>VM formatted tape utility</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

```
CCKDCDSK

    -option

    filename
```

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

```
CCKDCOMP

    -option

    filename
```

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 -option filename

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

- CCKDSWAP filename

DASDCAT (Display PDS datasets and members)

Descriptive
DASDCAT -i image [SF=shadowfile] pdsname/spec:flags
DASDCONV (DASD image file conversion program)

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

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[-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)
-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[-model] [cyls [ipltext]]

Diagram

```
volser — devtype [—model]
  — cyls [ipltext]
```

Dataset Statement

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

Diagram

```
dsname — method — units — pri — sec — dir —
  — dsorg — recfm — lrecl — blksize — keylen
```

DASDLS (List datasets on a volume)

Descriptive
DASDLS [-option [-option ... ]]

```
filename [SF=shadowfile]
```
Diagram

```
rs                  -option

   filename  SF=shadowfile
```

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)
- **-dsn1[^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

```
rs                  filename  SF=shadowfile

   pdsname  ASCII
```

---

**DASDSEQ (Display sequential datasets)**

Descriptive


Diagram

```
rs                  image  SF=shadowfile

   -DEBUG       -EXPERT

   -ASCII
```
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)
-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

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

\[\text{Tapecopy} \quad \text{tapedrive} \quad \text{awsfile} \]

or

\[\text{Tapecopy} \quad \text{awsfile} \quad \text{tapedrive} \]

TAPEMAP (Show information about an AWS tape file)

Descriptive

TAPEMAP filename

Diagram

\[\text{TapeMap} \quad \text{filename} \]

TAPESPLT (Split an AWS tape file)

Descriptive

TAPESPLT infile outfile count

Diagram

\[\text{Tapesplt} \quad \text{infile} \quad \text{outfile} \quad \text{count} \]
**VMFPLC2 (VM formatted tape utility)**

**Descriptive**

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

**Diagram**

![Diagram of VMFPLC2 Utility]

**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**

![Diagram of DMAP2HRC Utility]
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**

$\{\text{VERSION}\}$
The Hercules version.

$\{\text{HOSTNAME}\}$
The host name, on which Hercules is running.

$\{\text{HOSTOS}\}$
The host operating system.

$\{\text{HOSTOSREL}\}$
The release of the host operating system.

$\{\text{HOSTOSVER}\}$
The version of the host operating system.

$\{\text{HOSTARCH}\}$
The host architecture.

$\{\text{HOSTNUMCPUS}\}$
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 logofile | --herclogo=logofile}]
[{-d | --daemon}]
[{-p dyndir | --modpath=dyndir}]
[{-l dynmod [...] | --ldmod=dynmod [...]}]
[{-s symbol=value [...] | --defsym=symbol=value [...]}]
[{-v | --verbose}]
[{-h | --help}]

[>logfile]
```
Starting Hercules with the Windows GUI

**Descriptive**

HERCGUI [-f configfile]

**Diagram**

```
HERCGUI [-f configfile]
```

Starting Hercules with the Hercules Studio

**Descriptive**

HERCULESSTUDIO [-f configfile] [-r rcfile]

**Diagram**

```
HERCULESSTUDIO [-f configfile] [-r rcfile]
```
# 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>
<tr>
<td>Key</td>
<td>Action</td>
</tr>
<tr>
<td>---------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Down arrow</td>
<td>Recalls the next command into the input area.</td>
</tr>
<tr>
<td>Right arrow</td>
<td>Moves cursor to the next character of the input area.</td>
</tr>
<tr>
<td>Left arrow</td>
<td>Moves cursor to the previous character of the input area.</td>
</tr>
<tr>
<td>Ctrl + Up arrow</td>
<td>Scrolls the message area up one line.</td>
</tr>
<tr>
<td>Ctrl + Down arrow</td>
<td>Scrolls the message area down one line.</td>
</tr>
<tr>
<td>Ctrl + Home</td>
<td>Scrolls the message area to the top.</td>
</tr>
<tr>
<td>Ctrl + End</td>
<td>Scrolls the message area to the bottom.</td>
</tr>
</tbody>
</table>

**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.

<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>
<tr>
<td>Tab</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>Key</td>
<td>Action</td>
</tr>
<tr>
<td>--------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<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**

**Windows event handler**

The following table shows the trapped Windows events.

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

**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**

```
```

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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>Devicetype-Model</td>
<td>Cylinders</td>
<td>Alternate Cylinders</td>
</tr>
<tr>
<td>------------------</td>
<td>-----------</td>
<td>---------------------</td>
</tr>
<tr>
<td>IBM 3380-1</td>
<td>885</td>
<td>1</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 13: 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 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

<table>
<thead>
<tr>
<th>Syntax Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>KEYWORDS</strong></td>
<td>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.</td>
</tr>
<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>
<tr>
<td><strong>xxx ,…</strong></td>
<td>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.</td>
</tr>
</tbody>
</table>
Table 15: Reading Syntax Descriptions

B2. Reading Syntax Diagrams

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Symbol" /></td>
<td>This symbol indicates the beginning of a statement.</td>
</tr>
<tr>
<td><img src="image2" alt="Symbol" /></td>
<td>This symbol indicates the end of a statement.</td>
</tr>
<tr>
<td><img src="image3" alt="Symbol" /></td>
<td>This symbol indicates that the statement is continued on the next line.</td>
</tr>
<tr>
<td><img src="image4" alt="Symbol" /></td>
<td>This symbol indicates that the statement is a continuation from the previous line.</td>
</tr>
<tr>
<td>required_element</td>
<td>A required element (keyword or variable) appears on the main path.</td>
</tr>
<tr>
<td>optional_choice</td>
<td>An optional element (keyword or variable) appears below the main path.</td>
</tr>
<tr>
<td>required_choice_1, required_choice_2, required_choice_3</td>
<td>A required element (keyword or variable) with selection. Only one of the available options may be specified.</td>
</tr>
<tr>
<td>Symbol</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| ![Symbol](optional_choice_2)
![](optional_choice_3) | Optional elements (keyword or variable) with selection are shown below the main line. Only one of the available options may be specified. |
| ![Symbol](PARM=)
![](option_1)
![](option_2)
![](option_3) | 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. |
| ![Symbol](default_choice_1)
![](optional_choice_1)
![](optional_choice_2) | 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. |
| ![Symbol](optional_choice)
![](optional_choice) | 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. |
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="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><img src="image" alt="SEGMENT" /></td>
<td>Reference to a syntax segment, which is described separately.</td>
</tr>
<tr>
<td><img src="image" alt="SEGMENT=" /></td>
<td>This symbol indicates a syntax segment which is referenced from the main syntax diagram.</td>
</tr>
<tr>
<td><strong>KEYWORDS</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>variables</strong></td>
<td>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.</td>
</tr>
</tbody>
</table>

Table 16: Reading Syntax Diagrams