UNISYS

DCP Series
TCP-IP Stack TELNET
User Guide

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le:

CP Series TCP-IP Stack TELNET User Guide Level 2R1

iis Product Information Announcement presents the release of the *DCP Series TCP-IP Stack TELNET User ;ide*, Level 2R1 (7831 5553-001).

ie Unisys DCP Series TCP-IP Stack level 2R1 provides added functions for Telcon software on a Unisys stributed Communications Processor (DCP). The TCP-IP Stack provides the following services:

- Front-end communications for OS 1100 hosts running DDN 1100 software
- Terminal access to host applications throughout a TCP/IP network through an implementation of TELNET
- Internetwork routing, enabling a DCP to function as an internet protocol (IP) router within a TCP/IP network or as a bridge node that interconnects Unisys DCA and TCP/IP networks

iis guide provides the information you need to use the TELNET application that is a part of the TCP-IP Stack. iis includes:

- An introduction to the TELNET protocol and the TELNET application
- Task oriented explanations of User and Server TELNET functions
- A summary of TELNET commands
- Explanations of TELNET messages

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About This Guide

TELNET is a feature of the Distributed Communications Processor (DCP) Series TCP-IP Stack program product, which runs with Telcon software on a DCP.

The TELNET feature conforms to the TELNET protocol, a member of the transmission control protocol/internet protocol (TCP/IP) family. It enables terminals to access applications running on host computers connected to the Defense Data Network (DDN) and other networks using the TCP/IP protocols.

Purpose

The purpose of this guide is to show terminal users how to use TELNET to access applications running on hosts connected to TCP/IP networks. To support this activity, it also shows how to manage the TELNET environment and how to end communications with hosts.

Scope

This guide does the following:

- Describes TELNET features
- Explains how to sign on and off DCPs
- Shows how to access the TELNET application
- Explains how to access remote hosts
- Shows how to manage the TELNET environment
- Shows how to end communications with remote hosts
- Shows how to end TELNET sessions
- Explains TELNET commands
- Describes TELNET error and information messages

udience

This guide has two primary audiences, User TELNET users and Server TELNET users. The following describes each:

- User TELNET users have terminals connected to a DCP, and they use the TELNET program to access applications across a TCP/IP network. These applications may reside on OS 1100 hosts or foreign hosts, that is, hosts not manufactured by Unisys.
- Server TELNET users use TELNET to access applications on an OS 1100 system from across a TCP/IP network. Their local TELNET (User TELNET) program may be one produced by other companies. It may also be the DCP TELNET implementation, in which case these users are both Server and User TELNET users.

'rerequisites

To use this guide effectively, you do not have to be a data communications professional. You should, however, have a working knowledge of your terminal and know how to use host applications. These subjects are not covered in this guide.

low to Use This Guide

This guide is organized by tasks, presented in the order you will most likely perform them. If you are a User TELNET user, read sections 1 and 2 and all of the appendixes. If you are a Server TELNET user, read sections 1 and 3 and all the appendixes.

Organization

This guide is organized in the following way:

Section 1. Introducing TELNET — The Protocol and the Application

This section provides information to help you understand the purpose of TELNET. It describes the TELNET protocol and application.

Section 2. Using User TELNET Facilities

This section provides information for DCP terminal users to access applications running on hosts connected to TCP/IP networks. This section explains how to make and break connections with the DCP, the TELNET application, and a remote host. It also explains how to manage the TELNET environment.

Section 3. Using Server TELNET Facilities

This section provides information for those who want to access applications running on OS 1100 hosts.

Appendix A. TELNET Commands

This appendix lists all TELNET commands in alphabetical order and describes what they do and how to use them. Appendix A is intended for experienced users who are familiar with TELNET but may need to be reminded about how to use a command.

Appendix B. Information Messages

This appendix provides a table of information messages along with explanations of the messages.

Appendix C. Error Messages

This appendix provides a table of error messages along with explanations of the messages.

otation Conventions

When this guide presents a command, it uses the following notation conventions:

- Information presented in all capital letters should be entered exactly as it appears. (Sometimes you may be able to use an abbreviation, however.) Commands and parameter names are examples of this type of information.
- Information presented in lower case italic letters represents user entry — or entry you supply, such as a name, number or address. The name you may use in a %%CONNECT command is an example of this type of input.
- Items enclosed in braces { } indicate that you select an item from a list.
- Items enclosed in brackets [ ] indicate that they are optional.

When this guide discusses the TCP/IP protocol it uses a slash (/). When it discusses the TCP-IP Stack program product, it uses a dash (-).

Contents

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Tables

Section 1
Introducing TELNET — The Protocol and the Application

This section offers background information only. It describes the TELNET protocol and the TCP-IP Stack application that implements it.

Contents

.1. About the TELNET Protocol

People follow rules when they converse. One person talks while the other listens — usually — and the person talking seldom switches languages in the middle of a sentence. The person listening usually looks at the speaker, occasionally nodding or providing some other feedback. These rules are called protocols, and they are necessary for humans to communicate effectively.

Computers must adhere to protocols as well, if they are to communicate effectively. Computer protocols define such things as which system transmits first and how both systems know when the transmission is over.

The TELNET application is a Unisys implementation of an internationally accepted protocol of the same name. The TELNET protocol is a member of the transmission control protocol/internet protocol (TCP/IP) family of protocols, developed to allow computers (and terminals) made by different manufacturers to communicate. The TELNET protocol specifies how terminals communicate with applications running on host computers, and how two terminals communicate with each other.

The TCP/IP protocols are used over TCP/IP networks. A TCP/IP network can be several interconnected networks, which is sometimes called an internet. An example of a TCP/IP network is the Defense Data Network (DDN). Figure 1-1 depicts an internet network.

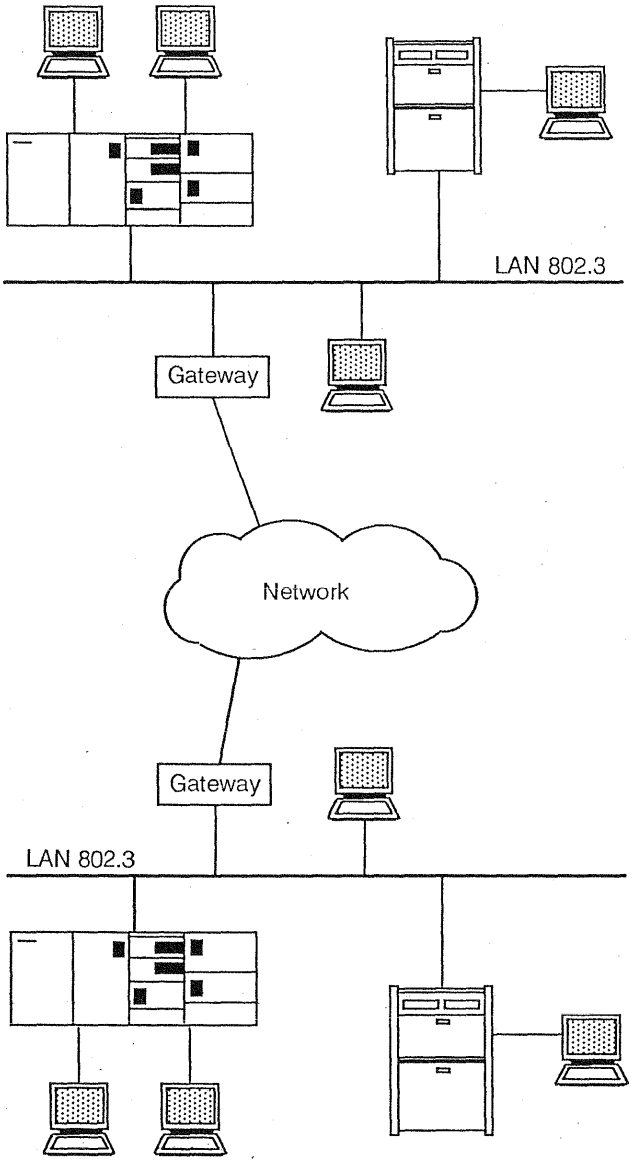

Figure 1-1. An Internet Network

.2. About the TELNET Application

The TELNET application implements the TELNET protocol. It is a feature of the TCP-IP Stack program product and provides two complementary services, User TELNET and Server TELNET.

User TELNET is for someone with a terminal connected to a DCP who uses the TELNET program to communicate with hosts across a TCP/IP network. These hosts can be Unisys systems, such as an OS 1100 system, but usually are systems manufactured by other vendors. User TELNET users should read Section 2.

Server TELNET is for someone who accesses the DCP from across a TCP/IP network to communicate with an OS 1100 system. In this case, the OS 1100 system is directly attached to the DCP. Server TELNET users should read Section 3.

Figure 1-2 illustrates User and Server TELNET services. Terminal A uses the DCP's User TELNET implementation to communicate with the remote host across the TCP/IP network. The remote host provides server TELNET functionality. Terminal B uses the host's User TELNET implementation and the DCP's Server TELNET to access the OS 1100 system.

It is possible to use both the DCP's User and Server TELNET. If your terminal is connected to a DCP and you access an OS 1100 host through another DCP located across a TCP/IP network you use both services. In that case, read both Section 2 and Section 3.

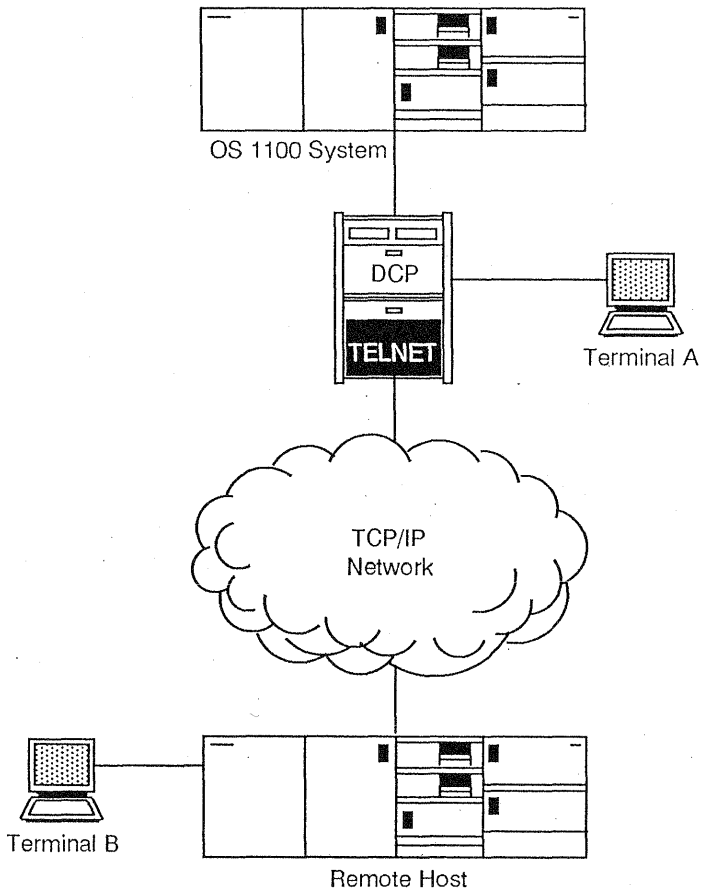

Figure 1-2. User and Server TELNET

Section 2
Using User TELNET Facilities

This section explains how to use User TELNET facilities. Read it if your terminal is attached to a DCP and you want to use TELNET to access applications running on hosts connected to TCP/IP networks.

Contents

1. Calling Remote Hosts

This subsection explains how to call remote hosts using TELNET. It consists of three modules, each of which describes one of the procedures you perform to call a remote host.

Calling a remote host normally requires you to perform the following procedures:

1. Sign on to a DCP. You perform this procedure using the $$SON command. Although terminals can be configured for automatic sign-on, you probably will have to perform this procedure.
2. Open a TELNET session. You perform this procedure using the $$OPEN command. Although some terminals can be configured to automatically establish a session with TELNET, you probably will have to perform this procedure as well.
3. Call a remote host. This is a two-step procedure. First you issue the %%CONNECT command. Then you inform the TELNET software what terminal type you are using and the type of application you want to access.
4. Sign on to a remote host. This procedure is not covered in this guide because it is under the control of the remote host. See the host's documentation for this information.
5. Access a remote application. If the remote host is an OS 1100 to which you gain access through a directly attached DCP running the Server TELNET facility, you issue the ATTACH command. See Module 3.1 for information. If this is another type of host, however, see the host's documentation.

Figure 2-1 illustrates the procedures you perform to make a host call. Each of the modules in this subsection contain a similar figure to illustrate where you are in the calling process.

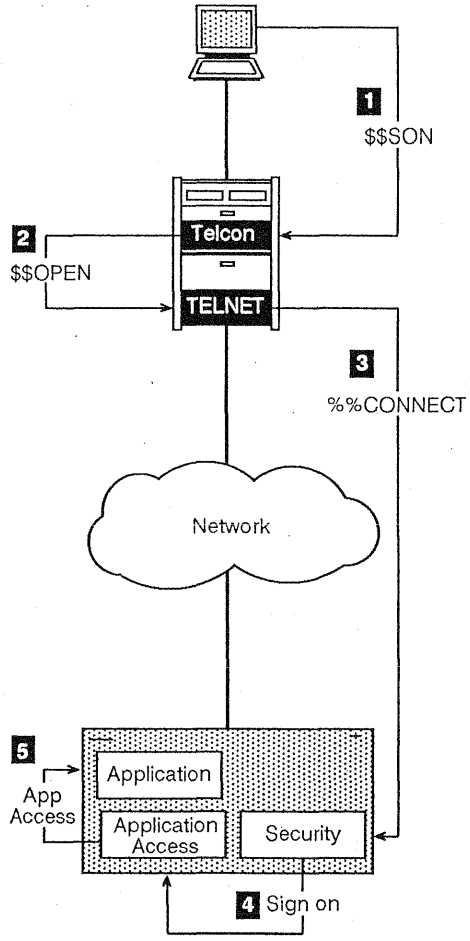

Figure 2-1. Connection Procedures

1.1. Signing on to a DCP

This module explains how to sign on to a DCP. This is normally the first procedure you perform to call remote hosts. Some DCPs are configured to allow access without signing on, but many require this step.

Starting Point

Your terminal should be inactive.

Procedure

Type the following and then press the TRANSMIT key. (Some terminals use RETURN or ENTER instead.)

```
$$SON terminal-id
```

where:

`$$SON`	is the command to sign on. The $$ characters are the default Telcon sentinel. Your DCP may use another.
terminal-id	is a 1-to-8-character name for your terminal, assigned during Telcon configuration.

When Telcon accepts your sign-on, a message similar to the following appears:

```
Unisys Telcon Level - 9R1 DCP - FEP007
ENTER SESSION ESTABLISHMENT REQUEST:
```

Example

```
$$son trm009
```

Figure 2-2 illustrates the result of this procedure.

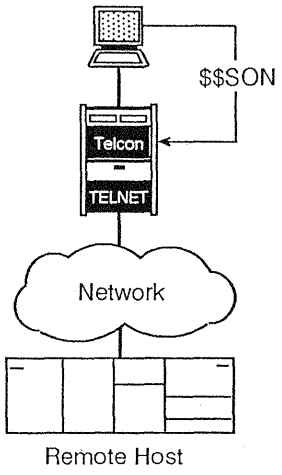

Figure 2-2. $$SON Command Result

Now What?

- To communicate with a remote host, you next open a session with TELNET. This procedure is explained in Module 2.1.2.
- To end communication with the DCP, sign off. This procedure is explained in Module 2.3.3.

.2. Opening TELNET Sessions

This module describes how to open a TELNET session. You must open a session with TELNET to call remote TCP/IP hosts. Some DCPs are configured to allow your terminal to automatically open TELNET sessions, but many require this procedure.

Starting Point

Your terminal should be signed on to a DCP.

Procedure

Type the following and then press the TRANSMIT key. (Some terminals use RETURN or ENTER instead.)

`$$OPEN` *`application-name`*

where:

`$$OPEN`	is the command to open a TELNET session. The $$ characters are the default Telcon sentinel. Your DCP may use another.
`application-name`	is the name of the TELNET application, assigned in Telcon configuration

The following appears:`**TELNET - TCP/IP STACK LEVEL 2R1**`

Example

```
$$OPEN TLNT1
```

Figure 2-3 illustrates the results of $$OPEN command.

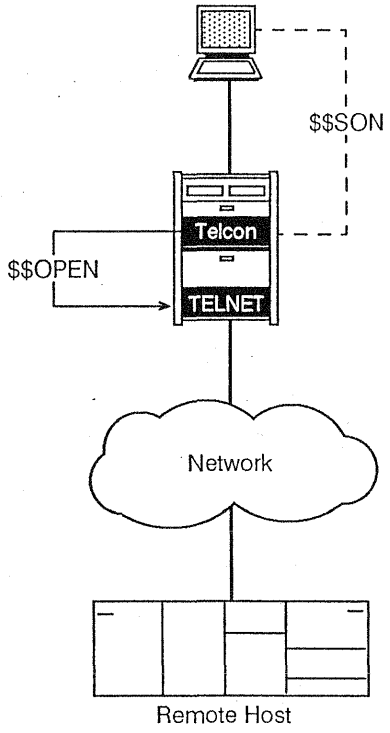

Figure 2-3. $$OPEN Command Result

Now What?

- To communicate with a remote host, you next issue the %%CONNECT command. This procedure is explained in Module 2.1.3.
- To close the TELNET session, issue the $$CLOSE command, which is explained in Module 2.3.2.

1.3. Calling Remote Hosts

This module explains how to call remote hosts.

Starting Point

Your terminal should be signed on, and a TELNET session should be opened.

Procedure

1. Type the following and then press the TRANSMIT key. (Some terminals use RETURN or ENTER instead.)

```
%%CONNECT {adr1,adr2,adr3,adr4}[,port]
          {name              }
```

where:

%%CONNECT	is the command to call a host. The %% characters are the default TELNET sentinel. Your DCP may use another. Type the whole command or the first two letters (CO).
adr1,adr2,adr3,adr4	is an address identifying a host and formatted as four decimal numbers separated by commas or periods. The first field is an integer between 0 and 223. The last three fields are integers between 0 and 255. See your site administrator for this address.
name	is a host name assigned on the NSID parameter of an NSM statement or the NAME1 and NAME2 parameters of an IPADR statement. This name replaces an address.
port	is a host's TCP port. The default is 23. See your site administrator for the port to use.

The following message appears. (DCA means a DCP. Non-DCA means any other supported computer.)

```
TELNET: INTERCONNECTION TYPE
                          1 = UTS TO DCA
                          2 = UTS TO NON-DCA
                          3 = UVT TO DCA
                          4 = UVT TO NON-DCA
```

2. Type the correct connection information and press the TRANSMIT key. (Some terminals use RETURN or ENTER instead.)

   The following messages briefly appear:

```
TELNET: CONNECTION IN PROGRESS
TELNET: CONNECTION SUCCESSFUL
```

Figure 2-4 illustrates the result of the %%CONNECT command.

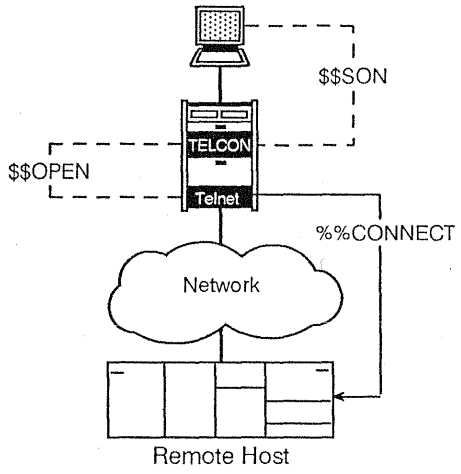

Figure 2-4. %%CONNECT Command Result

Now What?

- If your connection is to an OS 1100 host, issue the ATTACH command, which is explained in Module 3.1.
- If your connection is to a foreign host, use the procedures defined in the host's documentation.

Note: To use a UNIX® host from a UTS terminal, remember to insert a start-of-entry (SOE) character at the beginning of each message.

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.2. Managing the TELNET Environment

This subsection explains how to manage the TELNET environment. It explains the following:

- How to determine if a remote host is active
- How to stop host output while letting the remote process continue to execute
- How to suspend or terminate a process on the remote host
- How to place your terminal in binary mode
- How to change the TELNET sentinel
- How to restore the TELNET environment to its original settings

2.2.1. Determining if a Remote Host is Active

This module explains how to determine if a remote host is active.

Starting Point

Your terminal should have attempted a connection with a remote host.

Procedure

Type the following and then press the TRANSMIT key. (Some terminals use RETURN or ENTER instead.)

```
%%PROBE
```

where:

%%PROBE	is the command to determine a host's status. Type the whole command or the first two letters (PR). The %% characters are the default TELNET sentinel. Your DCP may use another.

The %%PROBE command uses no parameters. The response you receive depends on the host application. For more information, see the application's documentation.

Example

%%PROBE

Now What?

- If the host is active and you were using an application, you can:
  - Wait for the host to resume communication
  - Terminate the process, which is described in Module 2.2.3
- If the host is active and you were not using an application, you can:
  - Access, an application, though you may have to wait until the host is free. If this is an OS 1100 host, issue the ATTACH command, which is explained in Module 3.1.
  - Disconnect from the host, which is explained in Module 2.3.1.
- If the remote host is not active, you can do any of the following:
  - Call another remote host. This procedure is explained in Module 2.1.3.
  - Close the TELNET session, which is explained in Module 2.3.2.

2.2. Stopping Host Output while a Process Continues to Execute

This module explains how to stop host output to your terminal while a process continues to execute. Some hosts do not support this feature.

Starting Point

Your terminal should be communicating with a host application.

Procedure

1. Press the MSG WAIT or BREAK key.

   The following message appears:

   ```
   *OUTPUT INTERRUPT*
   ```

2. Type the following and then press the TRANSMIT key. (Some terminals use RETURN or ENTER instead.)

   ```
   %%CANCEL
   ```

where:

`%%CANCEL`	is the command to stop output to your terminal. Type the whole command or just the first two letters (CA). The %% characters are the default TELNET sentinel. Your DCP may use another.

Example

```
%%CANCEL
```

Now What?

- To access another application, use the host's procedures. If you are connected to an OS 1100 system, use the ATTACH command, which is explained in Module 3.1. If you are connected to another type of host, see the host's documentation.
- To end a host call, issue the %%DISCONNECT command, which is explained in Module 2.3.1.

.3. Suspending or Terminating a Process

This module explains how to suspend or terminate a process executing on a remote host. You do this with the %%INTERRUPT command. The action the remote host takes is determined by the Server TELNET facility and the host application. See your site administrator for host application information.

Starting Point

Your terminal should be communicating with a host application.

Procedure

1. If the terminal is receiving data, press the MSG WAIT or BREAK key.

   The following message appears:

   ```
   *OUTPUT INTERRUPT*
   ```

2. Type the following and then press the TRANSMIT key. (Some terminals use RETURN or ENTER instead.)

   ```
   %%INTERRUPT
   ```

where:

%%INTERRUPT	is the command to cause the remote host to suspend or terminate a process. Type the whole command or just the first two letters (IN). The %% characters are the default TELNET sentinel. Your DCP may use another.

The %%INTERRUPT command uses no parameters.

Example

```
%%INTERRUPT
```

Now What?

The options you have available are determined by the host. See the host documentation for information.

2.2.4. Changing the Terminal's Mode

This module explains how to place your terminal in binary or normal mode.

Starting Point

Your terminal should be communicating with a remote host.

Procedure

1. If the terminal is receiving data, press the MSG WAIT or BREAK key.

   The following message appears: `*OUTPUT INTERRUPT*`

2. Type the following and then press the TRANSMIT key. (Some terminals use RETURN or ENTER instead.)

   `%%SET [`*`receive-mode`*`] [,`*`transmit-mode`*`]`

where:

`%%SET`	is the command to specify a mode. The %% characters are the default TELNET sentinel. Your DCP may use another.
`receive-mode`	specifies that TELNET should pass either normal or binary data to the terminal.
`transmit-mode`	specifies that TELNET should pass either normal or binary data across the network to the host.

Example

The example specifies binary for both receive and transmit modes.

```
SET binary,binary
```

Now What?

- To resume output from the host, press the MSG Wait or BREAK key.
- To access an application, follow the procedures in the host's documentation. If you are communicating with an OS 1100 host, issue the ATTACH command, which is described in Module 3.1.
- To disconnect from the host, issue the %%DISCONNECT command, which is described in Module 2.3.1.

.2.5. Changing the TELNET Sentinel

This module explains how to change the TELNET sentinel, which enables TELNET to distinguish between TELNET commands and data. Change the sentinel if you think that it is likely to appear in data sent over the TCP/IP network. Here are the rules for changing the TELNET sentinel:

- Changes last until the TELNET session ends, when the sentinel reverts to the default or another sequence chosen by your site administrator.
- The TELNET sentinel cannot be the same as the Telcon sentinel, nor can it be a question mark (?).
- The two characters that make up the sentinel may be different, for example, *&.

Starting Point

Your terminal should be communicating directly with TELNET or a remote host.

Procedure

1. If the terminal is receiving data, press the MSG WAIT or BREAK key.

   The following message appears:

   ```
   *OUTPUT INTERRUPT*
   ```

2. Type the following and then press the TRANSMIT key. (Some terminals use RETURN or ENTER instead.)

   ```
   %%CHANGE [new-sentinel]
   ```

where:

`%%CHANGE`	is the the command to change the TELNET sentinel. The %% characters are the default sentinel. Your DCP may use another. You must use the current sentinel to issue this command.
`new-sentinel`	is the new sentinel character sequence. Issuing the %%CHANGE command without specifying a new sequence, resets the sentinel to the one configured for this system.

The following message appears: TELNET: SENTINEL CHANGED SUCCESSFULLY

Example

```
%%CHANGE ##
```

Note: After changing the sentinel character sequence, use the new sentinel on subsequent commands.

Now What?

- If you were communicating with an application, press the MSG WAIT or BREAK key to resume output from the host.
- To access an application, follow the host procedures. See the host's documentation for information.
- To disconnect from the host, issue the %%DISCONNECT command, which is described in Module 2.3.1.

2.6. Restoring TELNET to Its Original Settings

This module explains how restore the TELNET environment to its original settings. You do this with %%RESET command. The original TELNET settings are normal mode and the configured or default sentinel (%%).

Starting Point

Your terminal should be communicating directly with TELNET or a remote host.

Procedure

1. If the terminal is receiving data, press the MSG WAIT or BREAK key.

   The following message appears:

   ```
   *OUTPUT INTERRUPT*
   ```

2. Type the following and then press the TRANSMIT key. (Some terminals use RETURN or ENTER instead.)

   ```
   %%RESET
   ```

where:

%%RESET	is the command to return the TELNET environment to configured or default values. Type the whole command or just the first two letters (RE). The %% characters are the default TELNET sentinel. Your DCP may use another.

The %%RESET command uses no parameters.

Example

```
%%RESET
```

Now What?

- If you were communicating with an application, press the MSG WAIT or BREAK key to resume output from the host.
- To access an application, follow the host procedures. See the host's documentation for information. If the host is an OS 1100 system, issue the ATTACH command, which is described in Module 3.1.
- To disconnect from the host, issue the %%DISCONNECT command, which is described in Module 2.3.1.

3. Disconnecting from Remote Hosts

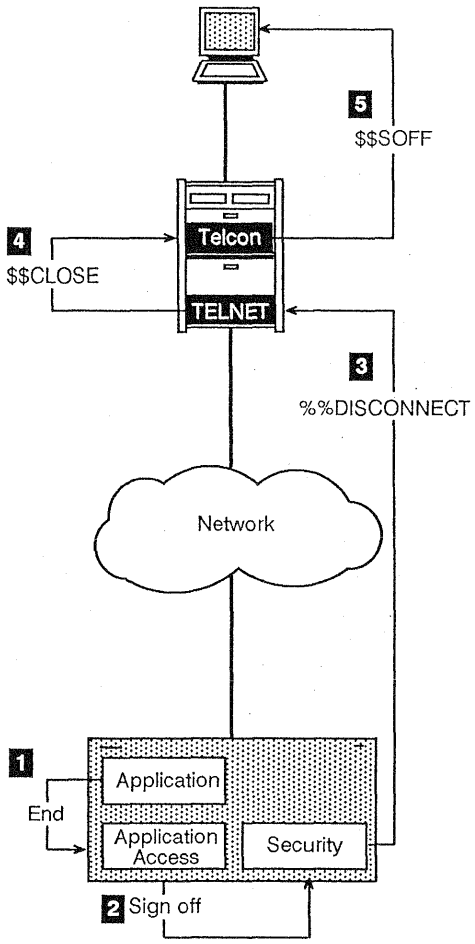
This subsection explains how to disconnect from remote hosts. It consists of three modules, each of which describes one of the procedures you perform to disconnect from a remote host.

Typically, disconnecting requires the following procedures:

1. Close the remote application. This procedure is not covered in this guide because it is under the control of the remote host and application. For information, see the host's and application's documentation.
2. Sign off the remote host. This procedure is not covered in this guide either because it is under the control of the remote host. See the host's documentation for information.
3. Disconnect from the remote host. You perform this procedure using the %%DISCONNECT command.
4. Close the TELNET session. You perform this procedure using the $$CLOSE command.
5. Sign off the DCP. You perform this procedure using the $$SOFF command.

Figure 2-5 illustrates the procedures you perform to disconnect from a remote host. Each of the modules in this subsection contains a similar figure to illustrate where you are in the disconnection process.

Note: *It is often possible to reduce the number of disconnection procedures. You can, for example, simply issue the $$SOFF command and Telcon shuts down the connection between your terminal and the DCP, breaking the terminal-to-remote host connection. You can also issue the $$CLOSE command, and Telcon will break the connection between the DCP and the remote host. It is, however, advisable to follow the procedures discussed in this subsection because problems can arise if you break a connection improperly.*



Disconnection

Figure 2-5. Disconnection Procedures

.1. Ending a Connection to a Host

This module explains how to end a connection to a host.

Starting Point

Your terminal should be communicating with a remote host.

Procedure

Type the following and then press the TRANSMIT key. (Some terminals use RETURN or ENTER instead.)

```
%%DISCONNECT
```

where:

`%%DISCONNECT`	is the command to disconnect from a host. The %% characters are the default TELNET sentinel. Your DCP may use another. Type the whole command or just the first two letters (DI).

The following message appears:

```
TELNET: DISCONNECT IN PROGRESS
TELNET: CONNECTION CLOSED
```

Example

```
%%DISCONNECT
```

Figure 2-6 illustrates the results of the %%DISCONNECT command.

Now What?

- To close the TELNET session, issue the $$CLOSE command, which is explained in Module 2.3.2.
- To call another remote host, issue the %%CONNECT command, which is explained in Module 2.1.3.

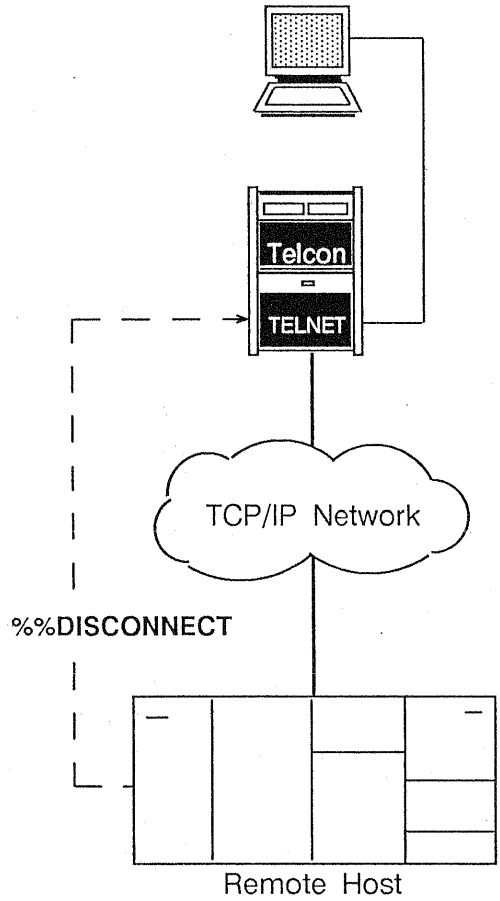


Figure 2-6. %%DISCONNECT Command Result

3.2. Closing TELNET Sessions

This module shows how to close a TELNET session, which ends communications between your terminal and TELNET. It does not sign off your terminal. If you close a session while communicating with a remote host, communications with the host ends.

Starting Point

Your terminal should be communicating directly with TELNET.

Procedure

Type the following and then press the TRANSMIT key. (Some terminals use RETURN or ENTER instead.)

```
$$CLOSE
```

where:

`$$CLOSE`	is the command to close the TELNET session. The $$ characters are the default Telcon sentinel. Your DCP may use another.

The following message appears: `SESSION PATH CLOSED`

Example

```
$$CLOSE
```

Figure 2-7 illustrates the result of the $$CLOSE command.

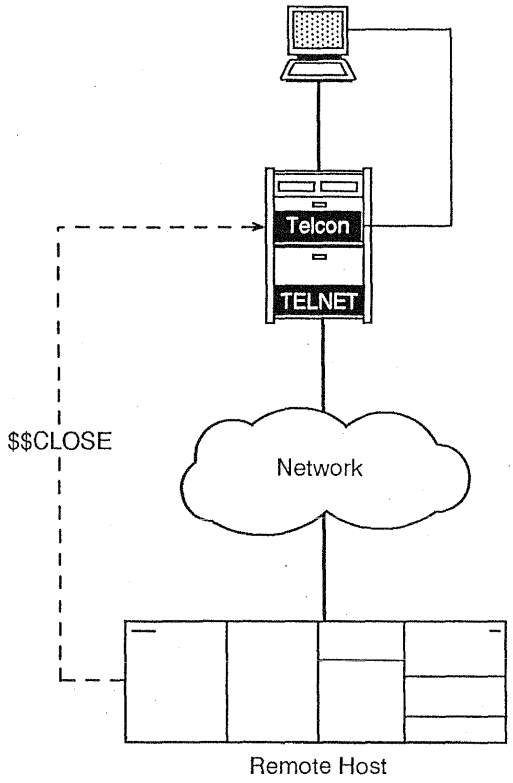


Figure 2-7. $$CLOSE Command Result

Now What?

To sign off the DCP, issue the $$SOFF command, which is described in Module 2.3.3.

3.3. Signing off the DCP

This module shows how to sign off the DCP, which you do to end communications with the DCP.

Starting Point

Your terminal should be communicating with the DCP, but a TELNET session should not be open.

Procedure

Type the following and then press the TRANSMIT key. (Some terminals use RETURN or ENTER instead.)

```
$$SOFF
```

where:

`$$SOFF`	is the command to sign off. The $$ characters are the default Telcon sentinel. Your DCP may use another.

The following message appears:

```
*INACTIVE TERMINAL*
```

Example

```
$$SOFF
```

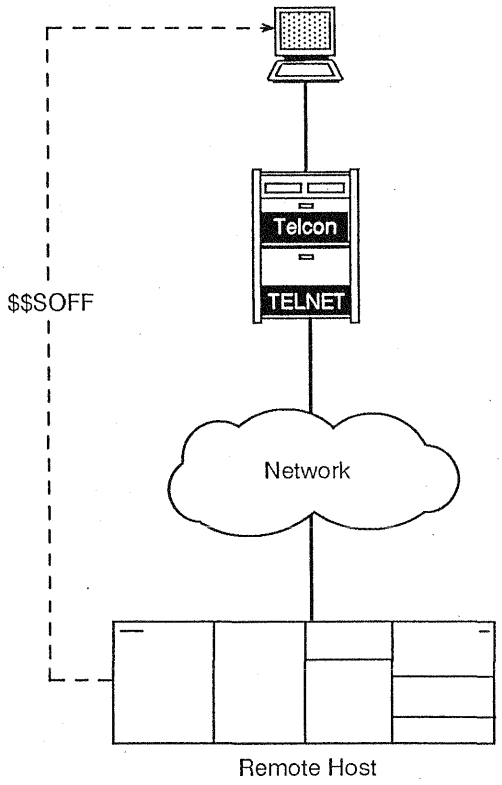


Figure 2-8. $$SOFF Command Result

Now What?

To use DCP services, you must sign on again. This procedure is described in Module 2.1.1.

Section 3
Using Server TELNET Facilities

This section consists of a single command, the ATTACH command, which enables you to access applications on OS 1100 hosts from across TCP/IP networks.

The Server TELNET facility simply provides access to OS 1100 system applications. Most communications functions associated with a TELNET connection are handled by the User TELNET service, which can be implemented on another DCP or on some other remote system. If you are using a DCP's User TELNET facility, see Section 2 of this guide for information on the steps required to establish, manage, and end a TELNET connection. If you are using some other system's User TELNET facility, see the documentation associated with it for this information.

Contents

1. Accessing an OS 1100 Application

This module explains how to use the ATTACH command to access an OS 1100 application. The ATTACH command is the only Server TELNET command and the only TELNET command that does not start with the TELNET sentinel.

Starting Point

Your terminal should display the following: `TELNET: ENTER ATTACH COMMAND`

Procedure

Enter the ATTACH command using the following format:

`ATTACH` *`application-id`*`[,`*`terminal-type`*`] [,`*`site-id`*`]`

where:

`ATTACH`	is the command to select an application. Type the whole command or just the first two letters (AT).
`application-id`	is the name of an application, such as demand, specified on an XEU network definition statement in the Telcon configuration.
`terminal-type`	is a number from Table 3-1 that identifies your terminal type. See your site administrator for this ID. If your terminal is not listed in the table, do not specify a terminal type. The default is 10. Do not use UNISCOPE® device-dependent applications with TELNET.
`site-id`	is the site ID passed to the OS 1100 application. For TIP applications, this is the terminal ID assigned on PID statements. See your site administrator for this number.

Example

```
ATTACH DMAND1,8,sid022
```

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Table 3-1. Terminal Types

Terminal Type	Number
TTY transparent (See note 1.)	0
TTY (includes SVT and UVT terminals)	1
DCT 500	2
UTS 10	3
UNISCOPE 100	4
UNISCOPE 200	5
UTS 400	6
UTS 20	7
UTS 40	8
IBM 3270	9
U Series terminals	10
U Series transparent terminals (See note 1.)	11

Notes:

1. *Specify a terminal type of TTY transparent or U Series transparent when you have a TTY or UNIX terminal and plan to access demand applications that generate escape code sequences. When an application is generating these sequences may not be obvious. If you do not know, use the formatting of your terminal screen as a guide. If the screen is formatted improperly, try specifying one of these terminal types.*
2. *Server TELNET does not use the terminal type specified on the ATTACH command for TELNET negotiations. This is accomplished before the ATTACH command is issued. Server TELNET tries to negotiated suppress-go-ahead, echo, and normal mode.*

Now What?

To use host applications, see the OS 1100 host documentation.

Appendix A
TELNET Commands

Appendix A lists all TELNET commands in alphabetical order and explains how to use each one.

Contents

1. ATTACH Command

This module explains how to use the ATTACH command, which is the only Server TELNET command. The command identifies the application you want to access and the type of terminal you are using. Use it to access an application running on an OS 1100 host.

Procedure

At the prompt: `TELNET: ENTER ATTACH COMMAND`, enter the ATTACH command using the following format:

`ATTACH` *`application-id`*`[,`*`terminal-type`*`][,`*`site-id`*`]`

where:

`ATTACH`	is the command to select an application. Type the whole command or just the first two letters (AT).
`application-id`	is the name of an application, such as demand, identified on an XEU network definition statement in the Telcon configuration.
`terminal-type`	is a number from Table A-1 that identifies your terminal type. See your site administrator for this ID. If your terminal is not listed here, do not specify a terminal type. The default terminal type is 10. Do not use UNISCOPE device-dependent applications with TELNET.
`site-id`	is the site ID passed to the OS 1100 application and used with TIP applications to provide the terminal ID assigned on PID statements. See your site administrator for this number.

Table A-1. Terminal Types

Terminal Type	Number
TTY transparent (See note 1.)	0
TTY	1
DCT 500	2
UTS 10	3
UNISCOPE 100	4
UNISCOPE 200	5
UTS 400	6
UTS 20	7
UTS 40	8
IBM 3270	9
U Series terminals	10
U Series transparent terminals (See note 1.)	11

Notes:

1. *Specify a terminal type of TTY transparent or U Series transparent when you have a TTY or UNIX terminal and plan to access demand applications that generate escape code sequences. When an application is generating these sequences may not be obvious. If you do not know, use the formatting of your terminal screen as a guide. If the screen is formatted improperly, try specifying one of these terminal types.*
2. *Server TELNET does not use the terminal type specified on the ATTACH command for TELNET negotiations. This is accomplished before the ATTACH command is issued. Server TELNET tries to negotiated suppress-go-ahead, echo, and normal mode.*

2. %%CANCEL Command

This module explains how to use the %%CANCEL command, which is a User TELNET command that implements the TELNET protocol abort output (AO) function. The command stops a remote host from sending output to your terminal, though the application continues to execute. The results depend on the host and application you are using. Some hosts do not support the %%CANCEL command.

Before you issue the %%CANCEL command, you usually press the MSG WAIT (message wait) or BREAK key to interrupt the executing remote application.

Procedure

Enter the %%CANCEL command using the following format:

```
%%CANCEL
```

where:

%%CANCEL	is the command to stop output to your terminal. Type the whole command or just the first two letters (CA). The %% characters are the default TELNET sentinel. Your DCP may use another.

The %%CANCEL command does not use parameters.

A.3. %%CHANGE Command

This module explains how to use the %%CHANGE command, which is a User TELNET command. This command changes the TELNET sentinel, which is a character sequence that enables TELNET to distinguish between TELNET commands and data. Here are the rules for changing the TELNET sentinel:

- Changes last until the TELNET session ends, when the sentinel reverts to the default or another sequence chosen by your site administrator.
- The TELNET sentinel cannot be the same as the Telcon sentinel, nor can it be a question mark (?).
- The two TELNET sentinel characters may be different, for example, *&.

Procedure

Enter the %%CHANGE command using the following format:

`%%CHANGE [new-sentinel]`

where:

`%%CHANGE`	is the the command to change the TELNET sentinel. The %% characters are the default sentinel. Your DCP may use another. You must use the current sentinel to issue this command.
`new-sentinel`	is the new sentinel character sequence. If you issue the command without specifying a new sentinel, it is reset to the one configured for this system.

Note: After changing the sentinel, use the new sentinel on subsequent commands.

.4. %%CONNECT Command

This module explains how to use the %%CONNECT command, which is a User TELNET command. The command establishes a connection between your terminal and a remote host.

Procedure

Enter the %%CONNECT command using the following format:

```
%%CONNECT {adr1,adr2,adr3,adr4}[,port]
          {name              }
```

where:

%%CONNECT	is the command to call a remote host. The %% characters are the default TELNET sentinel. Your DCP may use another. You can type the whole command or just the first two letters (CO).
adr1,adr2,adr3,adr4	is an address identifying a host and formatted as four decimal numbers separated by commas or periods. The first field is an integer between 0 and 223. The last three fields are integers between 0 and 255. See your site administrator for this address.
name	is a host name assigned on the NSID parameter of an NSM statement or the NAME1 and NAME2 parameters of an IPADR statement. This name replaces an address.
port	is a host's TCP port. The default is 23. See your site administrator for the port to use.

A.5. %%DISCONNECT Command

This module explains how to use the %%DISCONNECT command, which is a User TELNET command that disconnects your terminal from a remote host.

Procedure

Enter the %%DISCONNECT command using the following format:

```
%%DISCONNECT
```

where:

%%DISCONNECT	is the command to disconnect from a remote host. Type the whole command or just the first two letters (DI). The %% characters are the default TELNET sentinel. Your DCP may use another.

The %%DISCONNECT command uses no parameters.

6. %%INTERRUPT Command

This module explains how to use the %%INTERRUPT command, which is a User TELNET command that implements the TELNET protocol interrupt process (IP) function. This command causes the remote host to suspend or terminate a process. The specific action the remote host takes is determined by the Server TELNET implementation and the host application.

Procedure

Enter the %%INTERRUPT command using the following format:

```
%%INTERRUPT
```

where:

%%INTERRUPT	is the command to cause the remote host to suspend or terminate a process. Type the whole command or just the first two letters (IN). The %% characters are the default TELNET sentinel. Your DCP may use another.

The %%INTERRUPT command uses no parameters.

A.7. %%PROBE Command

This module explains how to use the %%PROBE command, which is a User TELNET command that implements the TELNET protocol are-you-there (AYT) function. The command enables you to determine if the remote host to which you have established a connection is still active.

Procedure

Enter the %%PROBE command using the following format:

```
%%PROBE
```

where:

%%PROBE	is the command to determine if the remote host to which you have established a connection is still active. Type the whole command or just the first two letters (PR). The %% characters are the default TELNET sentinel. Your DCP may use another.

The %%PROBE command uses no parameters. The response you receive depends on the remote host application. See the application's documentation for more information.

8. %%RESET Command

This module explains how to use the %%RESET command, which is a User TELNET command that returns the TELNET environment to its original settings: normal mode and the configured or default sentinel (%%).

Procedure

Enter the %%RESET command using the following format:

```
%%RESET
```

where:

%%RESET	is the command to return the TELNET environment to configured or default values. Type the whole command or just the first two letters (RE). The %% characters are the default TELNET sentinel. Your DCP may use another.

The %%RESET command uses no parameters.

A.9. %%SET Command

This module explains how to use the %%SET command, which is a User TELNET command. This command enables you to put your terminal into normal or binary mode.

Procedure

Enter the %%SET command using the following format:

```
%%SET [receive-mode][,transmit-mode]
```

where:

%%SET	is the command to specify a terminal mode. Type the whole command or just the first two letters (SE). The %% characters are the default TELNET sentinel. Your DCP may use another.
receive-mode	specifies the mode, normal or binary, that TELNET assumes when passing incoming data to the terminal. For example, if you specify binary mode here, data passed to the terminal is in binary mode.
transmit-mode	specifies the mode, normal or binary, that TELNET assumes when passing data across the network to the remote host. For example, if you specify binary mode here, data passed to the host is in binary mode.

Appendix B
Information Messages

Table B-1 lists TELNET information messages you may receive on your terminal screen.

Table B-1. Information Messages

Message	Explanation
TELNET: ATTACH SUCCESSFUL	Received from the remote host when the ATTACH command is successful.
TELNET: CONNECTION ABORTING	Local or network circumstances have caused the TELNET connection to abort.
TELNET: CONNECTION CLOSED	Your request to terminate or close a connection is complete.
TELNET: CONNECTION CLOSING	The connection is now closing.
TELNET: CONNECTION IN PROGRESS	TELNET is attempting to establish a connection to the remote host that you specified on the %%CONNECT command.
TELNET: CONNECTION PEER ABORTING	The remote host is aborting the connection.
TELNET: CONNECTION PEER CLOSING	The remote host has sent a request to close the connection. The remote host will accept data, but it will not send any more data. If you have not already typed in a %%DISCONNECT command, do so.
TELNET: CONNECTION SUCCESSFUL	Your request to establish a connection using the %%CONNECT command is successful. Your connection to the remote host is complete.

continued

Table B-1. Information Messages (cont.)

Message	Explanation
TELNET: DISCONNECT IN PROGRESS	TELNET is terminating the current connection in response to a %%DISCONNECT command.
TELNET: ENTER ATTACH COMMAND	A request from Server TELNET for information to establish a session with a specific application. See the ATTACH command for details on parameters.
TELNET: ** INTERRUPT **	The remote host has detected the entry of a BREAK, ATTENTION, or MSG WAIT (message wait) key.
TELNET: SENTINEL CHANGED SUCCESSFULLY	A response to the %%CHANGE command, indicating you changed the TELNET sentinel character sequence successfully.

Appendix C
Error Messages

Table C-1 lists error messages you may receive on your terminal screen.

Table C-1. Error Messages

Message	Explanation
TELNET: ATTACH UNSUCCESSFUL, TERMINAL ID BUSY	The terminal ID specified on an ATTACH command is already in use.
TELNET: BAD INTERFACE PACKET	An internal system error. Contact your site administrator.
TELNET: CALL REQUEST FAILED	A response to the %%CONNECT command. Try the command again. Contact your site administrator if you are still unsuccessful.
TELNET: COMMAND INVALID	A response to a command that you typed wrong or misspelled. Try the command again.
TELNET: COMMAND INVALID, NO CONNECTION ESTABLISHED	A response indicating that you issued a command that is valid only when you have a connection. Type in a %%CONNECT command to establish a connection.
TELNET: COMMAND MISSING PARAMETER NO. nnn	A response indicating that the command you typed is missing a parameter. nnn defines the position in the parameter list, 001 equals the first parameter, 002 equals the second parameter, and so on. Retype the command.
TELNET: CONNECTION ALREADY OPEN	Indicates you issued a %%CONNECT command when a connection was already open. Use the open connection.

continued

Table C-1. Error Messages (cont.)

Message	Explanation
TELNET: DUPLICATE CONNECTION ATTEMPT	An internal system error. Contact your site administrator.
TELNET: ERROR IN PROCESSING HOST NAME	Means you used an invalid format for the remote host address in a %%CONNECT command.
TELNET: INVALID ATTACH ATTEMPT	Indicates that the ATTACH command you typed was in an invalid format, or the remote host received other data when it expected ATTACH information.
TELNET: INVALID HOST NAME ENTERED	indicates that the host name directory cannot find the host name you specified on a %%CONNECT command. Contact your site administrator.
TELNET: INVALID PARAMETER FOR NO. nnn	Indicates that a command parameter value is invalid. nnn defines the position in the parameter list; 001 equals the first parameter; 002 equals the second parameter, and so on.
TELNET: INVALID PORT ENTERED	Indicates you specified a wrong port number. You must specify port 256, 257, or 258 for a pass-through connection. These port numbers are not valid for a gateway connection.
TELNET: INVALID SENTINEL	Means that the parameter for the %%CHANGE command is invalid. Make sure that the TELNET sentinel is not the same as the Telcon sentinel.
TELNET: INVALID TERMINAL ID	Means that the terminal type you entered in an ATTACH command is invalid. Check the ATTACH command list of valid terminal types.
TELNET: IP OPTION ERROR	Means a protocol option error exists. Contact your site administrator.
TELNET: NETWORK FAILURE	Means the network has failed or gone down. Wait a few minutes and retry the connection.

continued

Table C-1. Error Messages (cont.)

Message	Explanation
TELNET: NETWORK NOT FOUND	Means the address in the %%CONNECT command is invalid. Check the address and try the connection again.
TELNET: NO ADDRESS EXISTS FOR THIS NAME	Means the directory could not find an entry for this name in a %%CONNECT command. Check the spelling of the name or contact your site administrator.
TELNET: NO CONNECTION EXISTS	Indicates an internal system error. Tell your site administrator that the configuration may need to be verified.
TELNET: NO FOREIGN SOCKET SPECIFIED	Indicates an internal system error. Contact your site administrator.
TELNET: NO LINK TABLE FOUND IN IP	Indicates an internal system error. Contact your site administrator.
TELNET: NO RESOURCES FOR REQUEST	Means that the local application is overloaded. Wait a few minutes and try the connection again. If you are still unsuccessful, contact your site administrator.
TELNET:NO ROUTE TO DESTINATION IS AVAILABLE	No routes to the remote host are available.
TELNET: NO SOURCE ADDRESS CONFIGURED	The DCP to which the terminal is attached does not have a destination's IP address configured.
TELNET: OPEN FAILURE	Means that the connection failed at the remote host for an unknown reason. Wait a few minutes and try the connection again. If you are still unsuccessful, contact your site administrator.
TELNET: REMOTELY REQUESTED ABORT	Means that the remote host requested a connection abort. Contact your site administrator.
TELNET: SECURITY/PRECEDENCE VIOLATION	Indicates that your security levels do not match those used by the remote host. Contact your site administrator.

continued

Table C-1. Error Messages (cont.)

Message	Explanation
TELNET: SERVICE FAILURE	Indicates that the network has detected a termination of the connection. Contact your site administrator.
TELNET: STRICT SOURCE ERROR	Means a requested message failed to be routed. Contact your site administrator.
TELNET: SYNTAX ERROR IN COMMAND	Indicates a command syntax error. Carefully retype the command.
TELNET: TIMEOUT OCCURRED	Indicates that a time-out condition occurred when you attempted a connection, or the connection timed out while you were sending data.
TELNET: ULP - REQUESTED ABORT	Indicates that the remote host or DCP generated an abort request on your TELNET connection. Contact your site administrator.
TELNET: ULP - REQUESTED CLOSE	Means the remote host or local application requested a close of your TELNET connection. Contact your site administrator.
TELNET: UNSPECIFIED ERROR	Indicates an unknown cause for an internal system error. Contact your site administrator.
TELNET: UNSUPPORTED COMMAND RECEIVED FROM CMS	Means the remote OS 1100 received a request from CMS 1100 that it does not support. CMS 1100 (on a remote OS 1100 host) assumes OS 1100 DCA protocols. Some terminal operations assumed in DCA protocols cannot be translated. This message may indicate an application limitation.

continued

Table C-1. Error Messages (cont.)

Message	Explanation
TELNET: WAIT -- LAST INPUT IGNORED	Means that TELNET is attempting to establish a connection to a remote host. No commands or other data can be entered until the connection attempt is complete. The attempt either succeeds or fails; other messages indicate the result of the connection attempt. Refer to the information messages in Appendix B for possible responses.

Glossary

D

DCA
See Distributed Communications Architecture.

DCP
See Distributed Communications Processor.

DDN
See Defense Data Network.

Defense Data Network (DDN)
A packet-switching network used and operated by the United States Department of Defense.

Distributed Communications Architecture (DCA)
A Unisys proprietary architecture and communications protocol family based on the Open Systems Interconnection Reference Model.

Distributed Communications Processor (DCP)
A member of the Unisys DCP family, which is a series of front-end processors and remote concentrators that provide communications facilities for Unisys host computers.

E

external end user (XEU)
A network definition statement that defines an external end user program, such as TIP, demand, or batch.

I

internet
A series of interconnected networks.

.N
See local area network.

:al area network (LAN)
A data communications network that is confined within a specific area and whose resources are shared.

›dule
In this manual, a one- or two-page presentation of coherent material.

›S
See network definition statement.

twork definition statement (NDS)
A formatted configuration statement that names and defines a network entity for Communication Management System (CMS) 1100, Telcon or associated program products.

cket-switched network
A network on which data is transmitted in units called packets. Packets can be routed individually over the best available network connections and reassembled to form a complete message at their destination.

›N
See public data network.

›tocol
The rules that computers, terminals and other devices follow when they communicate.

blic data network
A network that provides data communications services to the public.

S

sentinel characters
A two-character sequence that tells the DCP that what follows is a command, not data. Both TELNET and Telcon require a sentinel character, but they can never be the same sequence.

Server TELNET
A TELNET component. It runs in a computer remote from the user terminal that initiates a connection, often on the computer the user wants to access. Server TELNET receives keystrokes from terminals across a network through a User TELNET implementation. Server TELNET passes the user keystrokes to an application and passes application output to User TELNET, which in turn passes the output to the terminal.

T

TCP/IP network
A network using the TCP/IP protocols. The Defense Data Network and many local area networks and public data networks are examples.

TCP/IP protocols
See transmission control protocol/internet protocol.

TCP-IP Stack program product
A Unisys program product that runs on a DCP and implements the TCP/IP protocols.

TELNET protocol
A member of the TCP/IP family of protocols that defines how terminals should communicate with applications and other terminals.

transmission control protocol/internet protocol (TCP/IP)
A widely accepted family of communications protocols that enables dissimilar computers and other devices to communicate. A significant feature of the TCP/IP protocols is their ability to enable communications across multiple interconnected networks.

ɐr TELNET
A TELNET component. It runs on the computer to which the initiating terminal is attached. User TELNET accepts keystrokes from the terminal and passes them across the network to Server TELNET, which in turn passes them to an application. User TELNET also receives application output through Server TELNET. It passes this output on to the terminal.

U
See external end user.

Bibliography

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DCP Series TCP-IP Stack Programming Reference Manual (7831 5561). Unisys Corporation.

ndex

T