Connecting a Terminal Server

Contents

This section contains information on the following topics:

Introduction

Many third-party applications require serial port interfaces to provide a connection to a PBX. As well, support staff traditionally use serial ports to connect maintenance terminals and modems to a system for maintenance. As the CS 1000E Call Server provides only two local serial ports for these purposes, an IP-based Terminal Server is required to provide the necessary standard serial ports for applications.

As the Terminal Server is configured to automatically log in to the active Call Server upon start-up, only one Terminal Server is required for the system. It can be located anywhere on the LAN. One connection from each Call Server COM1 port is connected to the Terminal Server.

Up to 16 TTY ports can be configured with the CS 1000E Call Server. The Terminal Server can be used as a central point to manage several devices through their serial ports.

The CS 1000E system currently supports the MRV IR-8020M-101 commercial Terminal Server only.

The MRV IR-8020M-101 Terminal Server is used with the CS 1000E system to provide serial connections for accessing the CS 1000E COM ports. The user can access each COM port from a local PC through telnet sessions or from a remote PC by dialing the on-board modem.

The Terminal Server provides IP connections to each Pseudo TTY (PTY) ports 0-15 for monitoring CDR and traffic reports.

The MRV IR-8020M-101 Terminal Server is supported by the CS 1000E system. The IR-8020M-101 – In-Reach Standalone has 20 Console Ports and a V.90 internal modem. A 19-inch rack-mount kit is provided with the unit.

On the MRV IR-8020M-101 Terminal Server, port 20 is the default management port. It will be used for primary configuration of the IP address, mask address and gateway address. Port 20 is reserved for configuring the Terminal Server in a CS 1000E system. Port 1 to 19 can be configured for Serial Data Interface for the CSE1000E system components.

IMPORTANT!

Before connecting the Terminal Server to another component of the CS 1000E system, read and understand the documentation provided by the Terminal Server's manufacturer.

This chapter contains the following procedures:

- Procedure 62: "Connecting a Terminal Server to the system" on page 256

- Procedure 63: "Configure IP address for the Terminal Server" on page 257

- Procedure 64: "Run telnet from PC" on page 258

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Configuring a Terminal Server

Follow Procedure 62 to connect a Terminal Server with a CS 1000E system. Table 14 lists the MRV cables required to install the IR-8020M-101 Terminal Server in a CS 1000E system.

Table 14
Required MRV serial cables and connectors

Order Code	Description
NTDU6302	Connects MRV Terminal Server to any standard DTE port or DCE port when a Null modem is used
NTDU6303	Used for telnet, rlogin connections
P/N-151-3028	Male RJ-45 to Male RJ-45 with connectors, 10 feet
P/N-350-0308	Female RJ-45 to Female DB9

Customer-made cables with the following pin out (as NTDU6302) can also be used. See Table 15.

Table 15
Customer made cable pin out

Pins on DB9 Female		Pins on RJ45 Male (MRV Terminal Server)	
1	DCD	2	DTR
6	DSR		
2	RXD	3	TxD

Table 15
Customer made cable pin out

Pins on DB9 Female		Pins on RJ45 Male (MRV Terminal Server)	
3	TXD	6	RxD
4	DTR	7	DSR/DCD
5	S GND	4	TxD GND
		5	RxD GND
7	RTS	1	CTS
8	CTS	8	RTS
9	N/C		

Procedure 62
Connecting a Terminal Server to the system

1   Connect the MRV P/N-151-3028 serial cable from the Terminal Server console port 20 to the PC COM port.

WARNING

Port 20 is the default console port. Do not change the configuration for port 20.

2   Plug MRV PC Card (in MRV package) into Terminal Server faceplate socket, and power on the Terminal Server.

3   Start the MRV HyperTerminal application. In Windows:

Start > Programs > Accessories > Communication > HyperTerminal.exe

4   Configure HyperTerminal to communicate with the Terminal Server's management port:

    a.   Set baud rate to 9600.

    b.   Set data bits to 8.

    c.   Set parity to none.

    d.   Set stop bit to 1.

    e.   Set flow control to "None".

    f.   Set Terminal Emulation to VT100.

    g.   Press <CR> until you receive a log-in prompt.

5   Log in to the Terminal Server. Enter:

    ACCESS

6   Enter the user name. Enter:

    ADMIN

7   Set privileged mode. Enter:

    SET PRIV

8   Enter the password. Enter:

    SYSTEM

———————————————————————— **End of Procedure** ————

Configuring the Terminal Server IP address

Procedure 63
Configure IP address for the Terminal Server

   Note: The IP address can be configured or changed only from local management port 20.

1   Configure the Terminal Server's IP address. At the In-Reach_Priv prompt. Enter:

    define server ip address [ip address]

2   Configure the Terminal Server's IP subnet mask. Enter:

    define server ip subnet mask [ip address]

3   Configure the Terminal Server's IP primary gateway address. Enter:

define server ip primary gateway address [ip address]

4   Check Terminal Server configuration. Enter:

list server ip

Example commands:

define server ip address 172.16.3.50

define server ip subnet mask 255.255.255.0

define server ip primary gateway address 172.16.3.1

―――――――――――――― **End of Procedure** ――――――――

Telnet Terminal Server virtual management port

Connect the Terminal Server ethernet port to the ELAN using a CAT5 ethernet cable. The virtual management port 0 is accessible from an online PC using a telnet session. The Terminal Server can now be configured from the on-line PC.

Procedure 64
Run telnet from PC

1   Use **Start > Run**
    Input telnet command: telnet ip-address port#

    Where:
    ip-address: Terminal Server IP address
    Port#: The target port number on Terminal Server=2000+(xx x 100)

    For Terminal Server virtual management port xx=0

    Example: telnet 172.16.3.50 2000

2   Press <CR> until the MRV login prompt appears.

3   Input login password and username to log in to the virtual management port. The default password is "access".

―――――――――――――― **End of Procedure** ――――――――

Telnet CS 1000E COM port from a PC

Connect port xx (xx = 1 - 19) of the Terminal Server to COM1 port of the CS 1000E Call Server.

Follow Procedure 65 to establish access to a Call Server from a PC through telnet Terminal Server. Use the same port number for each procedure step.

Procedure 65
Accessing a CS 1000E from a PC through telnet Terminal Server

1   Disable IP TCP Keepalive Timer so that the telnet session is always on and LAN traffic is reduced. Enter:

    DEFINE PORT xx IP TCP KEEPALIVE TIMER 0

    Where: xx = 1-19

    Note: Do not change the configuration for the default console (port 20).

2   Specify the character to be transferred for <CR> in telnet. Enter:

    define port xx TELNET NEWLINE FILTERING CR

3   Define the port baud rate to equal the baud rate of the CS 1000E COM port. Enter:

    define port xx speed [BAUDRATE]

    Where: xx = Port number from 1-19 and BAUDRATE = the baud rate of the connected Call Server COM port.

4   Logout. Enter:

    logout port xx

5   Check the configuration. Enter:

    list port xx alternate chara

    list port xx telnet chara

6   Run telnet on the PC.

    a.   In Windows:

         Start > Run

b. Enter the Input telnet command. Enter the command:

```
TELNET xxx.xx.x.xx xxxx
```

Where:

xxx.xx.x.xx = Terminal Server IP Address

xxxx = telnet port (for port 1 to 19)

Note: The value of the target telnet port, xxxx, is determined using the following formula:

TELNET PORT = 2 000 + (port number × 100)

For example, if the telnet port is 7, then:

TELNET PORT = 2 000 + (port number x 100)
            = 2 000 + (700)
          = = 2700

If the Terminal Server IP Address is 172.16.3.50 and the telnet port is 7, then TELNET command line is:

TELNET 172.16.3.50 2700

Example:

telnet 172.16.3.50 2000 (telnet to virtual management port)

telnet 172.16.3.50 2700 (telnet port 7)

—————————————— **End of Procedure** ——————————————

Configuring a transparent rlogin port

The CS 1000E system uses Pseudo TTY (PTY) ports as TTY ports. All serial applications, such as CDR and Traffic, can be implemented through PTY ports. PTY ports are configured in LD 17. An external device, such as a printer, can access a Call Server PTY port through the Terminal Server by using a remote login (rlogin) session. Using HyperTerminal, follow Procedure 66 to configure a transparent rlogin port.

Procedure 66
Configuring a transparent rlogin port

1   Enable keepalive timer 1 for the port. Enter the command:

```
DEFINE PORT XX IP TCP KEEPALIVE TIMER 1
```

Where:

xx = port number

2   Enable a dedicated service using rlogin. Enter the command:

```
DEFINE PORT XX RLOGIN DEDICATED SERVICE xx.xx.xx.xx
```

Where:

xx = port number

xx.xx.xx.xx = port IP address

3   Enable the port to be accessible only by local command and from a serial connection only. Enter the command:

```
DEFINE PORT xx ACCESS LOCAL
```

Where:

xx = port number

4   Enable the In-Reach Element Manager to complete a ZMODEM transfer using the rlogin feature. Enter the command:

```
DEFINE PORT xx RLOGIN TRANSPARENT MODE ENABLED
```

Where:

xx = port number

Note 1: When the rlogin transparent mode is enabled, characters are passed raw (without interpretation) and transparently within an rlogin session. This allows the ZMODEM transfer to complete. See Table 16 for ZMODEM requirements.

Table 16
ZMODEM requirements

Feature	Setting
Typeahead	1024
TCP window size	1024
telnet CSI ES	Enabled
telnet NEW LINE FILTER	LF or Standard

5   Enable autoconnect for the port. Enter the command:

```
DEFINE PORT xx AUTOCONNECT ENABLED
```

Where:

xx = port number

6   Enable autodedicate for the port. Enter the command:

```
DEFINE PORT xx AUTODEDICATED ENABLED
```

Where:

xx = port number

7   Define a user name for the port. Enter the command:

```
DEFINE PORT xx USERNAME "ptyxx"
```

Where:

xx = port number

ptyxx = User Name is the pty port set during Call Server configuration for rlogin connection. The pty port is set using LD 17. For example, in LD 17, configure TTY 2 as pty. The port # username on Terminal Server becomes "pty2", not "PTY2" or "pty02".

Note 1: Ignore the following MRV information message during using DEFINE command. "In-Reach -729- Parameter cannot be modified by a set command". This is informational only that you must use DEFINE and not the more general SET command. It is not an error.

Note 2: The quotation marks ("") are also required around "PTYxx"

8   Log out of the port. Enter the command:

```
LOGOUT PORT xx
```

Where:

xx = port number

9   Check port configuration. Enter the command:

```
LIST PORT xx
```

```
LIST PORT xx ALTERNATE CHARA
```

Where:

xx = port number

——————————————— **End of Procedure** ———————————————

Configuring a transparent rlogin port with sample data

Sample data has been incorporated into Procedure 67. This configuration shows that a device connected to MRV Port 2 will rlogin 47.11.166.76 through pty 10.

Procedure 67
Configuring a transparent rlogin port

1   Enable keepalive timer 1 for the port. Enter the command:

```
DEFINE PORT 2 IP TCP KEEPALIVE TIMER 1
```

2   Enable a dedicated service using rlogin. Enter the command:

```
DEFINE PORT 2 RLOGIN DEDICATED SERVICE 47.11.166.76
```

3   Enable the port to be accessible only by local command and from a serial connection only. Enter the command:

```
DEFINE PORT 2 ACCESS LOCAL
```

4   Enable the In-Reach Element Manager to complete a ZMODEM transfer using the rlogin feature. Enter the command:

```
DEFINE PORT 2 RLOGIN TRANSPARENT MODE ENABLED
```

5   Enable autoconnect for the port. Enter the command:

```
DEFINE PORT 2 AUTOCONNECT ENABLED
```

6   Enable autodedicate for the port. Enter the command:

```
DEFINE PORT 2 AUTODEDICATED ENABLED
```

7   Define a user name for the port. Enter the command:

```
DEFINE PORT 2 USERNAME "pty7"
```

Note: When typing the letters "pty", they must be lower case letters. The number must equal the pty number configured on the system.

8   Log out of the port. Enter the command:

```
LOGOUT PORT 2
```

——————————— **End of Procedure** ———————————

Accessing an MRV Console Port through the on-board modem

The MRV IR-8020M Terminal Server is equipped with a V.90/K56flex 56 Kbps on-board modem. The modem port is 23. Follow Procedure 68 to access an MRV Console Port through the on-board modem.

Procedure 68
Accessing an MRV Console Port through the on-board modem

1   Connect an analog telephone line to the MRV telephone line port.

2   Set up the remote PC connection.

3   Dial in to the MRV onboard modem from the PC.

4   From the PC, run HyperTerminal. Enter the command:

```
ATD [phone number]
```

Screen response:

```
CONNECT 9600/ARQ/V34/LAPM/V42BIS

Login
```

5   Log in to the In-Reach Element Manager using the default password, (see steps 4,5,6,and 7 in Procedure 62 on).

——————————— **End of Procedure** ———————————

Once logged in to the on-board modem, it is possible to telnet to ports 1-20. It is also possible to rlogin to different IPs.

CS 1000E COM port types

Table 17 lists various components of the CS 1000E system and their COM port types.

Table 17
System components and COM port type

System component	COM port type
Baystack 460	9-pin DCE (male)
Baystack 470	9-pin DCE (male)
NTDU27 Signaling Server	9-pin DTE (male)
	Note: Signaling Server comes with a six-foot female-to-female null modem cable.
NT4N64AA CPPII	9-pin DTE (male)
A0852632 Media Card L-adapter	9-pin DCE (female)
A0870611 MIRAN L-adapter	9-pin DCE (female)
P0609204 Media Card L-adapter	9-pin DTE (male)
P0609205 MIRAN L-adapter	9-pin DTE (male)
NTDU14 Gateway	9-pin DTE (male) (modified to isolate pins 6, 7, and 8)
	Use PORT 0 of NTBK48AA 3-port SDI cable.