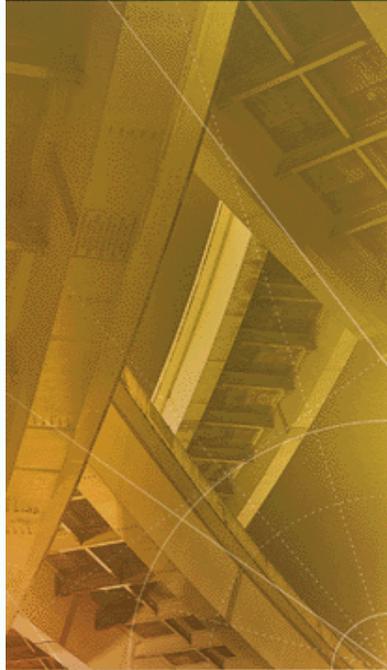
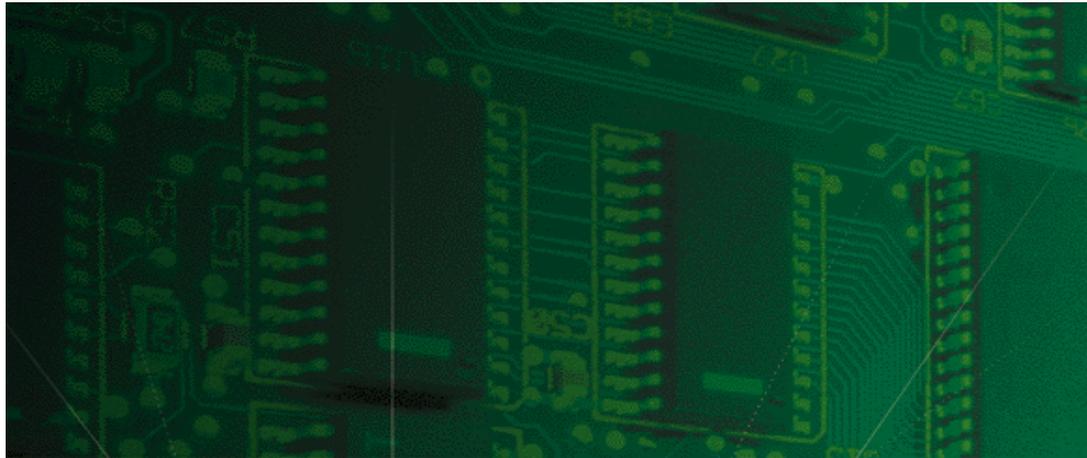


# Trouble Clearing Guide



Total Control System  
System Release 3.5



Part No. 1.024.2044-00  
Version Number 01



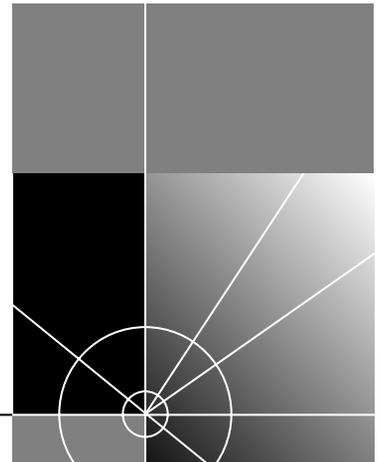
# Trouble Clearing Guide

Total Control System

System Release 3.5

<http://www.3com.com/>

Part No. 1.024.2044-00  
Published March 1999



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# ABOUT THIS GUIDE

About This Guide provides an overview of the Total Control System Trouble Clearing guide, lists its conventions, and tells how to contact 3Com.

---

## Overview

This guide offers answers to Total Control System questions. It is intended for those who install, configure, or maintain a Total Control System.



*Release notes are shipped with some products. If the information in the release notes differs from the information in this reference, follow the instructions in the release notes.*

---

## Guide Conventions

These tables list conventions used throughout this guide.

Icon	Notice Type	Description
	Information note	Information that contains important features or instructions.
	Caution	Information to alert you to potential damage to a program, system, or device.
	Warning	Information to alert you to potential personal injury or fatality. May also alert you to potential electrical hazard.
	ESD	Information to alert you to take proper grounding precautions before handling a product.

---

Convention	Description
Text represented as a screen display	This typeface represents displays that appear on your terminal screen, for example: <code>Netlogin:</code>



Convention	Description
Text represented as <b>commands</b>	<b>This typeface</b> represents commands that you enter for example:  <b>setenv TCMHOME directory</b>  <i>This guide always gives the full form of a command in uppercase and lowercase letters. However, you can abbreviate commands by entering only the uppercase letters and the appropriate value. Commands are not case-sensitive.</i>
Text represented as <b>menu</b> or <b>sub-menu names</b> .	<b>This typeface</b> represents all menu and sub-menu names within procedures, for example:  On the <b>File</b> menu, click <b>New</b> .

## Contacting 3Com

Call the appropriate toll free number listed below for technical support.



*For European countries that do not have a toll free number listed, call +31 30 602 9900.*

Country	Toll Free Number	Country	Toll Free Number
<b>Austria</b>	06 607468	<b>Netherlands</b>	0800 0227788
<b>Belgium</b>	0800 71429	<b>Norway</b>	800 11376
<b>Canada</b>	1800 2318770	<b>Poland</b>	00800 3111206
<b>Denmark</b>	800 17309	<b>Portugal</b>	0800 831416
<b>Finland</b>	0800 113153	<b>South Africa</b>	0800 995014
<b>France</b>	0800 917959	<b>Spain</b>	900 983125
<b>Germany</b>	0800 1821502	<b>Sweden</b>	020 795482
<b>Hungary</b>	00800 12813	<b>Switzerland</b>	0800 553072
<b>Ireland</b>	1800 553117	<b>UK</b>	0800 966197
<b>Israel</b>	0800 9453794	<b>United States</b>	1800 2318770
<b>Italy</b>	1678 79489	<b>All Other Locations (Outside Europe)</b>	1847 7976600

Refer to the Total Control Hub Documentation CD-ROM for more information regarding product warranty.



For information about Customer Service, including support, training, contracts, and documentation, visit our website at <http://totalservice.3com.com>

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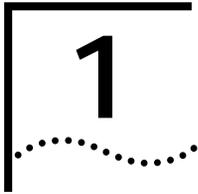
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# HOW TO USE THE TOTAL CONTROL SYSTEM TROUBLE CLEARING GUIDE

The Total Control® System (TCS) Trouble Clearing Guide answers frequently asked questions received by 3Com's Technical Support group about the chassis and the call process.

Each chapter covers a chassis component, answering questions involving installation, configuration, use, and trouble clearing. Note, not all chapters have installation, configuration, use, and trouble clearing sections.

## **Solution format**

Most solutions are taken directly from the 3Com Knowledgebase® (3KB) web site. All solutions follow the 3KB format, which lists questions (goals), confirms products involved (facts), matches problems (symptoms), and lists solutions (fixes). Knowing this format enables you to quickly assess whether a solution is appropriate for your question.

Many solutions have been included in this guide. However, it is not all inclusive. Likewise, it is meant to supplement product documentation already provided. Additional solutions can be obtained by accessing the 3Com Knowledgebase web site at: <http://knowledgebase.3Com.com> or calling 3Com's Technical Support group.

## **Finding the solutions you need**

Finding a solution depends on asking the right question.

To use this guide effectively:

- identify the component where your question occurs and review that component's list of topics in the table of contents, or
- identify the area in the call process where your question occurs and search the index using product keywords or statements describing the call process symptoms.

The table of contents lists the chassis components with topics categorized according to installation, configuration, use, and trouble clearing.

Call process topics and symptoms are indexed at the back of this guide.

**Assumptions** To make this Total Control System Trouble Clearing Guide effective, we had to make some assumptions. We assume the reader is familiar with:

- telecommunication terminology and concepts
- 3Com product documentation
- 3Com product name acronyms
- Windows

We also assume the reader is familiar with and knows how to start

- Total Control Manager application
- HyperTerminal application or similar emulation applications
- Telnet application
- Download code from the 3Com Totalservice web site
- Unzip files

The solutions' task-oriented steps are written in a format which assumes a basic knowledge of the product and its options.

**Writing style conventions** To streamline the length of the instructions, certain writing style conventions have been used.

### **Start**

Many explanations begin with starting the Total Control Manager (TCM) application. Rather than explaining in four or five steps how to start the application and select a chassis each time, it is assumed these steps are understood and so the step *Start Total Control Manager* is used to represent these steps.

### **Command to Execute and Command**

In the *Total Control Manager Commands* window, there is the heading *Command to Execute* which appears over two pull-down menus. To differentiate between these menus, the following convention is used:

Steps referring to the first pull-down menu are worded:

- On the **Command to Execute** menu, click...

Steps referring to the second pull-down menu are worded:

- Click the command...

**3Com acronyms**

To streamline the length of the instructions, 3Com and telecommunication industry acronyms are used in the trouble clearing instructions. You should be familiar with these acronyms. For your convenience, here is a brief list.

API - Application Programming Interface

ANI - Automatic Number Identification

ARC - Access Router Card

BBS - Bulletin Board System

CD - Carrier Detect

CD-ROM - Compact Disk Read-Only Memory

CHAP - Challenge Handshake Authentication Protocol

CLI - Command Line Interface

CLK - Clock

CSU - Channelized Service Unit

CRC - Cyclic Redundancy Check

DCE - Data Communication Equipment

DLCI - Data Link Control Identifiers

DNIS - Dialed Number Identification Service

DOS - Disk Operating System

DRAM - Dynamic Random Access Memory

DTE - Data Terminal Equipment

DTR - Data Terminal Ready

DUN - Dial-Up Networking

HARM - HiPer Access Router Manager

HiPer DSP - HiPer Digital Signal Processor

ISDN - Integrated Services Digital Network

IP - Internet Protocol

IPX - Internet Protocol Transfer

ISP - Internet Service Provider

KB - Kilobyte

L2TP - Layer 2 Tunneling Protocol

LAC - L2TP Access Concentrator  
LD - Line Detect  
LMI - Local Management Interface  
LNS - L2TP Network Server  
MB - Megabyte  
MHz - MegaHertz  
MIC - Message Integrity Check  
MLPPP - Multi-Link Point-to-Point Protocol  
MNP - MicroCom Networking Protocol  
MPIP - Multi-link PPP Interspan Protocol  
NAC - Network Application Card  
NAS - Network Access Server  
NIC - Network Interface Card  
NMC - Network Management Card  
NTP - Network Time Protocol  
NVRAM - Non-Volatile Random Access Memory  
ODBC - Open Database Connectivity  
PC - Personal Computer  
PCSDL - Personal Computer Software Download  
PPP - Point-to-Point Protocol  
PPTP - Point-to-Point Tunnel Protocol  
PRI - Primary Rate ISDN  
PSI - Power Supply Interface  
PSU - Power Supply Unit  
RAC - Remote Access Concentrator  
RADIUS - Remote Authentication Dial In User Service  
RAM - Random Access Memory  
SAP - Server Advertisement Protocol  
RAS - Remote Access Server  
SECDB - Security Database

SLIP - Serial Line IP Protocol

SNMP - Simple Network Management Protocol

SQL - Structured Query Language

TACACS+ - Terminal Access Controller Access Control System+

TCM - Total Control Manager

Telco - Telephone Company

TFTP - Trivial File Transfer Protocol

TSR - Terminate-and-Stay-Resident

UART - Universal Asynchronous Receiver Transmitter

VGA - Video Graphics Array

VPN - Virtual Private Network



# 2

## HIPER DIGITAL SIGNAL PROCESSOR T1/E1 NETWORK INTERFACE CARD

This chapter contains solutions for the HiPer™ Digital Signal Processor HiPer DSP) T1/E1 Network Interface Card (NIC).

For additional information, see the 3Com Knowledgebase® web site at: <http://knowledgebase.3Com.com>

---

### Installing

This section contains software installation questions.

#### Installing HiPer DSP cards with NETServer

##### Fact

- NETServer card
- HiPer DSP card

##### Fix

- 1 On the NETServer card, set all modems to inactive by typing:

```
set modem all inactive
```

- 2 Type:

```
save all
```

Wait until the card's orange LED is off before proceeding.

- 3 Type:

```
reset all
```

- 4 Type:

```
set modem density all 30
```

- 5 Type:

```
set modem strictest <slot number of first DSP card>
```

For example, `set modem strictest 1`

- 6 Type:

```
set modem s1-s60 active
```

This will activate 60 modems (the first two HiPer DSP cards).

7 Type:

```
save all
```

Wait until card's orange LED is off before proceeding.

8 Type:

```
reset all
```

Wait approximately 20 seconds.

9 Type:

```
show all
```

10 If cards are still inactive, repeat steps 6 through 10.

11 Select only one modem in step 6. For example:

```
set modem s1 active
```

This should trigger all the others to go active.

12 Repeat step 11 until all cards are active.

---

## Using

This section contains product usage questions.

### Problems with connecting higher than 14.4 bps on a HiPer DSP card

#### Fact

- HiPer Access Router Card (HiPer ARC)
- Network Management Card (NMC)
- Total Control Manager (TCM) application
- HiPer DSP card
- New installations

#### Symptom

- Cannot connect higher than 14.4 bps on a HiPer DSP card

#### Cause

- Auto configuration on card initialization is enabled on the NMC

#### Fix

Use TCM to disable auto configuration on card initialization on the NMC. Restore the HiPer DSP card from default, and save it to NVRAM.



Have the HiPer DSP card's configuration settings available for reconfiguration.

- 1 Start **Total Control Manager**.
- 2 Click the **Network Management Card**.
- 3 On the **Main Menu** bar, click **Configure**, and then click **Programmed Settings**.
- 4 On the **Parameter Group** menu, click **Configuration Group**.
- 5 Double-click the **Auto Config on Card Initialization** menu, click **disable**, and then click **OK**.
- 6 Click the **HiPer DSP** card.
- 7 On the **Configure** menu, click **Actions/Commands**.
- 8 On the **Command to Execute** menu, click **Software**.
- 9 Click the command **Restore T1/E1 and Modems From Default**, and then click **Execute**.
- 10 After *Success* appears under the Command Status *Result* heading, click **Close**.
- 11 Reconfigure the **HiPer DSP** card.
- 12 After reconfiguring, click **HiPer DSP** card.
- 13 On the **Configure** menu, click **Actions/Commands**.
- 14 From **Command to Execute** menu, click **Software**, then **Save Both T1/E1 and Modems to NVRAM**.
- 15 When *Success* appears under the Command Status *Result* heading, click **Hardware**, then **Hardware Reset**.
- 16 When *Success* appears under the Command Status *Result* heading, click **Close**.

#### Taking DS0 out of service on HiPer DSP card

##### Fact

- HiPer DSP card
- Total Control Manager application
- Performance Monitor
- Primary Rate ISDN (PRI) card

### Symptom

- Taking a HiPer DSP card out of service

### Fix

Take Digital Signal (DS)0's out of service.

- 1 Click **HiPer DSP** card span (card selected but not highlighted).
- 2 On the **Configure** menu, click **Programmed Settings**.
- 3 On the **Parameter Group** menu, click **Timeslot Service Configuration**.
- 4 Scroll to channel to be taken out of service.



To expand the **channel** menu, move the cursor to the right of the channel heading (for example **S4C25.12**). The cursor becomes vertical. Drag right to expand the menu.

- 5 Double-click the **channel** menu, click **localOutOfService**, and then click **OK**.

### Set traps, Accounting reports, and Call statistics on HiPer DSP card

### Fact

- Security and Accounting server
- HiPer DSP card
- Total Control Manager (TCM) application
- Accounting
- Remote Authentication Dial-In User Service (RADIUS) protocol

### Symptom

- How to enable traps
- Not getting call statistics
- No accounting reports on calls

### Fix

Access chassis through TCM.

- 1 Start **Total Control Manager**.
- 2 Click the **HiPer DSP** card.
- 3 On the **Main Menu** bar, click **Fault**, and then click **Trap Settings**.
- 4 Click **Template 1**, and then click **OK**.
  - a On the **Parameter Group** menu, click **Trap Enables**.

- b For each trap you want a report on, double-click the menu, click **enableLog**, and then click **OK**.
  - c On the **Configure** menu, click **Actions/Commands**.
  - d On the **Command to Execute** menu, click **Software**
  - e Click the command **Refresh Template 1 Config Channels**, and then click **Execute** and **Close**.
- 5 Click the **HiPer DSP** card.
- a On the **Configure** menu, click **Programmed Settings**.
  - b Click **Card Level**, and then click **OK**.
  - c On the **Parameter Group** menu, click **Call Statistics**.



To expand the **Group Selection** menu, move the cursor to the right of the **S#** heading. The cursor becomes vertical. Drag right to expanded the menu.

- d Double-click the **Group Selection** menu, and then click **group1And2And3And4**.

Note group selection categories:

Group 1 - Usage

Group 2 - Data Transfer

Group 3 - Performance

Group 4 - Operating Mode

- e Click **OK**.
- 6 Click the **HiPer DSP** card.
- a On the **Configure** menu, click **Actions/Commands**.
  - b On the **Command to Execute** menu, click **Software**.
  - c Click the command **Save Both T1/E1 and Modems to NVRAM**, and then click **Execute**.
  - d When *Success* appears under the Command Status *Result* heading, click **Close**.
- 7 Click the **Network Management Card**.
- a On the **Configure** menu, click **Actions /Commands**.
  - b Click the command **Save Chassis to NVRAM**, and then click **Execute**.

- c When *Success* appears under the Command Status *Result* heading, click **Close**.

### Enable authentication hints on HiPer DSP card

#### Fact

- HiPer DSP card
- Total Control Manager (TCM) application
- Point-to-Point Protocol (PPP)

#### Symptom

- Setup message is not being seen when dialing in through terminal
- Not seeing Starting PPP when logging in through terminal

#### Fix

Telnet to the HiPer ARC and type **enable authentication hints** at the Command Line Interface (CLI) prompt.

- 1 Start **Total Control Manager**.
- 2 Click the **HiPer DSP** card.
- 3 On the **Main Menu** bar, click **Configure**, and then click **Programmed Settings**.
- 4 Click **HiPer DSP Template(s)**.
- 5 Click **All**, and then click **OK**.
- 6 On the **Parameter Group** menu, click **Call Control Options**.
- 7 Copy and paste the following changes across all columns (click **box**, **Copy**, **parameter heading** (highlighting all columns), and hold down **Ctrl** key and press **V**).
  - a Set **Result Codes (Qn)** to **displayResult**.
  - b Set **Verbal/Numeric Result Codes (Vn)** to **numeric**.
  - c Set **Result Code Groups (X)** to **0**.
  - d Set **ARQ Result Codes (&A)** to **arqResultsDisabled**.
  - e Set **Response to +++** to **ignoreEscCode**.
- 8 Click **OK**.
- 9 Click the **HiPer DSP** card.
- 10 On the **Configure** menu, click **Actions/Commands**.
- 11 Click the **Command to Execute** menu, click **Software**.

- 12 Click the command **Save Template 1 Config To NVRAM**, and then click **Execute**.



Make sure all results read *Success* under the Command Status *Result* heading after clicking **Execute**.

- 13 Click the command **Save Template 2 Config To NVRAM**, and then click **Execute**.
- 14 Click the command **Save Template 3 Config To NVRAM**, and then click **Execute**.
- 15 Click the command **Save Template 4 Config To NVRAM**, and then click **Execute**.
- 16 Click the command **Refresh Template 1 Config Channels**, and then click **Execute**.
- 17 Click the command **Refresh Template 2 Config Channels**, and then click **Execute**.
- 18 Click the command **Refresh Template 3 Config Channels**, and then click **Execute**.
- 19 Click the command **Refresh Template 4 Config Channels**, click **Execute**, and then Click **Close**.

### Taking HiPer DSP card modems off the packet bus

#### Fact

- HiPer DSP card
- EdgeServer™ Pro card
- HiPer Access Router Card
- EdgeServer card
- NETServer Primary Rate ISDN card

#### Symptom

- Taking HiPer DSP card modems off the packet bus
- Getting packet bus generic errors
- Packet bus problems
- Ring no answer on the HiPer DSP card
- Busy signals

**Fix**

Take HiPer DSP card modems off the packet bus.

1 Plug into console port into HiPer DSP card.

2 At prompt, type:

```
> chdev mdm 255
```

3 At prompt, type:

```
mdm255>at-su99
```

This takes the modems off the packet bus.

4 To enable auto answer, type:

```
mdm255>ats0=1
```

5 To put the modems back on the packet bus, type:

```
mdm255>su100
```

6 To disable the packet bus, type:

```
mdm255>ats0=0
```

---

**Trouble Clearing**

This section contains problems encountered while using the product.

**Determining call failure and disconnect reasons****Fact**

- HiPer DSP card
- T1 card
- Primary Rate ISDN (PRI) card

**Symptom**

- Receiving call failures and disconnect reasons from modems on the HiPer DSP card via console port
- Getting a time stamp log of modems in the HiPer DSP card through the console port
- Getting DS0 disconnect messages when monitoring modems
- Users are not staying connected

**Fix**

Set up the HiPer DSP card to display *failure to disconnect reasons* on each modem through the console port. Type:

```
at-af (display fail log)
```

For example:

```
>chdev mdm 1
mdm 1>at-af
[response]
(Ch.20): 16:48:15:20
```

Inbound call failure reason is:

```
Normal user call clear
```

Type:

```
at-ad (display disconnect log)
```

For example:

```
>chdev mdm 1
mdm 1>at-ad
[response]
(Ch.20): 16:48:15:020
```

Outbound call disconnect reason is:

```
Received Disconnect command from Gateway Card
```

## Viewing HiPer DSP modem disconnect reasons or failed logins from console

### Fact

- HiPer Digital Signal Processor (DSP) card
- Console port

### Symptom

- Viewing modem disconnect reasons or the number of failed logs from console port of the HiPer DSP card
- Viewing number of failed logs on the modems of the HiPer DSP card from the console
- HiPer DSP card disconnects
- Failure to connect
- Users cannot connect to the HiPer DSP card
- Problems connecting

### Fix

To view HiPer DSP modem disconnect reasons, plug into the HiPer DSP card console port.

- 1 To enable HiPer DSP modem channel debug, type:

```
>chdev mdm 255
```

(255 for all modems or 1-24 for a specific one).

- 2 At prompt *mdm255>*, type:

```
at-ad
```

This enables disconnect logs for modems.

### Set up debug with HiPer DSP card

#### Fact

- HiPer DSP card

#### Symptom

- Enabling debug on the HiPer DSP card
- Viewing real-time status from console port of the HiPer DSP card

#### Fix

To view debug, plug into the HiPer DSP card console port.

- 1 To enable HiPer DSP card channel debug, type:

```
>chdev tslot
```

- 2 Type:

```
tslot1>trc dbg 25 2
```

- 3 To disable HiPer DSP card debug, type:

```
tslot1>trc dbg 25 0
```

- 4 To view real-time idle/connect in/connect-out status from the HiPer DSP card, type:

```
>chdev tslot
```

- 5 Type:

```
tslot1> dis atstat
```

- 6 To view Chan T1 call event messages, type:

```
>chdev mdm 1
```

- 7 Type:

```
mdm 1>at-df 26,2
```

- 8 To turn off debug, type:

```
mdm 1>at-df 26,0
```

## Problems connecting x2 or v.90 on a HiPer DSP card

### Fact

- HiPer DSP card
- Total Control Manager application

### Negated Fact:

- Network Management Card

### Symptom

- x2 negotiation falls back to v.34
- x2 negotiation fails
- v.90 negotiation falls back to v.34
- v.90 negotiation falls back to x2
- v.90 negotiation fails

### Cause

- x2 server mode is disabled
- v.90 digital modem is disabled
- v.90 analog modem is disabled
- v.90 all digital modems are disabled
- T1 circuit does not support 56k technology

### Fix

HiPer DSP cards do not require feature keys to turn on x2 or v.90 support. If you cannot connect at x2/v.90, the problem is either in the HiPer DSP card configurations or the T1 circuit itself.

- 1 To verify HiPer DSP card is configured correctly:
  - a Start **Total Control Manager**.
  - b Click the **HiPer DSP** card.
  - c On the **Main Menu** bar, click **Configure**, and then click **Programmed Settings**.
  - d Click **Template 1**, and then click **OK**.
  - e On the **Parameter Group** menu, click **x2/v.90 Configuration**.
  - f Double-click the **x2 Server Mode [S76.1]** menu, and then click **enable**.
  - g Double-click the **v.90 Analog Mode [S81.4]** menu, and then click **enable**.

- h** Double-click the **v.90 Digital Mode [S81.5]** menu, and then click **enable**.
  - i** Double-click the **v.90 All Digital Mode [S81.6]** menu, and then click **enable**.
  - j** If above settings were already enabled, move on to **Step 2**.
  - k** To save the settings, click **OK**.
  - l** On the **Configure** menu, click **Actions/Commands**.
  - m** On the **Command to Execute** menu, click **Software**.
  - n** Click the command **Save Template 1 Config To NVRAM**, and then click **Execute**.
  - o** Click the command **Refresh Template 1 Config Channels**, and then click **Execute**.
  - p** Click **Close**.
- 2** If problems remain after performing all of the above, the problem is most likely in the T1 circuit. At least one side of a x2/v.90 call must be digital. Verify with your telephone company that your T1 circuit meets these requirements. There can be no Analog to Digital conversions taking place anywhere in the T1 circuit.
- 3** If you believe your T1 circuit is set up correctly, test the modem you are dialing up. Dial the 3Com Bulletin Board @ 888-877-9248 and attempt to connect at x2/v.90. If you cannot connect, contact your modem manufacturer or upgrade the modem.

**Dial-in user  
disconnects for HiPer  
DSP card and HiPer  
ARC**

**Fact**

- HiPer DSP card
- HiPer Access Router Card
- Microsoft Windows NT 4.0
- U.S. Robotics modems
- Microsoft Windows 95
- Microsoft Windows 98
- Microsoft Windows 95 Dial Up Networking

**Symptom**

- User is disconnected when dialing into HiPer DSP card using Windows 95 dial-up networking

- Cannot connect

### Fix

- 1 Dial into the chassis to see if a connection can be made.  
Use **HyperTerminal** (or another terminal emulation software).  
If you can see the login prompt, it means that HiPer DSP card is OK.
- 2 Type **ppp user name** and **password**.  
You should see *ppp* text on the screen.
- 3 If the call drops before you see the login prompt, capture the following settings from client side for further trouble clearing:  
These settings are for U.S. Robotics® Sportster™ and Courier™ modems.
  - **ati4** - current setting
  - **ati5** - NVRAM setting
  - **ati6** - disconnect reason
  - **ati7** - software version
  - **ati11** - SNR
  - **aty11** - signal attenuation (do it online)
- 4 If disconnection occurs after entering **user name** and **password**, type:  
**HiPer>monitor ppp**  
to see when the PPP negotiation fails.



# 3

## T1 NETWORK INTERFACE CARD

This chapter solutions for the T1 Network Interface Card (NIC).

For additional information, see the 3Com Knowledgebase® web site at: <http://knowledgebase.3Com.com>.

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### Installing

This section contains software installation questions.

**3C905B - What is the cable that comes with the NIC for?**

#### Fact

- 3C905B-TX cable

#### Symptom

- Cannot determine what the 3C905B cable is for

#### Fix

Remote Wake Up allows network administrators to power up personal computers (PC) remotely, to add new applications, update operating systems and conduct inventory checks. This saves time, eliminates the tedious work of visiting each desk to turn on PCs, and simplifies the manager's job, all of which contribute to significantly lower cost of ownership for networked PCs. This capability allows administrative tasks to be performed after-hours without disrupting end user productivity.



The PC motherboard must have a 3-pin remote wake up connector.

The 3C905B-TX is fully ACPI compliant. It includes a 3-pin remote wake up connector and 328 foot cable to allow an auxiliary power supply to the NIC. This is necessary for the NIC to receive a wake up signal even if the PC is in shutdown mode.

3Com NICs with Remote Wake Up support both Magic Packet wake up technology as well as ACPI Remote Wake Up. These will be supported in the next generation of Microsoft operating system, specifically Windows NT 5.0 and Windows 98.

**Pinouts for a  
100BASE-TX twisted  
pair straight-through  
Ethernet cable**

**Fact**

- 3C905B-TX cable
- 3C905B-TX-NM cable
- 3C905B-COMBO cable
- 3C905-TX cable
- 3C515-TX cable
- 3C575-TX cable
- 3C574-TX cable
- 3C595-TX cable
- 3C597-TX cable
- 3CCFEM556 cable
- Configured media type to 100BASE-TX cable
- 100BASE-TX cable
- Can see other computers on the network
- Other computers can see this computer

**Symptom**

- Cannot connect at 100 Mbps
- Can connect at 10 Mbps
- Runs fine at 10BASE-T cable
- ACT LED is solid orange
- Cannot connect to network at 100BASE-TX cable
- Error: "Adapter is not connected to this type of network" when set to 100BASE-TX cable
- Incorrect cable pinouts
- Cannot transfer data across the network

**Change**

- Upgraded network from 10BASE-T cable to 100BASE-TX cable

**Cause**

Cable pinouts are incorrect. Pinouts were as follows: 1-2, 3-4, 5-6, 7-8. For 100BASE-T connections, pins 3 and 6 must be from the same twisted

pair. For example: If pin 3 is green, pin 6 should be white/green. Pins 1 and 2 must also match.

### Fix

Pinouts for a 100BASE-TX twisted pair straight-through Ethernet cable are:

- White/Blue TX+ 1 to 1 TX+ White/Blue
- Blue TX- 2 to 2 TX- Blue
- White/Brown RX+ 3 to 3 RX+ White/Brown
- 4 to 4 Not used
- 5 to 5 Not used
- Brown RX- 6 to 6 RX- Brown
- 7 to 7 Not used
- 8 to 8 Not used



Use category 5 grade twisted pair cable.

**Pinouts for a 10BASE-T twisted pair crossover or straight through Ethernet cable or Cannot connect to a 10BASE-T hub with Category 1 or 2 cabling**

### Fact

- 3C905B-TX cable
- 3C905B-TX-NM cable
- 3C905B-FX(SC) cable
- 3C905-TX cable
- 3C900B-TPO cable
- 3C900B-TPC cable
- 3C900B-COMBO cable
- 3C509B-TPO cable
- 3C575-TX cable
- 3C574-TX cable
- 3CCFEM556 cable
- 3CCFEM556B cable
- Any operating system
- 10BASE-T link LED is on

### Symptom

- Incorrect cable pinouts
- No ACT LED
- Cannot determine correct pin assignments for 10BASE-T
- Cannot see peer computer when connected with a straight through cable

### Cause

- A crossover cable is used to connect two machines together directly without a hub.
- A straight-through cable is used to connect a machine to a hub, providing access to the network.
- Category 3, 4, or 5 cabling must be used to connect at 10BASE-T.

### Fix



Use category 3 or higher grade twisted pair cable.

Pins 1 and 2 must be from the same twisted strand as well as pins 3 and 6. For example: If pin 1 is orange, pin 2 must be white with an orange stripe.

Pinouts for a 10BASE-T twisted pair **crossover** Ethernet cable are:

- TX+ 1 to 3 RX+
- TX- 2 to 6 RX-
- RX+ 3 to 1 TX+
- RX- 6 to 2 TX-

Pinouts for a 10BASE-T twisted pair **straight-through** Ethernet cable are:

- TX+ 1 to 1 TX+
- TX- 2 to 2 TX-
- RX+ 3 to 3 RX+
- RX- 6 to 6 RX-
- Pins 4, 5, 7, and 8 are not used.



Use category 3, 4, or 5 cabling.

Maximum distance for 100BASE-TX is 100 meters.

**Pinouts for a 100BASE-TX twisted pair straight-through Ethernet cable or Pinouts for RJ-45, 100BASE-TX, Category 5, and UTP cables**

**Fact**

- 3C905B-TX cable
- 3C905B-TX-NM cable
- 3C905B-COMBO cable
- 3C905-TX cable
- 3C515-TX cable
- 3C575-TX cable
- 3C574-TX cable
- 3C595-TX cable
- 3C597-TX cable
- 3CCFEM556 cable
- Configured media type to 100BASE-TX cable
- 100BASE-TX cable
- Can see other computers on the network
- Other computers can see this computer

**Symptom**

- Cannot connect at 100 Mbps
- Can connect at 10 Mbps
- Runs fine at 10BASE-T
- ACT LED is solid orange
- Cannot connect to network at 100BASE-TX
- Error: "Adapter is not connected to this type of network" when set to 100BASE-TX
- Incorrect cable pinouts
- Cannot transfer data across the network

**Change**

- Upgraded network from 10BASE-T to 100BASE-TX

**Cause**

Cable pinouts are incorrect. Pinouts were as follows: 1-2, 3-4, 5-6, 7-8.

**Fix**

For 100BASE-T connections, pins 3 and 6 must be from the same twisted pair. For example: If pin 3 is green, pin 6 should be white/green. Pins 1 and 2 must also match.

Pinouts for a 100BASE-TX twisted pair **straight-through** Ethernet cable are:

- White/Blue TX+ 1 to 1 TX+ White/Blue
- Blue TX- 2 to 2 TX- Blue
- White/Brown RX+ 3 to 3 RX+ White/Brown
  - 4 to 4 Not used
  - 5 to 5 Not used
- Brown RX- 6 to 6 RX- Brown
  - 7 to 7 Not used
  - 8 to 8 Not used



Use category 5 grade twisted pair cable.

**Pinouts for a twisted pair crossover 100BASE-TX Ethernet cable****Fact**

- 3C905 cable
- 3C905B cable
- 3C575 cable
- 3C574 cable
- 3CCFEM556 cable
- Crossover cable
- 100 Mbps network
- Configured media type to 100BASE-TX
- Connecting computer to computer
- Not connecting through a hub

**Symptom**

- LED link light on NIC is not illuminated
- Incorrect cable pinouts

- Cannot connect at 100 Mbps
- Can only connect at 10 Mbps
- Can connect at 10 Mbps

**Fix**

Crossover cable can be used, but it is not supported at 100 Mbps.

Pinouts for a 100BASE-TX crossover twisted pair Ethernet cable are:

- 1 Pins 1 and 2 must be of the same twisted strand.
- 2 Pins 3 and 6 must be of the same twisted strand.
- 3 Pins 4, 5, 7, 8 are not used in 100BASE-TX.
- 4 Maximum distance for 100BASE-TX cabling is 100 meters.
- 5 The cabling must be category 5.
- 6 This cabling scheme is not compatible with 100BASE-T4.
- 7 Pin 1 on the first end must connect to pin 3 on the second end.
- 8 Pin 2 on the first end must connect to pin 6 on the second end.
- 9 Pin 3 on the first end must connect to pin 1 on the second end.
- 10 Pin 6 on the first end must connect to pin 2 on the second end.

For example:

- White/Blue TX+ 1 to 3 RX+ White/Brown
- Blue TX- 2 to 6 RX- Brown
- White/Brown RX+ 3 to 1 TX+ White/Blue
  - 4 to 4 Not used
  - 5 to 5 Not used
- Brown RX- 6 to 2 TX- Blue
  - 7 to 7 Not used
  - 8 to 8 Not used





# QUAD ANALOG NETWORK INTERFACE CARD

This chapter contains solutions for the Quad Analog Network Interface Card (NIC).

For additional information, see the 3Com Knowledgebase® web site at: <http://knowledgebase.3Com.com>.

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## Trouble Clearing

This section contains problems encountered while using the product.

### Chassis Card Mean Times Before Failure (MTBF)

#### Fact

- Primary Rate ISDN (PRI) card
- Network Management Card (NMC)
- HiPer Access Router Card (ARC)
- HiPer Digital Signal Processor (DSP) card
- Dual Channelized T1 card
- NETServer Primary Rate ISDN (PRI) card
- NETServer card
- 70 AMP AC Power Supply Unit (PSU)
- 130 AMP AC Power Supply Unit (PSU)
- Quad Analog Network Interface Card (NIC)
- DC Chassis with fan tray
- EdgeServer Pro card
- AC Chassis with fan tray

#### Symptom

- Needs MTBF's (Mean Times Before Failure) for Chassis

**Fix**

Mean Times Before Failure (in hours) for the Total Control Chassis:

- 576,177 - Analog NIC
- 376,919 - Quad Analog RS-232 NIC
- 298,840 - Quad Digital Modem
- 267,887 - Quad Analog/Digital Modem
- 207,759 - PRI NAC
- 419,255 - V.35 NIC Ethernet
- 478,177 - Channelized T1
- 145,651 - HiPer ARC NAC
- 103,948 - NMC 486/CLK (clock)
- 107,623 - HiPer DSP NAC 24
- 3,091,928 - HiPer DSP card
- 107,154 - NMC 16MB/CLK
- 437,511 - DSP T1/E1 NIC
- 249,042 - EdgeServer Pro card
- 231,267 - 130 AMP AC PSI (power supply interface)
- 44,110 - 130 AMP AC PSU
- 464,600 - 130 AMP DC PSI
- 48,400 - 130 AMP DC PSU
- 128,274 - 70 AMP AC PSI
- 494,096 - 70 AMP AC PSU
- 4,608,295 - 70 AMP DC PSI
- 496,278 - 70 AMP DC PSU
- 430,107 - DC Chassis with Fan Tray
- 430,107 - AC Chassis with Fan Tray



# HiPer Digital Signal Processor T1 PRI Network Application Card

This chapter contains solutions for the HiPer™ Digital Signal Processor T1 PRI Network Application Card (NAC).

For additional information, see the 3Com Knowledgebase® web site at: <http://knowledgebase.3com.com>.

---

## Installing

This section contains software installation questions.

**Software download fails on Total Control Manager or Upgrading the HiPer DSP card through the console connection**

### Fact

- HiPer DSP card
- Total Control Manager (TCM) application

### Symptom

- Flashing green light on the Run/Fail LED
- Card shows yellow on Total Control Manager
- Card reboots
- Software download fails on Total Control Manager
- Upgrading a HiPer DSP card

### Fix

Upgrade the HiPer DSP card through the console connection.

- 1 From the RJ-45 interface labeled AUX PORT, plug the console cable with the null modem adapter into the communication port on the personal computer (PC) or laptop.
- 2 Start **HyperTerminal** or any terminal emulation program set to 115200 bps.
- 3 Reset the card by sliding the HiPer DSP Network Application Card (NAC) out.

- 4 Slide the HiPer DSP NAC card back in.  
Watch HyperTerminal session screen.
- 5 At prompt,  

```
Enter download trigger
```

type:  

```
AT{Z}
```

The message:  

```
Begin software downloading
```

appears.
- 6 On the **Transfer** menu, click **Send File**.
- 7 Identify where the code is located, and then click **Transfer**.  
Download should begin.



For latest code, go to Total Service Site at: [totalservice.usr.com](http://totalservice.usr.com)

### HiPer Access System and NETServer Power Configurations

#### Fact

- NETServer PRI card
- Total Control Chassis
- Quad Digital modem
- Quad Analog/Digital modem
- Network Management Card (NMC)
- HiPer DSP card
- HiPer Access Router Card (ARC)
- Chassis 45Amp Power Supply Unit
- Chassis 70Amp Power Supply Unit
- Chassis 130AMP Power Supply Unit

#### Symptom

- Need Power Supply configuration
- Power problem or configuration problem

**Fix**

The maximum number of cards, in both HiPer Access Router and NETServer configuration, supported in the associated chassis are as follows:

**Power Supply HiPer DSP and NETServer Configurations****45 Amp, 6 HiPer DSP cards, 144 call maximum**

- 4 HiPer DSP cards (1 set)
- 1 HiPer Access Router card (96 calls)
- 1 NETServer card

**70 Amp, 10 HiPer DSP cards, 240 call maximum**

- 8 HiPer DSP cards (2 sets)
- 2 HiPer Access Router cards (192 calls)
- 1 NETServer

**130 Amp, 14 HiPer DSP cards, 336 call maximum**

- 12 HiPer DSP cards (3 sets)
- 2 HiPer Access Router cards (288 calls)
- 1 NETServer

Upgrade from 70 Amp PSU/PSI set(s) to 130 Amp PSU/PSI set(s) once they exceed 10 HiPer DSP cards in the 10 HiPer DSP + 2 HiPer Access Router configuration or once they exceed the 2 sets of the 4 HiPer DSP + 1 NetServer card configuration.

The 70 Amp power supplies PSU/PSI sets can be exchanged for the 130 Amp PSU/PSI sets. However, the 45 Amp supplies cannot be upgraded to either 70 Amp or 130 Amp supplies.

**How many HiPer DSP cards can be configured for a NETServer PRI card and a HiPer ARC**

**Fact**

- Total Control Chassis
- HiPer DSP card
- HiPer Access Router Card (ARC)
- NETServer Primary Rate ISDN (PRI) card
- New installations

**Symptom**

- HiPer DSP configuration for a HiPer ARC and NETServer card

**Fix**

**45A PSU**

6 HiPer DSP + 1 HiPer ARC (144/180 calls)

4 HiPer DSP + 1 NETServer PRI (96/120 calls)

**70A PSU**

10 HiPer DSP + 1 HiPer ARC (230/300 calls)

8 HiPer DSP + 2 NETServer PRI(192/240 calls)

**130A PSU**

14 HiPer DSP + 1 HiPer ARC (336/420 calls)

12 HiPer DSP + 3 NETServer PRI (288/360 calls)

---

**Configuring**

This section contains software configuration questions.

**Difference between Setting Round Robin, First Available or Fixed Assignment**

**Fact**

- HiPer DSP card
- Round Robin
- Fixed Assignment
- Total Control Chassis
- Total Control Manager
- PRI

- First Available
- Call Routing Methods

### Symptom

- The difference between Round Robin, First Available and Fixed Assignment using the HiPer DSP card

### Fix

Definitions of the three routing methods:

**Fixed Assignment** - Fixed assignment routes 1 to 1 meaning, DS0 1 (digital signal) will route to modem 1; DS0 2 will route a call to modem 2 and so on.

**Round Robin** - The modems will answer in a cyclical fashion.

If a call comes in on DS0 1, that call will route to modem 1. If call hangs up, the next call that comes in will route to modem 2 even if modem 1 is free.

**First Available** - The first modem available accepts the incoming call.

If a call comes in on DS0 17, it routes to modem 1. If a call comes in on DS0 18, it routes to modem 2 if the first call on DS0 17 is still active. If the call on DS0 17 hangs up, and then a call comes in on DS0 19, it routes to modem 1.

### Fix

Console Commands for setting the routing method:

To switch to the timeslot level, type:

```
>chdev tslot  
span1\timeslot>
```

To set the Round Robin routing method, type:

```
set mdmrmeth rndrobin
```

To set the First Available routing method, type:

```
set mdmrmeth lstavail
```

To set the Fixed Assignment routing method, type:

```
set mdmrmeth fixeda
```

---

**Using**

This section contains product usage questions.

**Setting T1 tone types****Fact**

- Total Control Chassis
- Quad Analog/Digital modem
- Dual Channelized T1 card
- 24 channels (full T1)
- Setting up a Dual Channelized T1 card in the Total Control Chassis
- Line Provisioning for a Dual Channelized T1 card
- Dual T1/PRI card
- Dual Channelized T1 card v3.0.2
- Dual T1/E1 card
- HiPer DSP card
- HiPer Access Router Card (ARC)
- Channelize T1 card
- Total Control Manager (TCM) application
- Tone Types
- Dual Tone Multi Frequency (DTMF) Tones
- Multi Frequency (MF) Tones

**Symptom**

- No modem tones heard when modem answers
- Dead air on dial up
- Problems with setting up tone types

**Fix**

The **Tone Types** found in the **Call Control Options** of the selected Quad modem cards using Total Control Manager (TCM) is incorrect. You must match what the telephone company is sending. Your options are **DTMF** or **MF** tones found using TCM.

- 1 Click the **Quad modem** card's *Run/Fail* LED.
- 2 On the **Main Menu** bar, click **Configure**, and then click **Programmed Settings**.

- 3 On the **Parameter Group** menu, click **Call Control Options**.
- 4 Scroll to **T1 Tone Type [S47.1]**.
- 5 On the **T1 Tone Type [S47.1]** menu, click **dtmfTones** or **mfTones**.
- 6 Click **OK**.



**T1 Provisioning Information:** The T1 card supports both DTMF and MF tone types. DTMF signaling method is the same as Touch Tone; it uses 12 distinct signals transmitted over the voice transmission path to provide addressing information. MF signaling supports KP (Key Pulse) and ST (Stop) control signals, which facilitate the transmission of ANI or DNIS digits by indicating when the transmission of an ANI or DNIS number begins and ends.





# HiPER DIGITAL SIGNAL PROCESSOR CHANNELIZED T1 CARD

This chapter contains solutions for the HiPer™ Digital Signal Processor (DSP) Channelized T1 card.

For additional information, see the 3Com Knowledgebase® web site at: <http://knowledgebase.3Com.com>.

---

## Installing

This section contains software installation questions.

### Upgrade from Dual Channelized T1 to Dual PRI

#### Fact

- Dual Channelized T1 card
- Dual PRI card
- Total Control Manager (TCM) application

#### Symptom

- Telco does not show D-channel (not coming up Active)

#### Change

- Upgraded from T1 line to a PRI line from Telco

#### Fix

If you upgrade from a T1 line to a PRI line, and you have a Dual Channelized T1 card:

- 1 Change code on Channelized T1 card to Dual PRI code.
  - a Go to **Totalservice.usr.com** web site.
  - b Download Dual PRI code.
  - c Unzip the file to the **USRSUITE/SDL** directory.
  - d Access chassis via Total Control Manager.
  - e Click the **Dual Channelized T1** card.

- f** On the **Main Menu** bar, click **Configure**, and then click **Software Download**.
  - g** Double-click **NAC/DMF File** box next to the Dual Channelized T1 card.  
The Open window appears.
  - h** Click the **Files of type** box, and then click **T1 PRI (dp\*.nac)**.
  - i** Double-click **dp.\*** file.
  - j** Double-click **SDL File** box next to the **NAC/DMF File** box.  
The Open window appears.
  - k** Click **Files of type** box, click **T1 PRI (dp\*.sdl)**, and then click **Start**.
- 2 After download, click the Dual PRI card **RN/FL** LED.
- a** On the **Main Menu** bar, click **Configure**, and then click **Programmed Settings**.
  - b** On the **Parameter Group** menu, click **PRI Trunk Settings**.
  - c** On the **Framing Mode** menu, click the desired setting.
  - d** On the **Line Coding Options** menu, click the desired setting.
  - e** On the **Primary Switch Type Set** menu, click the desired setting.
  - f** Click **OK**.
  - g** Click the **Dual PRI** card.
  - h** On the **Configure** menu, click **Programmed Settings**.
  - i** On the **Parameter Group** menu, click **PRI Configuration**.
  - j** On the **ISDN-GW Slot** menu, double-click the box.
  - k** Click the arrow control to increase or decrease the value.



The ISDN gateway slot can be set one of two ways. If there is a NETServer PRI card in the chassis and you wish to terminate ISDN calls on the NETServer PRI's I-ports, the ISDN gateway is set to the NETServer PRI slot number. If you wish to terminate ISDN calls on the NETServer PRI's S-ports, or if there is a HiPer ARC or an EdgeServer™ card in the chassis, the ISDN gateway slot is set to **0** so the ISDN call will go to the modems. The modems must be running 5.5.x or 5.6.x code to access ISDN calls.

- l** Click **OK**.
- m** On the **Configure** menu, click **Actions/Commands**.
- n** On the **Command to Execute** menu, click **Hardware**.

- o Click the command **Hardware Reset**, and then click **Execute**.
- 3 Click **RN/FL** LED on one of the Quad modems.
- 4 On the **Main Menu** bar, click **View**, and then click **Select All**.
  - a On the **Configure** menu, click **Programmed Settings**, and then click **Line Interface Options**.
  - b Double-click the **Line Interface Source [%Dn]** box, change **t1Tdm** to **priTdm**.
  - c Hold down the **Ctrl** key and press **C** to copy the value.
  - d Click the **Line Interface Source [%Dn]** heading to select the entire row.
  - e Hold down the **Ctrl** key and press **V** to paste **priTdm** in all boxes, and then click **OK**.
  - f On the **Configure** menu, click **Actions/Commands**.
  - g Click the command **Save to NVRAM**, and then click **Execute**.
  - h Click the command **Software Reset**, and then click **Execute** and **Close**.

ISDN and analog calls should work after this setup.

---

## Configuring

This section contains software configuration questions.

### Setting a Dual Channelized T1 Card

#### Fact

- Dual Channelized T1 card
- T1 card
- Dual Channelized T1 card v3.0.2

#### Symptom

- Trunk settings are for a PRI line
- Loopback lights orange
- Modem does not answer incoming calls

#### Fix

- 1 Flash Dual Channelized T1 card with T1 code.
- 2 Perform software download through personal computer (PC) or Total Control Manager.





# HiPer Digital Signal Processor E1/R2 Card

This chapter contains solutions for the HiPer™ Digital Signal Processor (DSP) E1/R2 card.

For additional information, see the 3Com Knowledgebase® web site at: <http://knowledgebase.3com.com>.

---

## Installing

This section contains software installation questions.

### Setting R2 parameters on the HiPer DSP card

#### Fact

- Written using 1.1.91 beta code and a Siemens EWSD switch
- For future R2 code releases, parameter names might change, but the value will remain the same.

#### Fix



**Upgrading from code 1.1.97** - Software version 1.1.91 has a minor change from 1.1.97. In code 1.1.97, it's not important to set the modems for international use. With version 1.1.91, it is.

To upgrade to 1.1.91:

- 1 Flash the new code.
- 2 Set the parameters to default.
- 3 Set the R2 parameters again.
- 4 Once completed, change the modems to **international**.
- 5 After flashing the code to 1.1.91, log in.
- 6 Type:

```
chdev span 1
```

- 7 Type:  
`cmd rdefault`
- 8 Set the R2 Parameters (reference parameter sections later in this chapter).
- 9 Type:  
`cmd svb`
- 10 Type:  
`chdev mdm 1`
- 11 Type:  
`atc10=17`  
Changes modems to international product.
- 12 Type:  
`chdev span 1`
- 13 Type:  
`cmd svb`

---

## Configuring

This section contains software configuration questions.

### Configuring the span for R2 Brazil, code version 1.1.97

#### Fact

- Total Control Chassis
- R2
- Code version 1.1.97

#### Symptom

- Need to configure span for R2 Brazil

#### Fix

When configuring the span:

- 1 Set everything to default (`cmd rdefaults`).
- 2 Set the Brazilian specific parameters.
- 3 Verify all line coding and line signalling parameters.
- 4 Changed to Register Signaling Parameters (see table 5-3) in **bold** from defaults.
- 5 Verify all.

## 6 Do not change asterisk marked parameters below.

**Table 7-1** Line Coding

Parameter	Command	ITU-T	Brazil
Line Type	ltype	Mfel	mfel
*Line Coding	lcoding	Hdb3	Hdb3
*Signaling Mode	sigmode	Bitorien	Bitorien
*Tone Type	tonetype	R2mfctone	R2mfctone
Line Direction	linedirect	Both	Both
Companding Scheme	compand	Alaw	Alaw
Delay from LOS to Call Clearing	delaylos	6000	6000

**Table 7-2** Line Signaling Parameters

Parameter	Command	ITU-T	Brazil
Line Signaling Type	linesigtyp	R2d	R2d
Unused ABCD bits	unusedabcd	5	5
Persistence Override	persisov	0	0
Use Seize Acknowledge	seizeack	Enable	Enable
Use Forced Release	forcedrel	Disable	Disable
Seize / Clearforward on Start-up	clrfwd	Disable	Disable
Pulse Idle on Clearback	piclrback	Enable	Enable
Clear Call on Unexpected Signal	clrcall	Enable	Enable
Delay before Answer	delayans	100	100
Release Guard Duration	relguard	400	400
Default Incoming CPC	incomcpc	Analog	Analog

**Using**

This section contains product usage questions.

**Registering signaling parameters****Fact**

- Total Control Chassis
- HiPer DSP card
- R2

**Symptom**

- R2 signaling parameters

**Fix**

The settings below assume that A-number identification (ANI) is supported in the network exchange equipment. If not, the parameter

**Request A-number** should be set to **disabled**.

**Table 7-3** Register Signaling Parameters

Parameter	Command	ITU-T	Brazil
Register Signaling Type	regsigtype	R2mfc	R2mfe
Register Signaling Status	regsigstat	Enable	Enable
Address Complete	addrcompl	a-3	a-3
Subscriber Busy	cldsdbusy	b-3	<b>b-2</b>
Subscriber Free	insubbusy	b-6	<b>b-1</b>
Wrong Number	wrongnum	b-5	<b>b-7</b>
Incoming B-number Length	bnumlen	15	<b>4</b> (see note 1 below)
Last Incoming B-digit Timeout	1stbdtout	5000	<b>2000</b>
Action on B-digit Timeout	actbtout	Endofb	Endofb
Request A-number	anumiden	Enable	Enable
Request A-number after B-digit	anumbnum	1	1
Send Calling Party Category	clgprtcat	a-5	a-5
Send A-number Digit N+1	anumreq	c-5	c-5

**Table 7-3** Register Signaling Parameters

Parameter	Command	ITU-T	Brazil
A-number Not Available	anumnav	Disable	<b>Enable</b>
End of A-number	endanum	iii-15	iii-15
*Send B-number Digit N	sndbnumn	a-9	a-9
*Send B-number Digit N-1	sndbnumn1	a-2	<b>a-9</b>
*Send B-number Digit N-2	sndbnumn2	a-7	a-7
*Send B-number Digit N-3	sndbnumn3	a-8	a-8
*Send First B-number Digit	sndfbnum	a-10	a-10
Send I-15 at end of B-number	endbparty	enable	<b>Disable</b>
Incoming CPC Map	incatmap	ii-3: maint ii-6: digital ii-13: test else: analog	ii-3: maint ii-6: digital ii-13: test else: analog
Outgoing CPC Map	outcatmap	Analog: ii-1 digital: ii-6 test: ii-13 maint: ii-3	Analog: ii-1 digital: ii-6 test: ii-13 maint: ii-3



**Note 1:** In most states, I-15 is not used for the end of the B-number, and the receiving equipment must either send *Address Complete* when it has received enough B-digits, or detect the end of the B-number using a timeout. The *Incoming B-number Length* parameter should be set to the number of B-digits that the network will offer. If the number set is greater than the number of available B-digits, the last B-digit timeout will expire when no more B-digits are offered, and the HiPer DSP will send a pulsed **Address Complete** signal to continue call setup. In Brazil, the most used value is **4**. We have encountered some states where the *bnumlen* needs to be **3**. Consult with the local telephone company in order to set this value.

Some switches in Brazil send III-15 in response to C-5 to indicate the end of the A-number, and send III-12 if the A-number is not available, or if no further A-number digits are available (implying that the switch has some, but not all of the A-number digits). For incoming calls, the HiPer DSP card interprets both III-12 and III-15 as *End of A-number* regardless of the *endanum* parameter. For outgoing calls, if the HiPer DSP card sends III-12 in response to C-5, it could result in the connection being dropped, therefore set *End of A-number* to III-15 as shown above.

---

## Trouble Clearing

This section contains problems encountered while using the product.

### Statistics Commands

The HiPer DSP card is equipped with many configuration and statistical commands that are extremely useful in trouble clearing. Some commands look at the span status. From the span prompt, use:

**Display ccrconfig** - displays configuration

**Display atbsig** - shows status of the ABCD bits

**Display mdmmeth** - modem routing method

**Display near** - displays near end span statistics

**Display atconfig** - shows time slots and their assigned channels

**Display atprotoc** - shows connections and protocols used to see who is connected

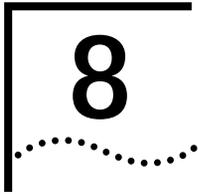
**Display atstat** - shows time slot status, state (blocked or unblocked)

**Display lstatus** - shows line status (If any alarms have been received, a true value indicates alarms occurred.)

**Display physst** - shows physical state of the span

**Display spnstats** - shows span statistics, errors

For help, just type **?** to see a list of items.



# E1 PRIMARY RATE ISDN CARD

This chapter contains solutions for the E1 Primary Rate ISDN (PRI) card.

For additional information, see the 3Com Knowledgebase® web site at: <http://knowledgebase.3Com.com>.

---

## Trouble Clearing

This section contains problems encountered while using the product.

**Cannot see all the cards in the chassis slot device configuration status from the E1 PRI card command line interface (CLI)**

### Fact

- Total Control Chassis
- Network Management Card (NMC)
- Total Control Manager (TCM) application
- Quad Analog/Digital modem
- E1 card

### Symptom

- Cannot see all the Quad modems in TCM
- Cannot see all the cards in the chassis slot device configuration status from the E1 PRI card CLI

### Cause

- Chassis awareness is enabled.

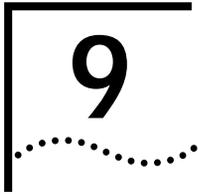
### Fix: Disable management chassis awareness.

- 1 Connect to the console port through the PRI network interface card (NIC).
- 2 On the **Main Menu** bar, press **Ctrl D**.  
PRI Debug is displayed.

- 3 Click option **6**, and then click option **2** to disable management chassis awareness.
- 4 Return to **Main Menu** bar.

**Fix: Add the missing card.**

- 1 On the **Main Menu** bar, click option **3** to go to the **Card Configuration** menu.
- 2 Click option **5, Chassis Slot Device Configuration**.
- 3 Assign the card to a slot number.
- 4 Click **Save to NVRAM**.



# E1/R2 CHANNEL ASSOCIATED SIGNALING CARD

This chapter contains solutions for the E1/R2 Channel Associated Signaling (CAS) card.

For additional information, see the 3Com Knowledgebase® web site at: <http://knowledgebase.3Com.com>.

---

## Configuring

This section contains software configuration questions.

### Installing a hub connected to an E1/CAS span

#### Fact

- Total Control Chassis
- E1/CAS span
- NETServer card
- Quad modems
- Total Control Manager (TCM) application

#### Symptom

- Installing Hub
- Connecting to E1/CAS span

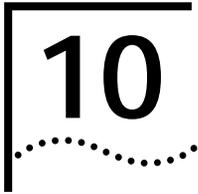
#### Fix

- 1 Set the E1/CAS defaults.
- 2 Check the following span line x configuration using the console menu:
  - a Set **Framing Mode** to **CAS**.
  - b Set **Idle Byte** sent to PTT to **55hex**.
- 3 Card Configuration:
  - a Set **Project ID** to **R2/Brazil**.



- l** Click the command **Software Reset**, and then click **Execute** and **Close**.
- m** On the **Configure** menu, click **Programmed Settings**.
- n** On the **Parameter Group** menu, click **Line Interface Options**.
- o** On the **Line Interface Source (%Dn)** menu, double-click **priTdm**, and then click **OK**.
- p** On the **Configure** menu, click **Actions/Commands**.
- q** Click the command **Save to NVRAM**, and then click **Execute** and **Close**.





# DUAL T1 CARD

This chapter contains solutions for the Dual T1 card.

For additional information, see the 3Com Knowledgebase® web site at:  
*<http://knowledgebase.3Com.com>*.

---

## Using

This section contains product usage questions.

### Dual Channelized T1 Line Provisioning

#### Fact

- HiPer DSP card
- Total Control Manager (TCM) application
- Dual Channelized T1 card
- Quad Digital modem
- Quad Analog/Digital modem

#### Symptom

- Line provisioning a T1 line for the Total Control Chassis
- T1 settings for the Dual Channelized T1 card

#### Fix

Line Provisioning

#### Framing Mode:

- DS1D4 Superframe (**ds1D4**)
- DS1 Extended Superframe (**ds1ESF**)

### Line Coding Options:

- Alternative Mark Inversion (**ami**)
- Binary 8 Suppression (**b8cs**)
- Zero Code Suppression (**zcs**)

### Dial-in/Dial-out Trunk Type:

- E & M (Ear & Mouth) Type II Feature Group B (FGB) (**eAndMTypeII**),
- Feature Group D (**DNIS**, **DNIS/ANI**)
- Loop Start (**loopStart**)
- Ground (**groundStart**)

### Dial-in/Dial-out Trunk Signal Start:

- **wink**
- **immediate** (only for E & M Type II)
- **dialTone** (for Ground or Loop Start)

### Dialout Signaling:

- Multi-Frequency Tones (**MFtones**)
- Dial Tone Multi-Frequency (**DTMF**)

**Can Dual T1/E1 or  
Dual Channelized T1  
work in chassis with  
Dual PRI?**

### Fact

- Dual T1/E1 card
- Dual Channelized T1 card
- Dual PRI card
- NETServer Primary Rate ISDN (PRI) card
- HiPer ARC

### Symptom

- All calls stop working after adding the Dual PRI card to the chassis
- The PRI card does not take calls
- Getting fast busy

- Getting a message from telephone company

### Fix

Dual PRI and Dual T1/E1 or Channelized T1 work in the same chassis provided:

- 1 Verify that there is a **channelized T1** card or **Dual T1/E1** card in **slot 1**.
- 2 Verify that there is a **Dual PRI** card in **slot 2**.
- 3 Access chassis with Total Control Manager:
  - a Click **Channelized T1** or **Dual T1/E1** card.
  - b On the **Main Menu** bar, click **Configure**, and then click **Programmed Settings**.
  - c On the **Parameter Group**, click **T1 Configuration**.
  - d On the **Number of T1 NACs in the Chassis** menu, click **multiple**, and then click **OK**.
  - e From the **Configure** menu, click **Actions/Commands**.
  - f Click the command **Save to NVRAM**, and then click **Execute**.
- 4 On the **Dual PRI** card, click the **RN/FL LED**:
  - a On the **Configure** menu, click **Programmed Settings**.
  - b On the **Parameter Group** menu, click **PRI Trunk Settings**.
  - c On the **Framing Mode** menu, select the setting the telephone company indicated.
  - d On the **Line Coding Options** menu, select the setting the telephone company indicated.
  - e On the **Primary Switch Type** menu, select the setting the telephone company indicated.
  - f Click **OK**.
  - g Click the **Dual PRI** card.
  - h On the **Configure** menu, click **Programmed Settings**.
  - i On the **Parameter Group** menu, click **PRI Configuration**.
  - j On the **ISDN-GW Slot** box, use the arrow control to select the setting the telephone company indicated.
  - k If terminating the ISDN calls to a **NETServer PRI** card, set the **ISDN-GW Slot** to the **NETServer slot number**.





# QUAD MODEM CARD

This chapter contains solutions for the Quad Modem card.

For additional information, see the 3Com Knowledgebase® web site at:  
*<http://knowledgebase.3Com.com>*.

---

## Configuring

This section contains product usage questions.

### Configuring Quad Modem line interface using AT commands

#### Fact

- Quad Digital card
- Dual Channelized T1 card
- Quad Analog/Digital card

#### Symptom

- Using AT commands to configure or set the line interface source on a Quad Analog/Digital modem
- Do not have Total Control Manager (TCM) application

#### Fix

AT commands to configure or set the line interface or modem:

- For standard analog line: **at%D0**
- For T1 line: **at%D1**
- For Primary Rate ISDN (PRI) line: **at%D2**
- Save to Non-Volatile Random Access Memory (NVRAM): **at&w**



For additional information on commands, type **AT\$** or **ATS\$**.

## Copying configuration from one modem to another

### Fact

- Quad Analog/Digital card
- Quad Digital modem
- Quad Analog modem
- Total Control Chassis

### Fix

To copy the configuration from one modem to another, complete the following steps using Total Control Manager:

- 1 Click **Total Control Manager**.
- 2 Click **Quad Modem** card.
- 3 Hold the **CTRL** key while clicking to select other modems on other cards.
- 4 On the **Configure** menu, click **Programmed Settings**.
- 5 Click any **Parameter Group** menu. For example, **Modem Identification**.
- 6 Click the **Load From** button.
- 7 Verify or enter the following:
  - **Target Host** - IP address of chassis you are copying settings from
  - **Community String** - *READ* community string from Network Management Card of chassis you are copying settings from
  - **Slot #** - slot number from Quad Modem you want to copy settings from
  - **Channel #** - channel number of Quad Modem you want to copy settings from
- 8 Click **OK**, to confirm, and then click **OK**.
- 9 On the **Configure** menu, click **Actions/Commands**.
- 10 Click the command **Save to NVRAM**, and then click **Execute**.
- 11 When *Success* appears under the Command Status *Result* heading, click **Close**.

## Trouble Clearing

This section contains problems encountered while using the product.

### Resetting modem after a premature disconnect

#### Fact

- NETServer card
- Quad Analog/Digital card
- Dial in user connected to a host device

#### Symptom

- Connection to host terminated prematurely
- Quad Modem card does not reset
- Next dial in user connects to host at the end of the previous session

#### Cause

- Resetting the modem after a premature disconnect should be handled by the packet bus Application Programming Interface (API) software. If this is not enabled, resetting of the modem is expected from the host.

#### Fix

- 1 To check that the packet bus is on, type:

```
show device
```

Packet bus API control should read **ON**.

- 2 Type:

```
set device nethangup on
```

### Quad Modems do not show on the PRI card software or Analog calls are not being picked up from the Quad Modem cards

#### Fact

- Dual PRI card
- Quad Digital card
- Network Management Card (NMC)
- Total Control Manager (TCM) application
- Quad Analog/Digital card

#### Symptom

- Configuring the modems through the Dual PRI software results in the slots not showing the presence of modems
- Get busy signals

- Digital calls go through but no analog calls will

### Fix

- 1 Use **TCM** to verify the **PRI** card is in a slot (Card is **black** and **RN/FL** LED is green.)

Use **TCM** to see if the modem(s) are indeed analog/digital or digital modems.



Cannot have analog modems.

- 2 Click the **Quad Modem** card **Modem1**. Hold down the **Ctrl** key and click the other modems.
- 3 On the **Main Menu** bar, click **Configure**, and then click **Programmed Settings**.
- 4 On the **Parameter Group** menu, click **Line Interface Options**.
- 5 Double-click the **Line Interface Source [%Dn]** box, click **priTdm**, and then click **OK**.
- 6 Click the **PRI** card.
- 7 On the **Main Menu** bar, click **Configure**, and then click **Actions/Commands**.
- 8 Click the command **Save to NVRAM**, and then click **Execute** and **Close**.
- 9 Click the **Network Management Card** or the **Quad Modem** cards.
- 10 On the **Configure** menu, click **Actions/Commands**.
- 11 On the **Command to Execute** menu, click **Software**.
- 12 Click the command **Software Reset**, and then **Execute** and **Close**.

**NMC or Quad Modem  
downloading more  
than 3 quad single  
sided or more the 10  
quad double sided  
from NMC 4.3.8**

### Fact

- Remote Access Concentrator (RAC)
- Quad Digital code 5.6.5 or 5.6.6
- Quad Analog code 5.6.5 or 5.6.6
- Network Manager Card (NMC)
- Total Control Manager (TCM) application

### Symptom

- Can download more than 3 single sided Quad Modems together
- Can download more than 10 doubled sided Quad Modems together

**Cause**

- There is a problem upgrading from TCS2.5.1 to TCS3.x. The NMC 4.3.8 seems to show a weakness.

**Fix**

Upgrade the NMC first to 5.5.5 (16 mgs) or 5.4.1 (8 mgs) before upgrading the Quad Modem cards.

**Disconnect reason  
"dialSecurity(34)"  
when connecting to a  
Quad Modem or a  
HiPer DSP****Fact**

- HiPer DSP card
- Total Control Chassis
- Total Control Manager (TCM) application
- Session Monitor
- T1 card
- Primary Rate ISDN (PRI) card
- Simple Network Management Protocol (SNMP)
- Accounting
- Remote Authentication Dial In User Service (RADIUS)

**Symptom**

- Reason for disconnect dialSecurity(34)

**Fix**

Hub Security failed for any one of several reasons such as:

- invalid password
- the modem was not able to communicate with the NMC for a Hub Security session and was set to refuse calls
- modem is disconnecting the initial call in preparation for dialback security



# 12

## EDGESERVER PRO CARD

This chapter contains solutions for the EdgeServer™ Pro card.

For additional information, see the 3Com Knowledgebase® web site at: <http://knowledgebase.3Com.com>.

---

### Installing

This section contains software installation questions.

#### Installing Ethernet drivers

##### Fact

- EdgeServer Pro card
- Microsoft Windows® NT

##### Symptom

- Configuring the EdgeServer Pro Ethernet drivers

##### Fix

- 1 On the **Windows NT Server** desktop, right-click the **Network Neighborhood** icon, and then click **Properties**.

The Network window appears.

- 2 Click the **Adapters** tab, and then click **Add**.

The network adapter list appears.

- 3 Click **DEC PCI Fast Ethernet DECchip 21142**, and then click **OK**.

- 4 When prompted for the file location, type:

**c:\i386**

- 5 Click **Continue**.



You will be prompted twice for this location since the EdgeServer card detects both Ethernet ports on the NIC.

The DEC DECchip 21142 based Adapter Setup dialog box appears with **AutoSense** highlighted in the *Connection type* box.

- 6 Click **OK**.
- 7 When the dialog box appears again, click **OK** (second port).
- 8 Go to **Protocols** tabbed page, and then click **Add**.
- 9 Click the **TCP/IP Protocol**, and then click **OK**.
- 10 When prompted for the file location, type:

**c:\i386**

- 11 Click **Continue**.

This program loads files and displays the Microsoft TCP/IP Properties window.

- 12 On the **IP address** tabbed page, click **Static Addressing**.

If you selected Static Addressing, add:

- address
- subnet
- default gateway

- 13 Click **OK**.
- 14 On the Network window, click **Close**.
- 15 Restart **Windows NT Server**.

## Upgrading **Fact**

- EdgeServer Pro card
- Microsoft Windows NT 4.0

## Symptom

- Problems upgrading EdgeServer Pro card

## Fix

- 1 Click the **Start** button, point to **Settings**, and then click **Control Panel**.
- 1 Double-click **Network**, and then click **Adapters** tab.
- 2 In the **Network Adapters** box, click **EdgeServer Pro WAN adapter**, and then click **Remove**.
- 3 Click the **Services** tab.

- 4 In the **Network Services** box, click **RAS** (Remote Access Server), and then click **Remove**.
- 5 In the **Network Services** box, click **SNMP** (Simple Network Management Protocol), and then click **Remove**.
- 6 Apply **Windows NT Services Pack 3**.



This is resident on your system or can be download for the Microsoft web site: [www.microsoft.com](http://www.microsoft.com)

- 7 Add the new **EdgeServer Pro** adapter.  
RAS and SNMP will be automatically re-installed.
- 8 Re-Apply **NT Service Pack 3**.
- 9 Restart **Windows NT** server.

## Installing SCSI Device Drivers

### Fact

- EdgeServer Pro card
- Microsoft Windows NT 4.0
- SCSI Device Drivers
- New Installation

### Symptom

- Problems installing SCSI device drivers on EdgeServer Pro card

### Fix

The installed SCSI driver is for the SCSI-3 interface on the peripheral Network Interface Card (NIC).

- 1 Click **Start**, point to **Settings**, and then click **Control Panel**.
- 2 To identify the device driver, double-click **SCSI Adapters**.

Normally, the SCSI device and driver appear in their respective dialog boxes. If the driver becomes disabled or removed, it is not available for selection.

### To reinstall the SCSI driver on EdgeServer Pro:

- 1 Click the **Drivers** tab, and then click **Add**.  
The Install Driver dialog box appears.
- 2 From the **Manufacturers** list, click **Adaptec**.

- 3 From the **SCSI Adapter** list, click **Adaptec AHA-29X/AHA-394** or **AIC-78XXPCI SCSI Controller**, and then click **OK**.
- 4 Click **Yes** to restart **EdgeServer Pro** card when prompted for reboot.

## Installing Network Adapters

### Fact

- EdgeServer Pro card
- Network adapters
- Quad Digital modem
- Network Management Card (NMC)
- Quad Analog/Digital modem
- HiPer DSP card
- Microsoft Windows NT 4.0
- New Installation
- WAN drivers

### Symptom

- Problems installing network adapters on the EdgeServer Pro card

### Fix

- 1 Right-click **Network Neighborhood** icon on the Windows NT Server desktop, and then click **Properties**.
- 2 Click **Adapters** tab, **Add**, and then click **Have Disk**.
- 3 When prompted for the file location, type:  
`c:\&oem&\bbinst`
- 4 Click **OK**.  
The program copies a number of system files, then displays the EdgeServer Pro Configuration dialog.
- 5 Configure ports as necessary.

## SNMP fails to start

### Fact

- Total Control Chassis
- Microsoft Windows NT 4.0
- Microsoft Windows NT

- EdgeServer card
- EdgeServer Pro card
- HiPer DSP card
- Dual Channelized T1 card
- Dual T1/E1 card
- Dual PRI card
- Event viewer
- Simple Network Management Protocol (SNMP)

### Symptom

- SNMP fails to start
- SNMP forced poll fails

### Fix

- 1 Verify SNMP is installed:
  - a Click **Start**, point to **Settings**, and then click **Control Panel**.
  - b Double-click **Services**.
  - c Scroll to and double-click **SNMP**.
  - d Click **Manual**, and then click **OK**.
-  If SNMP is not installed, add the service from network service.
- 2 Verify if SNMP has errors.
  - a Click **Start**, point to **Programs, Administrative Tools (Common)**, and then click **Event Viewer**.
  - b Check if **SNMP** has error messages.
- 3 Verify SNMP registry path is correct:
  - a Click **Start**, and then click **Run**.
  - b Type **Regedit** (to display Registry Editor), and then click **OK**.
  - c Edit the following path:
    1. HKEY\_LOCAL\_MACHINE
    2. SYSTEM
    3. ControlSet001
    4. Services

5. SNMP
6. Parameters
7. ExtensionAgents
8. Verify: **SOFTWARE\3Com\EdgeServer\PerfMib\CurrentVersion**

### Default password on new install

#### Fact

- EdgeServer card
- EdgeServer Pro card
- Microsoft Windows NT 4.0

#### Symptom

- Do not know the administrator password
- Forgot the password
- Default password not known

#### Fix

Password = edgeserver

---

## Trouble Clearing

This section contains problems encountered while using the product.

### Correcting high volume call pickup performance

#### Fact

- Total Control Chassis
- EdgeServer card
- EdgeServer Pro card
- Microsoft Windows NT v4.0
- RAS (Remote Access Service)
- Microsoft Windows NT 4.0
- HiPer DSP card
- Dual Channelized T1 card
- Dual T1/E1 card
- Dual PRI card
- Event Viewer

## Symptom

- poor high volume call pickup performance
- modems fail to answer during high load
- not communicating with Microsoft Windows NT RAS
- ring no answer

## Fix

If you notice modem channels failing to answer calls during high load situations, the following condition may be occurring:

A timing inconsistency exists between the modem channels and RAS. The modem channels are ready to answer calls, but RAS is still finishing the previous call.

To solve this timing issue, add more RAS ports so that the last port used will have sufficient time to reset.



Do not arbitrarily add RAS ports to your setup without determining their effectiveness. Additional ports use valuable system resources.

Follow the procedure below to add RAS ports:

- 1 Through the **Services** tabbed page in the **Network** window, access the **RAS Setup** dialog box.
- 2 Unless you are using the maximum number of ports supported (256), clone another 8 RAS ports on the list.
- 3 Click **Continue**.
- 4 Restart the **EdgeServer** card when prompted.
- 5 Monitor the setup again to see if the additional ports helped to correct the dropped call condition.
- 6 If you are not using the maximum configuration, and the above process reduced the dropped calls, but did not eliminate them, repeat the previous steps to eliminate the condition.





# HiPer ACCESS ROUTER CARD

This chapter contains solutions for the HiPer™ Access Router Card (ARC).

For additional information, see the 3Com Knowledgebase® web site at:  
*<http://knowledgebase.3Com.com>*.

---

## Installing

This section contains software installation questions.

### Upgrading through console connection

#### Fact

- HiPer Access Router Card (ARC)
- Network Management Card (NMC)
- HiPer Digital Signal Processor (HiPer DSP)
- Total Control Manager (TCM) application

#### Symptom

- Flashing green light on the RN/FL LED
- Card shows yellow on Total Control Manager
- Card reboots
- Software download fails on Total Control Manager
- Cannot upgrade a HiPer ARC
- TFTP timeout on Total Control Manager

#### Fix

- 1 From the RJ-45 interface labeled AUX PORT, plug the console cable with the null modem adapter into communication port on personal computer (PC) or laptop.
- 2 Start **HyperTerminal** or any terminal emulation program set to 115200 bps.

- 3 Reset the card by sliding the HiPer ARC's Network Application Card (NAC) out (card at front of the chassis).
- 4 Move dip switch **1** & **2** to the **On** position. (Baud rate set to 115200.)
- 5 Slide card back into chassis.  
Watch HyperTerminal session screen.
- 6 After the boot Prom Version is displayed, type:
 

```
AT{Z}
```

 The message:
 

```
Begin software downloading
```

 appears.
- 7 On the **Transfer** menu, click **Send File**.
- 8 Identify where the code is located, and then click **Transfer**.  
Download should begin.



For latest code, go to Total Service Site at: [totalservice.usr.com](http://totalservice.usr.com)

### Installing HiPer Access Router Manager (HARM) on Solaris UNIX

#### Fact

- HiPer Access Router Manager (HARM) application
- Solaris
  - OS: Sun Solaris
  - Solaris v2.5.1
  - Solaris v2.5
- OS: Solaris
- UNIX
- Simple Network Management Protocol (SNMP)
- HiPer ARC
- Total Control Chassis

#### Symptom

Installing the HiPer Access Router Manager (HARM) on Sun Solaris UNIX

#### Fix

- 1 Go to Total Service Site at: [totalservice.usr.com](http://totalservice.usr.com)
- 2 Login.

- 3 Click **Software Library**.
- 4 Scroll to **Total Control Hubs: HiPer ARC** and click.
- 5 Click **Start Search**.
- 6 Scroll to appropriate **\*.tar** file, and then click.
- 7 Download file to system into a directory on the UNIX station.
- 8 Un-compress file.
- 9 Un-tar file.
- 10 Run the install program by typing:
 

```
./install
```
- 11 A prompt will appear:
 

```
Please enter in Full installation path name.
```
- 12 Enter in the path name where HARM will be installed. (for example:
 

```
/export/home/harm
```

The installation procedure will run and bring you back to the UNIX prompt:

```
HARM has been installed on this system in
```
- 13 Go to directory by typing:
 

```
/export/home/harm
```
- 14 Run by typing:
 

```
./harm
```

---

## Configuring

This section contains software configuration questions.

### Initialization string on the HiPer ARC

#### Fact

- HiPer Access Router Card (ARC)
- HiPer Digital Signal Processor (DSP) card
- Quad Analog/Digital card
- Total Control Chassis
- Initialization strings

#### Symptom

- HiPer DSP does not save some settings on reboot

- Problems saving modem settings to Non-Volatile Random Access Memory (NVRAM)
- HiPer ARC init string resets modem settings
- Modems cannot keep settings

### Fix

Although HiPer ARC talks to the chassis modems over the packet bus, it interacts with them as serial devices. Virtual serial ports (modems) are created using the packet bus. Packet bus sessions are opened when the cards boot and normally do not drop until the next reboot of the HiPer ARC or the modem(s).

The HiPer ARC automatically configures modems to its requirements upon initialization of the packet bus. Every time a packet bus session is opened, the HiPer ARC sends the following initialization string to the modem on the other side of the session.

```
ATH0S0=0S72.0=1E0Q0V0&A0&K1&L0&N0&TX0S47.5=1S2=255
```

This initialization string is hard coded into the HiPer ARC.

**Table 13-1** Explanation of the default AT initialization string sent to the modem

AT	attention prefix
HO	hang up (go on hook)
S0=0	ring to answer on = 0 (don't auto answer)
S72.0=1	disable ATZ command over packet bus
E0	local echo off
Q0	result codes suppressed
V0	return numeric result codes
&A0	ARQ result codes disabled
&K1	auto enable compressions
&L0	leased line feature off
&N0	negotiate connection rate
&T	turn off diagnostics
X0	select smallest set of result codes
S47.5=1	require packet bus connection to answer
S2=255	set the escape character from default + to ASCII 255

Any other settings outside the range of other settings can be changed and saved into NVRAM where they will remain.

**Setting PPTP Fact**

- PPTP (Point to Point Tunnel Protocol)
- HiPer ARC v4.1.11
- Microsoft Windows NT 4.0 Server
- HiPer ARC
- Virtual Private Network (VPN)
- Total Control Chassis
- Microsoft Windows NT servers

**Symptom**

- Cannot get PPTP to work on the HiPer ARC
- Setting up PPTP on the HiPer ARC
- Cannot get PPTP to work
- PPTP tunnel is not reliable
- Cannot establish a PPTP tunnel

**Fix**

- 1 Set a user on the HiPer ARC. From the Command line Interface (CLI), type:

```

set tunnel user [username]
  client_endpoint [string]
  group [string]
  medium_type [ipv4]
  password [user_password]
  security [none | control_only | data_only |
           both_data_and_control]
  server_endpoint [string]
type [none | pptp | l2tp]

```

**Table 13-2** HiPer ARC PPTP Command Definitions

[username]	Name of user.
[client_endpoint]	Initiator IP address, end of the tunnel. Limit 64 ASCII characters.
[group]	Group ID of the tunneled session. Limit 64 ASCII characters.
[medium_type]	The transport layer of the tunnel medium used when creating tunnels. Default: IPV4.
[password]	User's password.

**Table 13-2** HiPer ARC PPTP Command Definitions

<b>[security]</b>	Additional degree of security to perform on control or data packets for this tunnel.
<b>[server_endpoint]</b>	The IP address of the server-end of the tunnel. Limit 64 ASCII characters.
<b>[type]</b>	The Tunneling protocol this user will employ. Default: PPTP.

- 2 Add a PPTP Network Server (PNS) by typing:

```
add pptp pns [1-9]
address [ip address]
```

- 3 Set pptp globally on the HiPer ARC. Type:

```
set global_call_type [pptp | l2tp | none]
```

- 4 Configure PPTP by typing:

```
set pptp <number>
  ack_timeout <milliseconds>
  data_receive_packet_window <number>
  flow_control <enable | disable>
  idle_timeout <number>
  load_balancing <enable | disable>
  loglevel <disable | control_pkt_only |
    ctrl_and_headers_of_data_pkt | ctrl_and_data_pkt>
  max_seek_descriptors <number>
  max_sessions <number>
  max_tunnels <number>
  reassembly_timeout <milliseconds>
  reply_timeout <seconds>
```

**Table 13-3** PPTP Configuration Command Definitions

<b>[number]</b>	Stack index number.
<b>[ack_timeout]</b>	Number of milliseconds the PPP stack waits to send and acknowledge to its peer when there is no data or control packets to piggyback the acknowledgment to. The default causes immediate acknowledgment when no data or control packets are pending. Default: 0.
<b>[data_receive_packet_window]</b>	Size in number of data packets that channel receive window sent to the stack's peers. Range: 0 - 256.
<b>[flow_control]</b>	Enables/Disables data tunnel flow control. Default: Disable.
<b>[idle_timeout]</b>	In seconds, interval waited before the control tunnel is timed out. Range: 0-65535.
<b>[load_balancing]</b>	When enabled, HiPer ARC accesses least used Layer 2 Tunneling Protocol (L2TP) Network Server (LNS) over the last 60 seconds. Default: Enable.
<b>[loglevel]</b>	Logging level to set to dump packets to the console. Default: Disable.

**Table 13-3** PPTP Configuration Command Definitions

<b>[max_sessions]</b>	Highest number of simultaneous active sessions the stack can support. Default: 0, Range: 1-1451.
<b>[max_seek_descriptors]</b>	Highest number of tunnel endpoints the PPTP stack can remain simultaneously connected to. Range: 1-1451.
<b>[reassembly_timeout]</b>	Number of milliseconds the stack uses to determine the window to use before reassembling out of order packets. A low value increases the chance that out-of-sequence packets will be lost (which may cause the PPP decompression engine to reset); a high value increases the time period where the PPTP stack processes packets which were received out of order (especially in the case of a packet which was lost within the network). The default may cause all out-of-sequence packets to be lost. Default: 0.
<b>[reply_timeout]</b>	Number of seconds the PPTP stack waits until a timeout occurs in receiving a response to the keep-alive (hello) message. Default: 0.

### Setting MPIP port numbers

#### Fact

- Multi-link PPP Interspan Protocol (MPIP)
- Dual PRI card
- Total Control Chassis
- Total Control Manager (TCM) application
- HiPer ARC v4.1.11
- HiPer ARC

#### Symptom

- Problems with setting up MPIP
- Unable to assign MPIP port numbers to the server or client
- Unable to change the MPIP server or client state status

#### Fix

The following command configures MPIP port numbers and on/off status for any HiPer ARC acting as a MPIP server or client. Setting this command does not affect the MPIP Server and MPIP Client tables.

From the command line interface, type:

```
set MPIP server_state <off | on>
client_state <off | on>
port <number>
```

**Table 13-4** MPIP Configuration Command Definitions

[Port]	The UDP port for the MPIP server and client. Default: 5912. Range: 0-65535.
[Client_state]	Turns all MPIP clients on or off. Default: on.
[Server_state]	Turns all MPIP clients on or off. Default: off.
[Shared_secret]	Password shared by the MPIP client and server. Limit 16 ASCII characters.
[Priority]	Rank specifying preference of MPIP server used. If two servers share the same priority, the server with the smaller IP address takes precedence. Default: 1. Range: 1-32.
[type]	The product type of the MPIP client: HiPer ARC or NETServer. Default: HiPer ARC.
[server_endpoint]	The IP address of the server-end of the tunnel. Limit 64 ASCII characters.

### Setting NTP (Network Time Protocol)

#### Fact

- Total Control Chassis
- Total Control Manager (TCM) applications
- HiPer ARC v4.1.11
- HiPer ARC
- Network Time Protocol (NTP)

#### Symptom

- Unable to set simple Network Time Protocol
- Unable to get time synchronization
- Setting up time on the HiPer ARC

#### Fix

From the command line interface, type:

```
set ntp polling_interval [64-1024]
   primary_server [IP_name or address]
retransmissions [0-200]
   secondary_server [IP_name or address]
   timeout [1-60]
```

**Table 13-5** NTP Configuration Command Definitions

[retransmissions]	Maximum number of times a request is retransmitted to a specified server before the server is considered unavailable. Range: 1-200 attempts. Default: 5 attempts.
[timeout]	Number of seconds since a request has been sent to a server, after which period the request is considered timeout. Range: 1 second to 1 minute. Default: 10 seconds.

## TACACS+ Authentication Authorization Accounting setup

### Fact

- HiPer Access Router Card (ARC)
- HiPer ARC 4.1.11
- TACACS+ 2.1
- Sun Solaris 2.6

### Fix

From the command line interface, type:

```
add aaa_server xxxx preference 1 address xxx.xxx.xxx.xxx
enable yes port 49
set security_server tacacsplus
disable direct_request
enable authorization
enable authentication remote
enable tacacsplus interim_accounting _interval
set ppp receive_authentication pap
save all
reboot
tacacs+ setup user = xxx {
login = cleartext "xxxxxx"
service =ppp protocol =ip {
default attribute =permit
}
```

## Setting initialization scripts

### Fact

- HiPer Access Router Card (ARC)

### Symptom

- Setup initialization scripts on the HiPer ARC
- Creating a modem initialization string for the HiPer ARC

### Fix

Setting up an initialization script for the HiPer ARC:

```
add init_script [script_name] command ["command string"]
```



Modem initialization string must be entered with quotes and must be less than 56 characters.

- 1 To modify the initialization script, type:

```
set init_script [script_name] command ["command string"]
```

- 2 To view the initialization script, type:

```
list init_script
```

- 3 Set the interface or modem group name to add the initialization script by typing:

```
set modem_group [group_name] init_script [name]
```

or

```
set switched interface [interface_name] init_script [name]
```

## Setting idletimeout **Fact**

HiPer ARC

### Symptom

Cannot set idletimeout on the HiPer ARC

### Fix

- 1 To set idletimeout on the users on the HiPer ARC, type:

```
set user <user_name> idle_timeout [in seconds]
```



There is no idle\_timeout on the switched interface or ports on the HiPer ARC. Specify idletimeout through Remote Authentication Dial In User Service (RADIUS), the user, or default user on the HiPer ARC table.

- 2 To set the idletimeout globally on the Hiper ARC:

```
set user default idle_timeout [in seconds]
```

The default is 0, meaning it's not activated.

## Setting RADIUS Security **Fact**

- HiPer ARC
- HiPer ARC v4.0.19
- HiPer ARC v4.0.29
- HiPer ARC v4.0.30
- Security and Accounting
- Remote Authentication Dial In User Service (RADIUS)

### Symptom

- Setting up RADIUS security with HiPer ARC
- Problems with Authentication
- Users get dropped

**Fix**

- 1 To set up authentication on the HiPer ARC, type:

```
set authentication
  primary_destination_port [port number]
  primary_secret [string]
  primary_server [ip address or name of server]
  retransmissions [count]
  secondary_destination_port [port number]
  secondary_secret [string]
  source_port [port number]
  timeout [timeout_seconds]
```

- 2 To view authentication settings, type:

```
show authentication
```

- 3 To enable the authentication, type:

```
enable authentication [local | remote | hint_assigned]
```

**Table 13-6** Enable Authentication Command Definitions

[local]	user gets verified off the user table.
[remote]	authentication happens through a RADIUS server.
[hint_assigned]	employs dynamic assignment of IP addresses

- 4 By default, the ppp receive\_authentication is set to **either**. It must be set to **pap**. Type:

```
set ppp receive_authentication pap
```

- 5 To enable Local or RADIUS (remote) authentication, type:

```
enable authentication local
enable authentication radius
```

- 6 To test authentication either locally or remotely on the HiPer ARC, type:

```
_authen [username] [password]
```

Example: **HiPer>>\_authen 3Com 3Com**

- 7 To display the RADIUS and local User Authentication Settings, type:

```
HiPer>> sh authentication counters
```

```

AUTHENTICATION COUNTERS
Local Successful Authentications: 4
Local Failed Authentications: 1
Remote Successful Authentications: 1
Remote Failed Authentications: 1
Remote No Responses: 8

```

**Setting specified IPX network configuration created with the Add IPX network command**

### Fact

- Total Control Chassis
- Total Control HiPer ARC
- Total Control HiPer ARC v4.1.11
- IPX Network
- Internet Protocol Transfer (IPX)
- Server Advertisement Protocol (SAP)
- IPX Routing

### Symptom

- Unable to see SAP table
- Unable to see SAP broadcast messages
- SAP packet size incorrect
- SAP table entries are not displayed consistently
- Setting the configuration of the specified IPX Network on a HiPer ARC
- IPX Routing is not working

### Fix

Type command to set configuration of the specified IPX network:

```

set IPX network <network name>
  delay_ticks [number]
  diagnostics [disable | enable]
  maximum_learning_retries [number]
  netbios [enable | disable]
  netbios_cache_timer [seconds]
  netbios_max_hops [number]
  packet_maximum_size [number]
  rip [auto_off | auto_on | on | off]
  rip_age_multiplier [number]
  rip_broadcast [enable | disable]
  rip_gap_timer [number]
  rip_packet_size [number]

```

```

rip_periodic [disable | enable]
rip_update_interval [number]
sap [auto_off | auto_on | on | off]
sap_age_multiplier [number]
sap_broadcast [enable | disable]
sap_gap_timer [number]
sap_nearest_replies [on | off]
sap_packet_size [number]
sap_periodic [enable | disable]
sap_update_interval [number]

```

### Setting up a login, a managed, and a network user in the HiPer ARC

#### Fact

- HiPer ARC
- Total Control Chassis

#### Symptom

- Setting up a login user in the user table
- Setting up a network user in the user table
- Setting up a managed user in the user table

#### Fix

Type:

```

add user [username]
  password [password]
  network_service [ppp | slip]
  type [login | network | callback | dial_out | manage]
  expiration [date]
  idle_timeout [seconds]
  message ["message"]
  modem_group [group_name]
  output_filter [filter_name]
  phone_number [number]
  session_time [seconds]

```

#### Fix: Setting up a network user:

Type:

```

set network user [name]
  address_selection [negotiate | assign | specified]
  default_route_option [enable | disable]
  header_compression [none | tcpip]
  ip [enable | disable]
  ip_routing [listen | send | both | none]

```

```

mtu [number]
network_service [ppp | slip]
rip [RIPv1 | RIPv2]
rip_authentication_key [string]
rip_policies_update [rip policies]
send_password [user password]
spoofing [enable | disable]

```

### Configure multiple HiPer ARCs using the same script file

#### Fact

- HiPer Access Router Card (ARC)
- Total Control Chassis

#### Symptom

- Running script files on the HiPer ARC
- Running configuration files on the HiPer ARC
- Running TFTP on the HiPer ARC

#### Fix

- 1 Create a file containing the command line interface (CLI) commands.
- 2 Transfer the file using the Trivial File Transfer Protocol (TFTP) to the HiPer ARC.
- 3 To run the configuration file, type:

```
do <filename>
```

### Setting up the MPIP client on a HiPer ARC

#### Fact

- Multi-link PPP Interspan Protocol (MPIP)
- Dual PRI card
- Total Control Chassis
- Total Control Manager (TCM) application
- HiPer DSP card
- HiPer ARC
- HiPer ARC v4.1.11
- Primary Rate ISDN (PRI)
- Integrated Services Digital Network (ISDN)

**Symptom**

- Unable to communicate to the MPIP client
- Problems with setting up MPIP
- MPIP server does not see the MPIP client

**Fix**

To configure MPIP client parameters, type.

```
set mpip client <IP_address>
  sharedsecret <string>
  type <hiperarc | netserver>
```

**Setting up the MPIP server on a HiPer ARC****Fact**

- Multi-link PPP Interspan Protocol (MPIP)
- Integrated Services Digital Network (ISDN)
- Dual PRI card
- Total Control Chassis
- Total Control Manager (TCM) application
- HiPer ARC
- HiPer ARC v4.1.11

**Symptom**

- Unable to communicate the MPIP server
- Problems with setting up MPIP
- MPIP client does not see the MPIP server
- Cannot establish a 2 B-channel connection

**Fix**

Type:

```
set MPIP server <ip address>
  port <number>
  priority <1-32>
  sharedsecret <string>
```

**Table 13-7** MPIP Configuration Command Definitions

[port]	The UDP port for the MPIP server and client. Default: 5912. Range: 0-65,535
[Client_state]	Turns all MPIP clients on or off. Default: on.
[Server_state]	Turns all MPIP clients on or off. Default: off.
[Shared_secret]	Password shared by the MPIP client and server. Limit 16 ASCII characters.
[Priority]	Rank specifying preference of MPIP server used. If two servers share the same priority, the server with the smaller IP address takes precedence. Default: 1. Range: 1-32.
[Type]	The MPIP client product type: HiPer ARC or NETServer. Default: HiPer ARC.

### Setting up the MPIP network service on a HiPer ARC

#### Fact

- Multi-link PPP Interspan Protocol (MPIP)
- Dual PRI card
- Total Control Chassis
- Total Control Manager (TCM) application
- HiPer ARC v4.1.11
- ClearTCPD (Transmission Control Protocol Daemon)
- DialOut
- Simple Network Management Protocol Daemon (SNMPD)
- Trivial File Transfer Protocol Daemon (TFTPd)
- TELNETD protocol

#### Symptom

- Problems with setting up MPIP
- Unable to communicate the MPIP client
- MPIP server does not see the MPIP client
- Unable to list network services
- Unable to TFTP using the socket number
- Unable to TELNETD using the socket number
- Unable to SNMPD using the socket number
- Unable to ClearTCPD using the socket number
- Unable to DialOut using the socket number

**Fix**

Type:

```

set network service <admin_name>
  close_active_connections [true | false]
  data [string]
  server_type [service_name]
  socket [socket_number]

```

**Using**

This section contains symptoms related to normal use of product.

**Seeing modems in  
specific slots or  
Setting chassis  
awareness**

**Fact**

- HiPer ARC
- Network Management Card (NMC)
- Quad Analog/Digital modem
- Quad Digital modem
- HiPer DSP card

**Symptom**

- Ports are not showing up in specific slots
- Ring no answer on the HiPer DSP card
- Busy signals
- Interfaces go down

**Fix**

1 Type:

```
list chassis
```

This displays the occupied and empty chassis slots.

It will display the following:

```

Slot Owner Description Ports Type
1 YES Primary Rate T1 NAC 0 DYNAMIC
2 NO Gen. 2 V.34 Anal-Digi Modem NAC 4 DYNAMIC
3 YES --EMPTY-- 0 STATIC
4 YES --EMPTY-- 0 STATIC
5 NO Gen. 2 V.34 Anal-Digi Modem NAC 4 DYNAMIC
6 YES --EMPTY-- 0 STATIC
7 YES --EMPTY-- 0 STATIC
8 YES --EMPTY-- 0 STATIC

```

```

9 YES --EMPTY-- 0 STATIC
10 YES --EMPTY-- 0 STATIC
11 YES --EMPTY-- 0 STATIC
12 NO Quad Anal-Digi V.34 Modem 4 DYNAMIC
13 YES --EMPTY-- 0 STATIC
14 YES 24 Channel High Density Modem 23 DYNAMIC
15 YES HiPer Access Router NAC 0 DYNAMIC
16 YES ISDN Primary Direct NAC 0 DYNAMIC

```

- 2 To see all the cards in the chassis, type:

```
enable nmc_chassis_awareness
```

- 3 Reboot HiPer ARC card.

The cards are displayed.

- 4 To see interface status, type:

```
list switched interface
```

- 5 If down, type:

```
enable interface slot:x/mod:x
```

- 6 If you are still not able to see the modems defined in specific slots, type:

```

set chassis slot [slot number 1-16]
card_type [quad modem | HDM_24 | HDM 30 | Empty ]
owner [yes | no]
type [static]
ports [1-30]

```

### Dialout with or do a reverse telnet on HiPer ARC

#### Fact

- HiPer ARC
- HiPer DSP card
- Quad Analog/Digital card

#### Symptom

- Cannot dialout
- Cannot reverse telnet

#### Fix

- 1 Add a modem group by typing:

```

HiPer>>add modem_group [group_name | all] interface
[interface_name (slot:x/mod:[1-y])]

```

2 Add a dialout service:

```
HiPer>>add network service [service_name]
service_type [telnet | dialout | cleartcp]
socket [socket number]
data "auth=on | off, login banner=\"string\",
login_prompt=\"string\",
service_type=dialout, modem_group=\"string\""
```

3 Verify network service correctly typed:

```
HiPer>>list network service
```

4 Verify service enabled. If not, enable by typing:

```
HiPer>>enable network service [service_name]
```

If not enabled, verify dialout service is correctly typed, especially the data portion (see step 2).

### Problems placing ISDN calls through Dual PRI card and HiPer ARC

#### Fact

- Total Control Manager (TCM) application
- Dual PRI card
- Integrated Services Digital Network (ISDN)

#### Negated Fact

- HiPer ARC

#### Symptom

- ISDN calls disconnect immediately after call attempt

#### Change

- Replaced NETServer card with a HiPer ARC
- Using Dual PRI card with HiPer ARC
- Using Dual PRI Card with a NETServer card that does not have a daughterboard

#### Cause

The HiPer ARC does not support the TDM (Timed Division Multiplexing) bus inside the chassis. ISDN calls from a Dual PRI card must terminate to Quad modems so the HiPer ARC can see them on the Packet bus.

**Fix**

Verify that the Dual PRI card is configured properly for a HiPer ARC:

- 1 Click **Start**, point to **Programs, USR Management Applications**, and then click **Total Control Manager**.
- 2 On the **File** menu, click **Open**.
- 3 On the **Device Name list**, double-click a chassis.
- 4 Click the **Dual PRI** card.
- 5 On the **Main Menu** bar, click **Configure**, and then click **Programmed Settings**.
- 6 On the **Parameters Group** menu, click **PRI Configuration**.
- 7 Double-click the **ISDN-GW Slot** box, click the arrow control to set the value to **0**, and then click **OK**.

This terminates ISDN calls to the Quad modems.



HiPer ARC does not have a Munich daughterboard to terminate ISDN calls.

- 8 On the **Configure** menu, click **Actions/Commands**.
- 9 From the **Command to Execute** menu, click **Software**, and then click the command **Save to NVRAM**.
- 10 Click **Execute**, and then click **Close**.

### Deleting administrative user

**Fact**

- HiPer Access Router Card (ARC)
- HiPer ARC v4.1.11

**Symptom**

- Cannot delete administrative user on the HiPer ARC after saving and rebooting
- Deleting administrative user

**Fix**

User cannot be removed from 4.1.11. Disable the user and set arbitrary password for it.

Type:

```
set user admin password admin
set user adm type login (for added security)
disable user admin
save all
```

### Tunnels: maximum number active

#### Fact

- HiPer ARC
- HiPer ARC v4.1.11
- Layer 2 Tunneling Protocol (L2TP) setup

#### Symptom

- Maximum number of tunnels that can be active on the HiPer ARC
- Need number of Virtual Tunnels for L2TP

#### Fix

The **Number of Control Channel Seek Descriptor** box indicates that the default is **8**.

Define as many users as needed on the RADIUS with each of them having their own tunnel server endpoint.

Local configuration limit on a chassis-wide basis is **9**.

### Setting RADIUS Accounting

#### Fact

- Security and Accounting Server
- HiPer ARC
- HiPer ARC v4.0.19
- HiPer ARC v4.0.29
- HiPer ARC v4.0.30
- Remote Authentication Dial In User Service (RADIUS)

#### Symptom

- Not getting any accounting reports from the HiPer ARC
- Setting up accounting on the HiPer ARC

#### Fix

- 1 To set up Accounting on the HiPer ARC, type:

```

set accounting
  primary_port [port number]
  primary_destination_port [port number]
  primary_retransmission [number]
  primary_secret [secret string]
  primary_server [ip address or host_name]
  retransmission [count]
  secondary_port [port number]
  secondary_server [ip address or host_name]
  timeout [number_seconds]
  use_servers [one | both]
  source_port [port_number]

```

- 2 To view accounting settings:

```
show accounting
```

- 3 To see if accounting reports are being sent, type:

```
HiPer>> sh accounting counters
```

It will display these settings:

```

ACCOUNTING COUNTERS
Number Of Local Users: 4
Number of Active Users: 3
UDP Packets Received: 8
UDP Packets Retransmitted: 9

```

## Monitoring RADIUS authentication

### Fact

- HiPer ARC v4.1.11
- Remote Authentication Dial In User Service (RADIUS)
- Security and Accounting

### Symptom

- Dial-up users unable to authenticate to RADIUS server
- Cannot authenticate

### Fix

- 1 To monitor RADIUS communication from HiPer ARC prompt, type:

```

show events
monitor radius

```

**2** The following menu appears when monitoring RADIUS:

- A. Monitor all RADIUS packets
- B. Monitor all RADIUS authentication packets
- C. Monitor all RADIUS accounting packets
- D. Monitor a specific user
- E. Monitor next session
- F. Monitor all packets to a specific server
- X. Exit the monitor

Below is a sample decode trace:

```
-----
Source-IP Src-Port Destination-IP Dest-Port Id Packet-Type
-----
205.160.103.196 1645 205.160.103.197 1645 3 Access-Accept
-----
```

```
Framed-Compression : 1
IP-Address-Pool : ippool
Framed-MTU : 1514
Framed-IP-Netmask : 255.255.255.255
Framed-Protocol : PPP
Framed-Routing : 0
Idle-Timeout : 3600
Proxy-State : x
Receive-Acc-Map : 0
Session-Timeout : 3600
Transmit-Acc-Map : 0
Service-Type : 2
```

**Setting switched interface****Fact**

- Total Control Chassis
- HiPer ARC v4.1.11
- HiPer ARC
- Switched interface

**Symptom**

- Unable to configure the switched interface
- Unable to disable authentication
- Unable to connect to host IP
- Need to set interfaces for two-way
- Issuing AT commands on switched interfaces

- Problems setting dialout through switched interfaces
- Setting host addresses on switched interfaces
- Setting user name on switched interfaces

### Fix

Type:

```
set switched interface <slot:x/mod:y>
  access [dial_in | dial_out | two_way]
  at_command [string]
  connection_type [direct_conn | normal | direct_net |
    no_prompt prompt_user_only]
  dial_prefix [string]
  disable_authentication [none | async_ppp] |sync_ppp |
  ppp]
  filter_access [on | off]
  host_address [IP_name or address]
  host_type [prompt | select | specified]
  init_script [name]
  input_filter [name]
  login_service [telnet | rlogin | cleartcp | ping]
  message [login_string]
  output_filter [name]
  password [user_password]
  prompt [prompt_message]
  prompt_style [local | remote]
  tcp_port [port_number]
  type [network | login | login_network]
  user_name [user_name]
```

**Table 13-8** Switched Interface Command Descriptions

[interface_name]			Switched interface (slot:x/mod:y) to modify. Limit: 64 ASCII characters.
[access]			Sets switched interface access type. Modem allows dial_in only, dial_out only, or both (two_way). Default: two_way.
[at_command]			String representing any generic AT command.
[connection_type]			Sets switched interface connection type. Options:

**Table 13-8** Switched Interface Command Descriptions

	<b>Direct_net</b>		Uses protocol parameter's setting to create a network (virtual node) connection. Employs user name and password specified in this command. Authentication is done by the network protocol such as PPP. Direct_net does not support the Serial Line IP Protocol (SLIP) protocol.
	<b>Direct_conn</b>		Employs user name and password specified in this command to establish a login type connection to the target host. Authentication is accomplished by the target host. If user name and password are not specified with this choice, user <i>default</i> is employed.
	<b>Normal</b>		Prompts for both user name and password. Default.
	<b>Prompt_user_only</b>		Prompts for user name only and authenticate with the password specified in this command.
	<b>No_Prompt</b>		Does not prompt. Authenticates with the user name and password specified in this command. If user name and password are not specified with this choice, user <i>default</i> is employed.
	<b>Dial_Prefix</b>		Prefix added to all phone numbers dialing from this port. Limit: 7 characters.
	<b>Filter_access</b>		Turns filtering ON or OFF. Default: Off.
	<b>Disable_authentication</b>		Sets enabling/disabling of authentication for types of dial-in users on a per interface basis. If authentication is disabled and a PPP call is auto-detected, the interface to which the user has dialed in will be checked for a configured user name which must have been previously entered using the user_name parameter in the above command. If user_name is specified for the particular interface, all user profile information will be forwarded without authentication.  If no user_name is configured on the specified interface, default user's profile will be forwarded without authentication. The types of calls you can specify to disable authentication for are:
		<b>None</b>	Authentication is not disabled for any type of PPP call. Default.
		<b>Async_ppp</b>	Authentication is disabled if the incoming call is autodetected as a PPP asynchronous call.
		<b>Sync_ppp</b>	Authentication is disabled if the incoming call is autodetected as a PPP synchronous call.
		<b>PPP</b>	Authentication is disabled if the incoming call is the call it autodetected as a PPP call.
	<b>Host_address</b>		IP address to connect a dial-in user to, if the host type is specified, and connection_type is direct_conn or direct_net.

**Table 13-8** Switched Interface Command Descriptions

	<b>Host_type</b>		Identifies how connection is established. Dial-in user is:
		<b>Prompt</b>	Prompted to enter a host name or address.
		<b>Select</b>	Connected to a login host, selected from the list of login hosts, determined by the host_select field in the set connection command. Default.
		<b>Specified</b>	Connection to the configured IP address.
	<b>Init_script</b>		Name of modem initialization script used. Maximum size: 7 ASCII characters. If setting an init_script for a Modem Pool or interface, the init_script name must already exist. A null string (" ") indicates the name will be deleted. Default: USR_int.
	<b>Input_filter</b>		File name of filter screening incoming data.
	<b>Login_service</b>		Login service to use if the connection_type is not direct_net. Options:
		<b>TELNET</b>	Default.
		<b>RLOGIN</b>	
		<b>ClearTCP</b>	
		<b>Ping</b>	User pings a login host, receives a successful or unsuccessful message, and is disconnected.
	<b>Message</b>		String to display to a dial-user when connection is set. Limit: 64 ASCII characters. You can use \$value to stipulate more parameters in the message line for identification purposes.
		<b>\$date</b>	Current date according to system uptime.
		<b>\$callid</b>	User's call identification according to system uptime.
		<b>\$port</b>	Port occupied by user (slot:x/mod:y).
		<b>\$hostname</b>	User's host name.
		<b>\$sysname</b>	User's system name (same as hostname).
		<b>\$time</b>	Time of call according to the system uptime.
	<b>Output_filter</b>		File name of filter screening outgoing data.
	<b>Prompt</b>		String to present the dial-in user. Default: login. Limit: 64 ASCII characters.
	<b>Prompt_style</b>		Specifies whether prompting of the user name and password on this interface will be provided by HiPer ARC (local), or by a distant security service such as RADIUS or TACACS+ (remote). Default: local.
	<b>Password</b>		Used if connection_type is no_prompt or prompt_user_only. Limit: 63 ASCII characters.

**Table 13-8** Switched Interface Command Descriptions

	<b>Protocol</b>		Protocol (PPP) to connect with, if connection type is direct_net. SLIP is not supported by direct_net connection type. Default: PPP.
	<b>Tcp_port</b>		TCP port number for login host. Value used for direct_conn or direct_net connection types. Limit: 65635.
	<b>Type</b>		Connection types allowed on the switched interface.
		<b>Login port</b>	Allows login users only.
		<b>Network port</b>	Allows network users only.
		<b>Login_network</b>	Allows either two. Default.
	<b>User_name</b>		Switched interface designation used if connection type is no_prompt. Limit: 64 ASCII characters.

**Seeing board settings** **Fact**

- HiPer ARC

**Symptom**

- Need to see board setting on the HiPer ARC
- Show Product code
- Show CPU type
- Show DIP switch settings on the HiPer ARC

**Fix**

Type:

**HiPer>> sh board settings**

```

Product Code: 323043
Hardware Version: Serial Number: /tmp
Feature Key: 6973635F
CPU Type: PPC 603e
CPU Speed(Mhz): 200
NIC Card ID: 19
NIC Card Name: Dual DEC42 10/100 Ethernet
NAC Card ID: 12146
NAC Card Name: unknown NAC

```

```

DIP Switch Settings:
1 2 3 4 5 6 7 8 9 10
-----
ON ON OFF OFF OFF OFF OFF OFF XXX OFF

SW 1-2: UI baud rate: 115200
SW 3: Engineering Fastboot: DISABLED
SW 4: Autoload application: ENABLED
SW 5: UI Require Carrier: ENABLED
SW 6: L1 Data Cache: ENABLED
SW 7: L1 Instruction Cache: ENABLED
SW 8: L2 Cache: ENABLED
SW 9: Eng. Watchdog Disable: (CANNOT BE READ)
SW 10: Manufacturing Test: DISABLED

```

### Using HARM to save HiPer ARC configuration

#### Fact

- HiPer ARC
- Total Control Chassis
- HiPer Access Router Manager (HARM) v1.1.8

#### Fix

- 1 Start **HARM**.
- 2 On the **File** menu, click **Save Configuration**.  
HARM will ask you if you want to permanently save the configuration.
- 3 Click **Save**.  
HARM will tell you that your configuration has been successfully saved.
- 4 Click **OK**.  
The *Save as* dialog box will open.
- 5 Type the filename you wish to use for the configuration in the file name box (for example: HARMCFG).
- 6 Click **Save**.  
HARM will ask you if you want to save the configuration to the file.
- 7 Click **OK**.



HARM should tell you that your configuration was successfully saved in the directory that had previously indicated.

---

**Trouble Clearing**

This section contains problems encountered while using the product.

**Ring No Answer****Fact**

- HiPer ARC v4.0.51
- HiPer ARC

**Negated Fact**

- HiPer DSP card

**Symptom**

- Ring no answer

**Change**

- Reconfigured HiPer ARC
- Moved HiPer ARC to a new location

**Cause**

- HiPer ARC no longer configured for the Network it is plugged into
- HiPer ARC not configured for the Local Area Network (LAN)
- HiPer ARC does not have an ethernet cable plugged into eth:1 or eth:2
- The HiPer ARC seems to not supply Data Terminal Ready (DTR) to modems when the following conditions are present:
  1. An Ethernet cable is not plugged into either eth:1 or eth:2.
  2. HiPer ARC does not have a valid network configured to attach to LAN.

**Fix**

Configure HiPer ARC with a valid network (LAN plugged into the HiPer ARC's ethernet connection).

**Default route changes in the routing table, preventing all routing to the internet when customers dial-in**

**Fact**

- HiPer ARC

**Symptom**

- Cannot surf
- Will not route to the Internet
- Default route is changing

**Fix**

Check all users on the HiPer ARC table to ensure that none have the Default Route Option enabled.

**1** Type:

```
show user <username>
```

**2** Check **Network parameters** for user.

**3** Verify **Default Route Option** is disabled.



# EDGE SERVER CARD

This chapter contains solutions for the EdgeServer™ card.

For additional information, see the 3Com Knowledgebase® web site at:  
*<http://knowledgebase.3Com.com>*.

---

## Using

This section contains product usage questions.

### Determining EdgeServer card WAN driver code version

#### Fact

- EdgeServer card software v1.5
- EdgeServer card software v1.6
- WAN drivers

#### Symptom

- Problems finding version of code for WAN drivers
- Finding the USRWAN.SYS file on the EdgeServer card
- Cannot find the right code for the EdgeServer card

#### Fix

To verify what version of the EdgeServer WAN drivers are being used, go to the directory:

```
\winnt\system32\drivers
```

Type **DIR** to display build dates.

File size and dates are listed as followed for the 1.5 version:

- USRCOM.SYS 62K 6/3/97
- USRLED.SYS 6K 6/3/97
- USRMDM.SYS 127K 6/3/97
- USRMGMT.SYS 45K 6/4/97

- USRPBUS.SYS 72K 6/3/97
- USRPCN.SYS 52K 4/9/97
- USRUTIL.SYS 24K 6/3/97
- USRWAN.SYS 27K 6/3/97

File size and dates listed for the 1.6 version:

- USRCOM.SYS 72K 1/6/98
- USRLED.SYS 7K 12/23/97
- USRMDM.SYS 128K 12/23/97
- USRMGMT.SYS 47K 12/23/97
- USRPBUS.SYS 72K 12/23/97
- USRUTIL.SYS 25K 12/23/97
- USRWAN.SYS 28K 12/23/97

### Setting Autodisconnect on the EdgeServer and EdgeServer Pro

#### Fact

- EdgeServer card
- EdgeServer Pro card
- Remote Access Server (RAS)
- Microsoft Windows NT 4.0

#### Symptom

- Setting Autodisconnect on the EdgeServer card
- Problems with Idletimeout on the EdgeServer card

#### Fix

A hidden NT RAS *Autodisconnect* parameter disconnects idle RAS dial-in callers when set.

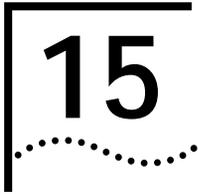
Use Regedit or regedt32 to set this parameter as desired:

- 1 Click **Start**, and then click **Regedt32**.
- 2 On the **Registry** menu, click **Open Local**.
- 3 Double-click the following folders to expand them:
  - **HKEY\_LOCAL\_MACHINE**
  - **SYSTEM**

- **CurrentControlSet**
  - **Services**
  - **RemoteAccess**
  - **Parameters**
- 4 Double-click the **Autodisconnect** key.
  - 5 Click the **base** to display the decimal value (it is set to 20 by default). The decimal value is in minutes.
  - 6 Set the decimal **Key** value to the desired amount of minutes, or set to **0** (zero) to disable the feature.

For example: Set the Autodisconnect Value decimal value to 30 if you want it to disconnect idle RAS users after 30 minutes.





# NETSERVER PRIMARY RATE ISDN CARD

This chapter contains solutions for the NETServer™ Primary Rate Integrated Services Digital Network (ISDN) (PRI) card.

For additional information, see the 3Com Knowledgebase® web site at: <http://knowledgebase.3Com.com>.

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## Configuring

This section contains software configuration questions.

### Frame Relay Setup

#### Fact

- NETServer PRI card
- Frame Relay
- Channelized Service Unit (CSU)

#### Symptom

- Problems with setting up Frame Relay on a NETServer PRI card
- Problems setting up Wide Area Network (WAN) port
- Setting up DLCI (Data Link Control Identifiers)
- Setting up LMI (Local Management Interface)

#### Fix

- 1 Verify local Area network (LAN) or WAN routing is turned **On**. Type:  
`show global`
- 2 Scroll down page.
- 3 If LAN WAN routing is turned **Off**, type:  
`set lanwan_routing on`  
By default, it is turned on.
- 4 Set the WAN port for **DTE** or **DCE**.

By default, it is set to DTE (Data Terminal Equipment).

- 5 Normally, the line speed used between the NETServer's V.35 port and the local frame relay is determined by an external device.

If this is the case, leave NETServer at DTE device. Type:

```
set <wan0 | wan 1> <DTE | DCE>
```

- 6 Set the baud rate on the WAN port. Type:

```
set <wan0 | wan1> speed <baud rate>
```

Baud rates can be set to 2048K, 1536K, 1344K, 512K, 256K, 128K, 64K, or 56K.

- 7 Configure your frame relay network IP address or IPX address, and netmask:

```
set <wan0 | wan1> address <network IP address>
set <wan0 | wan1> ipxnet <network IPX address>
set <wan0 | wan1> netmask <network IP subnet mask>
```

- 8 Add your DLCI (Data Link Control Identifiers). Type:

```
add dlci <wan0 | wan1> <dlci#>:,<ip address> <dlci#>:<IPX
address>
```

- 9 To delete the DLCI, type:

```
delete dlci <wan0 | wan1> <dlci#>
```



The DLCI address should be on the same segment as the WAN 0 address of the NETServer.

- 10 Configure LMI (Local Management Interface). This is the protocol that is used to communicate link status. Type:

```
set <wan0 | wan1> lmi <seconds> <full status interval>
```

**<seconds>** - signifies how often the NETServer card will ask the switch if it is alive. The range is from 5 to 30 seconds. The default is 0.

**<full status interval>** - indicates the number of Simple Status Inquiry messages that the NETServer card will issue before it asks the switch for a Full Status Inquiry report on the status of all virtual circuits in the network. The range is 1 to 255. The default is 6.

- 11 Set the MTU and routing for the WAN port. Type:

```
set <wan0 | wan1> mtu <bytes>
```

The default is 1500.

```
set <wan0 | wan1> routing <on | broadcast | listen | off>
```

The default is off.

- 12 Save the setting. Type:

```
save <wan0 | wan1>
```

- 13 Reset the ports. Type:

```
reset <wan0 | wan1>
```

- 14 To show WAN port configuration. Type:

```
show <wan0 | wan1>
```

## MPIP Setup Fact

- NETServer PRI card
- Dual PRI card
- MPIP Unix Control Server
- Multi-link Point-to-Point Protocol Interspan Protocol (MPIPP)

## Symptom

- Problems with setting up MPIP
- Cannot do MPIP with 2 NETServer PRI cards
- Setting up MPIP with a UNIX control server

## Fix

How to set up MPIP with 2 NETServer PRI cards and a MPIP Control Server  
MPIP

- 1 Configure both NETServer PRI 1 card and the NETServer PRI 2 card for use with MPIP Control Server 1 by typing the following command at both NETServers:

```
set mpipserver 1.1.1.1/1030 mpipsecret
```

- 2 Add both the NETServer PRI 1 card and NETServer PRI 2 card as clients of MPIP Control Server 1 by typing the commands below at the NETServer PRI 1:

```
add mpipclient 1.1.1.1 mpipsecret
```

(Adds NETServer 1 card as its own client.)

```
add mpipclient 1.1.1.2 mpipsecret
```

(Adds NETServer 2 card as a client.)

- 3 Set the NTP time server across the network by entering the following command at the MPIP Control Server's command prompt:

```
set time 1.1.1.3
```

Reset the time by entering this command:

```
reset time
```

- 4 Turn the MPIP Control Server **On** at the command prompt of the NETServer PRI 1 card by entering the following command:

```
set mpipserver on
```

MPIP is now up and running with the NETServer PRI 1 card serving as the MPIP Control Server and both the NETServer 1 card and NETServer 2 card acting as clients.

#### **Fix: Setting the NETServer PRI card as a MPIP server:**

- 1 Setup the chosen NETServer PRI card as the MPIP server.
- 2 Configure the MPIP clients.

The IP addresses do the work here.

The chosen MPIP server has to be its own client. Hence, the MPIP client list on the MPIP server will also include its own IP address.
- 3 Synchronize the clocks on the server and the clients by pointing them to one NTP time server (and not two time servers).

The times on the two NETServer PRI's can be synchronized by either rebooting them at the same time or by doing reset time.
- 4 Once the environment is figured out, test each NETServer for multi-link point-to-point protocol (mlppp) connections.
- 5 Once step 4 is performed, start your dial-up networking (DUN).
- 6 Upon configuring the basic parameters, the number dialing process should be followed as below.
  - a If the numbers are different, dial:

```
8475882300&8475882301
```
  - b If there is only one number, dial that number after making sure that one channel will land on one chassis and the next will land on the other chassis.
- 7 Follow the above steps 2 and 3 on the command syntax for setting up MPIP server and client.

---

**Using**

This section contains product usage questions.

**Assigning multiple address pools****Fact**

- NETServer card
- NETServer PRI card
- NETServer PRI card software V.3.5.X
- NETServer PRI card software V.3.6.X
- NETServer PRI card software V.3.7.X
- Remote Authentication Dial In User Service (RADIUS)

**Symptom**

- Assigning multiple address pools on the NETServer card
- Not getting correct IP from multipool
- RADIUS does not recognize multiple address pool

**Fix**

- 1 To add an IP address pool into the NETServer card, type:

```
add ippool <ip address pool name> <starting ip address>
      <#of addresses in pool>
```

**<ip address pool name>** - is the identifying name of the pool up to eight alphanumeric characters.

**<starting ip address>** - is the starting IP address for the pool in the dotted decimal notation.

**<# of addresses ip pool>** - is the number of sequenced IP addresses to be included within the address pool (1-512).

For example:

```
add ippool pooltwo 192.77.203.67 200
```

- 2 To delete the IP address pool, type:

```
delete ippool <ip address pool name>
```

- 3 To view all assigned address pools on the NETServer card, type:

```
sh ippool
```

- 4 Assign a local user to a specified IP address pool if you are using multiple address pools. Type:

```
set netuser <username> ippool <ip address pool name>
```

For RADIUS authenticated users, the RADIUS attribute:

**Framed\_IP\_Address\_Pool\_Name**

must be used or supported by RADIUS. This is attribute number **0x9024**. To support this, add the following string to the *dictionary.dat* file of the RADIUS:

```
ATTRIB_NMC Framed_IP_Address_Pool_Name 0x9024 string
```

### Making NETServer card talk to HiPer DSP card

#### Fact

- HiPer Digital Signal Processor (DSP) card
- Total Control Chassis
- NETServer Primary Rate ISDN (PRI) card
- Quad Analog/Digital card
- NETServer PRI card software v3.6.28
- NETServer PRI card software v3.7.24
- NETServer PRI card software v3.8.1

#### Symptom

- NETServer card will not recognize HiPer DSP cards
- Ring no answer from the HiPer DSP cards
- Dead air on dial up
- HiPer DSP card does not take any calls while Quad modems work fine
- Not enough ports show up on the NETServer PRI card
- Setting modem density
- Cannot configure modem
- Busy signals

#### Fix

To make the NETServer PRI card recognize the HiPer DSP cards, type:

```
set modem density [slot #] [24 | 30]
```

- indicates the number of ports: T1/PRI= 24, E1= 30

```
set modem startslot 1
```

- changes the start of the port to 1 instead of 5

**show modem**

- to display all modem slot types

**set modem s5-s100 active**

- sets the modems specifying an s-ports range and setting them active

**save all**

- saves all changes

**reset s(port#)**

- resets specific slot port number to default value

**reset all**

- resets all slot port numbers to default values

**show modem**

- to display all modem slot types

## Trouble Clearing

This section contains problems encountered while using the product.

### Setting NETServer PRI card ports to active

#### Fact

- Quad Analog card
- Quad Analog/Digital card
- Dual Channelized T1 card
- Quad Digital card
- Dual T1/E1 card
- NETServer PRI card
- NETServer card

#### Symptom

- Cannot set s-ports to active
- S-ports go inactive
- Ring no answer
- Dead air on dial up
- Ports show up as AIP
- Busy signals on PRI

**Cause**

- Could be noise on the packet bus

**Fix**

- 1 Set ports to active. Type:  

```
set modem (s-ports range) active
```
- 2 Click **Save All**.
- 3 Click **Reset All**.
- 4 If the previous steps do not work, place NETServer card in a different slot (both Network Interface Card (NIC) and Network Application Card (NAC)).
- 5 If placing the NETServer card in a different slot does not work, try pulling all cards out, including:
  - Quad modem cards
  - HiPer DSP cards
  - PRI card
  - Network Management Card
- 6 Slide the cards back in, one at a time, then type:  

```
set modem (s-port range) active
```
- 7 Click **Save All**.
- 8 Click **Reset All**.



Quad Analog modems do not talk to the packet bus. Therefore, you will not be able to set them active. They rely on an external device for Data Terminal Ready (DTR).

**Getting a "mpipd:  
Invalid MIC" in syslog  
for MPIP****Fact**

- NETServer PRI card
- PRI card
- Dual PRI card
- HiPer ARC software v4.1.11
- Total Control Chassis
- HiPer Access Router Card (ARC)
- Multi-link PPP Interspan Protocol (MPIP)

- Integrated Services Digital Network (ISDN)
- SYSLOG
- Debug

### **Symptom**

- Error message 'port S44 ppp\_sync failed' in syslog or debug doing MPIP
- Error message 'mpipd: Invalid MIC' in syslog or debug doing MPIP
- Problems with MPIP

### **Fix**

MIC - Message integrity check - failed - means that the problem is due to one of the following:

- 1 MPIP secrets are wrong.
- 2 The client packet did not come through clean - some network problem - lots of CRCs (Cyclic Redundancy Check).



# 16

## NETSERVER CARD

This chapter contains solutions for the NETServer™ card.

For additional information, see the 3Com Knowledgebase® web site at:  
*<http://knowledgebase.3Com.com>*.

---

### Configuring

This section contains software configuration questions.

#### NETServer card as DTE for Quad Modem cards

##### Fact

- NETServer card
- NETServer PRI card
- Dual Channelized T1 card
- Dual T1/E1 card
- Dual Primary Rate Integrated Services Digital Network (ISDN) (PRI) card
- Quad Analog card
- Quad Analog/Digital card

##### Symptom

- Show All command on NETServer card shows inactive s-ports
- Dead air
- Busy signals
- Establishing the NETServer card as DTE (Data Terminal Equipment) for Quad Modem cards

##### Fix

- 1 Set all modems active on NETServer card. Type:

```
set modem startslot x
```

(x value normally 2 with Quad Modems and a T1/PRI card in slot 1)

```
set modem density 2 4
```

(where 2 is the slot and 4 is the density)

```
set modem s1-s(x) active
```

[where x = number of ports]

```
reset all
```

- 2 Click the **NETServer** card.
- 3 On the **Main Menu** bar, click **Configure**, and then click **Actions/Commands**.
- 4 Click the command **Save All to NVRAM**, and then click **Execute** and **Close**.
- 5 Restart the **NETServer** card.

### Setting idletimeout **Fact**

- NETServer card
- NETServer Primary Rate ISDN (PRI) card

#### **Symptom**

- Cannot set idletimeout on the NETServer card

#### **Fix**

To set idletimeout on the NETServer s-ports, type:

```
set s<port #> idletime <0 | 1-240 minutes>
```

### Setting NETServer 8/16 Plus for NCSI DialOut **Fact**

- NETServer 8/16 Plus
- Internet Protocol (IP) configuration similar

#### **Symptom**

- Not able to dialout

#### **Fix**

To provide dial out connections through Internet Protocol Transfer (IPX):

- 1 Run the latest code and configure the chassis to provide IPX dial-in connections.
- 2 Test the system, connecting a dial-in user to the Netware servers, to check the IPX connectivity.

- 3 If using IP, test the IP connectivity.
- 4 Type the commands that follow, changing the parameters related to your system.



The CAPITAL letters must be used, as well as lower case and number of letters when naming the services (for example: CSONCSIA is in upper case and has 8 letters).

```
set system name CSONCSIA (8 capital letters)
add modem_group CSONCSIA interface mod:[1-9] (limited to 9
modems for DialOut per NETServer)
add network_service CSONCSIA server_type DialOut data
modem_group="CSONCSIA"
set dial_out security no
set dial_out idle_timeout 0
set dial_out recovery_timeout 1
set ipx system number 1a2b3c4d
```

Last 8 numbers from the NETServer's MAC address - that is viewed using the command:

```
sh interface eth:1
set ip net <ip network name> routing_protocol <ripv1 ou
ripv2>
save all
reboot
```

- 5 After reboot, type:

```
list services
```

Information similar to below is displayed:

**Table 16-1** Configured Network Services

Name	Server Type	Socket	Close	Admin Statistics
tftpd DATA:	TFTPD	69	FALSE	ENABLED
telnetd DATA	TELNETD	23	FALSE	ENABLED
CSONCSIA DATA: modem_group= "CSONCSIA"	DialOut	32773	FALSE	ENABLED (This should be enabled.)

**6** Type:**sh system**

SYSTEM DESCRIPTION

System Descriptor:

U.S. Robotics NetServer/16, Version: V4.1.82, Built on Aug  
13 1998 at 10:45:38.

```

Object ID:                1.3.6.1.4.1.429.2.11
System UpTime:            0d 05:10:56
System Contact:           Edilson/Mauricio
System Name:              CSONCSI (Verify:broadcasted name)
System Location:         CSO_Brazil
System Services:         Internet EndToEnd Applications
System Transmit Authentication Name: Netserver
System Version:          V4.1.82

```

Everything **enabled** can be seen.**7** From the Netware server console, type:**display servers****8** Verify chassis name listed in your IPX services.**9** Install NCSI and configure it using **COM4** as the mapped port to the NETServer.**10** Install a new modem using the file **mdmusrim.inf** attached to **COM4**.**11** Choose **Shared Total Control NCSI Modem** from the list of available modems.

---

**Using**

This section contains product usage questions.

**Dialback Fact**

- NETServer card
- NETServer Primary Rate ISDN (PRI) card
- Quad Analog/Digital card

**Symptom**

- Cannot do dialback
- Setting up dialback on NETServer card

**Fix**

- 1 Create a location table on the NETServer card. Type:

```
add location dialback
set location dialback [continuous | on demand]
set location dialback netmask [255.255.255.0 | remote
  LAN's netmask]
set location dialback ipxnet [ipx network number]
```

If Internet Protocol Transfer (IPX) is used, type:

```
set location dialback protocol [ppp | slip]
set location dialback mtu [100 - 1500]
set location dialback routing [broadcast | listen | on |
  off]
set location dialback group [0-99]
set location dialback high_water [0 | bytes in queue]
set location dialback maxports [ 0 | 1 | 2-10]
set location dialback idletime [0-240]
set location dialback compression [on | off]
set location dialback script 1 "ATDT[onenumber]\r"
  "CONNECT"
```

- 2 Add a network user on the user table of the NETServer card. Type:

```
add netuser usr password usr location dialback
```

- 3 To set the destination IP address for a point-to-point protocol (PPP) connection, type:

```
set location <location name> destination <IP address>
```

- 4 To set the IPX number of the NETServer, type:

```
set location <location name> ipxnet <IPX network number>
```

- 5 Set the s-ports for dial-in and dialout. Type:

```
set s(port#) login network twoway device /dev/network
set s(port#) service_dev telnet 6001
set s(port#) service_login telnet
save all
reset s(port#) or reset all
```

- 6 On the chassis, check that the Quad modem card dip switches 3, 8, and 9 are set to **On**.

If not, add an initialization string to the port setup for dialout. Type:

```
at&f1e1qvs0=1\r\n
```

Assign this initialization string to its port.

- 7 Assign a modem group that will be doing the dialback. Type:

```
set s(port#) group 1
```

#### On the client side:

- 1 Modify the initialization string under the DUN (dial-up network) properties or modem entry itself. Add:

```
at&f1&c0s0=1s13=1
```

**&c0** will fool Windows 95 if that connection is still up. Without this DUN, it will disconnect after you login to the NETServer with a dialback user.

**s0=1** causes it to autoanswer.

**s13=1** will cause it to reset properly after your session. Without this, it will cause a long delay for DUN to disconnect.

- 2 Select:

**Bring up terminal window after dialing**

This is where you would manually log on to the dialback user created on the NETServer.

- 3 After it dials you back, press **F7** to continue.

## Resetting Password or Erasing Configurations

### Fact

- NETServer card
- NETServer Primary Rate ISDN (PRI) card

### Symptom

- Change password on the NETServer card
- Needs to erase configurations on NETServer card
- Delete configuration

### Fix

- 1 Set card dip switch 5 to **On**.
- 2 Restart system.
- 3 Set card dip switch 5 to **Off**.



Performing this will erase all configurations on the NETServer card.

To enter a new password, type:

```
set password [password | none]
```

---

## Trouble Clearing

This section contains problems encountered while using the product.

### Dialout and dialback ptp from NETServer fails

#### Fact

- Dual Primary Rate ISDN (PRI) card
- Quad Analog card
- Quad Digital card
- Quad Analog/Digital card
- NETServer Primary Rate ISDN (PRI) card
- Code base where problem has been seen v3.5.34 and v3.7.24

#### Symptom

- After dialing in, caller's modem is called back
- modems train successfully
- Win95 Dial-up networking displays *Establishing connection* and eventually timesout

#### Symptom

On NETServer:

```
set debug 0x51
```

```
set cons
```

Attempt single (only one caller) dialback session.

Watch debug for following output.

When Quad connects:

```
gre.....
```

```
gre.....
```

```
gre.....
```

messages are displayed on screen.

Then, NT server tells NETServer to call out.

Debug displays.

```
send (atdt898989\r)
```

```
expects(CONNECT)
```

Callers modem receives call and connects after handshaking. After DCD is up, if debug displays garbage, for example:

```
{ }*(^(&YUI^P&{&{^({*( {*(^({%({{$%%(P( *PP{
```

or something like this, the callback will fail.

### Fix

Type:

```
add init script xyz
set init script xyx "atq0e1\r"
set modem sx init xyz
repeat for all modems
save all
reset all
```

Run test again.

## NSI 8/16 - Dialback Fact

- NETServer 8/16 I-modem PLUS
- Can dial into the NetServer/8 I-MODEM PLUS
- Dialback user configured
- Modem code earlier than 2.5.10

### Symptom

- Dialback from the NETServer fails

### Fix

- 1 Log in as administrator ( type username and password).
- 2 From the NETServer prompt, type:

```
set i-modem interface mod:1 at_command at*v=3
```

This will disable the call type **auto detect** and force set the B channel to **modem** or **fax only**.

- 3 Alternatively, you can upgrade the modem code to version 2.5.10 which supports call type **auto detect**.



# TOKEN RING

This chapter contains solutions for the Token Ring.

For additional information, see the 3Com Knowledgebase® web site at: <http://knowledgebase.3Com.com>.

---

## Trouble Clearing

This section contains problems encountered while using the product.

**User with a static IP address cannot connect to a second chassis added to the same LAN**

### Fact

- Remote Access Concentrator
- HiPer Access Router Card
- NETServer Primary Rate ISDN (PRI) card
- Dial-in user with a static Internet Protocol address

### Change

Second Remote Access Concentrator added to the same Local Area Network (LAN) to deal with the volume of calls. The user has the same user name and password in the second chassis.

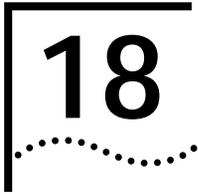
### Symptom

- User gets authenticated on second chassis but receives no packets.
- User can access services on LAN but not past the router on the second chassis.

### Fix

- 1 Check the routing table in the router.
- 2 Check for a static route to the original chassis for that IP address.
- 3 If there are packets bound for the user, they will be routed to the original chassis. Delete that entry from the routing table.





# QUAD RS-232 NETWORK INTERFACE CARD

This chapter contains solutions for the Quad RS-232 Network Interface Card (NIC).

For additional information, see the 3Com Knowledgebase® web site at: <http://knowledgebase.3Com.com>.

---

## Configuring

This section contains software configuration questions.

### Quad RS-232 pinouts

#### Fact

- Quad Analog/Digital card
- Quad Digital card
- Quad Analog card
- Quad RS-232 card
- Quad Cable card

#### Symptom

- Console cable specification or pin layout
- Need pin assignments for the Quad RS-232 card

#### Fix

Pinouts:

DB-25 50-pin Function Signal Source

1 25,50 Chassis Ground both

2 1,13,26,38 Transmitted Data DTE

3 2,14,27,39 Received Data DCE

4 3,15,28,40 Request to Send DTE

5 4,16,29,41 Clear to Send DCE (data communication equipment)

- 6 11,23,36,48 Data Set Ready DCE
- 7 7,19,32,44 Signal Ground both
- 8 6,18,31,43 Carrier Detect DCE
- 15 9,21,34,46 Sync TX Timing DCE
- 17 10,22,35,47 Sync RX Timing DCE
- 20 5,17,30,42 Data Terminal Ready DTE
- 22 12,24,37,49 Ring Indicate DCE
- 24 8,20,33,45 Sync TX Timing DTE

### Quad card dip switch settings

#### Fact

- Quad Digital card
- Quad Analog card
- Quad Analog/Digital card
- DIP switch settings card

#### Symptom

- Need to know the dip switch settings on the Quad card

#### Fix

DIP switch defaults and description:

- 1 OFF Data Terminal Ready (DTR)
  - OFF - normal DTR operation: computer must provide DTR
  - ON - DTR always ON (override)
- 2 OFF Verbal/numeric result codes
  - OFF - verbal (word) results
  - ON - numeric results
- 3 OFF Result code display
  - OFF - results suppressed
  - ON echo suppressed
- 4 ON Command modem local echo
  - OFF - keyboard commands displayed
  - ON - echo suppressed

- 5** OFF Auto Answer
  - OFF - modem answers on first ring
  - ON - auto answer disabled
- 6** OFF Carrier Detect operations
  - OFF - modem sends CD signal on connect with another modem
  - ON - CD always ON (override)
- 7** OFF Auxiliary
  - OFF - result codes in originate/answer mode
  - ON - result codes in answer mode disabled
- 8** ON AT command set recognition
  - OFF - command recognition disabled
  - ON - recognition enabled (smart mode)
- 9** ON Escape code (+++) response
  - OFF - modem hangs up, returns to command mode, sends no carrier
  - ON - modem maintains connection, returns to command mode, sends OK
- 10** OFF Power-on and ATZ reset software defaults
  - OFF - load from NVRAM
  - ON - Load default configuration from ROM



# 19

## DUAL PRIMARY RATE ISDN (PRI) CARD

This chapter contains solutions for the Dual Primary Rate ISDN (PRI) card.

For additional information, see the 3Com Knowledgebase® web site at: <http://knowledgebase.3Com.com>.

---

### Installing

This section contains software installation questions.

#### Line Provisioning for Dual PRI

##### Fact

- Dual PRI card
- Total Control Manager (TCM) application
- Quad Digital card
- Quad Analog/Digital card
- Integrated Services Digital Network (ISDN)

##### Symptom

- Line Provisioning for the Dual PRI card

##### Fix

Obtain the line provisioning information from the telephone company.

Framing Mode:

- DS1D4 Superframe (ds1D4)
- DS1 Extended Superframe (ds1ESF)

Line Coding Options:

- Alternative Mark Inversion (ami) - most common
- Binary 8 Suppression (b8cs)

Switch Type:

- DMS100
- 5ESS
- 4ESS
- NI2

Address Signaling:

- DNIS/ANI

NFAS ID:

- 0-127 (Dual PRI card does not support backup D-channeling.)

---

## Using

This section contains product usage questions.

### Connecting ISDN through Dual PRI card to the NETServer PRI card

#### Fact

- Dual Primary Rate ISDN (PRI) card
- NETServer PRI card
- Total Control Manager (TCM) application

#### Symptom

- Cannot connect ISDN
- Getting fast busy
- Getting a recorded message from telephone company

#### Fix

Terminate calls from a Dual PRI card to a NETServer PRI card:

- 1 Slide the **Dual PRI** card into **chassis slot 1**.
- 2 Slide the **NETServer PRI** card into **chassis slot 16**.
- 3 Access the chassis via Total Control Manager, and then:
  - a Click the **Dual PRI** card's **RN/FL** LED.
  - b On the **Main Menu** bar, click **Configure**, and then click **Programmed Settings**.
  - c On the **Parameter Group** menu, click **PRI Trunk Settings**.
  - d Set the values for **Framing Mode**, **Line Coding Options**, and **Primary Switch Type Set**.

- e Click **OK**.
- 4 Click the **Dual PRI** card, and then:
  - a On the **Main Menu** bar, click **Configure**, and then click **Programmed Settings**.
  - b On the **Parameters Group** menu, click **PRI Configuration**.



The Dual PRI card operates in any slot up to slot 16. The NETServer PRI card operates in any slot except slot 17. Set the ISDN gateway slot to the slot where the NETServer PRI card is inserted.

- c Double-click the **ISDN-GW Slot** box, and then click the arrow control to set the value to the slot number that contains NETServer PRI card.
- d Click **OK**.
- 5 Click the **Dual PRI** card, and then:
  - a On the **Main Menu** bar, click **Configure**, and then click **Actions/Commands**.
  - b On the **Command to Execute** menu, click **Software**.
  - c Click the command **Save to NVRAM**, and then click **Execute**.
  - d On the **Command to Execute** menu, click **Hardware**.
  - e Click the command **Hardware Reset**, and then click **Execute** and **Close**.

---

## Trouble Clearing

This section contains problems encountered while using the product.

### Fast Busy when dialing into Dual PRI card

#### Fact

- Dual Primary Rate ISDN (PRI) card
- HiPer Digital Signal Processor (DSP) card
- Total Control Manager (TCM) application

#### Symptom

- Fast busy when dialing
- Unable to map DSO's to a modem

#### Change

- Downloaded code

- Installed new Dual PRI card
- Moved Dual PRI card to slots 7-17
- Installed Dual PRI card in slots 7-17

### Cause

- Improper configuration of Dual PRI card
- Incorrect placement of Dual PRI card in Total Control Chassis

### Fix

- 1 The most common reason for a fast busy on a Dual PRI card is an invalid switch type. To make sure the active switch type is correct:
  - a Click **CD** (Carrier Detect) LED for the Dual PRI card.
  - b On the Main Menu bar, the **Performance** menu, click **Session Monitor**.

The **Select Timeslots** window appears. The **Span Line** button should be selected.
  - c Click **OK**.

The **Functional Group Monitor Setup** window appears.
  - d Click **Default**.

Parameters under **Parameters** heading appear under **Parameters Selected** heading.
  - e Click **OK**.
  - f Scroll to the **Active Primary Switch Type** box.
  - g Verify that the switch type identified under this column is the correct switch type for your Dual PRI card. You may have to contact your local telephone company. If the switch type is correct, move on to **step 2**.
  - h If you find the switch type is incorrect:
    1. Click the **CD** LED for the Dual PRI card.
    2. On the **Main Menu** bar, click **Configure**, and then click **Programmed Settings**.
    3. On the **Parameter Group** menu, click **PRI Trunk Settings**.
    4. Change the **Primary Switch Type Set** to the correct setting, and then click **OK**.
    5. Click on the bottom of the Dual PRI card to highlight the entire card.

6. On the **Main Menu** bar, click **Configure**, and then click **Actions/Commands**.
7. On the **Command to Execute** menu, click **Software**.
  - a. Click the command **Save to NVRAM for Dual PRI cards**, and then click **Execute**.
  - b. Click the command **Save T1/E1 to NVRAM** for HiPer DSP card, and then click **Execute**.
  - c. On the **Command to Execute** menu, click **Hardware**.
  - d. Click the command **Hardware Reset**, and then click **Execute**.

Once the card restarts, the new switch setting will be active.

## 2 Dual PRI card only

Another reason for a fast busy is invalid configuration of the Quad modem cards.

Perform the following to verify:

- a Click the **Modem1** LED.
- b On the **Main Menu** bar, click **View**, and then click **Select All**.
- c On the **Configure** menu, click **Programmed Settings**, and then **Line Interface Options**.
- d Verify the **Line Interface Source [%Dn]** box is **priTdm**. If it is, go to step 3.
- e If not:
  1. Double-click the **Line Interface Source** box.
  2. Click **priTdm**, and then click **Copy**.
  3. Click on the words **Line Interface Source [%Dn]**.

The whole row should now be highlighted.

4. Hold down the **Ctrl** key and press the letter **V** to paste the change to all modems.
5. Click **OK**.
6. With all modem LEDs highlighted, click **Configure**, and then click **Actions/Commands**.
7. Click the command **Save to NVRAM**, and then click **Execute** and **Close**.

### 3 Dual PRI card only

Verify Dual PRI card is installed in slots 1-16 only.

#### **D-channel slows down on Dual PRI card or Busy signals on Dual PRI**

##### **Fact**

- Dual Primary Rate ISDN (PRI) card
- Network Management Card (NMC)
- Quad Analog/Digital card
- Quad Digital card
- Total Control Manager (TCM) application

##### **Symptom**

- D-channel slows down on Performance Monitor
- Busy signals
- Slow busy

##### **Fix**

For busy signals on a Dual PRI card, verify PRI trunk settings with the telephone company:

#### 1 Framing Mode:

- DS1D4 Superframe (ds1D4)
- DS1 Extended Superframe (ds1ESF)

#### 2 Line Coding Options:

- Alternative Mark Inversion (ami)
- Binary 8 Suppression (b8cs)
- Zero Code Suppression (zcs)

#### 3 Switch Type:

- DMS100
- 5ESS
- 4ESS
- NI2

#### 4 NFAS ID number (optional): 0-127



The Dual PRI card does not support backup D-channeling.

### Trouble Clearing the Dual PRI card:

- 1 Write down Dual PRI card settings:
  - Framing Mode
  - Line Coding Options
  - Primary Switch Type Set
- 2 Restore Dual PRI card settings from default:
  - a Click the **RN/FL** LED on the Dual PRI card.
  - b On the **Main Menu** bar, click **Configure**, and then click **Actions/Commands**.
  - c On the **Command to Execute** menu, click **Software**.
  - d Click the command **Restore from Default**, and then click **Execute**.
  - e Click the command **Save to NVRAM**, and then click **Execute**.
  - f On the **Command to Execute** menu, click **Hardware**.
  - g Click the command **Hardware Reset**.

Once the Dual PRI card comes up (which usually takes 2 minutes), perform a **Hardware Reset** on each modem.

### Configuring Modems:

- 1 Click the Dual PRI card **Modem1** LED.
- 2 On the **Main Menu** bar, click **Configure**, and then click **Programmed Settings**.
- 3 On the **Parameter Group** menu, click **Line Interface Options**.
- 4 Double-click the **Line Interface Source [%Dn]** box, click **priTdm**, and then click **OK**.
- 5 Click the **Modem1** LED.
- 6 On the **Main Menu** bar, click **Configure**, and then click **Actions/Commands**.
- 7 Click the command **Save to NVRAM**, and then click **Execute** and **Close**.
- 8 Click the **Modem** card.
- 9 On the **Main Menu** bar, click **Configure**, and then click **Actions/Commands**.
- 10 Click the command **Hardware Reset**, and then click **Execute** and **Close**.

- 11 Perform **Hardware Reset** on each modem, so the Dual PRI card recognizes the Quad modem cards.

**Problems placing  
ISDN calls through a  
Dual PRI card and a  
HiPer ARC**

**Fact**

- Total Control Manager (TCM) application
- Dual Primary Rate ISDN (PRI) card
- HiPer Access Router Card (ARC)
- Total Control Chassis
- Integrated Services Digital Network (ISDN)

**Symptom**

- ISDN calls disconnect immediately after call attempt

**Change**

- Replaced NETServer card with a HiPer ARC
- Using Dual PRI card with HiPer ARC
- Using Dual PRI card with a NETServer card that does not have a Munich daughterboard

**Cause**

- The HiPer ARC does not support the TDM (Timed Division Multiplexing) bus inside the chassis. ISDN calls from a Dual PRI card must terminate to Quad modem cards so the HiPer ARC can see them on the packet bus.

**Fix**

Verify that the Dual PRI card is configured properly for a HiPer ARC:

- 1 Start **Total Control Manager**.
- 2 Click the **Dual PRI** card.
- 3 On the **Main Menu** bar, click **Configure**, and then click **Programmed Settings**.
- 4 On the **Parameter Group** menu, click **PRI Configuration**.
- 5 Double-click the **ISDN-GW Slot** box, and then click the arrow control to select **0**.

This terminates ISDN calls to Quad modem cards.



The HiPer ARC does not have a Munich daughterboard to terminate ISDN calls.

- 6 Click **OK**.
- 7 On the **Main Menu** bar, click **Configure**, and then click **Actions/Commands**.
- 8 On the **Command to Execute** menu, click **Software**.
- 9 Click the command **Save to NVRAM**, and then click **Execute** and **Close**.





# SECURITY AND ACCOUNTING SERVER

This chapter contains solutions for the Security and Accounting Server using the Remote Authentication Dial-In User Service (RADIUS™) protocol.

For additional information, see the 3Com Knowledgebase® web site at: <http://knowledgebase.3Com.com>.

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## Installing

This section contains software installation questions.

### Installing Microsoft Access 7.0 and the 32bit ODBC drivers

#### Fact

- Microsoft Access 7.0
- Microsoft Access 97
- Microsoft Windows 95
- Microsoft Windows 98
- Microsoft Windows NT 4.0
- 32bit Open Database Connectivity (ODBC) drivers
- Security and Accounting Server
- Security and Accounting Server software v4.3
- Security and Accounting Server software v5.0.1
- Security and Accounting Server software v5.5.3
- Security and Accounting Server software v6.0.8
- Remote Authentication Dial In User Service (RADIUS)
- New Installations

#### Symptom

- Cannot install Security and Accounting Server

- Error: " 32bit ODBC drivers not installed
- Problem installing 32bit ODBC for Microsoft Office 95 or 97

### Fix



Before you install the Security and Accounting Server, you must install Microsoft Access 7.0 or Microsoft Access 97. In addition, the Security and Accounting Server requires 32bit ODBC drivers to interact with your Access database.

To verify you have the correct driver, follow these steps:

- 1 In Windows, click **Start**, point to **Settings**, and then click **Control Panel**.
- 2 Double-click the **32bit ODBC** icon.  
If you do not have this icon, you must install it. (Go to Installing the correct ODBC drivers from Microsoft Access below, then repeat this section.)
- 3 Click the **ODBC Drivers** tab.
- 4 Find the **Microsoft Access Driver**.
- 5 Verify that the version number is **3.0** or greater.
- 6 If you do not have the **32bit ODBC** icon, double-click the **ODBC** icon.
- 7 Click **ODBC Drivers** tab.
- 8 Verify the **Microsoft Access Driver** version.

### Fix: Installing the correct ODBC drivers from Microsoft Access:

- 1 Open **Office97** CD.
- 2 Double-click **Setup**.
- 3 Click **Continue**.
- 4 Type **Name** and **Organization**, and then click **OK**.
- 5 Verify **Name** and **Organization**, and then click **OK**.
- 6 Type **CD Key numeric code**, and then click **OK**.
- 7 Verify **CD Key numeric code**, and then click **OK**.
- 8 Verify **software installation location**, and then click **OK**.
- 9 Click **Custom**.
- 10 Click **Microsoft Access**, and then click **Change Option**.

- 11 Double-click the desired options (checking the option), and then click **OK**.
- 12 Click **Data Access**, and then click **Change Option**.
- 13 Double-click the desired options (checking the option), and then click **OK**.
- 14 Verify **Microsoft SQL Server ODBC** driver is checked.



SQL: Structured Query Language

- 15 Click the **Desktop DBC** driver, and then click **Change Option**.
- 16 Click the **Microsoft Access ODBC** driver.
- 17 *Optional* - Click (check mark) the **Microsoft Excel ODBC** driver.
- 18 *Optional* - Click (check mark) the **Microsoft Text ODBC** driver.

### Installing Security and Accounting for UNIX from CD-ROM on an HP-UX 10.20

#### Fact

- UNIX
- Security and Accounting Server
- Operating System (OS): Hewlett-Packard UNIX software v10.20
- Operating System (OS): Sun Solaris software

#### Fix

- 1 Insert **CD**.
- 2 Switch to **user root** and the **#** prompt appears.
- 3 Create a directory to act as the mount point. Type:

```
mkdir -p /SD_CDROM/tcm
```



In this example, the **/SD\_CDROM/tcm** directory is the mount point. You can use any appropriate directory as the mount point.

- 4 Change the permissions of the mount point directory. Type:

```
chmod 777/SD_CDROM/tcm
```

- 5 Mount the CD-ROM. Type:

```
/sbin/mount/dev/dsk/c0tXd0 /SD_CDROM/tcm
```



IX is the SCSI address of the CD-ROM drive.

---

## Configuring

This section contains software configuration questions.

### Setting up RADIUS on a NETServer

#### Fact

- NETServer card
- NETServer Primary Rate ISDN (PRI) card
- Security and Accounting Server
- Remote Authentication Dial In User Service (RADIUS)

#### Symptom

- Problems with authenticating
- Users are not able to get in
- Problems with setting up RADIUS

#### Fix

Setting up RADIUS on a NETServer:

Type:

```
set authentic [ip address]/[udp # | 1645]
set alternate [ip address]/[udp # | 1645]
set secret [encryption key]
set [authentic | alternate] [ip address]/[udp # | 1645]
    [encrypt key]
```

### Testing configurations with client.exe file

#### Fact

- Microsoft Windows 95
- Microsoft Windows NT 4.0
- Microsoft Windows 98
- Security and Accounting Server
- Security and Accounting Server software v5.0.1
- Security and Accounting Server software v.6.0.8
- Security and Accounting Server software v5.5.3
- Security and Accounting Server software v5.0.7
- Remote Authentication Dial In User Service (RADIUS)
- Client.exe file

## Symptom

- Problems with authenticating
- Install Problems
- Problems with setting up RADIUS
- Testing configurations on the Security and Accounting Server
- Problems using the client.exe file
- Cannot authenticate users using the Security and Accounting Server

## Fix

Use Client.exe to test the Security and Accounting Server's settings before it is connected to the chassis.

- 1 Locate Client.exe in the **/usrsuite/security** directory.
- 2 Double-click **Client.exe** file.
- 3 Type the Security and Accounting Server **IP** in the **IP** box.
- 4 Type the Security and Accounting Server **secret key** in the **Secret** box.
- 5 Type the **UDP port address** (default: 1645).
- 6 If using **CHAP** (Challenge Handshake Authentication Protocol) or some type of *challenge*, specify this in the **Challenge** box, and then click **OK**.  
The Security Testing Client window appears.
- 7 On the **File** menu, click **Send Interactive**.
- 8 Type the Security and Accounting database user's **username** and **password**, and then click **OK**.
- 9 Check the Security and Accounting Console that the user was authenticated:
  - a The **Client** box should contain the **Network Access Server (NAS) IP address** through which the call was routed.
  - b The **RADIUS message** box should contain **Access-Accept**.
  - c Click **View Log** and look for evidence of **Access-Accept** packets sent to the defined client in the log.

**Error:**  
**"Winsock32.dll"**  
**while running**  
**Security and**  
**Accounting**

**Fact**

- Security and Accounting Server
- Security and Accounting Server software v5.0.1
- Security and Accounting Server software v.6.0.8
- Security and Accounting Server software v.5.5.3
- Security and Accounting Server software v5.5.3
- Security and Accounting Server software v5.0.7
- Security and Accounting Server software v4.3
- Remote Authentication Dial In User Service (RADIUS)
- Microsoft Windows NT 4.0

**Symptom**

- Cannot run Security and Accounting Server
- Problems running the Security and Accounting Server
- Setting up RADIUS security with HiPer Access Router Card (ARC)

**Fix**

If Security and Accounting is running as a service on Windows NT, this error will occur.

Since the server is already running as a service, NT will not let you run the server as an application.

To avoid this error, stop the Security and Accounting Server service and start it as an application.

**Setting up LNS and**  
**LAC for use with**  
**HiPer ARC and**  
**RADIUS (L2TP**  
**Network Server)**

**Fact**

- HiPer Access Router Card (ARC)
- HiPer ARC v4.1.11
- Layer 2 Tunneling Protocol (L2TP) setup
- Tunnel security
- L2TP Network Server (LNS)
- L2TP Access Concentrator (LAC)
- VPN (Virtual Private Network)
- Remote Authentication Dial In User Service (RADIUS)

## Symptom

- Using the HiPer ARC as an LNS through RADIUS
- How to set up an LNS in RADIUS
- Setting up L2TP for RADIUS
- Problems with setting up LAC RADIUS
- Problems setting up LNS RADIUS
- Cannot establish a tunnel
- Unable to tunnel
- Problem creating VPN tunnel

## Fix

Using the HiPer ARC as an LNS, there is no configuration required, only a point-to-point (ppp) user. Here is a sample configuration:

- 1 Two HiPer ARCs are needed: 1 LAC and 1 LNS.

For the LAC designated ARC, the following settings are needed on the RADIUS server:

A user profile says **test** on the LAC. The test attributes are:

- test Password = **test**
- Service-Type = **Framed**
- Framed-Protocol = **PPP**
- Framed-IP-Netmask = **255.255.255.255**
- Framed-MTU = **1500**
- Framed-IP-Address = **1.1.1.1**
- Tunnel-Type = **L2TP**
- Tunnel-Server-Endpoint = **200.67.201.38**
- Tunnel-Security = **None**

In the above example, the **Tunnel-Server-Endpoint** is the IP address of the LNS.

- 2 If you want to utilize Tunnel security:

Make sure you configure the transmit authentication name on both the LAC and the LNS. For example on the LAC set system:

```
transmit_authentication_name <LAC name>
```

For the RADIUS server talking to the LNS, set up a user profile for **lacname**. For example:

```
lacname Password =<password>
Tunnel-Password =<shared-secret>
Tunnel-Security = <None|Control-Only|Data|Data-Only|Both>
```

The password for **lacname** should be **NULL** or **no password**. *Do not configure* a password for lacname. On the LAC, add the attribute:

```
Tunnel-Password =<shared-secret>
Tunnel-Security = <None|Control-Only|Data|Data-Only|Both>
```

A profile on the LNS is also needed. The configuration should be similar to the configuration on the LAC, but without the tunneling attributes.

```
test Password = test,
Service-Type = Framed, Framed-Protocol = PPP,
Framed-IP-Netmask = 255.255.255.255,
Framed-MTU = 1500,
Framed-IP-Address = 1.1.1.1
```

## Configuring with TACACS+

- Fact**
- NETServer Primary Rate ISDN (PRI) card
  - HiPer Access Router Card (ARC)
  - Remote Authentication Dial In User Service (RADIUS)
  - Security and Accounting Server software v.6.0.8
  - Security and Accounting Server
  - Terminal Access Controller Access Control System+ (TACACS+)
  - RADIUS Authentication

## Symptom

- Cannot authenticate using TACACS+
- Problems with the Security and Accounting proxying over to TACACS+

### Fix

To configure the Security and Accounting Server for communication with TACACS+ servers, perform the following steps:

- 1 On the **Main Menu** bar, click **Server Setup**.  
The System Settings appear.
- 2 On the **Security** tab in the **TACACS Plus Service Name** box, type:  
**tacacs+**
- 3 Click **Advanced Options, Proxy Servers**, and then click the **TACACS+** tab.
- 4 Type the **IP address** in the **TACACS + Server IP Address** box.
- 5 Type the **Server Secret** in the **TACACS+ Server Secret** box.
- 6 Click **Done**, and restart the server to activate any changes.

### Make Security and Accounting v6.0.8 work using Access v95 on a Microsoft NT server with Service Pack 3

#### Fact

- Security and Accounting Server software v.6.0.8
- Remote Authentication Dial In User Service (RADIUS)
- Security and Accounting Server
- HiPer Access Router Card (ARC)
- NETServer card
- Remote Access Concentrator
- Dual Primary Rate ISDN (PRI) card
- Quad Analog/Digital card
- Network Management Card (NMC)
- Dual Channelized T1 card
- EdgeServer Pro card
- Microsoft Access 97
- Microsoft Windows NT 4.0
- Microsoft Office 97
- Microsoft Windows 95
- Microsoft Windows 98

### Symptom

- Security and Accounting v6.0.8 does not work using Microsoft Access v95 on a NT server (Service Packet 3)
- Status message reports the tabctl32.ocx file has not been registered in Microsoft Access
- Works okay with Microsoft Access v97
- Reinstalling or restarting does not solve the problem

### Fix

This combination of applications requires the **comctl32.ocx** file, rather than the **tabctl32.ocx** file.

- 1 Go to the **Microsoft Access 95** sub-directory found in the **security** directory.
- 2 Copy the file **comctl32.ocx** into the **winnt/system32** directory.



For Microsoft Windows 98 and 95 or Microsoft Office 97, you do not need to make any modifications.

### Configuring Security and Accounting to authenticate through an NT domain

#### Fact

- NETServer Primary Rate ISDN (PRI) card
- NETServer card
- HiPer Access Router Card (ARC)
- Security and Accounting Server
- Security and Accounting Server software v.6.0.8
- Security and Accounting Server software v5.5.3
- Microsoft Windows NT 4.0
- Total Control Chassis
- Remote Authentication Dial In User Service (RADIUS)

#### Symptom

- Dial up users unable to authenticate to RADIUS server
- Problems installing Security and Accounting Server
- RADIUS authentication fails
- Cannot establish a connection dialing into the NETServer 8/16 plus authenticating to a RADIUS server

- Cannot authenticate users using the Security and Accounting Server
- Problems with POOL\_NAME on the Security and Accounting Server

### Cause

- The POOL\_NAME box in the "USERS:Table" of the Access database has been deleted.
- This box is empty but must be in the database.

### Fix



Make sure the Security and Accounting Service is turned off before proceeding.

Check the following:

- 1 Open **Database Manager**, and then click the **Database Window** icon.
- 2 Click the **Tables** tab, and then double-click the **USERS** table.
- 3 Click the **CHALL\_KEYPRESS\_TIMEOUT** box.
- 4 Click **Insert**, and then click **Column** to add a column to the left of the **CHALL\_KEYPRESS\_TIMEOUT** column.
- 5 Click the new column name (which will probably be called **Field1**).
- 6 Right click on the highlighted column, and then click **Rename Column**.
- 7 Type the column name: **POOL\_NAME**.
- 8 Close **USERS: Table**, and then save the changes.



The changes will take effect once the service is restarted.

## Using

This section contains product usage questions.

### Authentication test for a connection that fails dialing into a NETServer 8/16 plus authenticating to RADIUS

#### Fact

- NETServer 8/16 plus card
- Remote Authentication Dial In User Service (RADIUS)
- Security and Accounting Server
- Command Line Interface (CLI)

**Symptom**

- Cannot establish a connection dialing into the NETServer 8/16 plus authenticating to a RADIUS server
- Cannot establish a connection
- Cannot authenticate

**Fix**

Type:

```
_auth <username on the RADIUS Server> <password on the  
RADIUS Server>
```

**Copying the  
sdconf.rec file when  
using SecurID for  
authentication**

**Fact**

- Security and Accounting Server
- Security and Accounting Server software v6.0.8
- Security Dynamics SecurID
- Total Control Chassis
- NETServer card
- HiPer Access Router Card (ARC)
- Remote Authentication Dial In User Service (RADIUS)
- Microsoft Windows NT 4.0
- Microsoft Windows 95
- Microsoft Windows 98

**Symptom**

- Where to copy the sdconf.rec file when using the Security and Accounting Server and SecurID
- Not authenticating with SecurID

**Fix**

Place the **sdconf.rec** file in the **C:\WinNT\System32** directory if using Microsoft Windows NT 4.0.

**Maximum Concurrent  
Sessions**

**Fact**

- Network Management Card (NMC)
- Security and Accounting Server software v.5.5.3

- Security and Accounting Server software v.6.0.8
- Total Control Manager (TCM) application
- Quad modem card
- HiPer Digital Signal Processor (DSP) card
- Microsoft Windows NT 4.0
- Remote Authentication Dial In User Service (RADIUS)
- Maximum concurrent sessions

### Symptom

- More than one person can get log in using the same user name and password
- Problems with getting concurrent sessions to work
- Cannot get concurrent sessions to work with Security and Accounting Server proxying into a Microsoft NT Domain

### Fix

Settings for the NMC using TCM:

- 1 Click the **NMC** card.
  - 2 On the **Main Menu** bar, click **Configure**, and then click **Programmed Settings**.
  - 3 On the **Parameter Group** menu, click **Logging Group**.
  - 4 In the **Primary Log Server IP Address** box, type the **IP address** for the computer where Security and Accounting is installed.
  - 5 Verify **Log Server's UDP Port** is **1646**.
  - 6 Double-click the **Log Group Selection** menu, use the arrow control to select **group2345**.
-  To expand the **Log Group Selection** menu, move the cursor to the right of the **S#** box. The cursor becomes vertical. Drag to expand the menu.
- 7 Click **OK**.
  - 8 With the **NMC** selected, on the **Main Menu** bar, click **Configure**, and then click **Actions/Commands**.
  - 9 Click the **Command to Execute** menu to **Software**.
  - 10 Click the command **Save Chassis to NVRAM**, and then click **Execute** and **Close**.

- 11 Go to the appropriate steps below to enable the modems' trap settings.

### Quad Modem Card Trap Settings

- 1 Click the **Quad modem** card, and then click the **Modem1** LED.
- 2 Hold down the **Ctrl** key, and then click the other modems' LEDs.
- 3 On the **Main Menu** bar, point to the **Fault** menu, and then click **Trap Settings**.
- 4 On the **Parameter Group** menu, click **Trap Enables**.
- 5 Set the following boxes to **enableAll**:
  - On Incoming Call
  - On Incoming Termination
  - On Connection Failure
  - On Connection Timeout
  - On DTE Idle Timeout
  - On Block Error Count
  - Dial In Call Duration
- 6 Click **OK**. Keep the modem(s) selected.
- 7 On the **Configure** menu, click **Actions/Commands**.
- 8 On the **Command to Execute** menu, click **Software**.
- 9 Click the command **Save Chassis to NVRAM**, and then click **Execute** and **Close**.

### HiPer DSP Card Trap Settings

- 1 Click the **HiPer DSP** card.
- 2 On the **Main Menu** bar, point to **Fault**, and then click **Trap Settings**.
- 3 Click **Template 1**.

An **X** appears in the box to the right.
- 4 Click **OK**.
- 5 On the **Parameter Group** menu, click **Trap Enables**.
- 6 Set the following trap boxes to **enableAll**:
  - On Incoming Call

- On Incoming Termination
  - On Connection Timeout
  - On DTE Idle Timeout
  - On Block Error Count
  - Incoming Connection Attempt Fail
- 7 Click **OK**. Keep the HiPer DSP card selected.
  - 8 From the **Configure** menu, click **Programmed Settings**.
  - 9 Click **Card Level** button, and then click **OK**.
  - 10 On the **Parameter Group** menu, click **Call Statistics**.
  - 11 Verify **Group Selection** is set to **group1And2And3And4**.



If the menu is contracted making it difficult to read, the box can be expanded by placing the cursor to the right of the box (cursor changes) and dragging to the right.

- 12 Click **OK**. Keep the HiPer DSP card selected.
- 13 On the **Configure** menu, click **Programmed Settings**, and then click **Actions/Commands**.
- 14 On the **Command to Execute** menu, click **Software**.
- 15 Click the command **Save Both T1/E1 and Modems to NVRAM**, and then click **Execute** and **Close**.

### Security and Accounting Server Settings

- 1 Click **TC Security and Accounting Database Manager**.
- 2 Click **Server Setup** button.
- 3 Click **RADIUS Clients** tabs.
- 4 Type the NMC card IP address.
- 5 Port is **1646**, **no secret**.
- 6 Type is **NMC**.
- 7 Click the **Security** tab.
- 8 Click **Enable Session Limiting** (check mark).



If you have Security and Accounting version 5.5.x, make sure that **Event Logging** is checked under the **Accounting** tab.

- 9 Click **User Setup**.
- 10 Click the user to be modified.
- 11 Under the **General** tab, verify that maximum concurrent session is set to **1**.
- 12 Click **Done**.
- 13 Restart the Security and Accounting Server.



If the Security and Accounting Server is used as a proxy server for NT, create a user in the Security and Accounting Server with the same user name under the NT User for Domains. Set the service type for **Framed-PPP**, and the authentication for Windows NT, making sure the maximum concurrent session is set to **1**.

### Print all client records for UNIX

#### Fact

- Security and Accounting Server
- UNIX
- Remote Authentication Dial In User Service (RADIUS)
- Operating System (OS): Sun Solaris

#### Symptom

- Printing all client records on the Security and Accounting Server for UNIX
- Getting client records on Security and Accounting for UNIX

#### Fix



This procedure is available only to security database (secdb) users.

- 1 Login as user **Postgres**, and then switch to the appropriate database.
- 2 At the **#** prompt, type:  

```
secdb
```
- 3 On the **secdb Main Menu** bar, press **1** for **Server Setup**, and then press **Enter**.
- 4 Press **3** to **Edit Server Clients**, and then press **Enter**.
- 5 Press **4** to **Print All Client Records**, and then press **Enter**.

The records are printed.

## Trouble Clearing

This section contains problems encountered while using the product.

### Setting up RADIUS busyout

#### Fact

- Total Control Chassis
- HiPer Access Router card software v4.1.11
- HiPer Access Router Card (ARC)
- Security and Accounting Server
- Remote Authentication Dial In User Service (RADIUS)

#### Symptoms

- Service loss
- Modems busy through RADIUS Command Line Interface (CLI) command
- HiPer ARC busyouts modems in the Total Control Chassis
- Network connectivity lost between HiPer ARC and RADIUS server
- HiPer ARC not polling the RADIUS server

#### Fix

- 1 Enable service loss. Type:

```
enable service_loss_busy_out radius
```

- 2 To set the frequency, type:

```
set service_loss_busyout radius  
frequency [interval]
```

This sets the interval at which network connectivity will be checked by a RADIUS server. If service is lost to the RADIUS server after a specified period (frequency), HiPer ARC will busy out the Hub's modems. HiPer ARC will continuously poll the RADIUS server until connectivity is restored and at that point, restore the Hub's modems to their normal state.

Default: 60 seconds. Range: 1-200 seconds.

### RADIUS authentication fails on HiPer ARC

#### Fact

- HiPer Access Router Card (ARC)
- Remote Authentication Dial In User Service (RADIUS)

### Symptom

- RADIUS authentication fails
- RADIUS server receives unauthenticated user accounting packets from HiPer ARC
- Unable to establish dial-up networking connection
- `_auth <username> <password>` authenticates user name from HiPer ARC command line; user cannot connect using dial-up networking

### Cause

- CHAP authentication will be attempted first if receive authentication is set to ANY.
- Microsoft clients often fail CHAP authentication.

### Fix

1 Type:

```
set ppp authentication to pap
```

### Restrict calls based on DNIS or ANI

#### Fact

- Remote Authentication Dial In User Service (RADIUS)
- Security and Accounting Server software v5.5.3
- Quad Analog card
- Dual T1/E1 card
- Quad Digital card
- Security and Accounting Server software v5.0.7
- Dual Primary Rate ISDN (PRI) card
- HiPer Digital Signal Processor (DSP)
- Total Control Manager (TCM) application
- Security and Accounting Server software v4.3
- Automatic Number Identification (ANI)
- Dialed Number Identification Service (DNIS)
- Microsoft Windows NT 4.0
- Microsoft Windows 95
- Microsoft Windows 98

## Symptom

- DNIS restrictions
- ANI restrictions

## Fix

Setting up DNIS and ANI restrictions:

- 1 Click **Server Setup** on the Total Control Security and Accounting Database Manager.
- 2 Click the **Check Dial In Restrictions** box.  
This is found on the **Security** tab.
- 3 On the **Accounting** tab, click **Enable Login Tracking**, and then click **Done**.
- 4 On the **Main Menu** bar, click **User Setup**.
- 5 Click **Check DNIS** (if DNIS is being used).
- 6 Type the restriction string under the **DNIS Restriction List** box.
- 7 Select **Check ANI** (if ANI is being used).
- 8 Type the restriction string under the **ANI Restriction List** box.

The restriction string configurations:

- + (allow number)
- - (number not allowed)
- \$ (global - character wildcard (end string with \$))

For example:

- +1617 (all calls within the 617 area code are allowed)
- -1312\$ (all calls within the 312 area code are not allowed)
- +5882300\$ (only local number 5882300 is allowed)

### If previous steps are unsuccessful, try:

- 1 Find out if **T1/PRI span** supports **DNIS** or **ANI**. If so, how many digits are being sent across? Contact the telephone company for this information.
- 2 Find out if **DNIS** or **ANI** info is actually being passed to the Security and Accounting Server. Run the Security and Accounting Server in debug mode to see it this being done.

### 3 Check the following.

```
Called_Station_ID = (dnis)
Calling_Station_ID = (ani)
```

The display indicates that the DNIS or ANI digits are being seen by the Security and Accounting Server.

**Error: "Unable to successfully use the sockets library" on the Security and Accounting Server**

#### Fact

- Security and Accounting Server
- Microsoft Windows NT 4.0 Server

#### Negated Fact

- Microsoft Windows 95

#### Symptom

- Security and Accounting will not load
- Error: "Unable to successfully use the sockets library"

#### Fix

Verify that the **WSOCK 32 DLL** is available. Check for other programs using the RADIUS or TACACS service ports (such as another RADIUS program). See the **Service Names** in the security manager program.



Make sure that the Security and Accounting Server is not already running as a Service in Microsoft Windows NT 4.0 server. From the Microsoft Windows NT 4.0 server desktop, complete the following steps:

- 1 Click **Start**, point to **Settings**, and then click **Control Panel**.
- 2 Double-click **Services**.
- 3 Scroll down the services list to **Total Control Security and Accounting Server**, and then click to select.
- 4 Click **Stop**.
- 5 Once the service is stopped, click **Start**, point to **Programs, USR Management Applications**, and then **TC Security and Accounting Server**.

The program will now load without error.

**Security Breach in debug log when attempting a PPP connection authenticating to RADIUS software**

**Fact**

- Security and Accounting Server
- Security and Accounting Server software v.6.0.8
- Security and Accounting Server software v5.5.3
- Security and Accounting Server software v5.0.7
- Security and Accounting Server software v4.3
- Total Control Chassis
- HiPer Access Router Card (ARC)
- Remote Authentication Dial In User Service (RADIUS)
- Point-to-Point Protocol (PPP)

**Symptom**

- ERROR: "Security Breach from <IP Address of NAS> <Date and Time>"
- Security and Accounting Server prompts with: Password incorrect. Check the secret for the client under "RADIUS Clients" .

**Fix**

Retype the shared secret on the Access server as well as in the Security and Accounting clients file.

- 1 Change the secret in the HiPer ARC. Type:

```
set authentication primary_secret <secret>
```

Changing the secret in the Security and Accounting software.

- 2 From Microsoft Windows 95 or Microsoft Windows NT 4.0, click **Start**, point to **Programs, USR Management Applications**, and then click **TC Security and Accounting Database Manager**.
- 3 Click **Server Setup**.
- 4 Click the **RADIUS Clients** tab.
- 5 Change the appropriate box.
- 6 Click **Done**.
- 7 Restart the **TC Security and Accounting Server** software.





# TOTAL CONTROL MANAGER APPLICATION

This chapter contains solutions for the Total Control Manager™ (TCM) application.

For additional information, see the 3Com Knowledgebase® web site at: <http://knowledgebase.3Com.com>.

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## Installing

This section contains software installation questions.

### PC Hardware Requirements

#### ■ Fact

- Total Control Manager (TCM) application
- Microsoft Windows 3.1
- Microsoft Windows 95
- Microsoft Windows 98
- Microsoft Windows NT 4.0
- Microsoft Windows NT 3.51
- Personal Computer (PC)

#### **Negated Fact**

- Macintosh™ computer

#### **Symptom**

- PC hardware requirements to run the Total Control Manager application

#### **Fix**

Hardware Requirements:

- 80486-based IBM® PC or compatible, 66 MegaHertz (MHz)
- 16 Megabyte (MB) of Random Access Memory (RAM)

- Video Graphics Array (VGA) graphics adapter and monitor
- 3.5-inch, 1.44 MB floppy drive or Compact Disk Read-Only Memory (CD-ROM)
- Mouse supported by Microsoft Windows 3.1, 95, 98, NT
- 40 MB hard drive, with 20 MB free
- 540K of available conventional memory
- Serial communications adapter with 16550 Universal Asynchronous Receiver Transmitter (UART) (required for port speeds above 19.2 Kilobytes per second (Kbps))

### Software download **Fact**

- HiPer Digital Signal Processor (DSP) card
- HiPer Access Router Card (ARC)
- NETServer card
- Quad Digital card
- Quad Analog/Digital card
- Dual Channelized T1 card
- Network Management Card (NMC)
- Dual T1/Primary Rate ISDN (PRI) card
- NETServer PRI card
- Total Control Manager (TCM) application

### **Symptom**

- Upgrading cards to latest code
- Cards are highlighted as yellow on Total Control Manager
- Problems with software download with Total Control Manager

### **Fix**

- 1 If files are were downloaded from the **totalservice** web site, store the zip files in the **ursuite\sdl** directory and unzip the files.
- 2 Click **Start**, point to **Programs, USR Management Applications**, and then click **Total Control Manager**.
- 3 Open the desired chassis.

- 4 On the **Main Menu** bar, click **Configure**, and then click **Software Download**.
- 5 On the **Software download** screen, click the **selection** box (check mark) for the card receiving the software download.  
The **NAC/DMF File** and **SDL File** code should appear in these boxes along with their perspective directory path.
- 6 Click **Start**.



For latest code, go to Total Service Site at: **totalservice.usr.com**.

### PC Software Download (PCSDL)

#### Fact

- Total Control Chassis
- NETServer card
- NETServer Primary Rate ISDN (PRI) card
- Dual Channelized T1 card
- Dual T1/E1 card
- Dual PRI card
- Quad Analog/Digital card
- Total Control Manager (TCM) application
- Network Manager Card (NMC)

#### Symptom

- Flashing green light on the RN/FL LED
- Card appears yellow on Total Control Manager
- Card reboots
- Software download fails on Total Control Manager
- Problem with Personal Computer Software Download (PCSDL)

#### Fix

- 1 From the back of the card, plug the console cable with the null modem adapter to a personal computer (PC).



The NMC, NETServer PRI, and NETServer cards plug into channel 1 of the Network Interface Card (NIC). For the Quad modem card, you will need a Quad NIC. For the PRI and T1/E1 cards, you can plug into the NIC's console port.

- 2 Start PC or terminal in Microsoft Disk Operating System (DOS) mode.
- 3 Before starting software download, unload any terminate-and-stay-resident (TSR) programs running on the PC.



TSR slows down the software download program considerably.

- 4 Store the codes in a temporary directory.
- 5 Once in the directory that the codes are stored in, issue the PCSDL commands. Type:

```
pcsd1 -p1 -r9600 -vsdn.n.n -vnan.n.n -nsd -nna
```

PCSDL executes the PCSDL program.

**Table 21-1** Parameter Purpose

<b>-p</b>	selects the communication port (port 1 or 2)
<b>-r</b>	selects serial port rate (= to card DIP switch settings)
<b>-vsd</b>	software download file version number -substitute a real number for n.n.n (-vnd1.0.2)
<b>-vns</b>	software .nac operation code version number substitute a real number for n.n.n (-vna1.0.3)
<b>-nsd</b>	identifies card type (example -nsdnm = NMC)
<b>-d</b>	specifies the directory path name (optional); -d should be followed by the directory name where the operation and SDL software are stored
<b>-nna</b>	specifies card type
<b>-ignoreCardID</b>	an undocumented option that interchanges codes to certain cards



This option is usually used with T1 or PRI code as well as NETServer code.

For example:

```
pcsd1 -p1 -r9600 -vsd1.0.2 -vna4.0.1 -nsdCT -nnaCT
-ignoreCardID
```

File name prefixes are required to specify the type of **.sdl** and **.nac** file used in the download. The following lists all currently defined prefixes used with the **-nsd** and **-nna** parameters of the **pcsd1** command. These prefixes may change for future versions of the Network Access Card (NAC) software.

**Table 21-2** Software Download and Network Access Card (NAC) Prefixes

.SDL Prefix	.NAC Prefix	Card
<b>ct</b>	<b>ct</b>	channelized T1 card
<b>dp</b>	<b>dp</b>	T1 PRI card
<b>li</b>	<b>li</b>	NETServer ISDN card
<b>nm/hm</b>	<b>nm/hm</b>	Network Management Card
<b>qf</b>	<b>qf</b>	double sided Quad v.34 Analog, Digital, Analog/Digital card
<b>qr</b>	<b>qr</b>	single sided Quad v.34 Analog, Digital, Analog/Digital card
<b>tr</b>	<b>lt</b>	NETServer Token Ring card
<b>hd</b>	<b>hd</b>	HiPer DSP card
<b>hc</b>	<b>hc</b>	HiPer ARC

---

## Using

This section contain product usage questions.

**Display serial numbers, hardware version, software version, DIP switch settings, DRAM, and Flash RAM information of each card**

### Fact

- NETServer card
- NETServer Primary Rate ISDN (PRI) card
- Dual Channelized T1 card
- Dual T1/E1 card
- Dual PRI card
- Quad Analog card
- Quad Analog/Digital card
- HiPer Digital Signal Processor (DSP) card
- HiPer Access Router Card (ARC)
- Total Control Manager (TCM) application
- Total Control Chassis
- New installations

### Symptom

- Need serial numbers for Total Control Chassis
- Need product numbers for the Total Control Chassis
- Need Hardware version of a card
- Need Software version of a card
- Need DIP switch settings of a card
- Need Dynamic Random Access Memory (DRAM) kilobyte (KB) settings of a card
- Need Flash Random Access Memory (RAM) kilobyte (KB) settings of a card
- Need inventory information through Total Control Manager

### Fix

Display inventory information through Total Control Manager.

- 1 On the **Total Control Manager** window **Main Menu** bar, click **Configure** menu, select **Inventory**.
- 2 Click the **check box** for the desired chassis Device Name and Target Host IP address, and then click **OK**.

The **Inventory** window appears with the desired information.

---

## Trouble Clearing

This section contains problems encountered while using the product.

### Dead Air when dialing into chassis

#### Fact

- Quad Analog/Digital card
- Dual Channelized T1 card
- Quad Digital card
- Total Control Manager (TCM) application

#### Symptom

- Dead air on dial up
- Silence on dial up
- Nothing on dial up
- No handshake on dial up

- No ring on dial up

### Change

- Power Loss
- Reset Card
- Software Upgrade

### Cause

- Settings may be lost from time to time if they are not saved properly. They may also be lost when upgrading several software versions at a time.

### Fix

- 1 Determine if the call is hitting a modem.
  - a Click **Total Control Manager**.
  - b Start chassis.
  - c Place a call and wait at least 15 seconds.
  - d If you see a modem go off hook, then the dead air is coming from the modem (go to step 2). If not, move to step 3.
- 2 Dead Air on a Quad Modem.
  - a Click the modem.
  - b On the **Main Menu** bar, click **View**, and then click **Select All**.
  - c On the **Configure** menu, click **Programmed Settings**, and then click **Call Control Options**.
  - d Scroll down. Look for:
    - **T1 Tone Type** (must match telephone company configuration)
    - **ANI-Based Incoming Call Digits** (caller ID)
    - **DNIS-Based Incoming Call Digits** (Dialed Number Identification Service)
  - e Verify settings with your telephone company. You will need to know precisely how many digits you should be setting up to receive.
- 3 Dead Air on a T1
  - a Dead Air on a T1 circuit is most commonly caused by a mis-configuration of the Dial-in Address box.
    1. Click **Carrier Detect** (CD) LED on the **T1 span** with the problem.

2. On the **Main Menu** bar, click **Configure**, and then click **Programmed Settings**.
3. On the **Parameter Group** menu, click **DS1 Trunk Settings**.
4. Verify the **Dial-in Address** configuration is correct for the feature groups the telephone company has provided.
  - noAddress (optional for feature groups B and D)
  - dnis (used for feature group B)
  - ani-dnis (used for feature group D)
  - ani
- 4 When you talk to your telephone company, confirm:
  - Framing Mode
  - Line Coding Options
  - Dial-in Address
  - Dial-in/Dial-out Trunk Signal Start
  - Dial-in/Dial-out Trunk TypeAll of these settings can cause dead air in the right combination.
- 5 If you are having trouble verifying this with your telephone company:
  - a Try changing your Dial-in Address from **dnis** to **noAddress** or vice-versa, and then click **OK**.
  - b Place a call.

**Parameter (DTE interface source) is missing**

**Fact**

- Total Control Manager (TCM) application
- Total Control Chassis
- HiPer Digital Signal Processor (DSP) card
- NETServer card
- Quad Analog/Digital card
- Total Control Chassis v.3.0 TCS
- Quad Digital card
- Network Management Card (NMC)

## Symptom

- Able to view modem Programmed Settings on Total Control Manager to tell if the modem(s) are connected to the packet bus (NETServer) or the Network Interface Card (NIC) (external Data Terminal Equipment (DTE)). Upgraded to TCS 3.0 and now the parameter (DTE interface source) is missing.
- DTE Interface Source is missing
- No DTE Interface Source setting

## Fix

When using TCM, the DTE interface source is a read-only parameter. Presently, the status can only be changed from the NETServer by making the modem active.

Type:

```
set modem s<#> active
```

The parameter was removed from the Total Control Manager modem **Programmed Settings** with NMC version 5.x.8 and higher.

### To check the DTE interface source status with TCS 3.0:

- 1 Click the modem(s) to monitor.
- 2 On the **Main Menu** bar, point to **Performance**, and then click **Session Monitor**.
- 3 On the **Functional Group** menu, click **DTE Interface Settings**.
- 4 On the **Parameters** list, click **DTE Interface Source**, and then click **Add** and **OK**.

## Modems only connect at 1200 bps

### Fact

- Total Control Manager
- HiPer Access Router Card (ARC)
- NETServer card
- NETServer Primary Rate ISDN (PRI) card
- Dual T1/E1 card
- EdgeServer Pro card
- EdgeServer card
- Total Control Chassis

- Quad Analog/Digital card
- Dual Primary Rate ISDN (PRI) card
- Dual Channelized T1 card

### Symptom

- Slow connect speeds
- Cannot connect at x2 or V.90 speeds
- Cannot connect faster than 1200 bps

### Fix

- 1 Click **Total Control Manager**.
- 2 Click the **Quad Modem** card that will not connect at a fast speed.
- 3 Click the **RN/FL** (green) LED on the Quad Modem card.
- 4 On the **Main Menu** bar, click **Configure**, and then click **Programmed Settings**.
- 5 On the **Parameter Group** menu, click **Signal Converter Settings**.
- 6 On the **Link Rate Speed Select [&N]** menu, click **variable**.



A setting other than **variable** will limit the maximum connect speed for that modem.



# NETWORK MANAGEMENT CARD

This chapter contains solutions for the Network Management Card (NMC).

For additional information, see the 3Com Knowledgebase® web site at: <http://knowledgebase.3Com.com>.

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## Installing

This section contains software installation questions.

### Initial Setup

#### Fact

- Network Management Card (NMC)
- New Installation

#### Symptom

- Adding IP address to the NMC
- NMC cannot talk to network
- Configuring a Serial Line Internet Protocol (SLIP) connection to a NMC
- Forgot community strings
- Adding community strings through console port

#### Fix

- 1 Plug the console cable into the communication port, and then access the user interface through a terminal emulation program (for example, HyperTerminal).
- 2 Press **Enter**.
- 3 If prompted for a password, type the **SNMP read write community string** password.

The default is **Public** for read only access and **Private** for read/write access.

- 4 Press **Enter**.
- 5 Type **1** from the **Main Menu** to access the **Configuration** menu.
- 6 Type **1**, and then press **Enter** to access the **Local Lan IP Address** menu.
- 7 Type **1**, and then press **Enter** to access the **Lan IP Address** menu.
- 8 Type the new **LAN IP Address**, and then press **Enter**.
- 9 Press **Esc** to return to the **Configuration** menu.
- 10 Type **2**, and then press **Enter** to access the **LAN IP Subnet Mask** menu.
- 11 Type the new **LAN IP Subnet Mask**, and then press **Enter**.
- 12 Press **Esc** to return to the **Configuration** menu.
- 13 Type **3**, and then press **Enter** to access the **Local Gateway IP Address** menu.
- 14 Type the new **Gateway IP Address**, and then press **Enter**.
- 15 Press **Esc** to return to the **Configuration** menu.
- 16 Type **9** to access the **Save Configuration to Non Volatile Memory** menu.
- 17 Press **Enter** to save the **LAN IP Configuration to NVRAM**.
- 18 Restart the Network Management Card after changing either the IP address or the netmask.

---

## Configuring

This section contains product usage questions.

### Setting up NMC to send accounting reports using Total Control Manager

#### Fact

- Network Management Card (NMC)
- Quad Analog/Digital card
- NETServer card
- Total Control Chassis
- NETServer Primary Rate ISDN (PRI) card
- Dual T1/E1 card
- Dual PRI card
- Quad Digital card
- Total Control Manager (TCM) application

- Security and Accounting Server
- Remote Authentication Dial In User Service (RADIUS)
- Quad Analog card

### Symptom

- Not getting accounting reports from the NMC
- Not getting any accounting reports
- Setting up accounting on the NMC

### Fix

Set up accounting on a Network Management Card using Total Control Manager.

- 1 Click **Network Management Card**.
- 2 On the **Main Menu** bar, click **Configure**, and then click **Programmed Settings**.
- 3 On the **Parameter Group** menu, click **Logging Group**.
- 4 Click and highlight the **Primary Log Server IP Address** box, and then type the **IP address** for the Primary Accounting server.
- 5 If a **Secondary Accounting** server exists, click and highlight the **Secondary Log Server IP Address** box, and then type the **IP address** for the Secondary Log Server IP Address.
- 6 Double-click the **Log Server's UDP Port** box, and then click the arrow control to set the value.  
  
By default, it is set to 1646 to correspond to 3Com Security and Accounting Server software.
- 7 Double-click the **Logging Client TX Retry** box, and then click the arrow control.  
  
This sets how many retries it takes before the accounting packet drops.
- 8 Double-click the **Log Group Selection** menu, and then click **group2345**.



In Group Selection, the different groups signify the following:

**Group 1 - USAGE** (always sent)

- User Name
- Call Start Date/Time
- Call End Date/Time
- Call Termination Reason
- Number Dialed - OUTGOING ONLY
- ANI-Incoming ONLY
- DNIS-Incoming ONLY

**Group 2 - DATA TRANSFER**

- Characters Sent
- Character Received
- Octets Sent
- Octets Received
- Blocks Sent
- Blocks Received
- Blocks Resent
- Characters Lost
- Line Reversals

**Group 3 - PERFORMANCE**

- Block CRC Errors
- Link NAKS
- Link Fallback
- Link Upshifts
- Link Timeouts
- Initial Link TX Rate
- Final Link TX rate
- Retrains Requested
- Retrains Granted

#### Group 4 - OPERATING MODE STATISTICS

- Sync/Async Mode
  - Modulation Type
  - Originate/Answer Mode
  - Error control Type
  - Data Compression Type
  - HST Back Channel Rate
  - Default DTE Data Rate
  - High Freq Equali
- 9 If **MD5 Calculation** is to be performed, double-click the box, and then click **enable**.  
By default, it is **disabled**.
- 10 If there are other backup logging servers, specify them in the **Third, Fourth, Fifth, Sixth, Seventh, and Eighth Backup Logging Server**.
- 11 If the logging server has a logical host name, type it in the **Logging Server's Name**.  
**Logging Server DNS Enable** (enabled or disabled) views the current state of the logging server's host address DNS resolution. By default, it is **disabled**.

#### Enabling traps for accounting reports

- 1 Click **Quad modem** port(s).
- 2 On the **Main Menu** bar, click **Fault**, and then click **Trap Settings**.
- 3 On the **Parameter Group** menu, click **Trap Enables**.  
Enable traps for any reports you need. Options are:
  - **enableTrap** - send trap messages to an alarm server
  - **enableLog** - send log reports to an Accounting Server
  - **enableAll** - do both
  - **disableAll** - do neither

## Using

This section contains symptoms related to normal use of product.

### Reading the feature enabled options when connected through the console port or Enabling Feature Keys

#### Fact

- Feature Enable
- Network Management Card (NMC)
- Console Port
- AutoResponse
- Hub Security
- Added Cost Feature
- Total Control Chassis

#### Symptom

- Finding what features are enabled on the NMC through console port
- Configuration changes to NMC setup through console port
- Enabling Features through the console port of the NMC
- Enabling Hub Security
- Cannot get Hub Security to work
- Enabling x2 or v.90 through the NMC

#### Fix

Several NMC features are available at additional cost from 3Com. These include Hub Security (RADIUS), Cellular Support, and X2/V.90. If you need to add additional-cost features, contact a sales representative to obtain the appropriate feature enable string. You will need to provide the serial number of the NMC card that the feature is being enabled on.

**1** On the **Main Menu**, choose option **3** for **Feature Enable**.

**2** On the **Feature Enable** menu:

```
Feature Enable
Current Features Enabled =
    0000 0000 0000 0000 0000 0000 0000 0100
Press Esc to Exit or Return to continue.
Enter New Feature Enable String:
From here type the New Feature Enable string then press
ENTER. Please note: The string is 16 digits long.
```

**3** On the **Main Menu**, type **1**.

- 4 Press **Enter** to access the **Configuration** menu.
- 5 On the **Configuration** menu, type **9** to access the **Save Configuration to Non-Volatile Memory** menu.
- 6 Press **Enter** to save the configuration to NVRAM.
- 7 Restart the NMC to activate the configuration changes.
- 8 To view the currently-enabled features, repeat **step 1** and see below for which feature(s) are enabled:

The following feature enable string verifies that you have **AutoResponse**. This is automatically enabled by default.

```
Current Features Enabled =
    0000 0000 0000 0000 0000 0000 0000 0100
```

Press **Esc** to Exit, or **Return** to continue.

Enter New Feature Enable String:

```
Current Features Enabled =
    0000 0000 0000 0000 0000 0000 0000 0101
```

The feature enable string above verifies that **AutoResponse & Hub Security** is installed.

```
Current Features Enabled =
    0000 0000 0000 0000 0000 0000 0000 0110
```

This above string shows that **AutoResponse** and the **Cellular** feature is installed.

```
Current Features Enabled =
    0000 0000 0000 0000 0000 0000 0010 0100
```

The feature string above shows that both **AutoResponse & X2/V.90** are enabled.



If you have HiPer DSP cards, you will not need a feature enable key; these cards automatically have X2/V.90.

```
Current Features Enabled =
    0000 0000 0000 0000 0000 0000 0010 0111
```

The above string verifies that **all options** are enabled.

---

## Trouble Clearing

This section contains problems encountered while using the product.

### Problems with the NMC retaining settings

#### Fact

- Total Control Chassis
- Network Management Card (NMC)
- Total Control Manager (TCM) application

#### Symptom

- Any card on Total Control Chassis will not retain the settings after rebooting
- Card settings are saved to Non-Volatile Random Access Memory (NVRAM)

#### Fix

Check the NMC card for **Auto Config on Card Initialization**. This should be disabled.

To disable:

- 1 Click **Network Management Card**.
- 2 On the **Main Menu** bar, click **Configure**, and then click **Programmed Settings**.
- 3 On the **Parameter Group** menu, click **Configuration Group**.
- 4 Double-click the **Auto Config on Card Initialization** menu, click **disable**, and then click **OK**.
- 5 On the **Configure** menu, click **Actions/Commands**.
- 6 On the **Command to Execute** menu (**Software** selected), click the command **Save Chassis to NVRAM**.
- 7 Restart the **Network Management Card**.



# REASONS FOR FAILURES TO CONNECT

This chapter contains reasons for failures to connect.

For additional information, see the 3Com Knowledgebase® web site at: <http://knowledgebase.3Com.com>.

**Disconnect Failure to connect Reason abortAnlgDstOvrIsdn (72)**

## **Fact**

- HiPer Access Router Card (ARC)
- HiPer Digital Signal Processor (DSP) card
- Total Control Chassis
- Total Control Manager (TCM) application
- Session Monitor
- Simple Network Management Protocol (SNMP)
- Security and Accounting Server
- Remote Authentication Dial In User Service (RADIUS)
- Primary Rate ISDN (PRI)
- Integrated Services Digital Network (ISDN)

## **Symptom**

- Reason for disconnect abortAnlgDstOvrIsdn(72)

## **Cause**

abortAnlgDstOvrIsdn(72)

Abort Analog Destination over ISDN Network Connection

The modem was originating a PRI-ISDN call in universal connect mode. It detected an analog modem answering, but was configured to not accept analog calls. (S68=0).

**Disconnect or Failure  
to connect reason  
rcvdGatewayDiscCmd  
(62)****Fact**

- Total Control Chassis
- EdgeServer Pro card
- HiPer Access Router Card (ARC)
- EdgeServer card
- NETServer Primary Rate ISDN (PRI) card
- NETServer card
- Dual Channelized T1 card
- Dual PRI card
- Quad Digital card
- Quad Analog/Digital card
- Network Management Card (NMC)
- Total Control Manager (TCM) application
- Session Monitor
- Security and Accounting Server

**Symptom**

- Reason for disconnect rcvdGatewayDiscCmd(62)

**Cause**

rcvdGatewayDiscCmd(62) - Gateway Disconnect Command Received:

The gateway card sends the modem a disconnect command. This is a normal method of terminating a call locally. This reason only applies to calls on the packet bus and is analogous to dtrDrop on the RS-232 Network Interface Card (NIC).

**Disconnect or Failure  
to connect reason  
V.42DisconnectCmd  
(26)****Fact**

- Total Control Chassis
- Dual Channelized T1 card
- Dual Primary Rate ISDN (PRI) card
- Quad Digital card
- Quad Analog/Digital card
- Network Management Card (NMC)

- Total Control Manager (TCM) application
- HiPer Digital Signal Processor (DSP) card
- Session Monitor
- Security and Accounting Server

### Symptom

- Reason for disconnect V.42DisconnectCmd(26)

### Cause

V.42DisconnectCmd(26)

The remote modem sent a V.42 error control disconnect request. This is a normal disconnect procedure under V.42 error control when the remote modem is the initiator of the disconnect. This error can occur if the user or application software sent +++, ATH, or dropped Data Terminal Ready (DTR) on the remote modem.

### Disconnect or Failure to connect reason for remotHungUpDuring Training(80)

#### Fact

- HiPer Access Router Card (ARC)
- HiPer Digital Signal Processor (HiPer DSP) card
- Total Control Chassis
- Dual Channelized T1 card
- Dual Primary Rate ISDN (PRI) card
- Quad Digital card
- Quad Analog/Digital card
- Network Management Card (NMC)
- Total Control Manager (TCM) application
- Session Monitor
- Security and Accounting Server
- Remote Authentication Dial In User Service (RADIUS)

### Symptom

- Reason for disconnect remotHungUpduringTraining(80)

### Cause

remotHungUpduringTraining(80)

The remote modem was detected, but went on-hook before the modems could finish training.

This reason replaces dsOTeardown (or loopLoss for POTS-plain old telephone network) when a remote modem has been detected. This object was added to help isolate call failure reasons.

In other words, the modems tried to train up, but failed, and never connected. Another possibility is the modem may not have failed, but the user hung up due to dissatisfaction with the modem tones. This is similar to the existing call attempt reason **DS0 teardown**. Checking older code call statistics versus new code statistics, the percentage of **DS0 teardown** as call attempt failure should be the same as (DS0 teardown + Cause 80 "disconnect during training").

### Disconnect or Failure to connect reason for V.32Cleardown(33)

#### Fact

- HiPer Access Router Card (ARC)
- HiPer Digital Signal Processor (HiPer DSP) card
- Total Control Chassis
- Dual Channelized T1 card
- Dual Primary Rate ISDN (PRI) card
- Quad Digital card
- Quad Analog/Digital card
- Network Management Card (NMC)
- Total Control Manager (TCM) application
- Session Monitor
- Security and Accounting Server
- Remote Authentication Dial In User Service (RADIUS)

#### Symptom

- Reason for disconnect v32Cleardown(33)

#### Cause

v.32Cleardown(33) - GSTN Cleardown

The modems were unable to find a common rate at which to connect.

For V.90 connections - fallbacks to V.34 (s76.3) were disabled and the line was dialed and the line was unable to support a v.90 connection.

Disconnect reason - this is a normal disconnect method for high speed connections.

**Disconnect or Failure to connect reason for pbOutOfSequenceFrame(56)**

**Fact**

- HiPer Access Router Card (ARC)
- HiPer Digital Signal Processor (HiPer DSP) card
- Total Control Chassis
- EdgeServer card
- NETServer card
- Dual Channelized T1 card
- Dual Primary Rate ISDN (PRI) card
- Quad Digital card
- Quad Analog/Digital card
- Network Management Card (NMC)
- Total Control Manager (TCM) application
- Session Monitor
- Security and Accounting Server
- Remote Authentication Dial In User Service (RADIUS)

**Symptom**

- Reason for disconnect pbOutOfSequenceFrame(56)

**Cause**

pbOutOfSequenceFrame(56) - PACKETBUS -Out of Sequence Frame

An error occurred in the packet bus physical layer. The modem received a frame out of sequence or a frame was missing.

**Disconnect or Failure to connect reason for none(32)**

**Fact**

- HiPer Access Router Card (ARC)
- HiPer Digital Signal Processor (HiPer DSP) card
- Total Control Chassis
- Dual Channelized T1 card
- Dual Primary Rate ISDN (PRI) card

- Quad Digital card
- Quad Analog/Digital card
- Network Management Card (NMC)
- Total Control Manager (TCM) application
- Session Monitor
- Security and Accounting Server
- Remote Authentication Dial In User Service (RADIUS)

### Symptom

- Reason for disconnect none(32)

### Cause

none(32) - No Connection Online

This is the value reported to the Network Management Card on a query or disconnect reason during modem training or while connected. This may also be a query of the call fail reason when the call did not fail. In system emulation mode, the modem will report **No connection** after being reset on power-up. In the online command mode, the modem will display **Online** instead of a disconnect reason.

### Disconnect or Failure to connect reason dsOTeardown(37)

#### Fact

- Total Control Chassis
- Dual Channelized T1 card
- Dual Primary Rate ISDN (PRI) card
- Quad Digital card
- Quad Analog/Digital card
- Network Management Card (NMC)
- Total Control Manager (TCM) application
- Session Monitor
- Security and Accounting Server
- Remote Authentication Dial In User Service (RADIUS)

### Symptom

- Reason for disconnect dsOTeardown(37)

## Cause

dsOTearDown(37)

The T1 or PRI card initiated the disconnect. This usually occurs because the remote modem has hung up: the central office signals to the T1 or PRI card when there is a disconnect at the other end of a call (telephone company disconnect). This applies to T1 or PRI calls, not to POT calls.

This is a catch-all reason for T1 and PRI calls. Typically, the hang-up was remotely initiated from the remote end of the call, and is viewed as a disconnect request from the telephone company. The remote user may have broken the call, the remote modem may have hung up, or something may be wrong within the phone network. It can mean the remote modem went on-hook abruptly without sending a V.42 Disconnect, MNP (MicroCom Networking Protocol), LD (line detect), or ClearDown. Even if the remote modem sends these before going on-hook, there is a race condition over whether it is received locally before the DSO teardown is received.

As a failure to connect reason, this may mean that a non-modem call was received.

The reason **failtotrain** was added in TCS 3.0 to help isolate non-modem calls.

## Disconnect or Failure to connect Reason unabletoRetrain(14)

### Fact

- Total Control Chassis
- Dual Channelized T1 card
- Dual Primary Rate ISDN (PRI) card
- Quad Digital card
- Quad Analog/Digital card
- Network Management Card (NMC)
- Total Control Manager (TCM) application
- Session Monitor

### Symptom

- Reason for disconnect unabletoRetrain(14)

### Cause

unabletoRetrain(14) - Unable to Retrain

After several attempts, disturbances on the phone line prevented the modems from retraining, and they could no longer transmit or receive data. This may be the result of poor line conditions. Use Total Control Manager to verify call statistics. Contact the telephone company.

### Disconnect Failure to connect Reason dtrDrop(1)

#### Fact

- Total Control Chassis
- Dual Channelized T1 card
- Dual Primary Rate ISDN (PRI) card
- Quad Digital card
- Quad Analog/Digital card
- Network Management Card (NMC)
- Total Control Manager (TCM) application
- Session Monitor
- Security and Accounting Server
- Remote Authentication Dial In User Service (RADIUS)

#### Symptom

- Reason for disconnect dtrDrop(1)

#### Cause

dtrDrop(1)

The Data Terminal Equipment (DTE) dropped the Data Terminal Ready (DTR) signal, terminating the call. This only applies to the RS-232 Network Interface Card (NIC) interface. For modems on the packet bus, the modem ignores this signal.

It is recommended to use DIP switch 1 to override the DTR signal for modems on the packet bus. The value may occur incorrectly sometimes under Total Control Manager because it is the default value until initialized to none(32).

### Disconnect or Fail to connect reason for athCommand(3)

#### Fact

- HiPer Access Router Card (ARC)
- HiPer Digital Signal Processor (HiPer DSP) card
- EdgeServer Pro card

- EdgeServer card
- NETServer Primary Rate ISDN (PRI) card
- NETServer card
- Total Control Chassis
- Dual Channelized T1 card
- Dual Primary Rate ISDN (PRI) card
- Quad Digital card
- Quad Analog/Digital card
- Network Management Card (NMC)
- Total Control Manager (TCM) application
- Session Monitor
- Security and Accounting Server
- Remote Authentication Dial In User Service (RADIUS)

### **Symptom**

- Reason for disconnect athCommand(3)

### **Cause**

athCommand(3)

The user or application software sent the ATH (ATH0) command to the modem while the modem was in online command mode.

### **Disconnect or Fail to connect reason for escapeSequence(2)**

#### **Fact**

- HiPer Access Router Card (ARC)
- HiPer Digital Signal Processor (HiPer DSP) card
- Total Control Chassis
- Dual Channelized T1 card
- Dual Primary Rate ISDN (PRI) card
- Quad Digital card
- Quad Analog/Digital card
- Network Management Card (NMC)
- Total Control Manager (TCM) application
- Session Monitor

- Security and Accounting Server
- Remote Authentication Dial In User Service (RADIUS)

### Symptom

- Reason for disconnect escapeSequence(2)

### Cause

escapeSequence(2)

The user or application software sent the +++ escape code (or other character as set in S2) to the modem, and the modem is configured to disconnect the call when it receives the escape code (refer to DIP switch 9/Register S14.0).

If there is a problem, reconfigure the application software using S2 to send a different escape code.

TCM has a third option of disabling +++ detection, which is equivalent to setting S2 to greater than 127.

### Disconnect or fail to connect reason for carrierLoss(4)

#### Fact

- HiPer Digital Signal Processor (HiPer DSP) card
- Total Control Chassis
- Dual Channelized T1 card
- Dual Primary Rate ISDN (PRI) card
- Quad Digital card
- Quad Analog/Digital card
- Network Management Card (NMC)
- Total Control Manager (TCM) application
- Session Monitor
- Security and Accounting Server
- Remote Authentication Dial In User Service (RADIUS)
- Simple Network Management Protocol (SNMP)

### Symptom

- Reason for disconnect carrier Loss(4)

### Cause

Explanation of carrier Loss(4)

The modem detected a loss of the remote modem's carrier and waited the time duration specified in Register S10. This register's default is 0.7 seconds.

For higher speed modulations, carrier loss detection is disabled when other recovery mechanisms are used (such as retraining). It is rare to see this disconnect or fail to connect reason because other reasons are usually used or are detected sooner.



# 24

## MODEMS

This chapter contains solutions for modems.

For additional information, see the 3Com Knowledgebase® web site at:  
*<http://knowledgebase.3Com.com>*.

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### Trouble Clearing

This section contains problems encountered while using the product.

#### For v.90 or any 3Com 56K Modem - Disable x2 and v.90

#### Fact

- 3CCFEM556 cable
- 3CCFEM556B cable
- 3CXEM556 cable
- 3CXEM556B cable
- 3CCEM556 cable
- 3CCEM556B cable
- XJ5560 cable
- Microsoft Windows 95 Operating System R2.5
- Microsoft Windows 95
- Microsoft Windows 98
- Microsoft Windows NT 4.0

#### Symptom

- Slow modem performance after upgrading to v.90
- Cannot connect to Internet Service Provider (ISP)
- Trouble connecting
- Slow connection
- Beeping noise during connection to ISP

**Fix**

Check the modem at the other end to verify whether it is a 56K modem and what protocol it is running (x2, K56Flex, or v.90).



Go to the 3Com web site **www.3Com.com** for additional information on X2 and v.90 trouble clearing, 56K modem connection requirements, and technology overviews.

Run 56K Modem Line Test: go to web site:

**`http://www.3com.com/56k/need4_56k/linetest.html`**

- 1 Click **Start**, point to **Programs, Accessories**, and then click **HyperTerminal**.
- 2 Double-click **Hypertrm.exe**.
- 3 Type:  
**3Com Line Test**
- 4 Click an icon, and then click **Next**.
- 5 Type the following Bulletin Board System (BBS) number:

**847-262-6000**



It is assumed Dialing Properties are setup to dial out.

A Line Test system connection is made, and asks if the system supports graphics.

- 6 Press the **Enter** key.  
You will be prompted for your first name.
- 7 Type **LINE**, and then press the **Enter** key.  
You will be prompted for your last name.
- 8 Type **TEST**, and then press the **Enter** key.



The Line Test system performs a series of diagnostics on the connection, and displays results in a few minutes.

If the line passes the test successfully, the following is displayed:

**`This connection supports 56K* technology! Congratulations - you're in good company!`**

- 9 Press the **Enter** key to see the first two screens of line statistics.

- 10 Press the **Enter** key for the second screen.
- 11 When done, type the letter **G**, and then press the **Enter** key to disconnect.

If the following is displayed:

```
Your line does not support 56K technology.
```

Type the letter **G**, and then press the **Enter** key to disconnect. Since line conditions can change from call to call, make several calls to Line Test to ensure an accurate diagnosis. If multiple phone lines are available, try calling from each line.

If the following is displayed:

```
56K is not currently possible on this connection, or is likely to be highly impaired.
```

Type the letter **G**, and then press the **Enter** key to disconnect. The most likely reason for this response is more than one analog-to-digital conversion in the connection to the provider exists. Also, the provider may be more than three wire-length miles from the telephone switch. If multiple calls indicate that the line will not support 56K technology, remember that telephone network configurations can change, so chances of making high-speed connections may improve over time.

If the following is displayed:

```
Cannot determine 56K capability, test must run in V.34 mode.
```

Type the letter **G**, and then press the **Enter** key to disconnect. This response may occur if there is excessive **noise** or static on the phone line. Since line conditions can change from call to call, try again at another time.

### **Reset the modem to factory default settings**

- 1 Click **Start**, point to **Settings**, and then click **Control Panel**.
- 1 Click **Modems**, and then click **Properties** of 3Com adapter.
- 2 Click the **Connections** tab.
- 3 Click the **Advanced** tab.

- 4 On **Extra Settings**, type:

**AT&F**

### To Disable X2 and/or V.90



Make sure that the analog phone line is not connected to the modem. From **HyperTerminal** or **Modem Properties**, type these AT Commands. Type **&w** to store these commands in Non-Volatile Random Access Memory (NVRAM), otherwise they must be typed at restart each time.



If added in **HyperTerminal**, the **Modem Properties** override these settings.

- 1 Click **Start**, point to **Programs, Accessories, Hyperterminal**, and then click **HyperTerminal**.

The Connection Description window appears.

- 2 Type a **name**, click an **icon**, and then click **Cancel**.
- 3 On the HyperTerminal window screen, verify an **OK** response if you type:

**AT**

- 4 Press the **Enter** key to verify that the modem is responding.
- 5 To disable either X2 or V.90, type:

**ATs32=34** (disables X2 technology)

**ATs32=66** (disables v.90 if it has already been installed)

- 6 To disable both X2 and V.90, type:

**ATs32=98**

- 7 To return to factory default, type:

**AT&F**

### Modem Properties

These settings do not need to be re-entered after restarting.

- 1 Click the **Connections** tab.
- 2 Click the **Advanced** tab.
- 3 On **Extra Settings**, type:  
**ATs32=34** (disables X2 technology)  
**ATs32=66** (disables V.90)
- 4 To disable both X2 and V.90, type:

**ATs32=98**

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