DNUG0.WS4 (= "DR Net User's Guide", foreword and table of contents)

DR Net
User's Guide

First Edition: March 1984

(Retyped by Emmanuel ROCHE.)

Foreword

DR Net is a computer network operating system designed to run with the Concurrent CP/M or CP/M-86 operating systems. DR Net allows you to share resources such as printers, disk drives, and software, and makes the trasnfer of data a simple matter of a few commands entered from your keyboard. DR Net is easy to learn and use, even if you have never used a network before.

How to use this manual

This manual introduces computer networks, describes the DR Net commands, and explain how to use DR Net.

Section 1 introduces computer networks, and explains fundamental procedures and concepts of the DR Net network.

Section 2 teaches you the DR Net commands you need to get on and off the network.

Section 3 describes the DR Net commands you need to use other network resources, and provides examples for their use.

Appendix A describes the SUBMIT command, and provides examples of submit files you can use with DR Net.

Appendix B defines DR Net network error messages, and explains how to recover from each error.

A glosary of terms concludes this manual.

If you are familiar with computer networks, review Section 1 and move on to the DR Net commands described in Section 2. If you have never used a computer network, begin with Section 1.

Conventions used in this manual

If you are not familiar with the CP/M command-entry rules, see the User's

Guide provided with your computer.

In all command illustrations and examples, "A>" represents the system prompt. Your screen might show a "B>", "C>", or another letter as the system prompt for the current drive. (Drive A, B, C, etc.)

You must execute all commands used as examples with a carriage return (the "RETURN" key on CP/M computers; the "ENTER" key on the IBM PC).

All command names are shown in UPPERCASE. Command tails are shown in lowercase. For example,

```
A>LOGON {nodename}
```

Both of these conventions are used for clarity. You can enter both the command name and the command tail in upper- or lowercase, or both. If the command tail is enclosed in brackets, as above, the tail is optional.

The term "filespec" stands for "file specification". Filespec is the file identification that is made up of two parts: a filename and a filetype; for example: PART1.DOC. "PART1" is the filename and "DOC" is the filetype. Notice that the filename and filetype are separated by a period (".").

In this manual, computer output is shown in colored type. User input is shown in boldface colored type.

If you are using the Concurrent CP/M operating system, consult the "Concurrent CP/M User's Guide" for detailed information on your operating system. If you are using the CP/M-86 operating system, consult the CP/M-86 User's Guide". If you do not know which operating system your computer is running on, as your system manager.

Note: If you are using virtual consoles, be aware that the commands described in this manual apply to one console only. If you execute a DR Net command, the command does not automatically execute on every console. The command applies only to the console you are switched on. For more information on virtual consoles, see the "Concurrent CP/M User's Guide".

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Section 1: Introduction to networking

What is a network?

A network can be defined as the communication lines that connect devices or computers. It is as simple as a telephone system. The lines that connect all the telephones on the system create the network. These communication lines allow you to talk with other people who have a phone and are connected to the telephone network.

Of course, you are familiar with the functions and terminology of a telephone. A computer network has its own terminology and functions. For example, computers that are linked by a network are called "nodes" instead of "phones". See Figure 1-1.

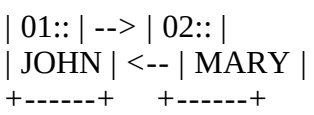


Figure 1-1. Computer network with two nodes

Figure 1-1 shows a computer network that has two nodes, one named "JOHN" and one named "MARY". The node "JOHN" is assigned the number "01::" and the node "MARY" is assigned the node number "02::". This network allows John and Mary to share their resources. For example, if John does not have a printer, he can access Mary's printer as if it were directly connected to his own computer.

You can have as few as 2 nodes, or as many as 255 nodes. DR Net nodes are identified by a unique, two-digit number. The digits can be a number in the range 0 to 9, a letter from A to F, or a combination of these numbers and letters. A double colon ("::") is always printed after the two digits, and is considered part of the number. No two nodes can have the same node number. Some valid node numbers are listed below:

02::
0F::
AE::
09::
00::

06::

Note: The node number FF:: is a reserved number, and does not work as a node number on your network.

DR Net nodes can also have node names. A node name can be any word up to eight characters long including letters and numbers. Some valid examples of node names are listed below:

MARY
BOB
DRAGON1
ORANGE
SERVER
WILLIAM8

Like the telephone network, DR Net provides you with a directory of all the node names on your network. If you have the name of a node, and want to find the node number, you can use this service. The NAMES command displays your directory; this command is detailed in Section 3.

Who's who on DR Net

DR Net allows nodes to be assigned as servers, requesters, or both. If a node is assigned as a requester (also called a user), it can only make requests over the network, and cannot serve any nodes. If a node is assigned as a server, it can only serve other requests coming over the network. A server cannot make requests. A node assigned as a server/requester can make requests as well as serve requests from other nodes. See Figure 1-2.

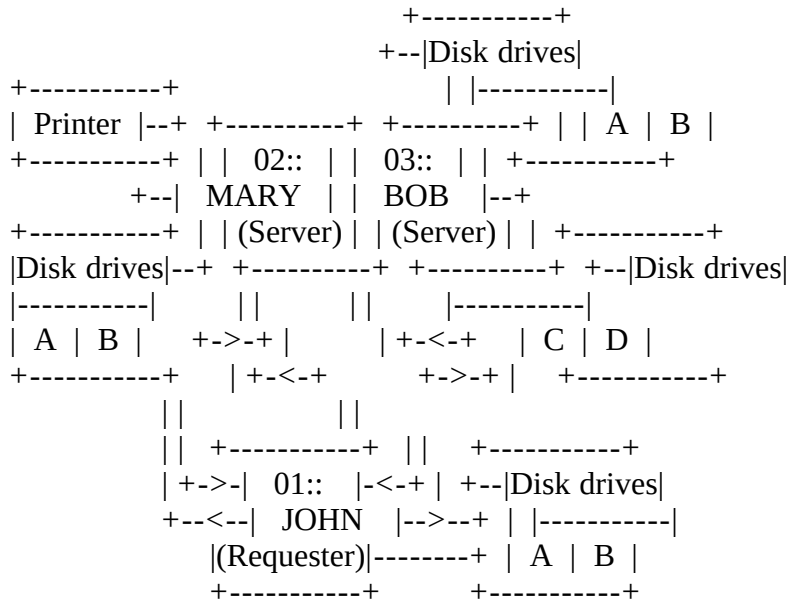


Figure 1-2. DR Net servers and requesters

In Figure 1-2, the node JOHN is a requester, and the nodes MARY and BOB are servers. JOHN can only send requests to MARY and BOB; the node JOHN cannot

service requests. MARY and BOB are assigned as servers. They cannot send requests, but they act as servers to the node JOHN. Notice that MARY has a printer and BOB has four disk drives: A, B, C, and D. JOHN does not have a printer or disk drives C and D, but he can request to use the printer or the drives, and MARY and BOB serve his requests over the network. Figure 1-2 is an example of how a network can be configured. If all the nodes are assigned as server/requester nodes, they can all send requests to each other. Each node can also act as a server.

DR Net can have up to 255 nodes. There is no restriction on how many of the nodes are servers, and how many of the nodes are requesters. Naturally, a network is configured based on the needs of its users. Your system manager determines who's who on the network. That is, the system manager designates the nodes that are servers, and the nodes that are requesters.

Two key terms to understand are "local" and "remote". Local means the node you are actually using. The nodes you access over the network are called remote. See Figure 1-3.

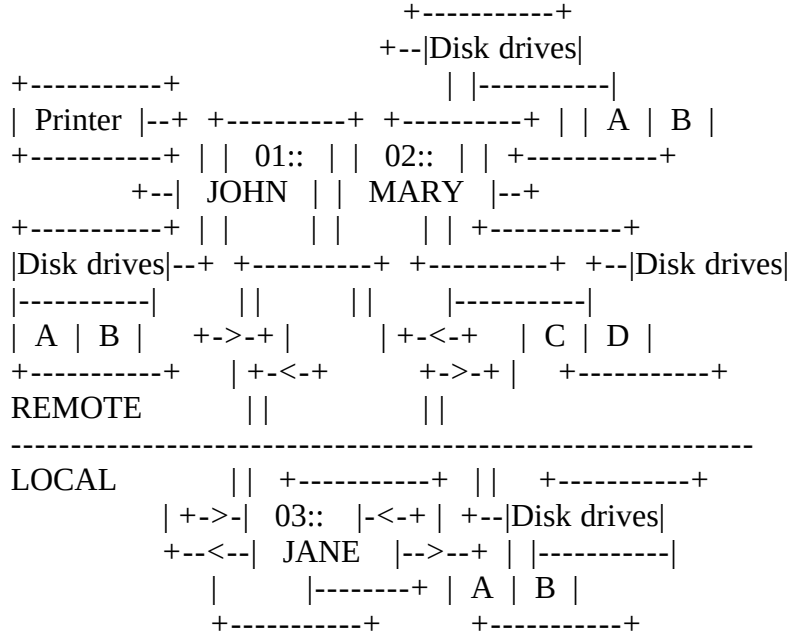


Figure 1-3. Local versus remote nodes

If you are working at the node called JANE, JANE is your local node. All the other nodes -- JOHN and MARY -- are remote. In this example, you can use all the resources you have on JANE, plus all the resources of JOHN and MARY if you are attached to the network. If you are not attached to the network, you can only use the resources you have on the JANE node (disk drives A and B); you do not have access to the printer located on the node JOHN, or the disk drives C and D on the node MARY.

Using device on remote nodes

Examine Figure 1-3 again, and imagine that all the nodes are assigned as requesters/servers. Remember that requesters/servers can issue requests, and

service requests for other users. In this example, John and Jane are working on the same project. To keep the project organized, they want to keep all the project files on the same disk. They decide to keep all the files on Jane's disk A.

John must attach to the network to access disk A located on node JANE. He must also make sure his device map is set up properly. A device map lists your devices (printers, disks) and explains how they are assigned to devices on other nodes. Figure 1-4 is an example device map.

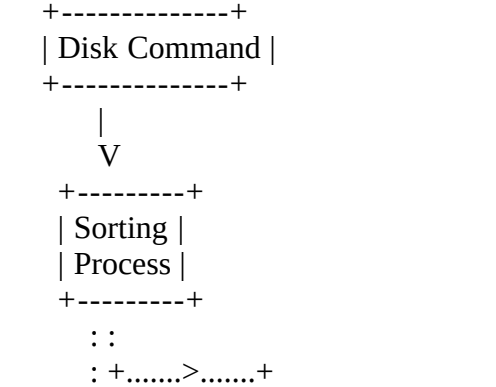
```
-----------------------------------------------------
Network Status Utility              For Node 03::
-----------------------------------------------------
Device Type   Local  =  Remote  on   Node  Logged ON?
-----------  -----    ------      ----  ----------
Disks :        A        A         JOHN     YES
             B        B         JOHN     YES
-----------------------------------------------------
```

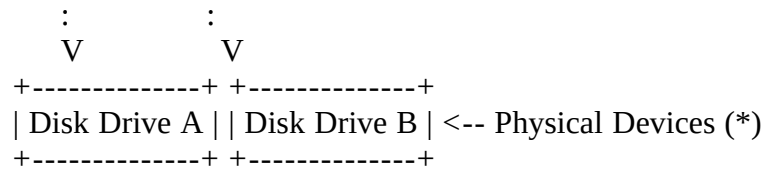
Figure 1-4. Device map

DR Net allows you to assign or map your devices to devices on other nodes. Figure 1-4 is a sample device map for Jane's node 03::. Jane has mapped her local disk A to remote disk A on the JOHN node. This means that everything Jane directs to her own disk A is actually sent over the network to John's disk A while Jane is connected to the network. In other words, she substitutes John's disk A for her own disk A. If Jane types "DIR A:" to display a directory of all the files on her disk A, Jane's screen actually displays the directory for node JOHN's disk A. This allows Jane and John to keep all the files for one project together on the same disk, John's disk A.

The commands for mapping devices and viewing your device map are detailed in Section 2.

Devices are disks and printers. DR Net allows you to have both physical devices and virtual devices. Physical devices are your own disks and printers; they are physically present at your computer. Virtual devices are disks and printers that you do not have at your computer. But you can use virtual devices, even though you do not have them, by using the network to communicate with them, just as though they are physically present at your computer. Obviously, when you are not using the network, only your physical devices are available to you. Figure 1-5 graphically depicts physical devices.





(*) Both Disk Drives A and B are Physical Devices

Figure 1-5. Physical devices

When you type a disk command at the keyboard, the command goes through a sorting process, so the computer can determine the disk where the command should be sent. The command or information is then sent to the correct disk. The path of the command is direct and easy to follow. In Figure 1-5, you see that the computer has two physical disks, and that you can only send information to disk drive A or disk drive B.

DR Net places a fileter in the path of the command. Figure 1-6 illustrates what happens when you use DR Net.

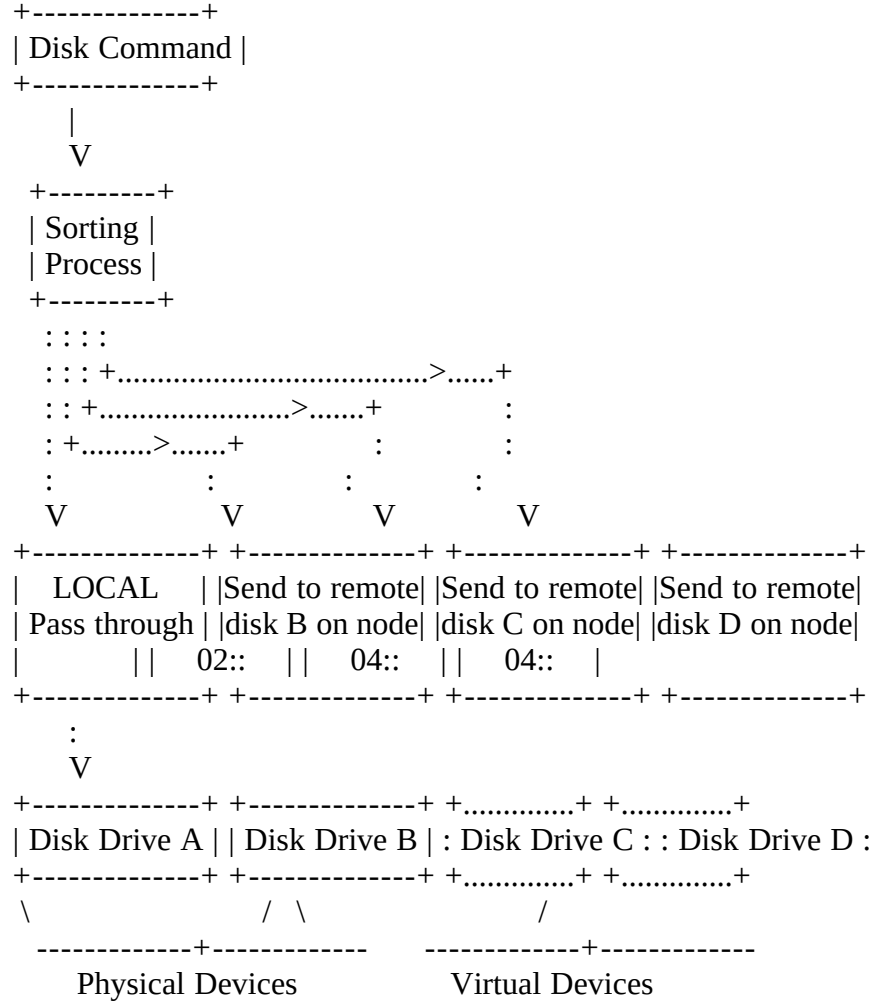


Figure 1-6. Virtual devices

The disk command is sorted and directed to the correct disk, but DR Net filters the command and, if necessary, redirects the command to a remote disk.

Notice that a command directed to disk A passes through, and is actually sent to local disk A. Commands to disk A pass through because disk drive A is not mapped to a remote node. Disk A is local.

Commands sent to disk B do not pass through to local disk B. DR Net filters commands to disk B because disk B is mapped to remote disk B on node 02::. Therefore, all commands to disk B are actually sent to disk B on remote node 02::.

Figure 1-6 also demonstrates how using DR Net makes virtual devices available. In Figure 1-5, the computer has only two physical disks. Figure 1-6 shows two physical disks and two virtual disks. Remember, virtual disks are available only to network users. When you use DR Net, you can map virtual devices to physical devices on remote nodes. In Figure 1-6, all commands sent to virtual disk C are redirected to disk C on node 04::. Commands sent to virtual disk D are redirected to disk D on node 04::. When the computer is disconnected from the network, these virtual disks are no longer available.

When you attach your node to the network, DR Net allows you to use up to 16 virtual disks, and up to 16 virtual printers. Virtual disks are named as follows:

A B C D E F G H I J K L M N O P

Virtual printers are names as follows:

LST0: LST1: LST2: LST3: LST4: LST5: LST6: LST7:
LST8: LST9: LST10: LST11: LST12: LST13: LST14: LST15:

Figure 1-7 shows an example device map for the node JANE.

```
-----------------------------------------------------
Network Status Utility              For Node 03::
-----------------------------------------------------
Device Type   Local  =  Remote  on   Node  Logged On?
-----------  -----    ------      ----  ----------
Disks :        A        A         JOHN     YES
               B        B         JOHN     YES
               C        C         JANE     YES
               P        D         JANE     YES
Printers:      0        0         MARY     YES
-----------------------------------------------------
                    Node       Name
                    ----       ----
Servers Logged on:  02::       MARY
                    03::       BOB
                    04::       JANE
-----------------------------------------------------
```

Figure 1-7. Mapped virtual devices

When John stores a file on his physical disk A (listed under the "Local" column), the file actually goes over the network to disk A (listed under the "Remote" column) on the node JANE. When John stores a file on his virtual disk

P, the file actually goes over the network and is stored on disk D on the node JANE. Virtual printers work the same way. John has his virtual printer 0 mapped to the physical printer 0 on remote node MARY. If he prints a file on his virtual printer 0, it actually prints on printer 0 on node MARY.

An overview of networking procedures

Before you can send requests, service requests, or map devices, you must follow a few procedures. First, you must attach your computer to the network, so that it becomes a node on the network. After you have attached your computer to the network, you might want to send requests, or act as a server for other nodes. To send requests to a server, you must log on that server. If you have a device mapped to a server, you cannot use that server until you log on. This log-on procedure is like using the telephone. First, you pick up the receiver (attach to the network); then, you dial the number (log on a server).

You must log on each server you intend to use. DR Net allows you to log on as many as 16 servers. However, you can only log on one server at a time. When you have attached to the DR Net network and logged on the servers you choose, you are ready to send requests, map devices, and use DR Net's other features.

The commands for attaching to the network and logging on servers are explained in Section 2.

Every node attached to the network has a default server. A default server is the node your node uses if you do not specify a node name or node number in the command tail. The number "00::" is usually reserved for the default server, although the default server can have any number you choose. The name of the default server can be "server" or any name that conforms to the DR Net rule for node names. Your default server is usually assigned by your system manager. When you attach to the network, log on your default server first.

When you finish using a server, log off that server. There is a limit to the number of requesters a server can support simultaneously. When that limit is reached, no one else can log on. A user who needs that server must wait for someone to log off. Logging off a server does not disconnect you from the network. The command only logs you off that server.

When you no longer want to use the network, you detach from the network. This means you are no longer connected to DR Net. If you are logged on servers when you detach from the network, DR Net logs off all the servers you were using. When you detach from the network, you are in local mode, and can no longer use devices on remote nodes.

Section 2 details the commands to log off servers and detach from the network.

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Section 2: Getting on and off the network

Section 1 introduces you to computer networks and the basic DR Net procedures. Section 2 explains how to

- attach to the network
- log on a server
- log off a server
- detach from the network

You must follow these procedures in the sequence given.

Getting started

Boot your computer system according to the instructions in the user's guide provided with your computer. If necessary, ask your system manager whether your computer is running the CP/M-86 or the Concurrent CP/M operating system. Most of the DR Net commands are the same for both operating systems, but there are some differences. All differences are documented in this manual.

When you boot your system, your screen displays the system prompt, "A>".

Check your directory to confirm that the following files are present:

NETON.CMD (or NETLDR.CMD)
LOGON.CMD
LOGOFF.CMD
NETOFF.CMD

If any of the files are missing, see your system manager.

Step 1: Attaching to the network

Before you can log on a server, attach your computer to the network. If you are using Concurrent CP/M, type

A>NETON

Your computer executes the command, and displays the following message:

```
This Virtual Console is now attached to the Network.
```

If you are using CP/M-86, type

```
A>NETLDR
```

Your computer executes the command, and displays the following message:

```
DR Net loaded.
```

The NETON and NETLDR commands do not have options. If you type any of the commands listed in this manual incorrectly, or if the file for the command is not in your directory, Concurrent CP/M and CP/M-86 display the following message:

```
CP/M Error: Can't Find Command
```

If you type one of the DR Net commands described in this manual, and you are not attached to the network, your screen displays the following message:

```
You are not attached to the Network.
Please run NETON for a Concurrent CP/M Requester
   or run NETLDR for a CP/M Requester.
```

Step 2: Logging on servers

As discussed in Section 1, you can log on as many as 16 servers. The LOGON command is the same for systems based on both Concurrent CP/M and CP/M-86.

Logginf on the default server

To log on your default server, type

```
A>LOGON ;password
```

Do not enter the word "password"; instead, enter the password that your system manager assigned to log on the default server.

Note: The password options used in the examples in this manual might not be necessary on your system. DR Net has an internal mechanism for sending a password automatically. If your system requires passwords and you do not include the password with the command, DR Net prompts you for the correct password. Ask your system manager if you must use passwords. If your system does not use passwords, ignore the passwords in the examples.

When the LOGON command executes, the following message displays on the screen:

Logging on node nn:: ...Successful

Your default server's number appears in place of the letters nn::. The double colon ("::") is the DR Net convention that indicates a node number; it is considered part of the node number.

You do not have to log on your default server before you log on other servers. However, there is an advantage to logging on your default server first. When you log on your default server, you can use node names instead of numbers to reference other nodes.

Logging on remote servers

You also use the LOGON command to log on other servers. The LOGON command takes the following general form:

LOGON nn:: ;password

or

LOGON nodename ;password

Use the node number option, nn::, when you know the server's node number. For example, to log on the server with the node number 01:: that requires the password ORANGES, type

A>LOGON 01:: ;ORANGES

If you want to log on nodes that do not require passwords, use only the node number. For example,

A>LOGON 2F::

When you successfully log on a node using the node number option, DR Net displays the following message:

Logging on node nn:: ...Successful

where "nn::" is replaced by the number of the server you logged on.

You can use the node name option instead of the node number option with the LOGON command. Some valid examples of the LOGON command with the node name option are listed below:

A>LOGON MARY
A>LOGON DATABASE ;ACCTMGR
A>LOGON HANK

Notice that you do not use double colons ("::") when you use node names. When you successfully log on a node using the node name option, DR Net returns the following message:

Logging on node name nn:: ...Successful

where "name" is replaced by the actual name of the node, and "nn::" is replaced by the node number of the server you logged on.

LOGON errors

If you fail to log on a server when you type the LOGON command, DR Net displays an error message. There are two types of LOGON error messages. The first type of error messages looks like the following message:

Logging on node nn:: ...Unsuccessful
...explanation...

where "nn::" is replaced by the node number of the server you tried to log on. In this type of error message, the word "...explanation..." is replaced by one of the messages listed in Table 2-1. Table 2-1 defines the messages, and suggests how to recover from errors.

Table 2-1. LOGON error messages

Format: Message
Description

Network Error
The node specified in the LOGON command does not exist, or it is not attached to the network. You cannot reach a remote node until it attaches to the network.

No servers available
The server you specified does not have room for another requester. Try again later.

Could not log on the default server
The default server is not attached to the network. You cannot reach the default server until it is attached to the network.

Wrong password for that server
You specified the wrong password for a server. DR Net prompts you three times for the correct password. If you do not enter the password correctly after three tries, DR Net returns the system prompt.

The second type of LOGON error does not display the "Logging on..." message. Instead, your screen displays a single line of explanation below the command line. Table 2-2 lists these error messages, defines them, and explain how to recover from the error.

Table 2-2. LOGON local error messages

Format: Message
Description

Use Command Format: LOGON node-id ;password

You probably typed the command incorrectly. Re-enter the command.

Unable to find the name in the name server
DR Net cannot find the name you entered in its list of server names. Use the NAMES command to list the server names. (See "NAMES" in Section 3.) Make sure you typed the node name, or node number, correctly.

You are currently logged on too many servers
You are already logged on 16 servers. Log off a server before you try again.

You are not logged on a server that supports name service
You used a node name with the LOGON command, but names service is not available. Either names service is not installed on your system, or you did not log on your default server. log on your default server before you use node names to specify other servers.

You must use a node id other than your own nn::
You attempted to log on your own node. You cannot log on your own node.

Requester erro - logon failed
Your requester is not functioning properly. Reboot your system before you try again.

After logging on

After you attach to the network and log on the servers you want to use, you are ready to

- run an application program, or
- change your map of local-to-remote devices (disks, drives, or printers)

If your system manager configured your device map, you might be able to run your program as soon as you attach to the network and log on the servers you need. You do not have to change your device map to run most application programs. Check with your system manager before you proceed to learn if you need to make any changes. Then, read the rest of this section to learn how to log off servers, and how to detach from the network.

You might have to change your device map to run certain application programs. For example, if one of your programs stores results on disk A on the node JANE, and another of your programs prints results on the printer on node MARY, make sure that your device map is set up properly. One of your disks must be mapped to disk A on the node JANE, and one of your printers must be mapped to the printer on node MARY. If you need to make changes to your device map; see Section 3 of this manual. The remainder of Section 2 describes how to log off a server, and how to detach from the network. Section 3 describes the DR Net commands you need to view and change your device map.

Step 3: Logging off servers

The LOGOFF command disconnects you from a single server. When you log off a server, you are still attached to the network. After you log off a server, you cannot send requests to that server until you log on the server again. If you attempt to send requests to a server that you have not logged on, DR Net returns an error message.

When you finish using a server, log off that server. Every server has a limit to the number of requesters it can support at one time. Once that limit is reached, no one else can log on. A user who needs the server must waith until someone else logs off.

LOGOFF command

Three LOGOFF command formats are available. None of the LOGOFF formats require a password. If you want to log off your default server, type

```
A>LOGOFF
```

When you type LOGOFF without a node number or node name, DR Net assumes you mean to log off your default server. If you log off your default server, you cannot use names to reference other nodes. You must use node numbers when you are not logged on the default server.

When you log off your default server, DR Net displays the following message:

```
Logging off node nn:: ...Successful
```

where "nn::" is replaced by the number of your default server.

If you want to log off a server using the node number, type the following command:

```
A>LOGOFF nn::
```

where "LOGOFF" is the command, and "nn::" is the node number of the server you want to log off. For example, if you want to log off servers 01::, 2F::, and 09::, you type the following commands:

```
A>LOGOFF 01::
A>LOGOFF 2F::
A>LOGOFF 09::
```

It does not matter which server you log off first.

If you do not know the number of a server, use the node name to log off the server, as follows:

```
A>LOGOFF nodename
```

You must be logged on your default server if you want to use the node name option. If you want to log off the server nodes with the names MARY, JANE, and

LIBRARY, type

```
A>LOGOFF MARY
A>LOGOFF JANE
A>LOGOFF LIBRARY
```

LOGOFF errors

An unsuccessful LOGOFF is indicated by a message in one of the following two forms:

```
Logging off node nn:: ...Unsuccessful
```
or
```
...explanation...
```

In this type of error message, the word "...explanation..." is replaced by one of the messages listed in Table 2-3. Table 2-3 lists the LOGOFF error messages, defines them, and suggests how to recover from the error.

Table 2-3. LOGOFF error messages

Format: Message
Description

You were not logged on that server
You attempted to log off a server that you had not logged on. Check to make sure this is the server you wanted to log off.

Network error
The remote node is not attached to the network. You cannot reach a remote node until it is attached to the network. The remote node might have been rebooted and has not re-attached to the network and logged on again.

Unable to find the name in the name server
DR Net cannot find the name you entered in its list of server names. Use the NAMES command to list the server names. (See "NAMES" in Section 3.)

You are not logged on a server that supports name service
You used a node name with the LOGOFF command, but name service is not available. Either you did not log on your default server, or name service is not installed on your system. Try logging on your default server.

Use Command Format: LOGOFF node-id
You probably typed the command incorrectly, or used the wrong command format. Try typing the command again.

You must use a node id other than your own nn::
You attempted to log off your own node. You cannot lof yourself off.

Step 4: Detaching from the network

If you want to detach your node from the network and you are using Concurrent CP/M, type

A>NETOFF

The NETOFF command logs off all the servers that you are currently logged on. Use NETOFF when you no longer want to access the remote devices. When you detach from the network, you can again access the local devices that you mapped to remote devices. When you are attached to the network, you cannot use the local devices you mapped to remote devices.

Remember, if you want to log on any server after running NETOFF, you must first attach to the network again.

The NETOFF command has no options. When you type NETOFF, your screen displays the following message:

This Virtual Console is now detached from the Network.

If you are using the CP/M-86 operating system, perform a system reset to detach from the network. The CP/M operating system does not have a NETOFF command. If you do not know the system reset procedure for your system, consult your User's Guide or your system manager.

Note: If you are using virtual consoles, be aware that the commands described in this manual apply to one console only. For example, if you type NETON, the only console that is attached to the network is the console you are switched on. To attach all the virtual consoles to the network, you must type a NETON for each console. See the "Concurrent CP/M User's Guide" for details on virtual consoles.

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DNUG3.WS4 (= "DR Net User's Guide", section 3)

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Section 3: DR Net commands

Section 2 describes how to

- attach to the network
- log on servers
- log off servers
- detach from the network

You know that, after you attach to the network and log on servers, you can run application programs or change your device map. If your system manager has configured your device map for you, you are ready to run application programs. Your default device map (the device map set up by your system manager) remains the same for most of the applications you run.

If your default device map is not appropriate for certain applications you run, then you must make changes in your device map. Section 3 describes the four DR Net commands that display and change your current map. The commands are listed in Table 3-1.

Table 3-1. DR Net commands

Format: Command
Description

NAMES
Displays the list of all servers and requesters on the network.

NETSTAT
Displays your device map of local to remote disk drives and printers.

NET
Changes or maps a local device to a remote device.

LOCAL
Changes or maps a remote device to a local device.

You must attach to the network to use the commands listed in Table 3-1. If you type one of these DR Net commands and you are not attached to the network, your screen displays the following message:

You are not attached to the Network.
Please run NETON for a Concurrent CP/M Requester
or run NETLDR for a CP/M Requester.

Before you can use the commands, you must have the following files in your directory:

- NAMES.CMD
- NETSTAT.CMD
- NET.CMD
- LOCAL.CMD

Type the DIR command to display your file directory, and make sure the files are in the directory. If any of the files are missing, contact your system manager.

How to use this section

Every command shown in this section terminates with a carriage return (generated by the RETURN key on CP/M computers, the ENTER key on IBM PCs). Some of the commands have two parts, the command name and the command tail. For example,

NAMES {namespec}

The word "NAMES" is the command, and the word "namespec" is the command tail. If the command tail is enclosed in curly brackets ("{" and "}"), as above, then the tail is optional. The curly brackets are used for illustration only; never enter curly brackets as part of a command or option.

All commands are shown in UPPERCASE. Command tails are shown in lowercase. Both of these conventions are used for clarity. You can enter the command and options in uppercase, lowercase, or both.

This section describes each command in the following format:

Format: Syntax
Explanation
Examples
Error Table

The syntax part shows you how to enter the command. Also shows the options if the command has options.

The explanation part describes how to use the command and its options. Explains any restrictions that apply to the command.

The examples part presents and explains examples of the command and options.

The error table part lists error messages associated with the command.

NAMES command

Syntax: NAMES
NAMES {namespec}

Explanation:

The NAMES command reads a special file located on your default server, and displays the servers and requesters on your network. You must be logged on your default server to enter the NAMES command.

If you enter the NAMES command without the namespec option, DR Net displays all the servers and users (requesters) on the network. Figure 3-1 is an example of what you might see on your screen if you enter the NAMES server.

```
Servers> SERVER  00::  MARY  02::  JANE    04::  JOHN  01::

Users  > MARY    02::  JANE  04::  ORANGE  09::  GOLD  08::
         BOB     03::  BLUE  05::  GREEN   07::  HANK  06::
```

Figure 3-1. NAMES command display

The display is divided into two categories, servers and users. The nodes assigned as servers/users can be found in both categories. In Figure 3-1, JANE and MARY are displayed as both servers and users.

The numbers listed to the right of a node name is the node number. If you know the name of a node, but do no know the number, you can use NAMES to learn the number.

Notice that Figure 3-1 lists 12 nodes. Remember that DR Net allows up to 255 separate nodes. When all 255 nodes are assigned as servers/users, the NAMES display contains more than 500 entries.

If you have many entries in your NAMES display, you can use the namespec option to confirm a single entry. That is, you type NAMES followed by the name of a specific node. For example:

```
A>NAMES mary
```

The namespec option also allows you to use the wildcards "?" and "*". The question mark ("?") represents one character. The asterisk ("*") can represent up to eight characters. For example, if you want to list all the node names that begin with a "J", type

```
A>NAMES j*
```

Based on the display in Figure 3-1, NAMES displays the following

```
Servers>  JOHN  01::  JANE  04::
```

Users > JANE 04::

If no servers or users match the characters used for the namespec, DR Net displays one or both of the messages below:

No Matching Server Entries
No Matching User Entries

Examples:

A>NAMES bob

Lists all server and user nodes with the name BOB.

A>NAMES

Lists all the servers and users on the network.

A>NAMES da*

Lists all the server and user nodes that begin with the letters "DA".

Table 3-2. NAMES error messages

Format: Message
Description

Name Service is currently unavailable
Name service is not installed, or your default server is not logged on. You must log on your default server before you can use the NAMES command.

File system error
A file system error occurred. You might have to rebott your system.

Name Service error
An internal error occurred. Log off and log on your default server again. Then, try running the program again.

No Matching Server Entries
No Matching User Entries
DR Net cannot find the characters you requested in the server's list of names. Type NAMES for a complete list of all servers.

NETSTAT command

Syntax: NETSTAT

Explanation:

Use NETSTAT to display your current device map. The device map is a list of disk drives, printers (sometimes called "list devices"), and queues. (See "NET command" later in Section 3 for a description of queues.) Your device map also lists the servers that you have logged on. The NETSTAT command has no options. To display your current device map, type

A>NETSTAT

Figure 3-2 is an example device map.

```
-----------------------------------------------------
Network Status Utility              For Node 06::
-----------------------------------------------------
Device Type   Local  =  Remote  on   Node  Logged On?
-----------  -----    ------      ----  ----------
Disks :        A        A         BOB      YES
               B        C         GOLD     YES
               G        B         MARY     NO
Printers:      0        0         SERVER   YES
               1        0         GOLD     YES
Queues:        MXSPL    MXSPL     SERVER   YES
-----------------------------------------------------
                    Node       Name
                    ----       ----
Servers Logged on:  00::       SERVER
                    02::       MARY
                    03::       BOB
                    08::       GOLD
-----------------------------------------------------
```

Figure 3-2. NETSTAT command display

A device map is very easy to read if you read the word "Local" as 'My disk', the equal sign ("=") as 'is really', and the word "Remote" as 'Node's disk'. For example, the first line of Figure 3-2 reads:

My disk A is really BOB's disk A.

The second line of the device map reads:

My disk B is really GOLD's disk C.

You can read the map of printers the same way. The first line of the printer map reads:

My printer 0 is really the SERVER's printer 0.

Remember that DR Net allows you to have up to 16 virtual disks, and up to 16 virtual printers. When you map that many devices, NETSTAT is handy for displaying your current device map.

If you are not logged on your default server, NETSTAT displays node numbers instead of node names in the node column. If you are not logged on any servers, the last line of the device map displays:

    You are not currently logged on any servers

If you type NETSTAT when you are not attached to the network, the following message displays:

    You are not attached to the Network.
    Please run NETON for a Concurrent CP/M Requester
      or run NETLDR for a CP/M Requester.

Example: A>NETSTAT Displays your current device map.

Table 3-3. NETSTAT error messages

Format: Message
    Description

All Devices Are Local
You have not mapped any devices. You cannot access remote devices that are not mapped. Use the NET command to map the devices, and try again.

You are not currently logged on any servers
You tried to access a node that you have not logged on. Log on the server, and try again.

NET command

Syntax: NET d:=d:nodename
    NET d:=d:nn::
    NET LSTn:=LSTn:nodename
    NET LSTn:=LSTn:nn::
    NET "qname" = "qname" nn::
    NET "qname" = "qname" nodename

Explanation:

The NET command allows you to change your device map. You can remap a local disk to a different remote disk, or you can map a local disk for the first time. For example, to map your disk A to disk C on the node JANE (node number 04::), type

    A>NET a:=c:jane

In this example, you used the node name JANE. Instead, you can use the node number for node JANE to accomplish the same task. For example,

A>NET a:=c:04::

If you do not specify a node name or number with the NET command, DR Net maps the device to a device on the default server. To use node names, log on your default server. If you use a node number to map a disk, uses the NAMES command to confirm the number.

Note: DR Net does not check to see if the number you specified actually exists. Therefore, you might map a drive to a non-existent server, and cause your program to crash. So, it is important to confirm the node number.

The NET command also maps printers. For example, to map your printer 0 to printer 0 on the node GOLD, type

A>NET lst0:=lst0:gold

To accomplish the same task using the node number for GOLD, type the following command:

A>NET lst:0=lst0:07::

where "07::" is the node number for GOLD.

Queues:

The NET command also maps queues. A queue is a mechanism that allows one process to communicate with another. A process can also use a queue to synchronize its execution with that of another process, and to exclude other processes from protected system resources. Some examples of queue names are listed below:

MXSPL
SPLIN
SPLOUT

If your system manager has configured your device map for all the application programs you use, you need not map queues. If an application requires the mapping of queues, use the following command format:

A>NET "qname" = "qname" nn::

where the first "qname" is the local queue name you want to map. The second "qname" is the remote queue you want to map to. The quotation marks (") are part of the command, and you must use them with the queue name. The distinction between uppercase and lowercase letters is very important in some queue names. All letters in a command are interpreted as uppercase, so use the backslash ("\") to denote lowercase. For example,

A>NET "MX\m\l\l" = "MX\m\l\l" 03::

In this example, DR Net interprets both queue names as "MXmll". A queue can be up to eight characters long including letters and numbers. The command in the

example maps local queue MXmll to the remote queue MXmll on node 03::.

You can also use the node name option as follows:

A>NET "qname" = "qname" nodename

You might find it easier to use a submit file to map queues. Examples of submit files that map queues are listed in Appendix A.

If you do not specify a node name or node number with the NET command, DR Net maps to the default server.

Note: Any changes you make with the NET command are only temporary. When you complete your tasks and detach from the network, all the changes you made during that work session disappear.

When you make changes to your device map, display your map with the NETSTAT command to confirm that the changes are established. Also, make sure you do not map a virtual disk or printer to a virtual disk or printer on another node.

Examples:

A>NET b:=b:server

Maps your disk B to the disk B on the node server.

A>NET a:=c:03::

Maps your disk A to the disk C on node 03::.

A>NET lst0:=lst0:hank

Maps your printer 0 to the printer 0 on the node HANK.

A>NET "AC\m\g\r" = "AC\m\g\r" 02::

Maps your local queue ACmgr to remote queue ACmgr on node 02::.

Table 3-4. NET error messages

Format: Message
Description

Local device value is out of range or undefined
The local device you attempted to map is undefined, or you type a number that is out of range. Disks are numbered from A to P. Printers are numbered from LST0: to LST15:.

Remote device value is out of range or undefined
The remote device you attempted to map to is undefined, or you typed a number

that is out of range. Disks are numbered from A to P. Printers are numbered from LST0: to LST15:.

Name Service Error
The name service has an internal error. Reboot your system, and try again.

Use Command Format: NET local-device = remote-device-node-id
You typed the command wrong, or used the wrong format. Try again.

Requester Error
The requester has an internal error. Use NETOFF, then NETON, and run your program again.

Name not found on Name Server
You specified a name that is not in your name server. Try another name.

LOCAL command

Syntax: LOCAL d:
LOCAL LSTn:
LOCAL "qname"

Explanation:

The LOCAL command is the opposite of the NET command. The LOCAL command unmaps (that is, removes) the local-to-remote map assignment for disks, printers, or queues. The LOCAL command tail must contain a disk drive reference, printer number, or queue name.

Imagine that you have your disk A mapped to the disk B on remote node JOHN. To unmap your disk A so it becomes local again, type

A>LOCAL a:

Imagine that you have mapped your printer 0 to the printer 1 on remote node ORANGE. To unmap your printer 0 so it is local again, type

A>LOCAL lst0:

To unmap queue "MXSPL" so it becomes local, type

A>LOCAL "MXSPL"

All changes you make with the LOCAl command are temporary. When you detach from the network, all changes you made with LOCAl disappear. The next time you attach to the network, your default resource map loads.

You can only use the LOCAL command to unmap devices you have attached to your system.

When you use LOCAL to make changes to your device map, use NETSTAT to confirm the changes you made.

Examples:

A>LOCAL lst0:

Unmaps LST0: (the default list device) from a remote node to your local node.

A>LOCAL a:

Unmaps disk A from a remote node to your local node.

A>LOCAL "MXSPL"

Unmaps the queue MXSPL from a remote node to your local node.

Table 3-5. LOCAl error messages

Format: Message
Description

Requester Error
The requester has an internal problem. Type NETOFF, then NETON, and try again.

Device value is out of range
You attempted to map a device to local that is out of range. Disks are numbered from A to P. Printers are numbered from LST0: to LST15:.

Use Command Format: LOCAL networked-device-id
You typed the wommand wrong, or used the wrong format. Try again using this format.

EOF

DNUG4.WS4 (= "DR Net User's Guide", Appendixes and glossary)

DR Net
User's Guide

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(Retyped by Emmanuel ROCHE.)

Appendixes

Appendix A: Submit file examples

The CP/M command SUBMIT allows you to invoke a list of commands from a file, rather than from the keyboard. The SUBMIT command reads the file, and executes each command line in the file as if you entered it yourself.

To use SUBMIT, create a file that contains all the commands you want to execute. This file must have the filetype SUB. A submit file can contain any valid CP/M commands, including valid DR Net commands. When you are ready to execute the commands in the file, you simply type

```
A>SUBMIT filename
```

where "filename" is replaced by the name of your submit file. SUBMIT then executes each command you have listed in the file.

Note: When you create a submit file, you must use the filetype SUB. But you do not type the filetype ".SUB" when you enter the SUBMIT command.

Submit files can attach to the network, log on your default server, and log on other servers you want to access. This appendix provides some examples of submit files you might find useful. For more information on the SUBMIT command and its options, see the "Concurrent CP/M User's Guide" or the "CP/M-86 User's Guide".

The two file names listed below make up a single submit file that attaches your node to the network, and logs on your default server. Create the file, and name it STARTUP.SUB or any name that follows the CP/M rules for naming files and has the filetype SUB.

```
NETON
LOGON
```

NETON is the Concurrent CP/M command for attaching to the network. If you are using the CP/M-86 operating system, use the NETLDR command instead of NETON. After you create your file with the text editor or word processor (a non-document file, or ASCII file) on your system, you are ready to execute the file. To run STARTUP.SUB, type

A>SUBMIT startup

The SUBMIT command then executes the commands in the files, and you are attached to the network and logged on your default server.

SUBMIT can perform more complex tasks than the foregoing example. For example, if Bob creates a file on his word processor, stores the file on a disk on node MARY, and prints the file on a printer on node JOHN, he completes the following steps:

1. Attach to the network.
2. Log on default server (to use names).
3. Log on the node MARY.
4. Log on the node JOHN.
5. Map a disk to a disk on MARY.
6. Map a printer to a printer on JOHN.

If Bob must perform this task on a regular basis, he can use SUBMIT to make the job easier. For this example, the submit file contains the following commands:

```
NETON
LOGON
LOGON mary
LOGON john
NET d:=a:mary
NET lst1:=lst0:john
```

Whenever Bob must complete the word processing task, he simply types SUBMIT followed by the filename. The SUBMIT command executes the six steps needed to attach to the network, log on the servers, and make changes in his device map.

As discussed in Section 3, you might prefer to use a submit file to map queues. A submit file that maps three queues from your local node to a remote node is listed below. Create a file called SPLMAP.SUB and type in the following commands:

```
NET "MXSPL" = "MXSPL" $1
NET "SPLIN" = "SPLIN" $1
NET "SPLOUT" = "SPLOUT" $1
```

The dollar signs ("$1") in the above submit file allow you to use an argument when you run the submit file. For example, if you want to map your local queues to the remote node 04:: using the above submit file, type the follwijgn command:

```
A>SUBMIT splmap 04::
```

You can use a node name or a node number as an argument for the SUBMIT command. If you do not specify an argument for the SUBMIT command, the network assumes you mean your default server.

A submit file that maps the queues listed above from remote to local is listed

below. Create a file called SPLLOCAL.SUB and enter the following lines:

```
LOCAL "MXSPL"
LOCAL "SPLIN"
LOCAl "SPLOUT"
```

To use the file to map the queues from any remote node to local, type the following command:

```
A>SUBMIT spllocal
```

Appendix B: DR Net network error messages

Most of the error messages described in this manual are command related. Command-related error messages are displayed when you make an error in one of the DR Net commands. Command-related error messages are detailed in Sections 2 and 3.

This appendix describes network error messages. Network error messages are not related to DR Net commands, and can occur after you enter any command or application program. Two types of network errors can be encountered using the network: standard CP/M errors and DR Net network errors.

Standard CP/M errors

One type of network error is a standard CP/M error that occurs on a remote node. For example, if you PIP a file to your own drive B when drive B is full, your screen displays a standard CP/M error. The general form of a standard CP/M error is as follows:

```
CP/M Error on d:, message
BDOS Function = n File = filename
```

where "d:" indicate the drive letter; "message" indicates the type of error; "n" is the BDOS function number; and "filename" indicates the file involved in the error. See the "Concurrent CP/M User's Guide" for a listing of possible messages, and their meanings.

Standard CP/M errors become network errors when the command applies to a remote node. For example, if you PIP a file to a drive on a remote node that happens to be full, your screen displays a network error. When a standard CP/M error occurs on a remote node, the general form of the message is as follows:

```
Network Error: message
```

where "message" indicates the type of error. These messages are the same as the messages displayed with the standard CP/M error.

When a standard CP/M error occurs on a remote node, your node is neither detached from the network nor logged off that server.

DR Net network errors

The other type of network error is directly related to the network. You can encounter these errors only when you are attached to the network. DR Net network errors take the following general form:

Network Error: message

where "message" is replaced by one of the three messages listed below:

- Server Not Logged On
- Physical Transmission Error
- Requester Error

This appendix defines these messages, and explains how to recover from each error.

Server Not Logged On

This message means you tried to use a server that you are not logged on. Log on the server.

Physical Transmission Error

This message means you are disconnected from a server to which you were previously connected. Usually, this happens because

- the server crashed and cannot be used until its operating system has been reloaded, or

- the network wires that connect your computer to the server are disconnected or damaged

If the server crashed, you are still attached to the network, and logged on other servers. If the wires are disconnected, you might still be able to use other servers, depending on the extent of damage to the network.

To recover, you must first determine the cause of the error. If others are still using the server to which you were previously connected, your physical condition is the problem. However, if no one else has access to that server, the failure might be in the server's network connection, or in the computer itself. Check the server to determine if it is functioning properly.

Caution: Never reset the server unless you are certain no one else is using it. When a computer is reset, all programs running on it abort, and all information a user entered can be lost.

Requester Error

Your computer tried to run another program on the network, but it has already reached its limit of networked programs. You are likely to encounter this message only when you run a lengthy SUBMIT routine on several virtual consoles at the same time. Even under these conditions, DR Net does not always become congested.

To use the network after this message displays, detach one of your virtual consoles, or wait until one of the SUBMIT routines completes before using the network again. To detach one of your virtual consoles, switch to a virtual console running in the background that is attached to the network. Before you enter NETOFF, make sure no programs using the network are running on the console.

Note: If this message appears frequently, tell your system manager. In many cases, a system can be reconfigured to increase the number of programs that can run on the network simultaneously.

When a DR Net network error occurs, your system probably aborts the program that is running, and displays the error message and the system prompt. However, your system might be configured to display the message and continue with the program instead. Should this happen, you can continue the program, but your computer might no longer be logged on the server, or attached to the network. It is safer to terminate the program. Then, attach to the network again, log on a server, and run your program again.

Network Traffic

The amount of network traffic can affect your computer operation. Heavy traffic can slow operations, because other requesters might be using the same resources on a server you want to use. This situation does not affect the way your program runs, or the accuracy of the data you enter. This condition might appear to you to be an error, but it is simply a delay. As soon as another requester releases the resource, your program automatically runs.

Glossary

This glossary defines terms used in this manual. The definitions apply only to the DR Net network; use them only within the context of this manual. The terms are listed alphabetically.

application programs
Computer programs taht run under an operating system, and perform certain tasks. Examples of application programs are word processing programs, spreadsheet programs, and mailing-list programs.

attaching to the network
Connecting your computer or node to the network, so you can communicate with other computers on the network.

boot or bootstrap
Procedure that turns your computer on, and loads the operating system.

command
Instruction you type at your terminal to tell the operating system or program what to do.

computer network
Two or more computers connected together by communication lines for the purpose of sharing data and resources.

default server
Node on your network where your names server resides. Also, the server node assumed by DR Net when you use the LOGON, LOGOFF, or NET commands, and do not enter a node name or number.

detaching from the network
Disconnecting your node from the network. Detaching from the network means that your node is local and you have access only to your local resources.

device map
List of your devices (disks and printers) and queues, and how they are assigned or mapped to devices on other nodes on the network.

devices
Printers and disks attached to your computer. Also called "peripheral devices".

DIR
CP/M command that displays all the files on a disk. The DIR command displays the disk directory.

directory
List of all the files located on a disk.

error message
Message your terminal or console displays when you type a command the comuter does not understand, or when the computer has a failure.

filespec
File identification made up of two parts: a filename and a filetype; for example: PART1.DOC. "PART1" is the filename, and "DOC" is the filetype. A reiod (".") separates the filename and filetype.

ID number
Number assigned to a specific node on the network. Also called the "node number".

list device
Device used to list data. A printer is a list device.

LOCAL
DR Net command that unmaps disks, printers, or queues from a remote node to your local node.

local mode
Operating mode or status of your computer when you are not attached to the network. You cannot access remote resources when you are in local mode.

LOGOFF
DR Net command used to log off or disconnect servers on the network.

log off
Procedure to disconnect a server you no longer want to access on the network.

LOGON
DR Net command that logs on or connects servers you want to access on the network.

log on
Procedure to connect a server you want to access on the network.

map (devices)
Procedure that assigns a device on your node to a device on a remote node.

NAMES
DR net command that reads a special file on your default server, and displays the list of servers and requesters on you network. The NAMES display includes node names and node numbers.

NET
DR Net command that allows you to change your device map. Use the NET command to map your devices or queues to devices and queues on other nodes on the network.

NETLDR
DR Net command that attaches your node to the network if you are using the CP/M-86 operating system.

NETOFF
DR Net command that detaches your node from the network if you are using the Concurrent CP/M operating system.

NETON
DR Net command that attaches your node to the network if you are using the Concurrent CP/M operating system.

NETSTAT
DR Net command that displays your current device map.

network
Communication lines that connect devices or computers.

node

Computer or system linked to other computers by a network.

node name
Name assigned to a specific node or computer on the network. A DR Net node name can be up to eight characters long including letters and numbers. Examples are SERVER, MARY, JOHN, ORANGE6.

node number
Number assigned to a specific node or computer on the network. Also called an ID number. Examples are 00::, FE::. The double colon ("::") is considered part of the node number.

operating system
Collection of programs that manages the computer's resources, and supervises other programs that run under the operating system.

peripheral devices
See "devices".

physical devices
Devices you can use that are actually present at your computer, such as printers and disks. See "virtual devices".

queue
Mechanism that allows processes to communicate, synchronize execution, and exclude other processes from protected system resources.

requester
Node on the DR Net network that can only send requests to servers on the network. Also called a user.

requester/server
Node on the DR Net network that can send requests to servers on the network, and service requests from other nodes on the network.

remote
Network nodes other than your own node.

computer resources, or resources
Disk drives, list devices (printers), and queues. In other manuals, resources might have a broader definition. However, in this manual, the term refers only to these three items.

server
Node on the DR Net network that can service requests from other nodes. A server cannot send requests.

server/requester
Node on the DR Net network that can send requests to servers on the network, and service requests from other nodes on the network. Same as "requester/server".

SUBMIT
CP/M command that enters a list of command from a file. When you use the

SUBMIT command, you type or enter one command file instead of a number of commands you want to execute. The SUBMIT command reads the file, and executes each command line in the file just as if you entered it from the keyboard.

system manager
Person responsible for maintaining your DR Net network.

system prompt
Letter and symbol displayed on your terminal or console. The letter indicates your current drive. You can only enter commands to the operating system and DR Net when the system prompt is displayed. Examples are A>, B>, C>.

system reset
Procedure that detaches your node from the network if you are using the CP/M-86 operating system

unmap
Procedure that re-assigns a remote device to your local node. See "LOCAL".

user
Node on the DR Net network that can send requests to other nodes on the network. Also called a "requester".

virtual consoles
Concurrent CP/M feature that lets you use on console as if it were more than one. Not to be confused with "virtual devices" as used in this manual.

virtual devices
Devies (disks and printers) not physically present that DR Net allows you to use when you are attached to the network. You can assign your virtual disks and printers to physical disks and printers on other nodes. In this manual, the term virtual devices refers strictly to virtual disks and virtual printers. It is not to be confused with "virtual consoles".

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