Vanguard Managed Solutions

Vanguard Applications Ware
Serial Feature Protocols

Network Control Channel Protocol

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To comment on this manual, please send e-mail to LGEN031@vanguardms.com

Network Control Channel Protocol

Overview

Introduction

This manual describes the NCCP (Network Control Channel Protocol) Option, a network management software option for Vanguard PADs, switches, and branch nodes. It is designed to optimize management support for remote transmission devices while minimizing cross-network management traffic.

This manual assumes you are familiar with network management systems and transmission product management, as well as Vanguard architecture, terminology, and connectivity.

What is in This Manual?

This manual discusses the following:

- Configuration of NCCP Option, using new tables in Vanguard products
- Compatibility requirements
- Description and use of the NCCP Option.
- Establishing calls
- Integral data scope capability for viewing modem control channel data from the Control Terminal Port (CTP)
- New status, statistics, events, and alarms for NCCP Option operation
- Operability rules and limitations
- Overview of NCCP Option features, such as Address Translation, Quick Timeout, Datascope function, State Search, and Streaming Device Detection
- Overview of the NCCP Option in Dial Environments.
- Supported devices
- Typical NCCP setup: Master Devices on One Control Channel

Alarms

For information about Alarms and Reports, refer to the *Vanguard Applications Ware Alarms and Reports Manual* (T0005).

In This Manual	**Topic**	**See Page**

NCCP Option

The NCCP Option is a network management software option for the Vanguard products. With this software, asynchronous ports of Vanguard nodes are configured to handle network management traffic between a network management system and remote site transmission products.

NCCP Option operates as a link between the management system and remote devices, ensuring the management system has real-time status updates of devices while minimizing network management traffic across the network.

Near the local node, Vanguard ports designated as Management-PAD ports (MPADs) transparently respond to management polling on behalf of managed devices. Near the remote node, Vanguard ports designated Device-PAD ports (DPADs) locally poll connected managed modems and DSU/CSUs. MPADs and DPADs communicate across the X.25 link, passing alarm conditions, commands, and test information but eliminating cross-network polling. The result is a reduction in network management traffic overhead with no loss of management visibility of remote devices.

Figure 1 shows an example of a network using the NCCP Option to support remote transmission devices. In this diagram, the network management system has three control channels. With a 9800 network management system, these control channels would be CAP connections. NCCP Option is used to support the remote device lines. At the local site, one control channel connects to a Vanguard port configured as an MPAD; at the remote site, the master modem and DSU/CSU each connect to DPAD ports. The two local master devices in the diagram are connected without using NCCP Option.
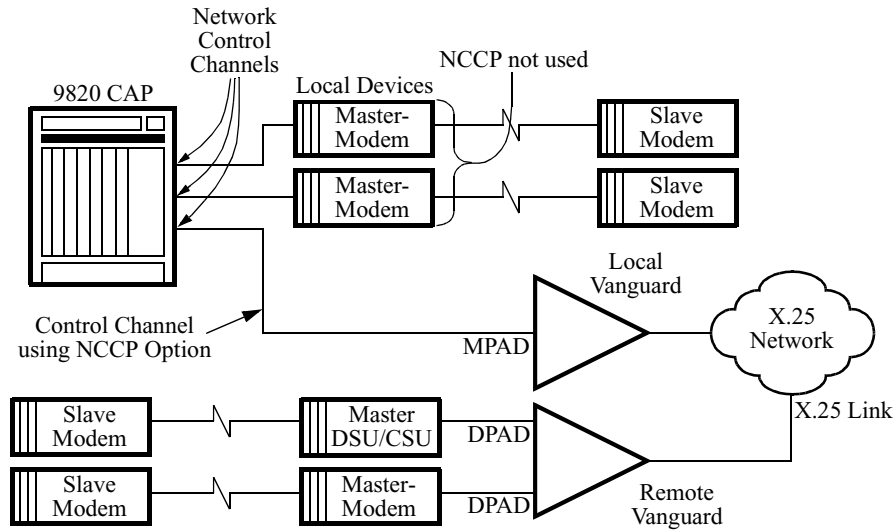
Figure 1. NCCP Option Network

During operation, the management system polls normally. Transparent to the network management system, the MPAD answers polls destined for the remote devices. The remote DPADs independently poll these same remote devices. As changes in the modem state are detected by the DPADs, events and alarms are passed back to the MPAD. After the next manager poll, the management system is alerted to the remote conditions. Operator-initiated device communication, such as commands, tests, and downloads, are passed normally across the network.

If there have been no messages between MPAD and associated DPADs for the time set with the parameter Inactivity Poll, the MPAD polls each of its DPADs to determine if the devices are being monitored. If a DPAD does not respond, the MPAD stops responding to NMS polls directed to the devices connected to the DPAD.

Compatibility Requirements

The NCCP Option Release 4.X is compatible with the 9800 Network Management System (NMS) Release 5.X and supports these managed devices:

- 32xx
- 33xx
- 35xx
- 36xx
- 26xx
- 25xx
- 21xx

■**Note**

The Vanguard Transparent Polled Asynchronous (TPA) software option is required if you attach dial modems to the NCCP PAD. This option uses a more precise idle timer for packetization.

Establishing Calls

Calls between the MPAD and DPAD are established at application startup with an application boot, node boot, power cycle, or application restart for error recovery. SVC remains connected during NCCP Option operation.

Range of Support

The NCCP Option interface is supported on the Vanguard devices. The NCCP protocol is asynchronous, so you can configure MPAD and DPAD ports on the CPU, AIO, and UIO boards. The maximum configuration is based on the available DRAM and CPU resources in the Vanguard, which varies depending on what other port types are configured, expected node throughput, and other variables. You can configure any of these port types as NCCP Option ports, and up to 50 DPADs per MPAD.

The number of remote DPADs you can support within a Vanguard depends upon the maximum number of SVCs the node supports. You can configure a maximum of 400 NCCP devices per Vanguard node. The maximum number of NCCP devices per NCCP channel, whether MPAD or DPAD, is 199. The NCCP Option supports standard device speeds, such as 75 bps, 150 bps, and 9600 bps.

Y-Cable Connector

■**Note**

Y-cable connection of multiple MPADs to a CAP port is not supported.

Operability Rules

Introduction

Set the Network Control Channel Speed of 326X Series Modems running leased line mode to 75 bps or 150 bps. A faster setting risks overrunning the buffer and truncating messages.

The NCCP Option does not support the 326X Series Modem network management password verification security feature.

If you wish to manage remote dial modems on a dial-up basis, you must configure a remote modem on the NCCP Option. The remote dial modem address is the same as that of the local dial modem, plus 100. For details, refer to "NCCP Option for Dial Environments" later in this document.

Connections between an MPAD and a DPAD are established via a Switched Virtual Circuit (SVC) by either the MPAD or DPAD.

You can have up to 99 dial master modems per MPAD channel, a limitation imposed by dial modem addressing conventions. The number of dial modems on MPAD ports and the delays inherent in packet switched networks will vary according to the application.

You can have up to 99 dial modems per DPAD channel, a limitation imposed by dial modem addressing conventions. With dial modems, you must enter both the address of the local modem as well as a remote address (local plus 100) to reserve dial-up management of remote modems. Like the MPAD, the number of dial modems on DPAD ports and the delays inherent in packet switched networks vary according to the application.

Master Devices on One Control Channel

This section describes in general terms one possible method of NCCP Option configuration. Figure 2 shows two remote master devices on one control channel.
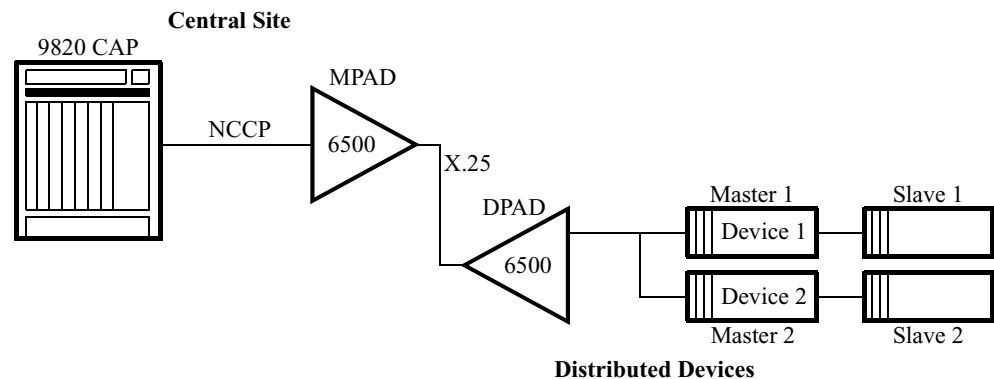
Figure 2. Master Devices on One Control Channel

In this type of configuration, polling theory works as follows. At the central site, the manager sends a poll to the MPAD, and receives a normal response. The MPAD is transparent to the manager, and the devices appear to be responding. However, the MPAD intercepts the polls instead of allowing them across the network. At the remote site, a DPAD connected to the devices polls the two devices. To the devices, the DPAD is transparent and the manager appears to be doing the polling. The DPAD is intercepting the poll responses instead of allowing them across the network. Figure 3 illustrates polling without and with the NCCP Option.
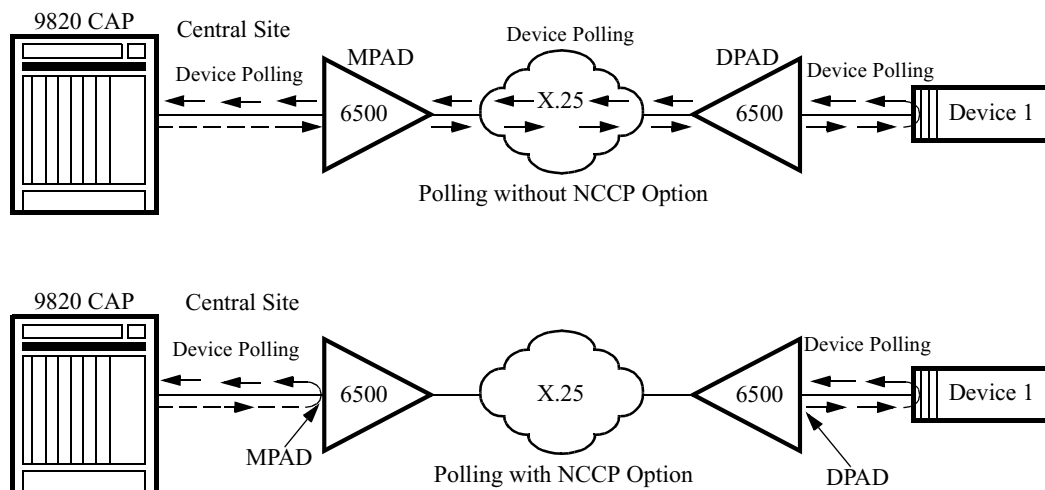
Figure 3. Polling Without and With the NCCP Option

If you are not running the NCCP Option, normal polling activity and commands always go across the network.

If you are running the NCCP Option while polling normally, and no device posts alarms or events, then no network management device information crosses the network. If an alarm does occur in Device 1 in Figure 3, when the DPAD polls Device 1, it sees a posted event. The DPAD passes the information to the MPAD. When the manager sends device polls to the MPAD, the event is reported back to the manager.

If a command is passed (for example, a device snapshot), the manager passes the command to the MPAD, which forwards it to the DPAD. The DPAD forwards the command to the device and reports back through the DPAD to the MPAD to the manager.

Option Features

Introduction

This section is an overview of NCCP Option features.

Address Translation

Address Translation provides greater addressing flexibility in certain situations. If you are adding MPADs or DPADs to an existing network, address translation helps consolidate the channels. The NCCP Option requires a unique address on all devices connected to a network control channel.

With Address Translation, you enter a unique network control address at the network management system inventory screen. The NCCP Option translates the unique NMS address into a physical network control address. If no translation is needed, the two addresses remain the same. Configure this feature at the NCCP Device Table through the Unique NCCP Address and Physical NCCP Address parameters on the MPAD node.

■**Note**

Address Translation does not support address 144; do not configure address 144 for the Unique NCCP Address or the Physical NCCP Address.

Figure 4 illustrates a networking scheme before and after configuring for Address Translation. The setup in the top illustration requires two unique 9820 addresses, and therefore needs two ports. The setup in the bottom illustration includes DPADs and an MPAD, which condense the 9820 CAP connections to one, even though the 9820 CAP manages the same number of devices. The 9820 CAP port still has the same unique addresses as the 9820 CAP in the top illustration, but the real device address is unchanged.
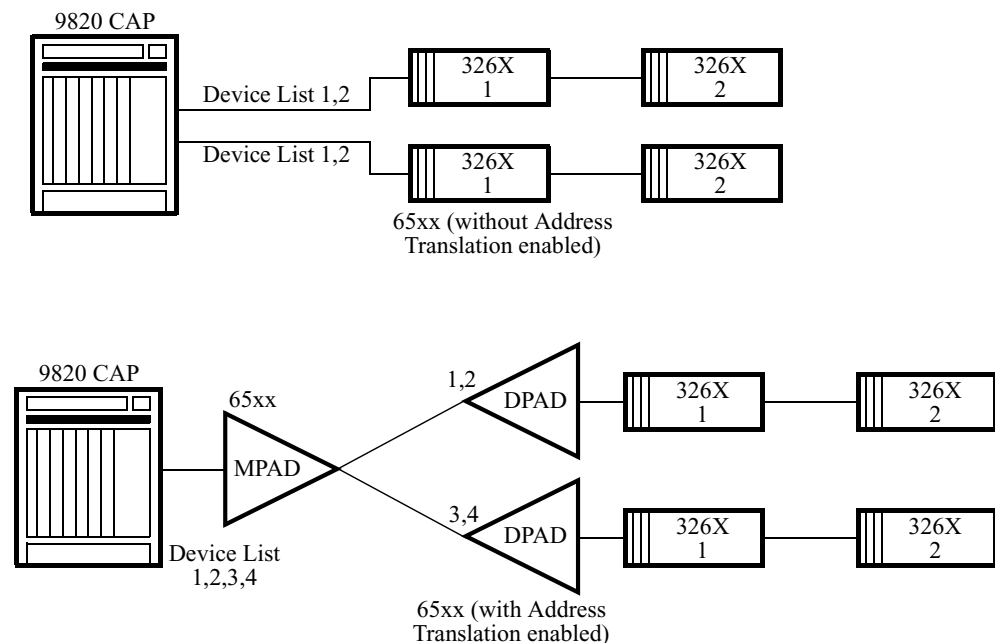
Figure 4. 9820 Network Without and With Address Translation Enabled

Since some networks use specific addressing conventions, this could make addressing difficult between the NCCP Option and some networks when lines are consolidated.

■**Note**

Use caution when configuring this feature. With address translation, the management address does not match the actual modem address, which may cause confusion when you are troubleshooting. When you set translation to "active," list the actual physical device address in the comments section on the device.

Quick Timeout

Quick Timeout improves NCCP channel efficiency when devices in the network are not responding. The MPAD sends a new response type to the network management system, which knows immediately that a device is not responding to polls, preventing unwanted timeouts. This parameter applies only to the MPAD Table.

Datascope/Monitor

The Datascope function is available in both the MPAD and DPAD, and runs from the CTP that is directly connected to the Vanguard or a remote CTP. It is accessible at the Monitor entry under the CTP main menu.

Identifying Misconfigured NCCP Devices

State Search identifies misconfigured NCCP devices. You can access it through the State Search Enable parameter in the NCCP PAD Parameters table. The State Search is done automatically when the DPAD initializes. Any devices connected after initialization are not detected. However, you can perform a DPAD boot to reinitialize the DPAD and perform the State Search. If enabled, the State Search parameter generates this event type when an unconfigured device is found:

DPAD1-DEVICE DETECTED ADDRESS 3 (03 hex) 2640

Identifying Streaming Devices

A device is considered streaming when it receives unwanted data from the network control channel. Streaming Device Detection identifies streaming devices on the network control channel. You can access the Streaming Device Detection parameter through the NCCP PAD Parameters table. On detection of a streaming device, the NCCP Option generates the following event:

DPAD-1 STREAMING DEVICE DETECTED

After this event appears, the DPAD stops polling on the NCCP Option channel for a configurable period of time. When the DPAD receives a valid response and the channel is clear for communication, the NCCP Option generates the following event:

DPAD-1 STREAMING CONDITION CLEARED

Other parameters in the NCCP Option Node table used to adjust streaming device detection sensitivity are Solicited Threshold, Unsolicited Threshold, and Stream Detect Delay. Refer to the Configuration section for more information on the individual parameters.

NCCP Option for Dial Environments

Introduction

When operating in dial mode, the 326X family uses a distinct addressing scheme to communicate with the network manager. Local dial modems are reached through the local modem address. Remote modems on a dial-up connection are accessed by entering the local modem address plus 100. While this addressing scheme is hidden from the dial management user, it does impact the NCCP Option. To manage remote modems with the NCCP Option, you must therefore configure the local address as well as a remote address (address + 100).

To use the NCCP Option with dial modems, do the following:

- Limit local dial modem addresses to 99
- For each local dial modem, configure both the local modem address, and the corresponding remote dial address (100 plus the local modem address: therefore, the maximum is 199)
- Disable the polling function on the remote modem address

Cabling

Introduction   This section describes how to cable an NCCP network and install CSKs to activate the software.

This section describes how to cable for these connections:

- Management system control channel to the corresponding MPAD
- Remote site DPAD to the Master transmission device
- Management CTP terminal connection to configure the Vanguard NCCP PAD functions

Control Channel to   Each management system control channel must connect to the corresponding
MPAD Connections   Vanguard MPAD port. You can use standard NMS device cables for the 9820 CAP for this connection, all of which terminate in DB25 connectors. No other cables are required. A typical connection of this type is shown in Figure 5. The cables are labeled with the appropriate product code numbers.
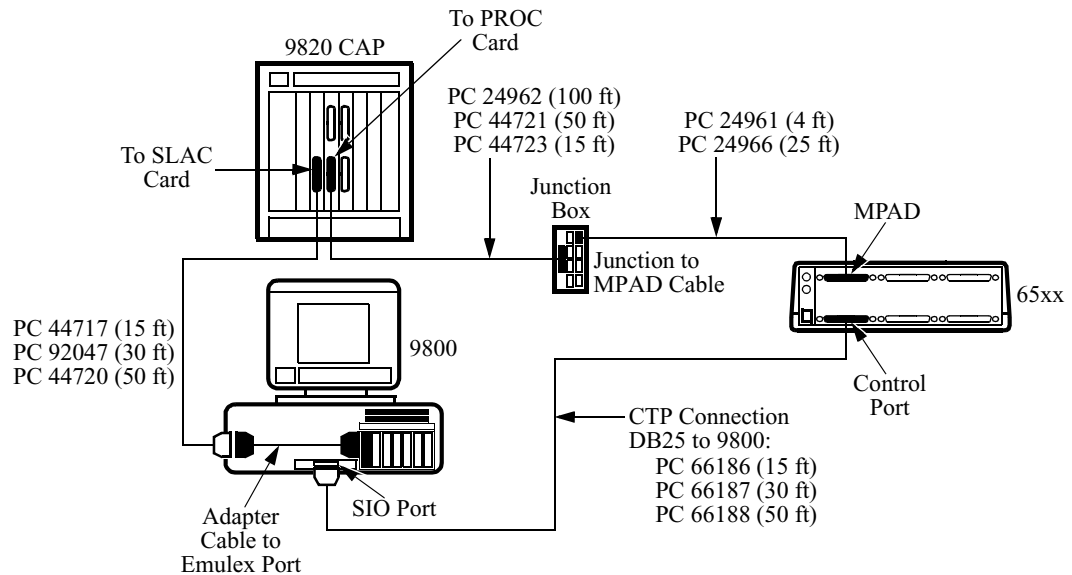
Figure 5. Manager to MPAD DB25 Connection

For Junction Box to 33xx, 35xx, 36xx, 21xx, 25xx, and 26xx connections, use PC 24961 or PC 24966.

For Junction Box to Multiple 33xx, 35xx, 36xx, 21xx, 25xx, and 26xx connections, use PC 24961 and PC 99576.

■**Note**

A junction box is used only for a network manager to device connection, not for DPAD to device connections.

Figure 6 shows DB26 Cable connections.
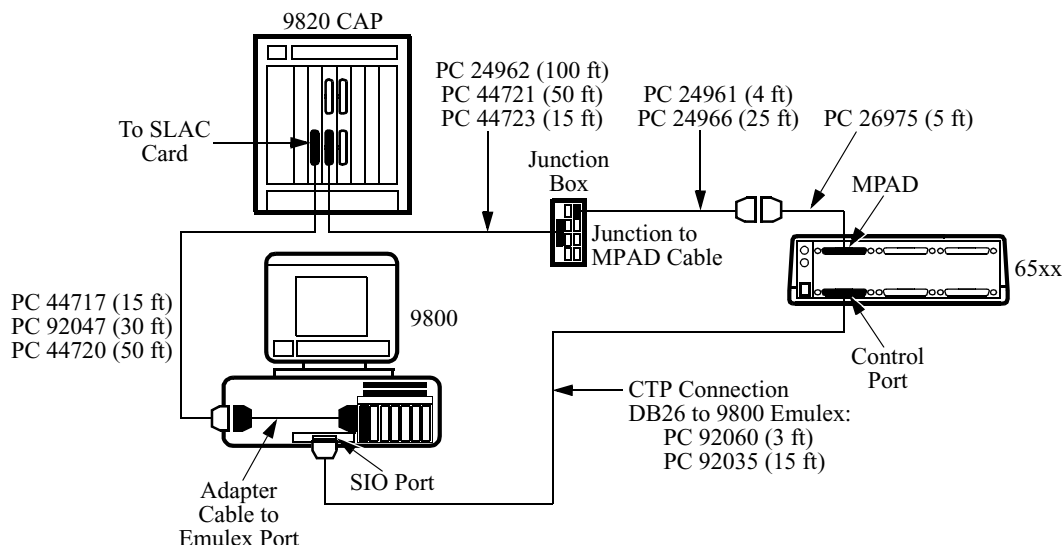
Figure 6. Manager to MPAD DB26 Connection

DPAD to Master Device Connections

Vanguard DPADs require a crossover connection to the master device when the port is a physical DCE. If the port is a physical DTE, you can use a straight-through cable. Since different transmission devices have different connectors, it is important to obtain the correct cable for the connection. Depending on the Vanguard backplane, a DB25 or DB26 connector is required. Check the port on the Vanguard for the connector type.

DPAD to Master DB25 device connections are illustrated in Figure 7.
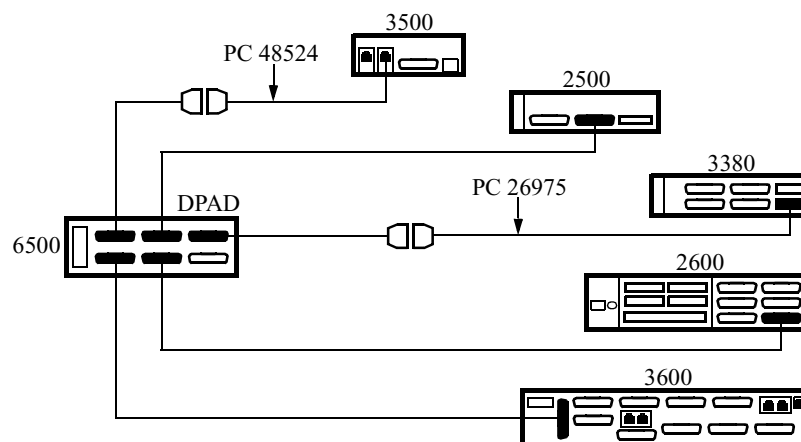
Figure 7. Vanguard DPAD to 3600, 3500, 3380, 2600, and 2500 Master DB25 Connections

DPAD to Master DB26 device connections are illustrated in Figure 8.
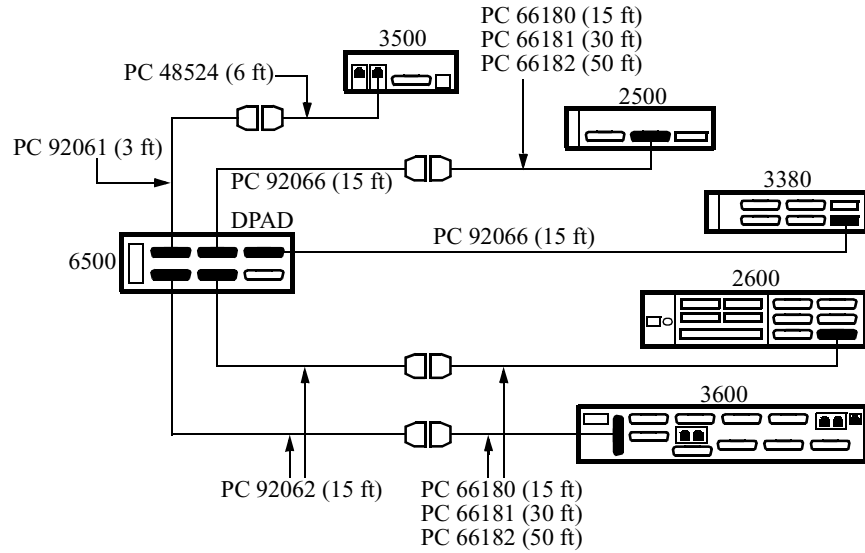
Figure 8. Vanguard DPAD to 3600, 3500, 3380, 2600, and 2500 Master DB26 Connections

326X DB25 connection to Vanguard DPADs is shown in Figure 9.
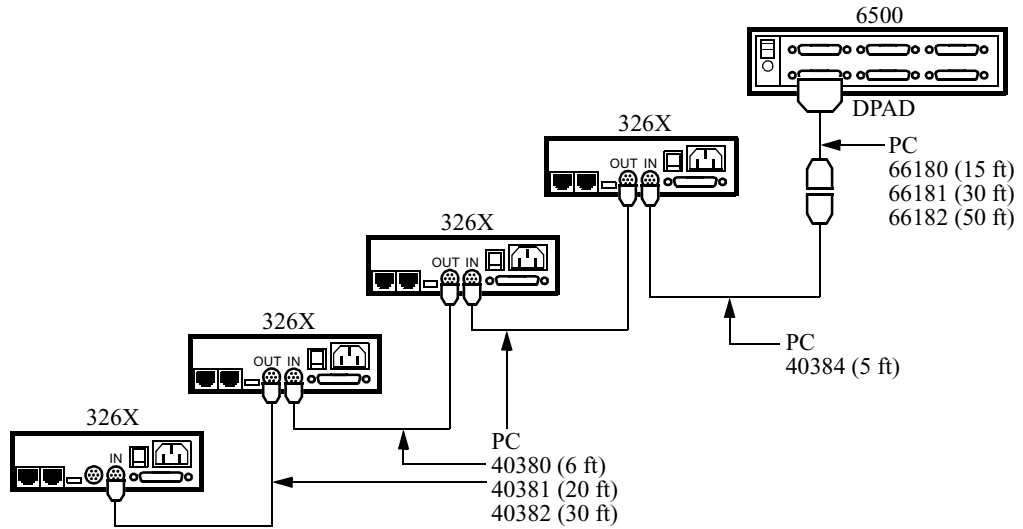
Figure 9. 326XDB25 Connection to Vanguard DPADs

326X DB26 connection to Vanguard DPADs is shown in Figure 10.
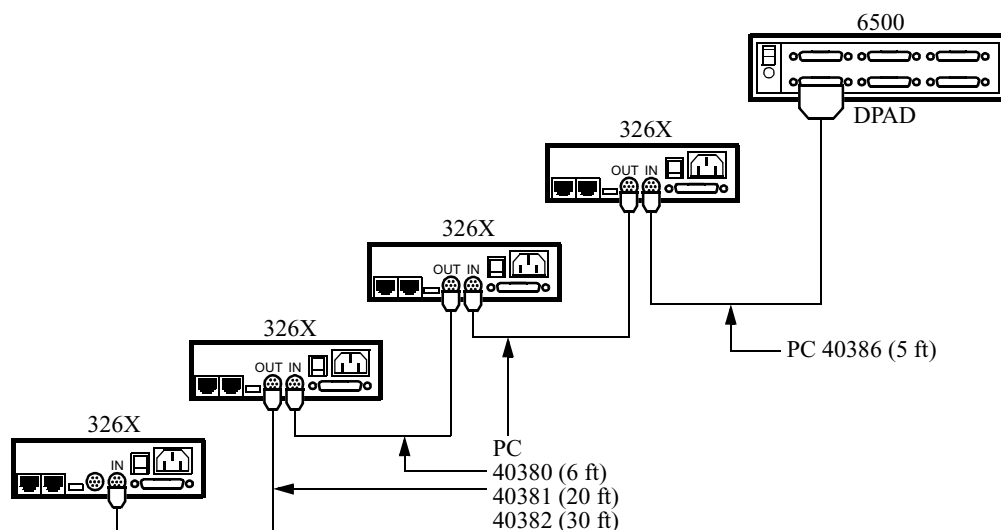
Figure 10. 326XDB26 Connection to Vanguard DPADs

Devices and their corresponding DB25 connectors and cables are listed in Cable Matrix section.

Terminal to Vanguard Connections

At least one CTP connection to the Vanguard network is required to configure NCCP Option functions. You can make the connection from the management station or a terminal. The terminal example is shown in Figure 11. For VT100 to Vanguard CTP connections, refer to the cables listed in Cable Matrix section.
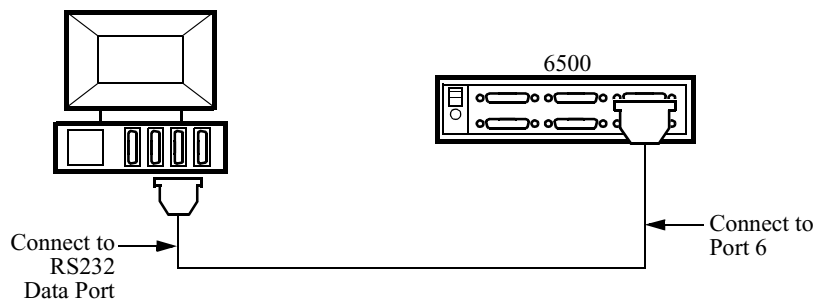
Figure 11. Terminal to Vanguard Connection

Adding a Custom Software Key

Introduction   The Custom Software Key (CSK) provided with your option is recognized only by the specific CPU card for which it is made. Code numbers (CSKs) are provided, allowing you access to the options you purchased.

Add CSK   Perform these steps to add a CSK:

Step	Action
1	Select **Configure** from the Main menu.
2	Select **Software Key Table** from the Configure menu. The Entry Number field is provided for reference purposes in the event you later need to change or update a specific option.
3	Assign an entry number and press <**CR**>.
4	Enter the CSK in the Key Value field and press the semicolon **;** <**CR**> to save the entry.
5	Press **Escape** to exit from the Software Key Table.

Boot

Introduction   The NCCP Option Boot entries allow you to boot the DPADs and MPADs in your network.

> ■**Note**
> Boot requires a manager access password.

To Boot NCCP   Perform these steps to boot the NCCP Option:

Step	*Action*
1	At the Main menu, select **Boot** <**CR**>. The Boot menu appears.
2	At the Boot menu, select **Boot NCCP Pad** <**CR**>
3	The Boot options are DPAD boot and MPAD boot. To Boot the DPAD, select the DPAD. Then select the table entry number of the DPAD to be booted. The following prompt appears: **Boot the DPAD** along with the following: **Booting the DPAD will be disruptive to Network Control Channel traffic.** Another prompt appears: **Proceed (y/n):**
4	At the proceed prompt, enter **y** (yes) or **n** (no). Press **ESC** to return to the Boot Menu. If you wish, boot the MPAD in the same way

Configuration

Introduction

This section describes how to configure the Vanguard NCCP Option. Refer to the *Vanguard Configuration Basics Manual* for information on logging on and accessing the main menu from the CTP.

■**Note**

Some changes to the MPAD and DPAD Node records will not take effect until the node is booted.

Configuration Overview

This section gives you an overview of configuration. Refer to Appendix B for settings of MPAD to DPAD, and Address Translation/Multiple DPADs configurations.

The general sequence for configuring the NCCP Option is:

1) If you havn't done so already, configure the ports, configure the link, and enter the node address. Configure the Custom Software Keys.

2) Configure the MPAD Table parameters:

- MPAD Subaddress
- Main Channel Subaddress
- Number of DPADs
- DPAD Mnemonic(s)
- Inactivity Timer
- SVC Retry Timer
- MPAD to DPAD Message Timer
- Quick Timeout Enable/Disable

3) Configure the NCCP Device Table parameters:

- MPAD Number
- DPAD Number
- Unique NCCP address
- Physical NCCP address
- Polling State

■**Note**

NCCP device information is configured at the MPAD node.

4) Configure the DPAD Table parameters:

- DPAD Subaddress
- Main Channel Subaddress
- MPAD Mnemonic
- Device Poll Frequency
- Inter-poll Delay
- Timeout
- Retry Count
- SVC Retry Timer
- DPAD to MPAD Message Timer

5) Configure the NCCP PAD parameters:

- Streaming Device Detection
- Unsolicited Threshold
- Solicited Threshold
- Stream Detect Delay
- State Search
- One Shot Polling
- Watch Dog Timer
- Event ACK Pend Time (tics)
- CUD field entered in hex

■**Note**

This step is necessary only to customize the NCCP Option features.

- Configure the Mnemonic Table entries.
- Configure the PAD Profile Table.
- Configure Routing Table entries.

Configuring the MPAD

Perform these steps to configure the MPADs in your NCCP network:

Step	*Action*
1	Select **Configure NCCP Pad** <**CR**>. from the Configure menu.
2	Select **MPAD Table** <**CR**>.
3	At the prompt, enter the appropriate MPAD Table entry number and press <**CR**>. The specified MPAD table entry appears.
4	Configure the parameters at the MPAD Table. Refer to Node A and B Record Examinations Worksheet. Then name the appropriate DPADs. Assign meaningful mnemonic names for each DPAD entry.
5	Check the MPAD Main Channel Port and configure it if necessary. If the Main Channel Subaddress entry is not there, enter a matching address in the Main Channel Subaddress field.
6	After naming the DPADs, press: • the semicolon,**;** <**CR**> to save • the **Esc** key to return to the Configure menu
7	At the Configure menu, select **Mnemonic Table** <**CR**>. A Mnemonic Table entry number prompt appears.
8	At the prompt, enter the appropriate Mnemonic Table entry number for the particular DPAD you named and press <**CR**>. The Mnemonic Table appears.
9	At the table, enter a Mnemonic Name for the DPAD. For example, if it is DPAD#1, enter: S10200<CR>
10	At Call Parameters, enter the node ID followed by the DPAD subaddress followed by <CR>.

Step	*Action* (continued)
11	After entering the DPAD mnemonics press: • the semicolon,**;** <**CR**> to save your changes • the **Esc** key to return to the Configure menu
12	Check the Route Selection Table to ensure the Call Parameters match what you entered at the Mnemonic Table. At the Configure menu, select **Route Selection Table** <**CR**>.
13	At the prompt, enter the appropriate Route Selection Table entry number for the particular DPAD you named and press <**CR**>. The Route Selection Table appears. ■**Note** The proper entries may be there already.
14	If the entries are not there, enter a matching address in the Address field. Make sure it matches the node ID portion of the Call Parameters entry in the Mnemonic Table. If necessary, enter a #1 Destination, entering p1 (for port 1), or p2 (for port 2), or any X.25 port. If necessary, enter a #1 Priority, which could be 1 to 15. Press: • the semicolon,**;** <**CR**> to save • the **Esc** Key to return to the Configure menu.
15	Check the PAD Profile and configure it if necessary. At the Configure menu, select **PAD Profile Table** <**CR**>.
16	At the prompt, enter the appropriate PAD Profile Table entry number for the particular PAD Profile you want and press <**CR**>. The PAD Profile Table appears. Refer to the appropriate PAD Profile Worksheet. Press: • the semicolon,**;** <**CR**> to save • the **Esc** key to return to the Configure menu
17	Check the port and configure it, if necessary. At the Configure menu, select **Port** <**CR**>. At the prompt, enter the appropriate number for the particular port you want and press <**CR**>. The Port Table appears. Press: • the semicolon,**;** <**CR**> to save • the **Esc** key to return to the Configure menu ■**Note** You may also configure the NCCP PAD parameters if you wish, but the default settings are usually acceptable.
18	Configure the NCCP devices of the MPAD and remote DPADs. At the Configure menu, enter **MPAD's NCCP Device Table** <**CR**>. The Device Table prompt appears.
19	At the Device Table prompt, enter the appropriate number for the particular device you want and press <**CR**>. The MPAD's NCCP Device Table appears. For the proper settings for configuring this table, refer to NCCP Device Record Worksheet. Press: • the semicolon,**;** <**CR**> to save • the **Esc** key to return to the Configure menu

Configuring the DPAD	This section describes how to configure the DPADs. The procedure is the same as for MPADs, except you do not configure devices, which are done on one end only. To configure a DPAD, perform the following steps:

Step	*Action*
1	Select **DPAD Table** <CR> from the Configure menu. The DPAD Table number prompt appears.
2	At the prompt, enter the appropriate DPAD Table entry number and press <**CR**>. The specified DPAD table entry appears.
3	Configure the parameters at the DPAD Table. Refer to the DPAD Record Worksheet. Then assign a mnemonic name for the MPAD that will be called by this DPAD.
4	Check the DPAD Main Channel Port and configure it if necessary. If the Main Channel Subaddress entry is not already there, enter a matching address in the Main Channel Subaddress field.
5	Press: • the semicolon,**;** <**CR**> to save • the **Esc** key to return to the Configure menu
6	At the Configure menu, select **Mnemonic Table** <**CR**>. The Mnemonic Table number prompt appears.
7	At the prompt, enter the appropriate Mnemonic Table entry number for the particular MPAD you named and press <**CR**>. The Mnemonic Table appears.
8	Enter a Mnemonic Name for the MPAD being called by this DPAD.
9	At the Call Parameters enter the node ID and the MPAD subaddress.
10	After you the MPAD mnemonics, press: • the semicolon,**;** <**CR**> • the **Esc** key to return to the Configure menu
11	Check the Route Selection Table to ensure the Call Parameters there match what you entered at the Mnemonic Table. At the Configure menu, select **Route Selection Table** <**CR**>. The Route Selection Table number prompt appears.
12	At the prompt, enter the appropriate Route Selection Table entry number for the particular MPAD you named and press <**CR**>. The Route Selection Table appears. ■**Note** The proper entries may be there already.
13	If the entries are not there, enter a matching address in the Address field. Make sure it matches the node ID portion of the Call Parameters entry in the Mnemonic Table. If necessary, enter a #1 Destination by entering p1 (for port 1), or p2 (for port 2), or any X.25 port. Enter a #1 Priority, which could be any number from 1 to 15. Press: • the semicolon,**;** <**CR**> to save • the **Esc** key to return to the Configure menu

Step	Action *(continued)*
14	Check the PAD Profile and configure it if necessary. At the Configure menu, select **PAD Profile Table** <**CR**>. The PAD Profile Table prompt appears.
15	At the prompt, enter the appropriate PAD Profile Table entry number for the particular DPAD you want and press <**CR**>. The PAD Profile Table appears. Refer to appropriate PAD Profile Worksheet Press: • the semicolon,**;** <**CR**> to save • the **Esc** key to return to the Configure menu
16	Check the port number and configure it if necessary. At the Configure menu, select **Port** <**CR**>. The Port number prompt appears.
17	At the prompt, enter the appropriate number for the particular port you want and press <**CR**>. The Port Table appears. Enter the following appropriate values in the fields, if they are not there already. Press: • the semicolon,**;** <**CR**> to save • the **Esc** key to return to the Configure menu ■**Note** You may also configure the NCCP PAD parameters if you wish, but the default settings are usually acceptable.

NCCP Option Menus

New Menus and Submenus

The menus through which you configure the NCCP Option have been added to several of the submenus found within the CTP Main menu. The altered Main menu entries and the new NCCP Option menu entries are described in this table:

Main Menu Entry	*Submenu Entry*	*NCCP Option Entry*
Examine	Examine NCCP PAD	• DPAD Table • MPAD Table • MPAD's NCCP Device Table • NCCP PAD Parameters
List	List NCCP PAD	• DPAD Table • MPAD Table • MPAD's NCCP Device Table • NCCP Device Table (filtered) by MPAD • NCCP PAD Parameters
Status/Statistics	NCCP PAD Stats	• DPAD Stats • MPAD Stats • Reset DPAD Stats • Reset MPAD Stats
Configure	Configure NCCP PAD	• DPAD Table • MPAD Table • MPAD's NCCP Device Table • NCCP PAD Parameters
Boot	Boot NCCP PAD	• DPAD Boot • MPAD Boot
Delete Record	Delete NCCP PAD	• Delete DPAD Record • Delete MPAD Record • NCCP PAD Device Record • NCCP PAD Parameters
Monitor	Monitor NCCP PAD	• Monitor a DPAD • Monitor a MPAD

Node Record Parameter

Parameter Description

A new parameter is added to the Node Record for the NCCP Option. This new parameter is:

Number of NCCP Devices:

Range	1 to 2000
Default	400
Description	Specifies the number of Network Control Channel Protocol (NCCP) devices that can be configured. Note that network managers have port limitations. Consult your network manager's documentation for details.
Boot Type	Changes to this parameter require a Node Boot to take effect.

Table Parameters

Introduction   This section describes the parameters that make up these tables:

- DPAD
- MPAD
- MPAD NCCP Device
- NCCP PAD Parameter tables.

Configuring the DPAD Table   This section describes the DPAD Table parameters. Figure 12 illustrates the DPAD Table parameters.

```
   Node:                Address:           Date:          Time:
   Menu: Configure NCCP Pad                               Path: (Main.6)

      DPAD Table
```

- DPAD Subaddress
- Main Channel Subaddress
- MPAD Mnemonic
- Device Poll Frequency (hours)
- Device Poll Frequency (minutes)
- Device Poll Frequency (seconds)
- Inter-poll Delay
- Timeout
- SVC Retry Timer
- DPAD to MPAD Message Timer
- Retry Count
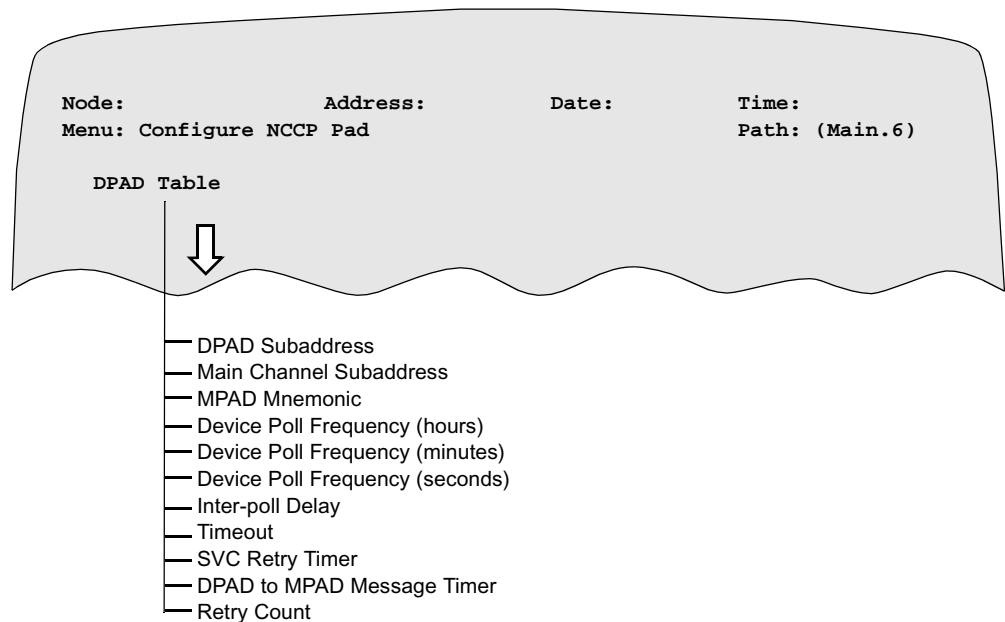
Figure 12. DPAD Table

DPAD Subaddress

Range	0 to 3 decimal digits
Default	400
Description	Specifies the subaddress of the DPAD. Calls addressed to this node and with this subaddress are routed to this DPAD.

Main Channel Subaddress

Range	0 to 3 decimal digits
Default	(blank)
Description	Specifies the subaddress of the port to which the NCCP devices are connected.

MPAD Mnemonic

Range	0 to 8 alphanumeric characters
Default	(blank)
Description	Specifies the mnemonic for the remote address called by this DPAD. ■**Note** There must be one unique MPAD mnemonic for each DPAD.

Device Poll Frequency (hours)

Range	0 to 24 hours
Default	0
Description	Specifies the minimum time in hours between polls to the same device.

Device Poll Frequency (minutes)

Range	0 to 59 minutes
Default	0
Description	Specifies the minimum time in minutes between polls to the same device.

Device Poll Frequency (seconds)

Range	0 to 59 seconds
Default	0
Description	Specifies the minimum time in seconds between polls to the same device.

Inter-poll Delay

Range	0 to 255 in seconds
Default	0
Description	Specifies the minimum time between two polls.

Timeout

Range	1 to 255 seconds
Default	3
Description	Specifies the time a DPAD waits for a device to respond to a poll before a timeout occurs and the device is considered nonresponding. ■**Note** Set this parameter equal to or shorter than the Command Response Timeout of the 9800.

SVC Retry Timer

Range	1 to 255 seconds
Default	40
Description	Specifies the length of time the NCCP Option waits before retrying to establish an SVC after a call attempt.

DPAD to MPAD Message Timer

Range	5 to 255 seconds
Default	120
Description	Specifies the time the DPAD waits for an acknowledgment from the MPAD.

Retry Count

Range	0 to 5
Default	0
Description	Specifies the number of poll retries before a device is considered nonresponding.

**Configuring the
MPAD Table**

This section describes the MPAD Table parameters. Figure 13 illustrates the MPAD Table parameters.


```
    Node:               Address:        Date:           Time:
    Menu: Configure                                     Path: (Main.6)

      MPAD Table
```

- MPAD Subaddress
- Main Channel Subaddress
- Inactivity Timer
- SVC Retry Timer
- MPAD to DPAD Message Timer
- MPAD Quick Timeout Enable
- Number of DPADs
- DPAD Mnemonic
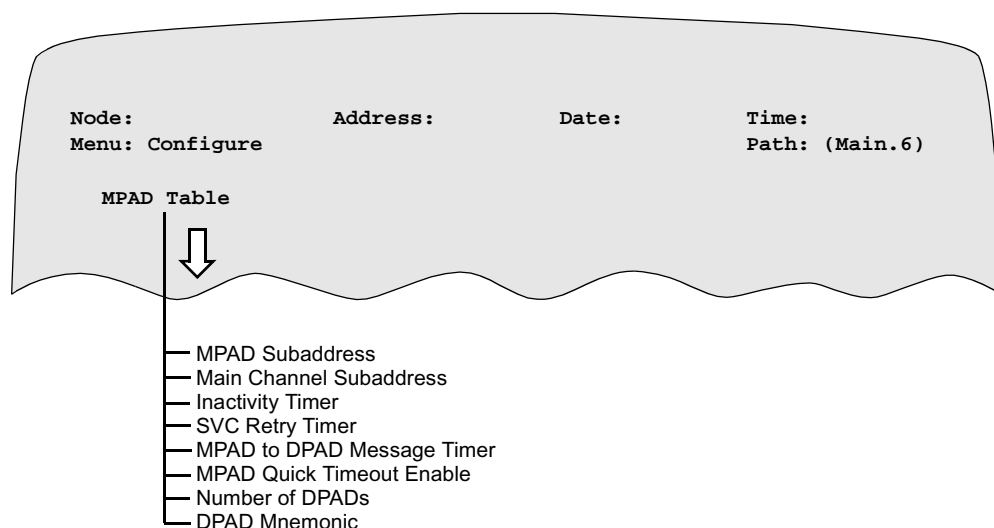
Figure 13. MPAD Table

MPAD Subaddress

Range	0 to 3 decimal digits
Default	300
Description	Specifies the starting subaddress of the MPAD (the subaddress called by DPAD #1). ■**Note** If you have multiple MPADs on the same node, and multiple DPADs configured on the same MPAD, leave enough space between addresses for expansion. You also need to configure the MPAD, NCCP Devices, PAD Parameters, Mnemonic Entries, Routing Tables, PAD Profiles, and Port Configurations.

Main Channel Subaddress

Range	0 to 3 decimal digits
Default	blank
Description	Specifies the subaddress of the port connected to the NMS.

Inactivity Timer

Range	30 to 65,535 seconds
Default	60
Description	If this time period expires without any communication between the MPAD and DPAD, the MPAD sends a message to the DPAD to ensure it is operating. ■**Note** This value must be less than the Watch Dog Timer in minutes of each DPAD being monitored.

SVC Retry Timer

Range	1 to 255 seconds
Default	10
Description	Specifies the length of time an NCCP Option waits before retrying to establish an SVC after a call establishment failure.

MPAD to DPAD Message Timer

Range	5 to 255 seconds
Default	60
Description	Specifies the time the MPAD waits for an acknowledgment from the DPAD.

MPAD Quick Timeout Enable

Range	Enable or Disable
Default	Disable
Description	This parameter enables or disables Quick Timeout for management systems that support an MPAD poll response indicating a nonresponding device at the DPAD.

Number of DPADs

Range	1 to 50
Default	0
Description	Specifies the number of DPADs.

DPAD Mnemonic

Range	0 to 8 alphanumeric characters
Default	(blank)
Description	Specifies the mnemonic for the remote address that is called when NCCP Options need to communicate with each other. ■**Note** Each remote DPAD has a DPAD mnemonic. There are up to 50 DPAD mnemonics.

Configuring the MPAD NCCP Option Device Table

This section describes the MPAD NCCP Option Device Table parameter (also shown in Figure 14).


```
Node:                Address:          Date:           Time:
Menu: Configure NCCP Pad                               Path: (Main.6)

    MPAD's NCCP Option Device Table
```

- MPAD Number
- DPAD Number
- NMS NCCP Address of Device (unique/manager)
- DeviceÕs NCCP address (physical)
- Poll State
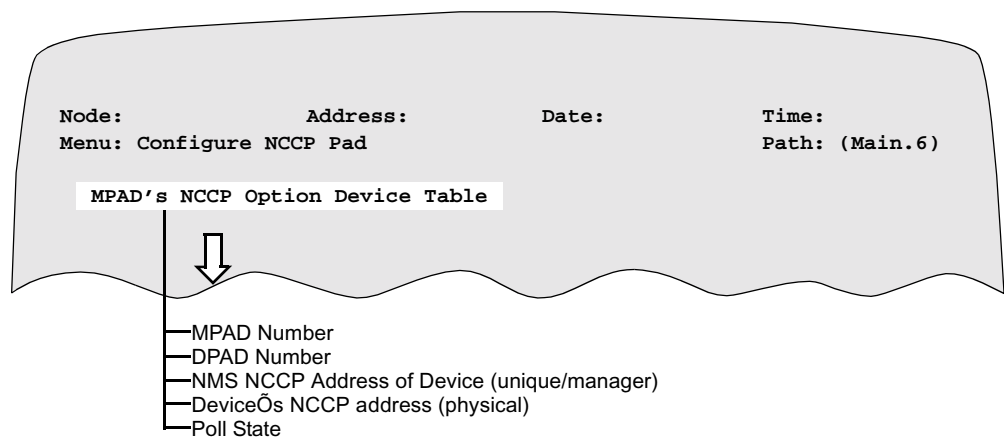
Figure 14. MPAD's NCCP Option Device Table

MPAD Number

Range	1 to 53
Default	1
Description	The number of the MPAD associated with this device.

DPAD Number

Range	1 to 150
Default	1
Description	This is the number of the DPAD associated with this device. ■**Note** Enter the same number associated with the MPAD's remote DPAD list.

NMS NCCP Address of Device (unique/manager)

Range	1 to 199
Default	1
Description	This is the device's unique NCCP address which matches the device address appearing on the network management station. Address 144 (0x90 hex) is not supported for Address Translation.

Device's NCCP Address (physical)

Range	1 to 199
Default	0
Description	This is the device's physical NCCP address. This parameter enables or disables the Address Translation feature. Set it to 0 if you want no Address Translation. If the value equals that of the Unique NCCP Address, this also results in no translation. This address is the one the device is strapped for. Address 144 (0x90 hex) is not supported for Address Translation.

Poll State

Range	None, Normal, Max
Default	Normal
Description	This parameter disables polling on some devices such as the DDS1 service DSU/CSUs. Set to None, Normal, or Max. Generally, set it to normal.

Configuring the NCCP Option PAD Parameters

This section describes the NCCP Option PAD parameters. Figure 15 illustrates the NCCP Option PAD parameters.


```
Node:              Address:          Date:               Time:
Menu: Configure NCCP Pad                                 Path: (Main.6)

    Codex NCCP PAD Parameters
```

- Stream Detection
- Solicited Stream Threshold
- Unsolicited Stream Threshold
- Stream Detect Delay
- State Search
- One Shot Polling
- Watch Dog Timer
- Event ACK Pend Time (tics)
- CUD field entered in hex
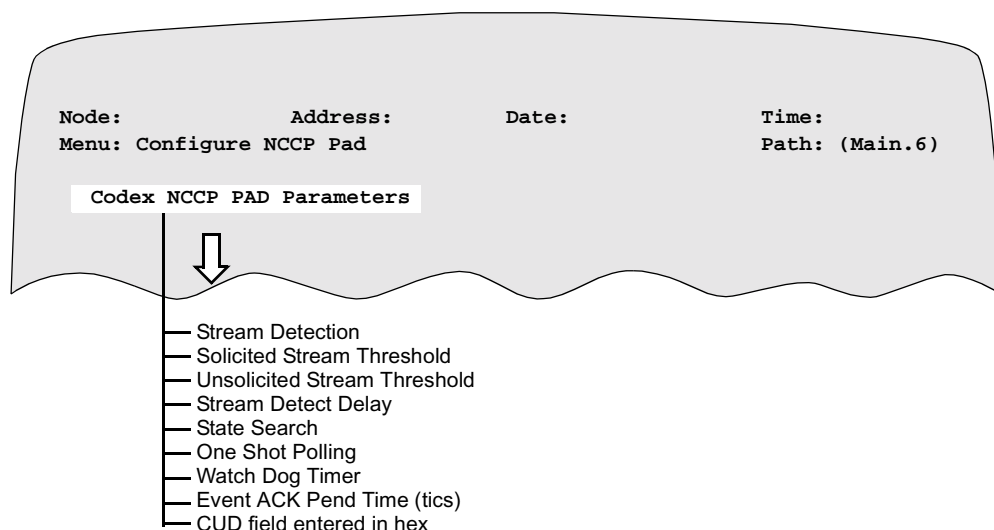
Figure 15. NCCP Option PAD Parameters

Stream Detection

Range	Enable or Disable
Default	Enable
Description	Determines whether or not the DPAD shuts off polling when it detects a streaming device.

Solicited Stream Threshold

Range	1 to 255
Default	2
Description	Specifies the maximum number of invalid responses the DPAD accepts before it considers a device to be streaming.

Unsolicited Stream Threshold

Range	1 to 255
Default	1
Description	Specifies the maximum number of bytes of unsolicited data the DPAD accepts before it considers a device to be streaming.

Stream Detect Delay

Range	1 to 65,535 seconds
Default	200
Description	Specifies the number of seconds the DPAD delays during streaming device detection

State Search

Range	Enable or Disable
Default	Disable
Description	Determines whether or not the DPAD searches for misconfigured devices.

One Shot Polling

Range	Enable or Disable
Default	Disable
Description	Determines whether or not the DPAD polls all the devices on the channel at least once, regardless of the device Polling State setting. The poll occurs at DPAD initialization.

Watch Dog Timer

Range	0 to 1440 minutes
Default	3
Description	Sets the number of minutes the DPAD waits for data transmission from the MPAD. If the DPAD receives no message during this time, the DPAD reboots. Set to Zero (0) disables this feature. ■**Note** The value must be greater than that of the Inactivity Poll Timer of the corresponding MPAD.

Event ACK Pend Time

Range	1 to 65,535
Default	10
Description	Sets the amount of time, in 50 ms increments, that a DPAD waits for an event acknowledgment (ACK).

CUD

Range	0 to 8 hexadecimal digits
Default	(blank)
Description	Use this parameter only if you cannot enter the desired values in the Mnemonic table entry with the Call User Data (CUD) field option. Enter an even number of digits. This parameter applies to the MPAD and DPAD.

Administration

Introduction

This section explains how to monitoring NCCP traffic using the datascope function.

Monitoring NCCP Traffic

Datascope lets you monitor the NCCP traffic at the MPAD/DPAD application level. For the Datascope to operate, the CTP must be connected to the Vanguard with the configured applications via a cable, or remotely with an X.25 link. You can select Monitor the DPAD or Monitor the MPAD.

Using Datascope

Perform these steps to use the Datascope:

Step	*Action*
1	Select **Monitor** <**CR**> from the Main menu. The Monitor menu appears.
2	Select **Monitor NCCP PAD** <**CR**> from the Monitor menu.
3	The Monitor options are Monitor a DPAD and Monitor an MPAD. To Monitor the DPAD, enter the number that corresponds to Monitor a DPAD at the Monitor menu. The following prompt appears: Select a DPAD Entry Number: 1/
4	Enter the number of the DPAD you want to monitor. A screen appears as shown in Figure 16. The screen displays: • the current application • the applications subaddress for its port • NCCP data traffic. Transmitted data is displayed in bold, while data received on the channel is shown in normal video.
5	• To update the screen, press <**CR**> • To refresh the screen, press **ctrl r** • To exit the screen, press **ESC**


```
 Node:          Address:         Date:          Time:
 DPAD #1   Main Channel (TX)/(RX) Data Port #5     Page 1 of 1

 9 0 8 4 9 0 8 4 0 1 F E 0 2 F D 9 0 8 4 90 8 4 0 1 F E 0 2 F D
```
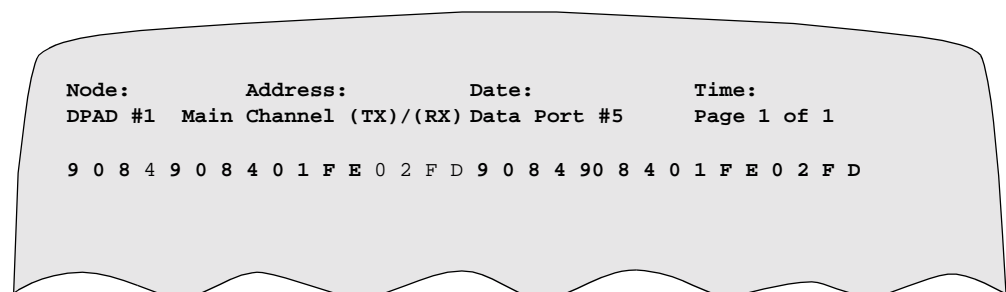
Figure 16. Datascope/Monitor

Viewing Status/ Statistics	The Status/Statistics screens allow you to view the status and statistics of the DPADs and MPADs in your network. To access the Status/Statistics screens, perform the following steps:

Step	*Action*
1	Select **Status/statistics** <**CR**> from the Main menu. The Status/statistics menu appears.
2	Select **NCCP PAD Stats** <**CR**>.
3	The NCCP PAD Option Status/statistics options are DPAD Stats, MPAD Stats, Reset DPAD Stats, and Reset MPAD Stats. At the Status/statistics menu, enter the number that corresponds to DPAD Table, for example. The following prompt appears: • Select a DPAD Enter the number of the DPAD you want to view statistics on. Figure 17 shows an exampled of a DPAD Statistics screen.
4	• To scroll through the screen, press any key • To repeat or update the statistics, press **CTRL-R**. • To return to the top of the menu, press **CTRL-T**. • To go back to the Status/statistics menu, press **ESC**.

```
Node:              Address:            Date:           Time:
DPAD Statistics: DPAD # 1
                        Internal DPAD CLOCK 7722
State Parameter          State
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Main NCCP Channel       DISCONN
MPAD Channel            DISCONNECTED
Poller State            INIT CHECK FOR STREAMING
DPAD Application        BOOT
Streaming Device        NOT DETECTED


Traffic between MPAD and DPAD
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =


Messages sent to MPAD   10


Messages sent from MPAD 20


Press any key to continue ( ESC to exit )...
```

Figure 17. DPAD Statistics

State and Statistics Parameters

Introduction A number of DPAD and MPAD states and statistics such as those shown in Figure 17 are displayed on the MPAD and DPAD Status screens. These DPAD and MPAD states and statistics are defined in this section.

DPAD Statistics These are the states and statistics for the DPAD.

States

The following lists define DPAD states and statistics. The first DPAD status screen displays DPAD application states.

- **Main NCCP Channel**. This is the DPAD's perception of the main channel state. The main channel connects the DPAD to the NCCP devices. The possible Main Channel states are as follows:
  - **Init Disconnect**. This means the call is not currently in place and the application has not tried to place the call yet.
  - **Connected**. This state means the channel is open for normal communication.
  - **Disconnected**. This means the call is not in place and there is no channel for communication.
  - **Calling**. This means the application is currently trying to establish a call.
  - **Clearing**. This means the call is being terminated.
- **MPAD Channel**. This is the DPAD's perception of the channel state between the DPAD and the corresponding MPAD. The possible states are the same as those for the main channel state listed above.
- **Poller State**. This is the known state of the DPAD poller function. The possible Poller states are as follows:
  - **Initial Check for Streaming**. This is the poller's primary state. When the application comes up, the main channel is checked for streaming devices. Once the channel has been checked, the DPAD waits for the MPAD to send a list of devices. If this state is displayed for a long time, there may be a problem communicating with the MPAD.
  - **Poller is Idle**. This state means there is no list of devices to poll.
  - **Poll Freq Delay Pending and Inter Poll Delay Pending**. In these states, the poller waits for either of the configured timers to expire. Polling is resumed when the timer is fired.
  - **Short Poll Send and Short Poll Receive**. These states occur during normal polling of the NCCP devices.
  - **Protected Message XMT**. This state occurs when a protected message has been transmitted.
  - **Protected Message RCV**. This state occurs when a protected message has been received.
  - Any remaining states occur while processing NCCP protected messages.
- **DPAD Application**. This represents the true state of the application and the activity on the DPAD/MPAD link. The possible DPAD Application states are as follows:
  - **Boot**. This appears when the application is starting or restarting.

- **Initializing**. This state signifies that the application is setting up its structures after a boot.
- **State Search**. This means that the application is looking for nonconfigured or unknown devices.
- **Binary Search**. This means the application is tracking down an unknown device address during the State Search operation.
- **Comm Idle**. This means the application is in a normal polling sequence, and there is no activity on the MPAD/DPAD channel.
- **Event Sent**. This indicates a change of NCCP device state has been sent to the MPAD.
- **Sending Status Event**. This indicates a list of NCCP devices and their current state has been sent to the MPAD.
- **Protected Message Sent**. This state appears when a DPAD message has been sent, usually during a state search.
- **Up and Running**. This appears when normal operation and initialization has completed.
- **Streaming Device**. This appears whether or not the DPAD has detected a streaming device on the Main Channel. The possible Streaming Device states are as follows:
  - **Detected**. This means the streaming device has been detected on the line.
  - **Not Detected**. This means that currently, there are no detected streaming devices.

Traffic

There are two DPAD traffic statistics, as follows:

- **Messages Sent to MPAD**. This statistic displays the number of packets sent from the DPAD to the MPAD. This number is reset from either a restart, a boot, a statistics reset on a DPAD, or a node-wide statistics reset.
- **Messages Sent from MPAD**. This statistic displays the number of packets sent from the MPAD to the DPAD. This number is reset from either a restart, a boot, a statistics reset on a DPAD, or a node-wide statistics reset.

Devices

The remaining DPAD screens show the states of each of the NCCP devices.
The states are as follows:

- **Not Yet Known**. This signifies that the DPAD application has not polled the device yet to determine the device state.
- **Normal Response**. This signifies that the device is responding to its polls and it is in Normal operating state.
- **Override**. This indicates the device is in override mode.
- **Test Complete**. This indicates the device has completed a manager initiated test.
- **Call Event**. This alerts you that there is a call event from the dial modem.
- **Alarm**. This state indicates that the device has an alarm to report.
- **New Device**. This indicates the device is in a new device state and needs to be downloaded and controlled by the NMS.
- **Non Responding**. This shows that the device is not responding to polls.

- **Unknown Device**. This indicates that the device is not configured for the DPAD and was detected by a state search.
- ****not configured****. This means the device is not configured.

MPAD Statistics

This section defines and explains states and statistics for the MPAD.

States

The following lists define MPAD states and statistics. The first MPAD status screen displays MPAD application states.

- **NCCP Channel**. This is the MPAD's perception of the main channel state. The main channel connects the MPAD to the manager. The possible Main Channel states are as follows:
  - **Init Disconnect**. This indicates the call is not currently in place and the application has not tried to place the call yet.
  - **Connected**. This indicates the channel is open for normal communication.
  - **Disconnected**. This indicates the call is not in place. There is no channel for communication.
  - **Calling**. This indicates the application is currently trying to establish a call.
  - **Clearing**. This indicates the call is being terminated.
- **MPAD Application**. This indicates the true state of the application. The two possible states are as follows:
  - **Boot**. This appears when the application is first starting or restarting.
  - **Running**. This appears when the application is up and running normally.
- **Message Traffic**. This indicates the current state of the inbound message handler. This state varies, depending on how much of the message was received in the last packet. The valid states are as follows:
  - **Message Startup**. When the MPAD first comes up, the handler state has not made the transition into the real message state.
  - **Message Monitor**. This is the state where the handler looks for the start of a new message.
  - **Message DLE**. This is the handler state where a DLE has been detected. The application expects either a DLE (0x90), a EOT (0x84), or an STX (0x82) to follow.
  - **Message Short Poll and Message Short Poll DLE**. This is the handler state processing the NMS's polls to NCCP devices.
  - **Message New Message and Message New Message DLE**. This is the handler state processing the beginning of a protected message.
  - **Message Receive Length and Message Receive Length DLE**. This is the handler state that receives the message length of a protected message.
  - **Message Command Byte**. This is the state in which the handler receives the command byte.
  - **Message Receive Message and Message Receive Message DLE**. This is the handler state that receives the body of the message.
  - **Message First CRC and Message First CRC DLE**. This is the state that handles the first CRC byte of the message.
  - **Message CRC Complete**. This is the state that handles the last CRC byte of the message.

After displaying MPAD application states, the screens display information on each of the remote DPADs.

- **Status (of the Remote PAD)**. This represents the MPAD view of its remote DPAD application.
  - **Non Responding**. This indicates the DPAD is not responding to Inactivity polls.
  - **Responding**. This indicates normal handshaking between applications.
  - ****not configured****. This indicates the DPAD application is not configured.
- **DPAD Channel**. This represents the MPAD's perception of the calling state of the channel between the MPAD and the corresponding DPAD. The channel state is one of the following:
  - **Init Disconnect**. The call is not currently in place, and the application has not tried to place the call yet.
  - **Connected**. The channel is open for normal communication.
  - **Disconnected**. The call is not in place. There is no channel for communication.
  - **Calling**. The application is currently trying to establish a call.
  - **Clearing**. The call is being terminated.
  - ****not configured****. There is no remote DPAD configured.
- **DPAD State**. This displays the MPAD's perception of the remote DPAD's state, as well as the current activity on the MPAD/DPAD channel. The possible states are as follows:
  - **Boot**. This appears when the MPAD wants to boot the DPAD.
  - **Boot Sent**. This indicates that the Boot command has been sent to the DPAD.
  - **Topology Sent**. This indicates the DPAD's device list has been sent to the DPAD.
  - **Comm Idle**. This means the DPAD state is idle, with no traffic.
  - **Inactivity Poll Sent**. This means the MPAD has sent an inactivity poll to the DPAD to determine the communications status and to update the NCCP device states.
  - **Protected Message Sent**. This indicates the MPAD has forwarded a protected message to the DPAD.
  - **Broadcast Message Sent**. This indicates the MPAD has forwarded a broadcast address protected message to the DPAD.
  - ****not configured****. This indicates there is no remote DPAD configured.
- **Traffic**. After the remote DPAD information is displayed, the inbound and outbound message traffic for each of the remote DPADs is displayed. The two statistics are:
  - **Messages sent to DPAD**. This displays the number of packets sent from the MPAD to the remote DPAD. The number is reset from a restart, a boot, statistics reset at an MPAD, or a node-wide statistics reset.
  - **Messages sent from DPAD**. This displays the number of packets sent from the remote DPAD to the MPAD. The number is reset from a restart, a boot, statistics reset at an MPAD, or a node-wide statistics reset.

Troubleshooting

Introduction	This section will help you troubleshoot some problems you may encounter with the NCCP Option.

This section is divided in two parts

- Troubleshooting at the MPAD Node
- Troubleshooting at the DPAD Node

Troubleshooting problems with the NCCP Option usually require examining both nodes because a problem with one node may cause an error in the other.

The most likely symptom of a problem is a nonresponding device at the network management system. The NCCP Option has status screens available from the Vanguard CTP and also generates CTP events when certain error conditions occur. Use the information in these screens and events to help diagnose problems with the NCCP Option.

Troubleshooting at the MPAD Node

Introduction   This section describes troubleshooting procedures for the MPAD node.

Status Screens   The NCCP Option has status screens that you can view at the Vanguard workstation. These screens provide information regarding NCCP Option operation.

Figure 18 shows an example of the MPAD status screen when the NCCP Option is operating normally.

```
Node:          Address:            Date:              Time:
MPAD Statistics: MPAD # 1                             Page 1 of 8


State Parameter    Current State
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
NCCP Channel       CONNECTED
MPAD Application   RUNNING
Message Traffic    MSG STARTUP


Remote DPAD #      Status           DPAD Channel State
= = = = = = = = = = = = = = = = = = = = = = == = = = = = = = = =
DPAD # 1           RESPONDING       CONNECTEDand COMM IDLE
DPAD # 2           **** not configured ****
DPAD # 3           **** not configured ****
DPAD # 4           **** not configured ****
DPAD # 5           **** not configured ****
DPAD # 6           **** not configured ****
DPAD # 7           **** not configured ****
DPAD # 8           **** not configured ****
DPAD # 9           **** not configured ****
```

Figure 18. MPAD Statistics

When the NCCP Option is operating normally, the MPAD NCCP Channel State and the DPAD Channel State fields show CONNECTED. If the fields do not indicate CONNECTED, refer to this table.

Symptom	Possible Problem
NCCP Channel NOT CONNECTED	• The Main Subaddress field is incorrectly configured in the MPAD record. The number of digits in the subaddresses must be the same. The port which the MPAD is calling is configured for autocalling.
	• The port which the MPAD is calling is configured for a different address.
	• The port is busy with a call from some other application.

Symptom	*Possible Problem* (continued)
DPAD Channel NOT CONNECTED	• The mnemonic entered in the MPAD record does not have a corresponding entry in the mnemonic table, or the entry in the mnemonic table is incorrect.
	• There is a problem with the routing table entries.
	• The channel was not booted after additions were made.
	• There is a network problem between the MPAD node and the DPAD node.
	• The DPAD/MPAD Mnemonic is not configured or is misconfigured. The MPAD and DPAD addresses must be correct at both ends.
	• Network security is barring calls.
	• CUD or FAC may be required in the network.
	• Some networks do not support three-digit subaddresses.
	• There are overlapping subaddresses in MPAD and DPAD.

If either of the above symptoms occur, call the address at the X29 prompt and see if the call went out. Check the Inbound parameter on the remote node and see if the call came through. If it did not, check the clear code and the X.25 Diagnostic code reference.

To see if there is a channel connection problem with the MPAD, check the SVC Call Summary screen, shown in Figure 19. Also, check the detailed port statistics for the X.25 port.

```
Node:           Address:            Date:               Time:
                                                        Page 1 of 1

Detailed Call Summary
Facilities
Calling Channel  Called Channel   R F N C    Connection Time
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
MPAD-1           PAD-3            0 0 0 0    7-AUG-1992 15:37:33
X25-1(16)        MPAD-1           0 0 0 0    7-AUG-1992 15:37:33
X25-1(15)        Control Port     0 0 0 0    7-AUG-1992 16:43:31
```

Figure 19. MPAD SVC Call Summary

Figure 19 shows a call in place between MPAD 1 and PAD port 3. This call is for the NCCP Channel. The figure also shows a call between MPAD 1 and an X25 channel. The call between the MPAD and the X25 channel is the same as the call for the DPAD Channel.

If the NCCP Option software is not visible, do the following:

- Enable the Custom Software Keys as necessary.

If there is no data on the NCCP channel:

- Run the Datascope. If no data is coming in or going out, check the cables, the PAD Profile, and Port Configuration speed.
- Check the Port statistics to see if data is going in or out.

Troubleshooting at the DPAD Node

Introduction

This section describes troubleshooting procedures for the DPAD node.

Status Screens

The NCCP Option has status screens you can view at the Vanguard workstation. These screens provide information regarding NCCP Option operation.

Figure 20 shows an example of the DPAD status screen when the NCCP Option is operating normally.

```
Node:               Address:            Date:           Time:
DPAD Statistics: DPAD # 1                               Page 1 of 6

Internal DPAD Clock:   199
State Parameter        Current State
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
Main NCCP Channel      CONNECTED
MPAD Channel           CONNECTED
Poller State           INIT CHECK FOR STREAMING
DPAD Application        BOOT
Streaming Device        NOT DETECTED


Traffic between MPAD and DPAD
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =

Messages sent to MPAD               0

Messages sent from MPAD             0
```

Figure 20. DPAD Status

When the NCCP Option is in operating normally, the DPAD NCCP Channel State and the MPAD Channel State fields appear CONNECTED. If the fields do not indicate CONNECTED, refer to this table.

Symptom	*Possible Problem*
Main NCCP Channel NOT CONNECTED	• The Main Subaddress field is incorrectly configured in the DPAD record. The number of digits in the subaddresses must be the same. • The port which the DPAD is calling is configured for autocalling. • The port which the DPAD is calling already has a call in place from some other application. • The port which the DPAD is calling is configured for a different address.

Symptom	*Possible Problem* (continued)
MPAD Channel NOT CONNECTED	• The mnemonic entered in the DPAD record does not have a corresponding entry in the mnemonic table, or the entry in the mnemonic table is incorrect. • There is a problem with the routing table entries. • There is a network problem between the MPAD node and the DPAD node. • The DPAD/MPAD Mnemonic is not configured or is misconfigured. The MPAD and DPAD addresses must be correct at both ends. • Network security is barring calls. • CUD or FAC may be required in the network. • Some networks do not support 3-digit subaddresses. • There are overlapping subaddresses in MPAD and DPAD.

To see if there is a channel connection problem with the DPAD, check the SVC Call Summary screen, shown in Figure 21.

```
Node:            Address:           Date:                Time:
Detailed Call Summary                                   Page 1 of 1
Facilities


Calling Channel    Called Channel    R F N C      Connection Time
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
DPAD-1             PAD-3             0 0 0 0      7-AUG-1992 15:37:33
X25-1(16)          DPAD-1            0 0 0 0      7-AUG-1992 15:37:33
X25-1(15)          Control Port      0 0 0 0      7-AUG-1992 16:43:31
```

Figure 21. DPAD SVC Call Summary

Figure 21 shows a call in place between DPAD 1 and PAD port 3. This call is for the NCCP Channel. This figure also shows a call in place between DPAD 1 and an X25 channel. The call between the DPAD and the X25 channel is the call for the MPAD Channel.

If the NCCP Option software is not visible, do the following:

• Enable the Custom Software Keys as necessary.

If there is no data on the NCCP channel:

• Run the Datascope. If no data is coming in or going out, check the cables, the PAD Profile, and Port Configuration speed.

• Check the Port statistics to see if data is going in or out.

Cable Matrix

Introduction   This section provides information on DB25 and DB26 to master device cabling as well as terminal to Vanguard cabling.

DB25 DPAD to Master Device

Connection to	*Vanguard Connector*	*Device Connector*	*Cable Needed*
32xx	DB25 female-to-male crossover	DIN F	Adapter Cable PC 40384 Crossover: (PC 66180, 15 ft) (PC 66181, 30 ft) (PC 66182, 50 ft)
35xx	DB25 male-to-male crossover	NC Port	1st Crossover: DB25M (PC 48524, 6 ft) 2nd Male-to-Male Crossover: (PC 66180, 15 ft) (PC 66181, 30 ft) (PC 66182, 50 ft)
36xx	DB25 male-to-male crossover	NC Port	DB25M Crossover: (PC 66180, 15 ft) (PC 66181, 30 ft) (PC 66182, 50 ft)
3380	DB25 male-to-male crossover	NC Port	1st Crossover: (PC 26975, 5 ft) 2nd Male-to-Male Crossover: (PC 66180, 15 ft) (PC 66181, 30 ft) (PC 66182, 50 ft)
26xx	DB25 male-to-male crossover	DB25F	DB25M Crossover: (PC 66180, 15 ft) (PC 66181, 30 ft) (PC 66182, 50 ft)
21xx	DB25 male-to-male crossover	NC Port	Crossover: (PC 66180, 15 ft) (PC 66181, 30 ft) (PC 66182, 50 ft)

DB26 DPAD to Master Device

Connection to	*Vanguard Connector*	*Device Connector*	*Cable Needed*
32xx	DB26 female-to-male	DIN F	DB26M to 8 DINM Custom (PC 40386, 15 ft)
35xx	DB26 male-to-male crossover	NC Port	DB25M to DB26M (PC 92061, 3 ft) DB25F to Mod-6 Custom (PC 48524, 6 ft)
36xx	DB26 male-to-male crossover	NC Port	DB26M to DB25F Straight-through (PC 92062, 15 ft) DB25M Crossover: (PC 66180, 15 ft) (PC 66181, 30 ft) (PC 66182, 50 ft)
3380	DB26 male-to-male crossover	NC Port	DB26M to DB26M Crossover (PC 92066, 15 ft)
26xx	DB26 male-to-male crossover	DB26F	DB26M to DB25F Straight-through (PC 92062, 15 ft) DB25M Crossover: (PC 66180, 15 ft) (PC 66181, 30 ft) (PC 66182, 50 ft)
21xx	DB26 male-to-male crossover	NC Port	DB26M to DB25F Straight-through (PC 92062, 15 ft) DB25M Crossover: (15 ft, PC 66180) (30 ft, PC 66181) (50 ft, PC 66182)

Connector	*Cable*
DB26	PC 92060, 3 ft PC 92035, 15 ft
DB25	PC 66186, 15 ft PC 66187, 30 ft PC 66188, 50 ft

Sample Applications

Introduction This section shows s applications examples for the NCCP Option and the proper configurations for their respective records. The sample configurations are MPAD to DPAD, Multiple DPADs, and Multiple DPADs with Address Translation.

General Configurations The general configurations shown in these tables apply to all three of the configuration types that follow. In a Multiple DPAD configuration, configure the node records, the X.25 port record, and the configurations for MPAD port 5 and DPAD ports 3 and 4 for both nodes. If there is no entry in the Node B column, it is the same as Node A.

Node A and B Record Examination

Parameter	*Node A (MPAD)*	*Node B (DPAD)*
Node Name	Node A	Node B
Node Address	10100	10200
Node Number	100	101
Chassis Type	Modulus8	
Maximum Routing Hops	15	
Hop Count Facility Code	200	
Control Port Subaddress	98	
Control Port Idle Disconnect Time (minutes)	10	
Alarm Distribution	CTP	
Alarm Printer Mnemonic	(blank)	
Alarm Selection	HIGH	
Threshold Alarm Timer (minutes)	15	
Broadcast Port Subaddress	95	
*Number of Broadcast Nets	0	
*Number of Broadcast Input Channels	1	
Billing Printer Mnemonic	(blank)	
Billing Record Call Threshold	10	
Maximum Billing Records	100	
Billing Record Timer (minutes)	0	
PVC Billing Record Timer (minutes)	0	
Maximum Simultaneous Calls	100	
Port Utilization Threshold (%)	75	
Buffer Utilization Threshold (%)	75	
CPU Utilization Threshold (%)	75	
Port Error Threshold	10	

Node A and B Record Examination *(continued)*

Parameter	Node A (MPAD)	Node B (DPAD)
PAD Bulletin Message	(blank)	
PAD Banner Message	^M^JCodex 6500 Pad (node%N) port%P(%C)^M ^J	

This table lists the proper port record settings in a multiple node configuration. If there is no entry in the Node B column, it is the same as Node A.

Node A and B Port Record Examination (Port 1)

Parameter	Node A	Node B
*Port Type	X25	
Connection Type	SIMP	
Port Control	NONE	
Clock Source	EXT	INT
Clock Speed	9600	
Link Address	DTE	DCE
*Number of PVC Channels	0	
*Starting PVC Channel Number	1	
*Number of SVC Channels	16	
*Starting SVC Channel Number	1	
Initial Frame	SABM	
T1 Transmission Retry Timer (1/10 sec)	30	
T4 Poll Timer	40	
N2 Transmission Tries	10	
Frame Sequence Counting	NORM	
K Frame Window	7	
Packet Sequence Counting	NORM	
W Packet Window	2	
P Packet Size	128	
Maximum Negotiated Packet Size	1024	
Data Queue Upper Threshold	5	
Data Queue Lower Threshold	0	
Restart Timer	180	
Reset Timer	180	
Call Timer	200	

Node A and B Port Record Examination (Port 1) *(continued)*

Parameter	Node A	Node B
Clear Timer	180	
Facilities to delete from Outbound Calls	NONE	

This table shows the proper MPAD Main Channel settings in a multiple node configuration.

Parameter	Values
*Port Type	PAD
Connection Type	SIMP
Port Control	NONE
Port Speed	75
Auto Baud Sequence	CR_only
Data Bits per Character	8
Device Parity	NONE
Number of Stop Bits	1
Profile Name	NCCP (User defined PAD Profile)
Call Control	NONE
Terminal Control	NONE
PAD Prompt Entry Number	0
Remote PAD Parameters Number	0
Autocall Mnemonic	(blank)
Autocall Timeout (sec)	10
Maximum number of Autocall Attempts	4
Subaddress	05
Group Subaddress	00
CUG Membership	--,--,--,--,--,--,--,--
Billing Records	OFF
Invitation to clear	CLRWO
Call Accept Timeout (sec)	0
Maximum Receive Buffer Length	4

This table lists the proper DPAD-2 Main Channel Port 3 settings in a multiple node configuration.

■**Note**

The first four parameters are the only ones you change.

This table shows the proper DPAD Main Channel settings in a multiple node configuration.

Parameter	Values
*Port Type	PAD
Connection Type	SIMP
Port Control	NONE
Port Speed	75
Auto Baud Sequence	CR_only
Data Bits per Character	8
Device Parity	NONE
Number of Stop Bits	1
Profile Name	NCCP (User defined profile)
Call Control	NONE
Terminal Control	NONE
PAD Prompt Entry Number	0
Remote PAD Parameters Number	0
Autocall Mnemonic	(blank)
Autocall Timeout (sec)	10
Maximum number of Autocall Attempts	4
Subaddress	04
Group Subaddress	00
CUG Membership	--,--,--,--,--,--,--,--
Billing Records	OFF
Invitation to clear	CLRWO
Call Accept Timeout (sec)	0
Maximum Receive Buffer Length	4

This table lists the settings you should use to configure the Routing Table for DPAD Node 10200 of the network shown in Figure 22.

Routing Table Nodes 10100-10200

Parameter	Node 10100	Node 10200
Entry #	1	1
Address	10100	10200
Destination	P1 (Port 1)	P1 (Port 1)
Priority	1	1

Configure the PAD Profile Tables on both nodes as shown in the next two tables, depending on whether you are configuring for Non-Polled or Polled Async.

Parameter	Value
1, PAD Recall	0
2, Echo	0
3, Data Forwarding Character	0
4, Idle Timer Delay	1
5, Device Flow Control	0
6, Service Signals Control	0
7, Break Signal Operation	0
9, Padding after Carriage Return	0
10, Line Folding	0
12, PAD Data Restraint	0
13, Line Feed Insertion after CR	0
14, Padding after LF	0
15, Editing	0
16, Character Delete	0
17, Line Delete	0
18, Line Display	0
19, Editing Type	0
20, Echo Mask	0
21, Parity Treatment	0
22, Page Wait	0
100, Break Character	0
101, Echo Substitution Toggle Character	0
102, Echo Substitution Character	0
103, XON Character	0
104, XOFF Character	0
105, Control Signal (EIA232-D) Data Restraint	0
106, Network Parity	0
107, Idle Disconnect Timer	0
108, Disconnect Character	0
109, Form Feed Padding	0
110, ESC Forwarding Delay	0
111, Echo Control	0
112, Dynamic Data Forwarding	0
113, Hewlett-Packard flow control	0

■**Note**

If you are using the Transparent Polled Async option, set the Short Timer to 2 and the PAD Mode to 01.

MPAD to DPAD Configuration

Figure 22 shows a sample NCCP Option networking scheme with an MPAD to DPAD configuration.
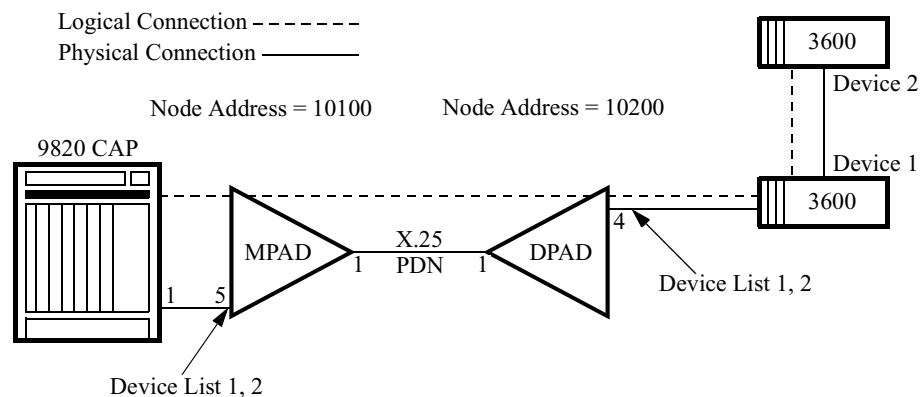
Figure 22. Sample MPAD to DPAD Configuration

■**Note**

You can cable up to four devices to a Vanguard async PAD port with a Y cable. Set the network control port on all the master modems to "3 state". When using devices such as the 36xx, 35xx, 33xx, and 25xx, strap all of the master modems for "3 state" except the last, which you should strap for "S/M Tier." However, a Y-cable connection of multiple MPADs to a 9820 CAP port is not supported.

The next four tables list the settings you should use to configure MPAD Node 10100 of the network shown in Figure 22.

This table shows the proper MPAD Record settings for Node 10100.

Parameter	Values
*MPAD Subaddress	300
*Main Channel Subaddress	05
*Inactivity Timer (seconds)	60
*SVC Retry Timer	10
*MPAD to DPAD Message Timer	120
*Quick Timeout Enable	1
*Number of DPADs	1
*DPAD #1 Mnemonic	S10200

■**Note**
    Leave a numerical space between MPAD Subaddresses if you have multiple
   MPADs. The MPAD address stored for the first DPAD record (the DPAD which
    is configured as DPAD #1 in the MPAD) is determined by the MPAD node
    address (10100) and the MPAD starting subaddress (300). The MPAD addresses
    for additional DPADs are incremented. For example, the MPAD address for
    DPAD2 is 10100301.

This table lists the proper NCCP device record for Device 1.

Parameter	*Values*
MPAD Number	1
DPAD Number	1
NMS NCCP address of Device (unique/manager)	1
NCCP Address (physical)	1 or 0
Poll State	Normal

This table lists the proper NCCP device record for Device 2.

Parameter	*Values*
MPAD Number	1
DPAD Number	1
NMS NCCP address of Device (unique/manager)	2
NCCP Address (physical)	2 or 0
Poll State	Normal

This table lists the proper Mnemonic Call Table Configuration.

Mnemonic Name	*Call Parameters*
S10200	10200400 (where 10200 is the Node address, and 400 is the DPAD subaddress)

Refer to the General Configurations section for information on configuring X.25
ports, Routing Tables, and PAD Profiles.

The next two tables list the settings you should use to configure DPAD Node 10200
of the network shown in Figure 22.

This table lists the proper DPAD device record for Device 1.

Parameter	Values
*DPAD Subaddress	400
*Main Channel Subaddress	04
MPAD Mnemonic	M10100
Device Poll Frequency (hrs)	00
Device Poll Frequency (mins)	00
Device Poll Frequency (secs)	10
Inter-poll Delay	0
Timeout (seconds)	10
SVC Retry Timer	40
DPAD to MPAD Message Timer	120
Retry Count	1

■**Note**

The MPAD address stored for the first DPAD record (the DPAD which is configured as DPAD #1 in the MPAD) is determined by the MPAD node address (10100) and the MPAD starting subaddress (300). The MPAD addresses for additional DPADs are incremented. For example, the MPAD address for DPAD2 is 10100301.

This table lists the Mnemonic Call Configuration.

| Mnemonic Name	Call Parameters
M10100	10100300 (where 10100 is the remote node, and 300 is the MPAD subaddress)

Multiple DPADs Configuration

Figure 23 shows a physical sample of an NCCP Option networking scheme with multiple DPADs.
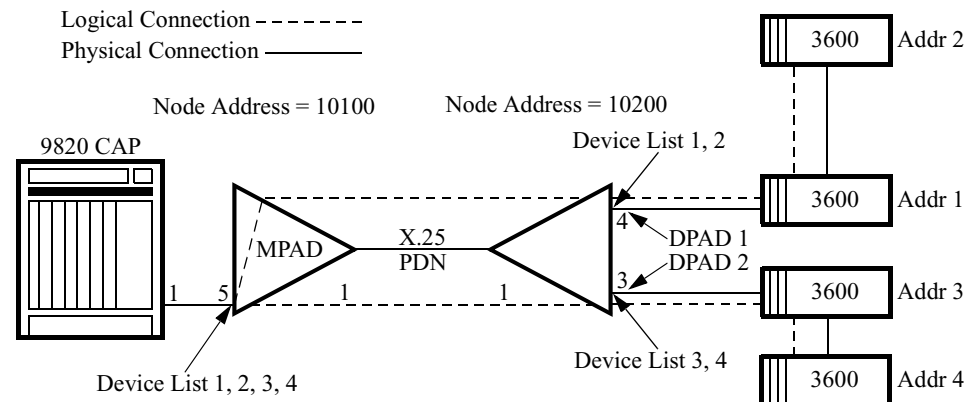
Figure 23. Multiple DPAD Physical Configuration

Figure 24 shows the detailed logical connections of the multiple DPAD configuration.
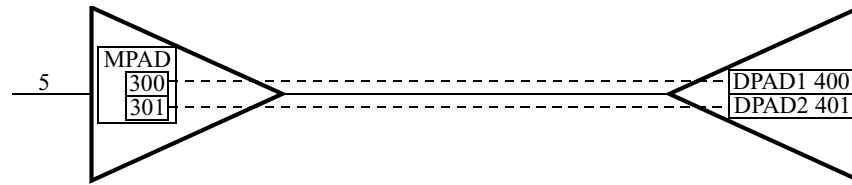
Figure 24. DPAD Logical

The next seven tables list the settings you should use to configure Node 10100 of the network shown in Figure 23.

This table lists the MPAD Record settings for a multiple DPAD configuration.

Configure: MPAD Record (Multiple DPADs)

Parameter	Values
*MPAD Subaddress	300
*Main Channel Subaddress	05
*Inactivity Timer (seconds)	60
*SVC Retry Timer	10
*MPAD to DPAD Message Timer	120
*Quick Timeout Enable	1
*Number of DPADs	1
*DPAD #1 Mnemonic	S102001
*DPAD #2 Mnemonic	S102002

■**Note**

Leave a numerical space between MPAD Subaddresses if you have multiple MPADs.

This table lists the MPAD Main Channel settings for Port 5 on a multiple DPAD configuration.

Parameter	Values
*Port Type	PAD
Connection Type	SIMP
Port Control	NONE
Port Speed	75
Auto Baud Sequence	CR_only
Data Bits per Character	8
Device Parity	NONE
Number of Stop Bits	1
Profile Name	NCCP (User Defined PAD Profile)

Parameter	*Values* (continued)
Call Control	NONE
Terminal Control	NONE
PAD Prompt Entry Number	0
Remote PAD Parameters Number	0
Autocall Mnemonic	(blank)
Autocall Timeout (sec)	10
Maximum number of Autocall Attempts	4
Subaddress	05
Group Subaddress	00
CUG Membership	--,--,--,--,--,--,--,--
Billing Records	OFF
Invitation to clear	CLRWO
Call Accept Timeout (sec)	0

This table lists the NCCP Device Record settings for Device 1 in a multiple DPAD configuration.

Parameter	*Values*
MPAD Number	1
DPAD Number	1
NMS NCCP address of Device (unique/manager)	1
NCCP Address (physical)	1 or 0
Poll State	Normal

This table lists the NCCP Device Record settings for Device 2 in a multiple DPAD configuration.

Parameter	*Values*
MPAD Number	1
DPAD Number	1
NMS NCCP address of Device (unique/manager)	2
NCCP Address (physical)	2 or 0
Poll State	Normal

This table lists the NCCP Device Record settings for Device 3 in a multiple DPAD configuration.

Parameter	Values
MPAD Number	1
DPAD Number	2
NMS NCCP address of Device (unique/manager)	3
NCCP Address (physical)	3 or 0
Poll State	Normal

This table lists the NCCP Device Record settings for Device 4 in a multiple DPAD configuration.

Parameter	Values
MPAD Number	1
DPAD Number	2
NMS NCCP address of Device (unique/manager)	4
NCCP Address (physical)	4 or 0
Poll State	Normal

This table lists the Mnemonic Call Table settings in a multiple DPAD configuration.

Mnemonic Name	Call Parameters
S102001	10200400, where 10200 is the Node address, and 400 is the DPAD subaddress
S102002	10200401, where 10200 is the Node address, and 401 is the DPAD subaddress

Refer to the General Configurations section for information on configuring X.25 ports, Routing Tables, and PAD Profiles.

The next five tables list the settings you should use to configure the DPAD Node 10200 of the network shown in Figure 23.

This table lists the Main Channel Port 4 settings for DPAD-1.

Parameter	Values
*Port Type	PAD
Connection Type	SIMP
Port Control	NONE
Port Speed	75
Auto Baud Sequence	CR_only
Data Bits per Character	8

Parameter	Values
Device Parity	NONE
Number of Stop Bits	1
Profile Name	NCCP (User Defined PAD Profile)
Call Control	NONE
Terminal Control	NONE
PAD Prompt Entry Number	0
Remote PAD Parameters Number	0
Autocall Mnemonic	(blank)
Autocall Timeout (sec)	10
Maximum number of Autocall Attempts	4
Subaddress	04
Group Subaddress	00
CUG Membership	--,--,--,--,--,--,--,--
Billing Records	OFF
Invitation to clear	CLRWO
Call Accept Timeout (sec)	0
Maximum Receive Buffer Length	4

■**Note**

The first four parameters are the only ones you change.

This table lists the DPAD-1 Record 1 settings.

Parameter	Values
*DPAD Subaddress	400
*Main Channel Subaddress	04
MPAD Mnemonic	M10100
Device Poll Frequency (hrs)	00
Device Poll Frequency (mins)	00
Device Poll Frequency (secs)	10
Inter-poll Delay	0
Timeout (seconds)	10
SVC Retry Timer	40
DPAD to MPAD Message Timer	120
Retry Count	1

■**Note**

The MPAD address stored for the first DPAD record (the DPAD which is configured as DPAD #1 in the MPAD) is determined by the MPAD node address (10100) and the MPAD starting subaddress (300). The MPAD addresses for additional DPADs are incremented. For example, the MPAD address for DPAD2 is 10100301.

This table lists the DPAD-2 Record 1 settings.

Parameter	*Values*
*DPAD Subaddress	401
*Main Channel Subaddress	03
MPAD Mnemonic	M101002
Device Poll Frequency (hrs)	00
Device Poll Frequency (mins)	00
Device Poll Frequency (secs)	10
Inter-poll Delay	0
Timeout (seconds)	10
SVC Retry Timer	40
DPAD to MPAD Message Timer	120
Retry Count	1

This table lists the Mnemonic Call Table DPAD-1 settings.

Mnemonic Name	*Call Parameters*
M10100	10100300 (where 10100 is the MPAD subaddress, and 300 is the remote node)

This table lists the Mnemonic Call Table DPAD-2 settings.

Mnemonic Name	*Call Parameters*
M101002	10100301 (where 10100 is the remote node, and 301 is the MPAD subaddress)

Refer to the General Configurations section for information on configuring X.25 ports, Routing Tables, PAD Profiles, and the Table Entry Examination.

Multiple DPADs with Address Translation Configuration

Figure 25 shows a sample NCCP Option networking scheme with Address Translation.
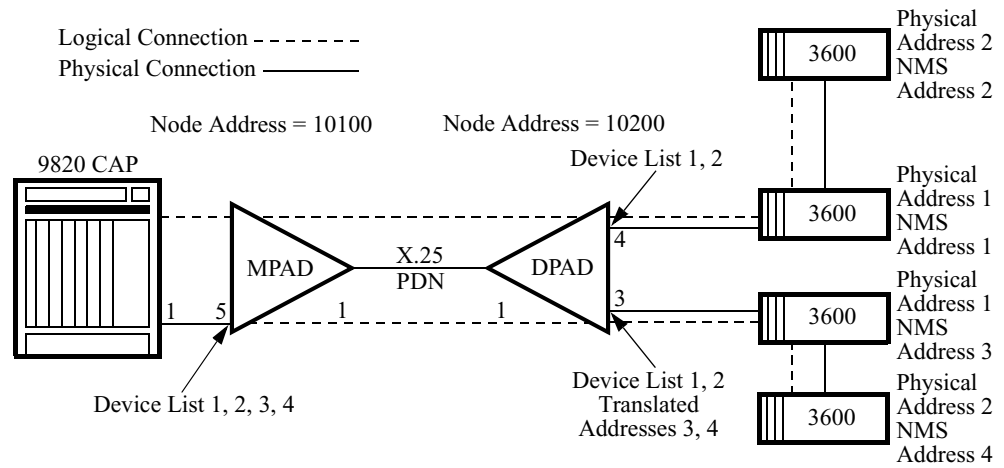
Figure 25. Multiple DPADs with Address Translation

The next seven tables list the settings you should use to configure Node 10100 of the network shown in Figure 25.

This table lists the MPAD Main Channel Port 5 settings.

Parameter	Values
*Port Type	PAD
Connection Type	SIMP
Port Control	NONE
Port Speed	75
Auto Baud Sequence	CR_only
Data Bits per Character	8
Device Parity	NONE
Number of Stop Bits	1
Profile Name	NCCP (User Defined PAD Profile)
Call Control	NONE
Terminal Control	NONE
PAD Prompt Entry Number	0
Remote PAD Parameters Number	0
Autocall Mnemonic	(blank)
Autocall Timeout (sec)	10
Maximum number of Autocall Attempts	4
Subaddress	05

Parameter	Values *(continued)*
Group Subaddress	00
CUG Membership	--,--,--,--,--,--,--,--
Billing Records	OFF
Invitation to clear	CLRWO
Call Accept Timeout (sec)	0
Maximum Receive Buffer Length	4

This table lists the MPAD Record settings in a multiple DPAD configuration.

Parameter	Values
*MPAD Subaddress	300
*Main Channel Subaddress	05
*Inactivity Timer (seconds)	60
*SVC Retry Timer	10
*MPAD to DPAD Message Timer	120
*Quick Timeout Enable	1
*Number of DPADs	1
*DPAD #1 Mnemonic	S102001
*DPAD #2 Mnemonic	S102002

■**Note**

Leave a numerical space between MPAD Subaddresses if you have multiple MPADs.

This table lists the NCCP Device Record settings for Device 1.

Parameter	Values
MPAD Number	1
DPAD Number	1
NMS NCCP address of Device (unique/manager)	1
NCCP Address (physical)	1 or 0
Poll State	Normal

This table lists the NCCP Device Record settings for Device 2.

Parameter	Values
MPAD Number	1
DPAD Number	1
NMS NCCP address of Device (unique/manager)	2
NCCP Address (physical)	2 or 0
Poll State	Normal

This table lists the NCCP Device Record settings for Device 3.

Parameter	Values
MPAD Number	1
DPAD Number	2
NMS NCCP address of Device (unique/manager)	3
NCCP Address (physical)	1 (translation of above address)
Poll State	Normal

■**Note**

Address Translation does not support address 144. When using Address Translation, do not configure address 144 for the Unique NCCP Address or the Physical NCCP Address.

This table lists the NCCP Device Record settings for Device 4.

Parameter	Values
MPAD Number	1
DPAD Number	2
NMS NCCP address of Device (unique/manager)	4
NCCP Address (physical)	2 (translation of above address)
Poll State	Normal

■**Note**

Address Translation does not support address 144. When using Address Translation, do not configure address 144 for the Unique NCCP Address or the Physical NCCP Address.

This table lists the Mnemonic Call Table configurations.

Mnemonic Name	Call Parameters
S102001	10200400, where 10200 is the Node address, and 400 is the DPAD subaddress
S102002	10200401, where 10200 is the Node address, and 401 is the DPAD subaddress

Refer to the General Configurations section for information on configuring X.25 ports, Routing Tables, and PAD Profiles.

The next 6 tables list the settings you should use to configure the DPAD Node 10200 of the network shown in Figure 25.

This table lists the Main Channel Port 4 settings for DPAD 1.

Parameter	Values
*Port Type	PAD
Connection Type	SIMP
Port Control	NONE
Port Speed	75
Auto Baud Sequence	CR_only
Data Bits per Character	8
Device Parity	NONE
Number of Stop Bits	1
Profile Name	NCCP (User Defined PAD Profile)
Call Control	NONE
Terminal Control	NONE
PAD Prompt Entry Number	0
Remote PAD Parameters Number	0
Autocall Mnemonic	(blank)
Autocall Timeout (sec)	10
Maximum number of Autocall Attempts	4
Subaddress	04
Group Subaddress	00
CUG Membership	--,--,--,--,--,--,--,--
Billing Records	OFF
Invitation to clear	CLRWO
Call Accept Timeout (sec)	0
Maximum Receive Buffer Length	4

■**Note**

 The first four parameters are the only ones you change.

This table lists the Main Channel Port 3 settings for DPAD 2.

Parameter	Values
*Port Type	PAD
Connection Type	SIMP
Port Control	NONE
Port Speed	75
Auto Baud Sequence	CR_only
Data Bits per Character	8
Device Parity	NONE
Number of Stop Bits	1
Profile Name	NCCP (User Defined PAD Profile)
Call Control	NONE
Terminal Control	NONE
PAD Prompt Entry Number	0
Remote PAD Parameters Number	0
Autocall Mnemonic	(blank)
Autocall Timeout (sec)	10
Maximum number of Autocall Attempts	4
Subaddress	03
Group Subaddress	00
CUG Membership	--,--,--,--,--,--,--,--
Billing Records	OFF
Invitation to clear	CLRWO
Call Accept Timeout (sec)	0
Maximum Receive Buffer Length	4

This table lists the settings for the DPAD 1 record.

Parameter	Values
*DPAD Subaddress	400
*Main Channel Subaddress	04
MPAD Mnemonic	M10100
Device Poll Frequency (hrs)	00
Device Poll Frequency (mins)	00
Device Poll Frequency (secs)	10
Inter-poll Delay	0

Parameter	Values (continued)
Timeout (seconds)	10
SVC Retry Timer	40
DPAD to MPAD Message Timer	120
Retry Count	1

■**Note**

The MPAD address stored for the first DPAD record (the DPAD which is configured as DPAD #1 in the MPAD) is determined by the MPAD node address (10100) and the MPAD starting subaddress (300). The MPAD addresses for additional DPADs are incremented. For example, the MPAD address for DPAD2 is 10100301.

This table lists the settings for the DPAD 2 record.

Parameter	Values
*DPAD Subaddress	401
*Main Channel Subaddress	03
MPAD Mnemonic	M101002
Device Poll Frequency (hrs)	00
Device Poll Frequency (mins)	00
Device Poll Frequency (secs)	10
Inter-poll Delay	0
Timeout (seconds)	10
SVC Retry Timer	40
DPAD to MPAD Message Timer	120
Retry Count	1

This table lists the Mnemonic Call Table setting for the DPAD 1.

Mnemonic Name	Call Parameters
M10100	10100300, where 10100 is the MPAD subaddress, and 300 is the remote node.

This table lists the Mnemonic Call Table setting for the DPAD 2.

Mnemonic Name	Call Parameters
M101002	10100301, where 10100 is the remote node, and 301 is the MPAD subaddress.

Refer to the General Configurations section for information on configuring X.25 ports, Routing Tables, PAD Profiles, and the Table Entry Examination.

Menu Worksheets

introduction

This section consists of blank worksheets that you can copy and fill out with the appropriate information from your network. This will help you keep track of the proper settings.

Node Record Examination Worksheet

Parameter	*Node A (MPAD)*	*Node B (DPAD)*
Node Name		
Node Address		
Node Number		
Chassis Type		
Maximum Routing Hops		
Hop Count Facility Code		
Control Port Subaddress		
Control Port Idle Disconnect Time (minutes)		
Alarm Distribution		
Alarm Printer Mnemonic		
Alarm Selection		
Threshold Alarm Timer (minutes)		
Broadcast Port Subaddress		
*Number of Broadcast Nets		
*Number of Broadcast Input Channels		
Billing Printer Mnemonic		
Billing Record Call Threshold		
Maximum Billing Records		
Billing Record Timer (minutes)		
PVC Billing Record Timer (minutes)		
Maximum Simultaneous Calls		
Port Utilization Threshold (%)		
Buffer Utilization Threshold (%)		
CPU Utilization Threshold (%)		
Port Error Threshold		
PAD Bulletin Message		
PAD Banner Message		

Node A and B Port Record Examination Worksheet

Parameter	Node A	Node B
*Port Type		
Connection Type		
Port Control		
Clock Source		
Clock Speed		
Link Address		
*Number of PVC Channels		
*Starting PVC Channel Number		
*Number of SVC Channels		
*Starting SVC Channel Number		
Initial Frame		
T1 Transmission Retry Timer (1/10 sec)		
T4 Poll Timer		
N2 Transmission Tries		
Frame Sequence Counting		
K Frame Window		
Packet Sequence Counting		
W Packet Window		
P Packet Size		
Maximum Negotiated Packet Size		
Data Queue Upper Threshold		
Data Queue Lower Threshold		
Restart Timer		
Reset Timer		
Call Timer		
Clear Timer		
Facilities to delete from Outbound Calls		

Parameter	Values
*Port Type	
Connection Type	
Port Control	
Port Speed	
Auto Baud Sequence	
Data Bits per Character	
Device Parity	

Parameter	Values
Number of Stop Bits	
Profile Name	
Call Control	
Terminal Control	
PAD Prompt Entry Number	
Remote PAD Parameters Number	
Autocall Mnemonic	
Autocall Timeout (sec)	
Maximum number of Autocall Attempts	
Subaddress	
Group Subaddress	
CUG Membership	
Billing Records	
Invitation to clear	
Call Accept Timeout (sec)	

Routing Table Nodes Worksheet

Parameter	Node 10100	Node 10200
Entry #	1	1
Address	10100	10200
Destination	P1 (Port 1)	P1 (Port 1)
Priority	1	1

Parameter	Values
1, PAD Recall	
2, Echo	
3, Data Forwarding Character	
4, Idle Timer Delay	
5, Device Flow Control	
6, Service Signals Control	
7, Break Signal Operation	
9, Padding after Carriage Return	
10, Line Folding	
12, PAD Data Restraint	

Parameter	Values *(continued)*
13, Line Feed Insertion after CR	
14, Padding after LF	
15, Editing	
16, Character Delete	
17, Line Delete	
18, Line Display	
19, Editing Type	
20, Echo Mask	
21, Parity Treatment	
22, Page Wait	
100, Break Character	
101, Echo Substitution Toggle Character	
102, Echo Substitution Character	
103, XON Character	
104, XOFF Character	
105, Control Signal (EIA232-D) Data Restraint	
106, Network Parity	
107, Idle Disconnect Timer	
108, Disconnect Character	
109, Form Feed Padding	
110, ESC Forwarding Delay	
111, Echo Control	
112, Dynamic Data Forwarding	
113, Hewlett-Packard flow control	

Parameter	Values
1, PAD Recall	
2, Echo	
3, Data Forwarding Character	
4, Idle Timer Delay	
5, Device Flow Control	
6, Service Signals Control	
7, Break Signal Operation	
9, Padding after Carriage Return	

Parameter	Values *(continued)*
10, Line Folding	
12, PAD Data Restraint	
13, Line Feed Insertion after CR	
14, Padding after LF	
15, Editing	
16, Character Delete	
17, Line Delete	
18, Line Display	
19, Editing Type	
20, Echo Mask	
21, Parity Treatment	
22, Page Wait	
100, Break Character	
101, Echo Substitution Toggle Character	
102, Echo Substitution Character	
103, XON Character	
104, XOFF Character	
105, Control Signal (EIA232-D) Data Restraint	
106, Network Parity	
107, Idle Disconnect Timer	
108, Disconnect Character	
109, Form Feed Padding	
110, ESC Forwarding Delay	
111, Echo Control	
112, Dynamic Data Forwarding	
113, Hewlett-Packard flow control	
114, PAD Mode	
115, Data Forwarding Criteria	
116, Short Timer Duration	
117, EIA Signalling Action	
118, Message Assembly	
119, DCD to Data Timer Duration	

Parameter	Values
*MPAD Subaddress	
*Main Channel Subaddress	
*Inactivity Timer (seconds)	
*SVC Retry Timer	
*MPAD to DPAD Message Timer	
*Quick Timeout Enable	
*Number of DPADs	
*DPAD #1 Mnemonic	

Parameter	Values
MPAD Number	
DPAD Number	
NMS NCCP address of Device (unique/manager)	
NCCP Address (physical)	
Poll State	

Mnemonic Name	Call Parameters
S10200	

Parameter	Values
*DPAD Subaddress	
*Main Channel Subaddress	
MPAD Mnemonic	
Device Poll Frequency (hrs)	
Device Poll Frequency (mins)	
Device Poll Frequency (secs)	
Inter-poll Delay	
Timeout (seconds)	
SVC Retry Timer	
DPAD to MPAD Message Timer	
Retry Count	

Parameter	Values
*MPAD Subaddress	
*Main Channel Subaddress	
*Inactivity Timer (seconds)	
*SVC Retry Timer	
*MPAD to DPAD Message Timer	
*Quick Timeout Enable	
*Number of DPADs	
*DPAD #1 Mnemonic	
*DPAD #2 Mnemonic	

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