

NETLDR
Remote Node Load and DUMP Utility

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1.0 INTRODUCTION

NETLDR is used to downline load remote nodes from the DECsystem-10, and to dump the memory of a remote node onto a file on the DECsystem-10. NETLDR cannot be run until a 'load request' has been received from the remote node (this is initiated at the remote node - see the DECsystem-10 Networks Software Installation Guide). The user must be logged in as [1,2] and have POKE, LOCK and HPQ privileges enabled to run NETLDR.

NOTE

NETLDR cannot be scheduled to run automatically if the command SET SCHED 1000 has been executed.

2.0 COMMAND FORMAT

The format for commands to NETLDR is:

```
filespec/CPUtype/NODE:nodeid/LINE:syn#/switch/switch...
```

where:

filespec = dev:filename.ext[p,pn]

CPUtype = /PDP11,/11,/PDP8 or /8

nodeid = node name (up to six characters) or a node number (octal value 01 to 77)

syn# = synchronous line from adjacent node to node of interest (0 to 12) [to dump a node, replace /LINE: with /SELF; /SELF cannot be used with /LOAD]

/switches are optional.

Entries in the SYS:NETLDR.INI file are as specified in Section 3.1, "NETLDR.INI".

3.0 FILE SPECIFICATIONS

Files to be loaded or to accept dumps are specified for use by NETLDR in the following form:

```
dev:filename.ext[p,pn]
```

Only the filename is required. The defaults are:

<u>Entry</u>	<u>Default</u>
filename for dumping	nodeid.LSD
extension	.BIN for loading .LSD for dumping
device	DSK: SYS:
p,pn	the p,pn where you are logged in, or [10,0] if you are not logged in.
CPUtype	/PDP11
if CPUtype is PDP-11	/PACKED
if node CPUtype is PDP-8	/IMAGE

3.1 NETLDR.INI

When a remote node is first started (in its bootstrap ROM), it sends a BOOT request over one of its synchronous lines. The node at the other end of the line receives the request and routes it to a node with an "MCR" device (that is, to a TOPS-10 host).

When the host receives the boot request, it automatically starts a copy of NETLDR running (detached, not logged in) unless:

- SCHED 1000 is set
- or the system was brought up with DEBUGF set.

The running NETLDR then reads the boot request, and finds the name of the node that received the request, the line number that received the request, and the node type and serial number of the originating node. With this information, it reads NETLDR.INI trying to match the received data and a string to the left of the equal sign (=). NETLDR.INI must contain a single command line for each node to be loaded or dumped. This command line must be in the following form:

```
/NODE:a/LINE:b/TYPE:c/SERIAL:nnn=dumpfilespec/switches,  
loadfilespec/switches
```

where:

- | | |
|--------------|--|
| a | is a nodeid |
| b | is a synchronous line number |
| c | is a station type |
| nnn | is a "serial" number unique to a node |
| dumpfilespec | is the specification of the file in which a dump is stored |
| loadfilespec | is the specification of the file to be loaded. |

Entries on the left side of the equation specify the node adjacent to the node to be loaded, the adjacent node's line, the type of the node to be loaded, and its CPUtype (if not a PDP-11). Entries are scanned and executed from left to right. For example, the following entries make up a NETLDR.INI file:

```

/TYPE:DC72=XPNN:D7213?/D/HPQ:1,SYS:DC7213
/NODE:NOVA/LINE:0/TYPE:DN82=XPNN:D8222?/D:0-137776/HPQ:1,SYS:DN8222
/NODE:NOVA/LINE:1/TYPE:DN82=XPNN:D8222?/D:0-137776/HPQ:1,SYS:DN8222
/NODE:45=/IGNORE
/TYPE:DN92=/IGNORE

```

The first line contains the dump and load specification for a node of type DC72 (? represents a wildcard). The dump file is stored on XPNN in the file called D7213x where x is the next generation number of the file. The dump taken is from 0 to 77776 (the defaults) using HPQ1; the file to be downline loaded into the DC72 is on SYS:DC7213.BIN. The dump is taken first, then SYS:DC7213.BIN is loaded. The next two lines specify that the file called SYS:DN8222 is to be loaded from Node NOVA into two DN82 nodes, one over line 0, the other over line 1. In both cases, dumps of locations 0 to 137776 are taken prior to loading. The last two lines illustrate the use of the /IGNORE switch. /NODE:45=/IGNORE indicates that all load requests from Node 45 are to be ignored; /TYPE:DN92=/IGNORE indicates that load requests from any node of Type DN92 are to be ignored.

NOTE

NETLDR.INI must not contain line numbers
or blank lines.

4.0 NETLDR SWITCHES

The switches available to NETLDR are:

/DUMP:x-y Dumps remote node memory from location x to location y to the file dev:filename.LSD[p,pn]; default locations are:

```

PDP-8       0 TO 17777
PDP-11      0 TO 77776

```

The default dump device, filename is XPN:nodeid.LSD, where XPN=[10,1].

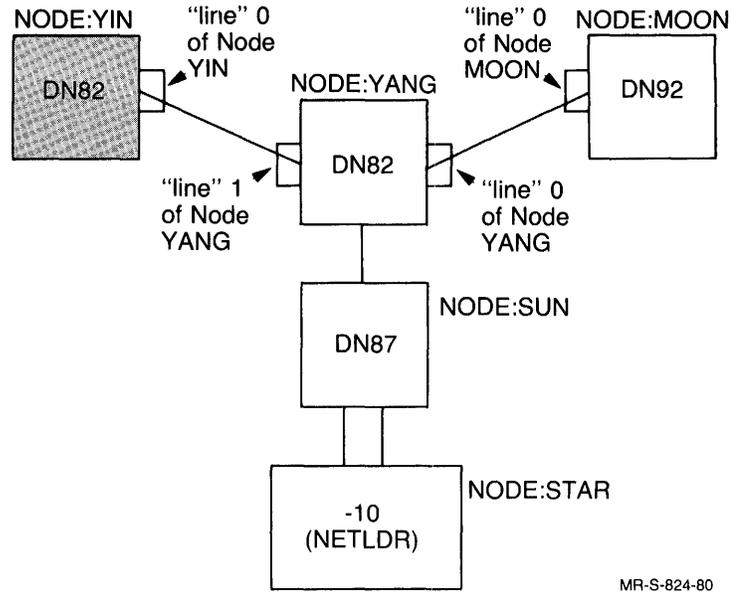
/EXIT Exits from NETLDR; equivalent to CTRL/C (^C).

/HELP Outputs the NETLDR HELP file.

/HPQ:q Specifies the high priority queue number. To have the running of NETLDR take precedence over time sharing (where HPQ=0), set HPQ=1 or some higher number. This switch can only be used if #HIGH PRIORITY QUEUES set at MONGEN(HDWGEN) time is nonzero and you have HPQ privileges. This switch must be on the right side of the equation.

/IGNORE*	Ignore (do not process) load requests from the specified node.
/IMAGE	Specifies that the .BIN file referenced is in image format (for a PDP-8); this is the default for a PDP-8.
/LINE:syn#	Specifies synchronous line number (in octal) from adjacent node which is to be used to load the desired node (see Figure 1-1).
/LOAD	Load software but do not start it (the default).
/PACKED	Specifies that the .BIN file referenced is in packed format. This is the default for PDP-11 files; it is illegal for PDP-8 files.
/PDP8	Specifies a PDP-8.
/8	Specifies a PDP-8.
/PDP11	Specifies a PDP-11 (the default in a NETLDR.INI command).
/11	Specifies a PDP-11.
/SELF	Specifies that the dump is to be carried out on the node itself.
/SERIAL:ser*	Specifies the serial number of the remote node processor. The serial number provided by the remote node request-to-load message must match the serial number specified in NETLDR.INI.
/START:addr	Starts program at address addr.
/TYPE:type*	Specifies node type as DN80, DN81, DN82, DN92 or DC72.

*This switch can only be used in NETLDR.INI.



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Figure 1-1 Loading a Remote Node

5.0 RUNNING NETLDR

When running NETLDR, you must be logged in as [1,2] and have LOCK and POKE and HPQ privileges. To run NETLDR, execute the following command:

```
.R NETLDR
```

The program prompts with:

```
FILE:
```

Enter a filespec, nodeid, synchronous line number and any switches.

For example, to downline load a file called DN8222 for a DN82 station called node 22 from node 10 over line 4, enter the following response to the FILE prompt:

```
BLKA:DN8222/NODE:10/LINE:4/PDP11
```

In this example, the file DN8222 has been stored on device BLKA:. Once downline loading is complete, the following message appears at the DN82 CTY:

```
INITIALIZING DN82 V11(23) DEC 1977-DN8222(22)
```

```
node type
version of software
date
node name
node number
```

Entries in a NETLDR.INI file to load node YIN from node YANG over line 0 of node YIN (line 1 of node YANG) and to prevent loads from node 45 would contain the following entries:

```
/NODE:YANG/LINE:1/TYPE:DN82=XPNN:D8266?/D:0-137776/HPQ:1,-
SYS:DN8266 !Load YIN from YANG over Line 0
/NODE:45/IGNORE !Ignore load requests from node 45
```

NOTE

The minus sign (-) following HPQ:1, is for line continuation in NETLDR.INI.

The entry to load node YIN also specifies that node YIN is a DN82, that a dump of locations 0-137776 is to be taken, placed in a file with the highest generation number on XPNN:D8266?, and that the file to be loaded must be taken from SYS:DN8266. The /HPQ switch is used to allow the dump request (/HPQ=1) to take precedence over normal time sharing.

6.0 ERROR MESSAGES

All error messages generated by NETLDR are preceded by either ? (fatal error) or % (nonfatal error) and the three characters NET. These characters are followed by three characters which can be used to reference the source code through a CREF listing. For example, given the following error message:

```
?NETCME command error
```

examine your NETLDR CREF listing looking, in the crossreference section, for the entry S.CME.

S.CME gives the line number where the source code that generates the error message appears.

The error messages returned from NETLDR that are self-explanatory are listed below. If other error messages appear, there is either a problem with the binary file you are trying to load, or there is a major problem with network software. Contact your systems programmer or software specialist for assistance. The self-explanatory error messages (in alphabetical order by NET...name) are:

Table 1-1
NETLDR Error Messages (partial list)

Name	Meaning
ABS	Ambiguous switch
BLN	Illegal line number
BTN	Illegal Type name
CLR	/CLEAR is not yet implemented
CME	Command error
CSR	/PDP8 or /PDP11 switch required
FNM	Filename missing
FSM	File-spec missing
HPQ	Cannot put job in HPQ
IDV	Double value illegal for switch
IFU	Illegal function
ILC	Illegal character
INN	Illegal node number
IPN	Illegal PN (dump device must be XPN)
ISA	Illegal switch argument
ISC	Illegal switch combination
ITN	Illegal Type number
ITY	Illegal TYPE
LCK	Must have LOCK privileges
LSR	/LINE or /SELF switch required
LTL	Line number greater than 17 (octal)
LTS	Last address to dump too small
NOT	Must be logged in as [1,2]
NMI	Cannot find match in SYS:NETLDR.INI
NSR	Node switch required
NSS	No switches specified
OAI	Odd dump address illegal
ODD	Cannot start at an odd address
POK	Must have POKE privileges
SIL	Illegal switches left of equal
SMA	Argument required for switch
SNG	No meaning for switch
UNS	Unknown switch

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