

Vanguard Managed Solutions

Vanguard Applications Ware
Serial Feature Protocols

X.42 Protocol

Notice

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Overview

Introduction

This manual describes the implementation of the X.42 protocol option for Vanguard products.

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About The X.42 Protocol

What Is it?

The X.42 protocol is a polled asynchronous protocol developed for lottery applications. It is used for communication between a controller at the central site and the lottery terminals located at the retail site.

This protocol option has been developed to let you take advantage of the flexibility and cost advantages of packet-based technologies such as X.25, Frame Relay, and D-channel packet in your lottery applications.

Example

X.42 ports and stations are configured in both the HPAD and TPAD nodes. This protocol is spoofed by the access devices at both the HPAD and TPAD ends of the network. That way, only data traffic is sent over the WAN.

Figure 1 shows a network using ISDN D-Channel Packet access lines for terminal connections to the network.

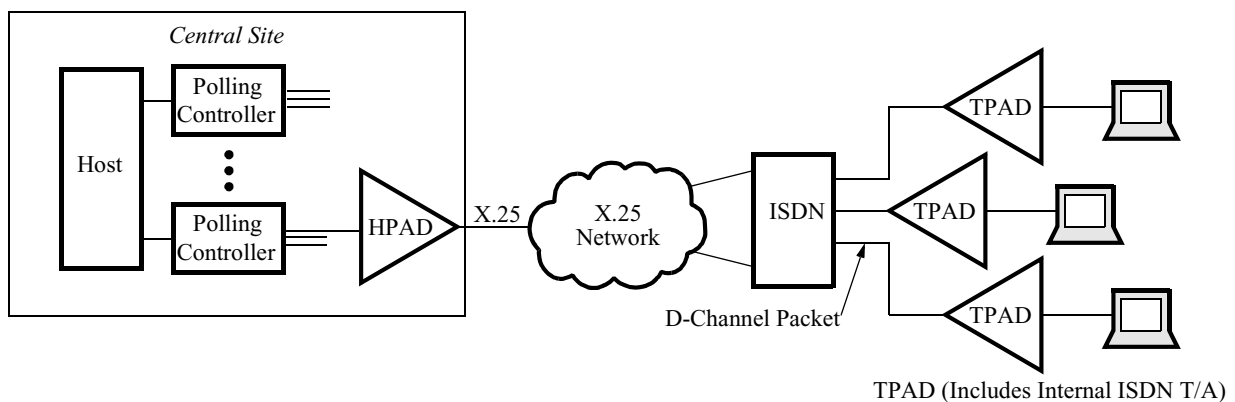


Figure 1. Example of X.42 Application Using Vanguard Products

Features

This protocol option for Vanguard provides these features:

- Fully spoofed HPAD/TPAD implementation for improved network performance.
- Address mapping, which allows different device addresses to be used on the HPAD and TPAD side.
- HPAD and TPAD port speeds that can be independently set for optimized performance.
- Switched Virtual Circuits (SVC) connections configurable on a device basis. This allows a single polling controller port (HPAD) to be connected to multiple terminal ports (TPAD).

Platform Support

This protocol option operates on these Vanguard platforms:

- 6500^{PLUS}
- Vanguard 6520
- Vanguard 6560
- Vanguard 6400 Series
- Vanguard 6425
- Vanguard 100
- Vanguard 200
- Vanguard 300/305
- Vanguard 310 Series
- Vanguard 320
- Vanguard 34x Series

Specifications

This protocol option specifications include:

- Up to 30 stations per port, maximum
- Supported port speeds of 1200 bps, 1800 bps, 2400 bps, 4800 bps, 9600 bps, and 19200 bps

Limitations

The X.42 protocol has these limitations:

<i>Limitation</i>	<i>Description</i>
Undelivered Data	A frame received from the Polling Controller by the HPAD may not be delivered to the terminal. This applies to all frame types. It means that “phantom” tickets may be issued. A phantom ticket is one that the host believes to have been issued but was never printed.
Extended Addressing	Not supported.
GSC Encryption	Not supported.
Control signal handling	Only the SIMP connection type is supported. This is not configurable.
Adding New Terminals to the Poll List	The HPAD requires station-specific activity other than broadcast frames on the link before initiating an X.25 call for an inactive station. This requires that a Polling Controller send at least one poll or UAD-frame to a station, after adding it to the poll list, before sending broadcast messages.

Features Not Currently Supported

These features, which may be supported for other protocols on Vanguard products, are not supported by the X.42 protocol:

- Data Connection Protection (DCP)
- Traffic Priority
- Remote Datascope

Link Level Description

Introduction

This section provides an overview of the X.42 link level protocol.

The X.42 protocol is a point-to-multipoint asynchronous binary protocol that uses 8-bit data with no parity and one stop bit.

Figure 2 shows the basic link level activity that occurs between the master station (HPAD) and the slave station (terminal or TPAD) on a X.42 link.

Link Level Activity

Figure 2 shows the basic X.42 link procedures.

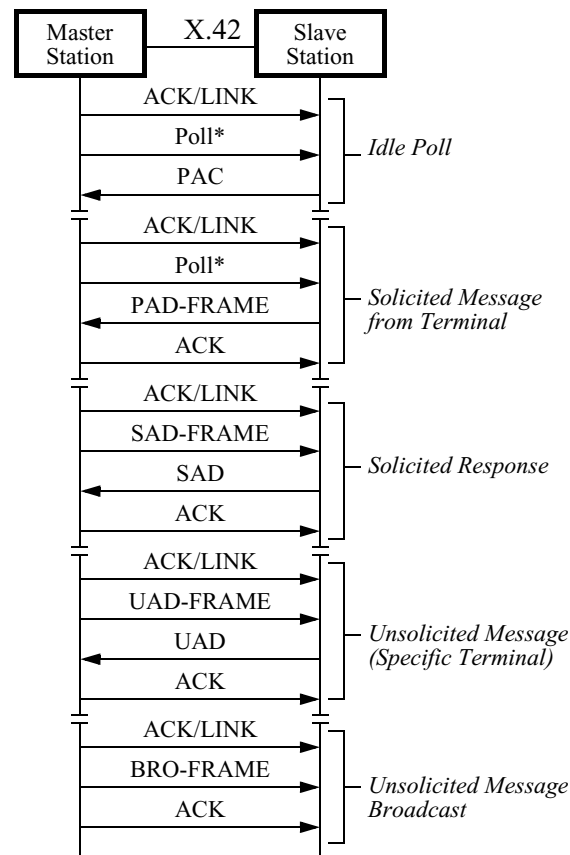


Figure 2. X.42 Link Activity

Descriptions

These tables describes the X.42 link level elements in more detail.

Protocol Element	Description
PAD	Poll character. This is also the address byte in a PAD-Frame.
PAD-Frame	A solicited message frame sent by a terminal in response to a poll.
PAC	A negative response to a poll. It is the complement of the PAD (Poll) byte sent by the master station.
SAD-Frame	A response to a solicited PAD-Frame message. It is sent by the host or central site to a terminal.
SAD	A positive acknowledgment to a SAD-Frame.
SAC	A negative acknowledgment to a SAD-Frame. It is the complement of the address byte from the SAD-Frame.
UAD-Frame	An unsolicited message from the central site to the terminal.
UAD	A positive acknowledgement to a UAD-Frame. It is the address byte in a UAD frame.
UAC	A negative acknowledgement to a UAD-Frame. It is the complement of the address byte from the UAD-Frame.
BRO-Frame	An unsolicited message from the central site to all terminals on line. This is known as a Broadcast Frame. This is typically used to download a message to all terminals at once.
LINK	An attention character sent by the master station to indicate a negative acknowledgement.
ETX	Indicates the end of text in a frame.
CNB	An Escape character.
ENQ	An inquiry about the last acknowledgement sent by the terminal or HPAD.
LRC	Longitudinal redundancy check character.
DRC	Diagonal redundancy check character.

Frame Format

Figure 3 shows the link level frame format for X.42 protocol frames.

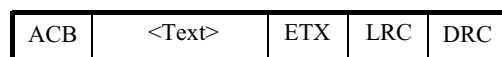


Figure 3. GSC Frame Format

Link Level Description

This table describes the components of a X.42 frame.

Frame Component	Description
ACB	This is an eight-bit character with the following format: essaaaaa . where: e = Encryption flag ss = Type (PAD = 10 SAD = 01 UAD = 11) aaaaa = Address. 31 is Broadcast and 30 is Extended Address flag. ■ Note Extended addressing is not supported.
LINK, ACK, ETX	These characters are escaped in text.
CNB	This is used as the Escape character.

Components of the X.42 Protocol Option

Simple Two-Terminal Network Example

Figure 4 shows the components of the HPAD and TPAD for a two-terminal network application for the X.42 protocol option. These are the logical components you configure to run the X.42 protocol on a network.

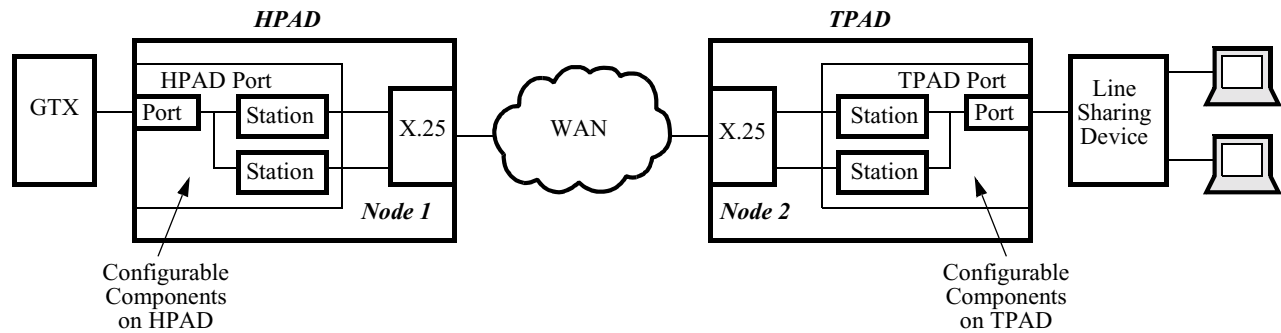


Figure 4. Two-Terminal Network Example

In Figure 4, one station is configured for each device address supported on the link. Each active station on the HPAD SVC maintains an X.25 SVC connection to a corresponding station on the TPAD.

Single Node Solution

X.42 connections can also be made between HPAD and TPAD stations residing in the same node for a single box solution.

Call Establishment and Clearing

Introduction

This section describes call establishment and call clearing when using the X.42 protocol option on Vanguard products.

Call Establishment

The HPAD always initiates calls in a X.42 application. After a node, port, or station boot, the HPAD attempts to establish an X.25 call to the TPAD once the Autocall Retry Timeout expires.

After a station is disconnected due to inactivity, X.25 calls are initiated when the HPAD receives a UAD frame, SAD frame, or poll from the Polling Controller for the device associated with the station. BRO-frames are ignored until a connection is established. In any other state, the HPAD attempts to re-establish the call after the time configured in Wake Up Timer parameter has expired.

The HPAD station does not respond to a poll received for itself from the GTX controller until the SVC is up.

Call Staggering

To prevent call flooding when you boot a multi-HPAD, you can configure the node to stagger autocall sequences.

To achieve the staggering effect, you must configure each HPAD port record with a different timeout value in the Autocall Retry Timeout parameter. When a boot occurs, each HPAD waits for the time specified in the Autocall Retry Timeout parameter before its stations start autocall sequences.

Figure 5 shows call staggering as it is implemented on three HPADs. After a node boot, the HPADs stagger calls 500 milliseconds apart.

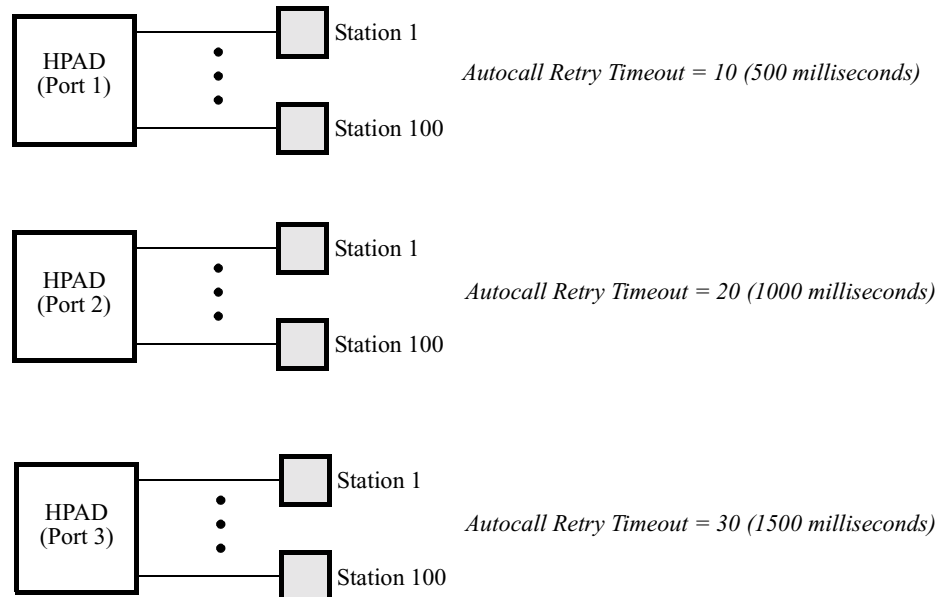


Figure 5. Staggering Calls With Autocall Retry Timeout Settings

■ Note

If a poll arrives at the HPAD during this initial stagger period, the station stops this timer and starts off on the autocall cycle immediately.

Call Clearing

Calls are cleared under the following conditions:

- A TPAD or HPAD boot (node/port/station). The HPAD attempts to establish an X.25 call to the TPAD after the time specified Autocall Retry Timeout parameter has expired.
 - Clear from the network. The HPAD attempts to establish an X.25 call to the TPAD after the time specified Autocall Retry Timeout parameter has expired.
 - HPAD clears the call when the Idle Disconnect timer expires. The call remains cleared until the HPAD sees activity other than broadcast frames specific to the station.
-

Wake Up Timer

The Wake Up Timer parameter is in the HPAD port record. It configures the timeout between autocall sequences. If you want the stations to restart autocall sequences without having to be manually booted, set this parameter to a value greater than 0.

When the Wake Up Timer parameter is configured (with value greater than 0), a station “sleeps” for the amount of time this parameter specifies. When the Wake Up Timer expires, the station wakes up and begins an autocall sequence.

■ Note

If you want to disable the Wake Up Timer functionality, set to the value of this parameter to 0. A station boot is now required to restart autocalling.

Idle Disconnect Timeout

The Idle Disconnect Timeout parameter is in the HPAD port record only. It sets the time in minutes that the HPAD waits to receive a UAD frame, SAD frame, or poll from the Controller before it clears the call to the TPAD.

With the Idle Disconnect Timeout parameter set from 1 to 1000, it closes the SVC if there is no data transfer occurring after the time set in this parameter.

With the Idle Disconnect Timeout parameter set to 0, the parameter is disabled. The SVC stays active indefinitely.

Configuring the X.42 Protocol Option

What You Need to Configure

Configure these records and tables for the HPAD and TPAD nodes in a X.42 application.

<i>For the HPAD Node</i>	<i>For the TPAD Node</i>
Port Record	Port Record
GSC Port Stations Table	GSC Port Stations Table
Route Selection Table	Route Selection Table
Mnemonic Table	
Node Record	Optional - Configure the Node Record only if the GSC Call Rate feature is required.

HPAD and TPAD Specific Parameters

The HPAD and TPAD node Port Records have some separate parameters that appear depending on whether you select HPAD or TPAD as the Port Subtype:

<i>For the TPAD Node</i>	<i>For the HPAD Node</i>
Minimum Poll Period	Idle Disconnect Timeout
Poll Response Timer	Autocall Retry Timeout
Acknowledgment Timeout	Maximum Autocall Retries
Broadcast Hold Timeout	Wake Up Timer
Solicited Response Timeout	
N1	
N2	

■ Note

This assumes your HPAD/TPAD nodes are configured for normal LAN/WAN operation and you are only adding GSC option protocol functionality to the nodes.

Refer to the following section for a basic configuration example.

HPAD/TPAD Sample Application

Figure 6 shows a sample X.42 option protocol configuration for a basic HPAD/TPAD implementation.

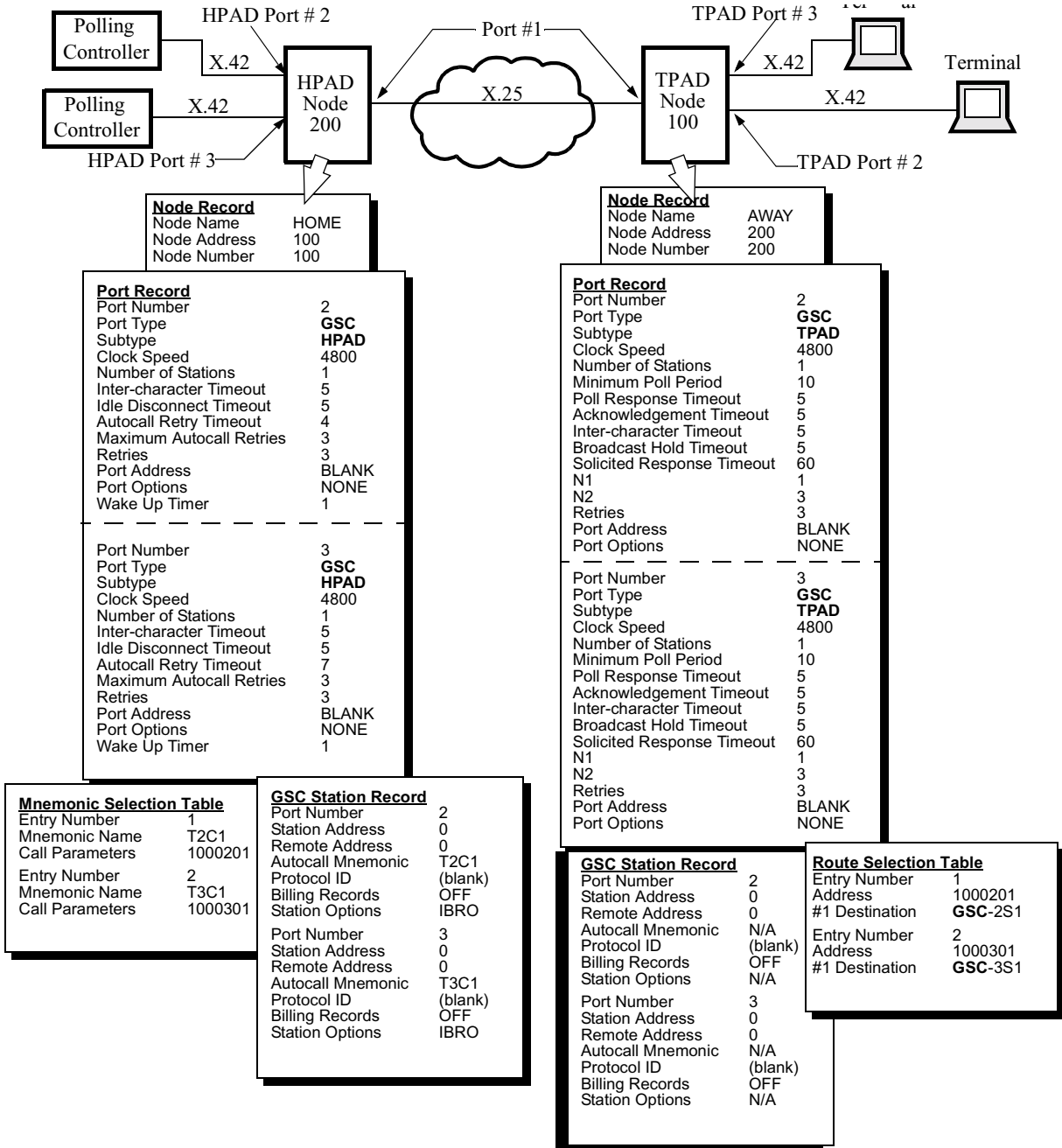


Figure 6. X.42 Sample Application

Configuring Port Parameters

Introduction

This section describes the port parameters you need to configure to operate the X.42 protocol option on a Vanguard device.

Configuring Ports

You need to configure the Port record for Vanguard products running the X.42 protocol option.

Follow these steps to configure the Port record for X.42 operation:

Step	Action	Result
1	Select Configure -> Ports from the CTP menu.	The Entry Number parameter for the Port record appears.
2	Type an Entry number and press ENTER.	The Port Type: prompt appears.
3	Type GSC and press ENTER.	The GSC Port record parameters appear in sequence.
4	Fill in the GSC port record parameters. See page 12 for details on these parameters.	This defines the operation of the GSC port.
5	Type ; (semicolon) to save your changes.	This saves the record.

GSC Port Record Parameters

These parameters make up the GSC Port Record.

■ Note

Unless otherwise indicated, you must perform a Port boot for changes to these parameters to take effect.

Sub-Type

Range:	HPAD, TPAD
Default:	TPAD
Description:	<p>Specifies the port sub-type. Choose:</p> <ul style="list-style-type: none"> • HPAD if the port is functioning as a host PAD (HPAD). • TPAD if the port functions as a terminal PAD (TPAD). <p>■ Note Perform a Node boot for changes to this parameter to take effect.</p>

Clock Speed

Range:	1200, 1800, 2400, 4800, 9600, 19200
Default:	1200
Description:	Specifies the clock speed of the port in bps.

Number of Stations

Range:	1 to 30
Default:	1
Description:	<p>Defines the number of stations/devices configured on this port.</p> <p>Note Perform a Node boot for changes to this parameter to take effect.</p>

Minimum Poll Period

Range:	1 to 1000
Default:	1
Description:	<p>Specifies the minimum time the TPAD waits between polls in 50 millisecond increments. (For example, 1 means 50 milliseconds.)</p> <p>Note This parameter applies only to the TPAD.</p>

Poll Response Timer

Range:	1 to 1000
Default:	5
Description:	<p>Specifies the maximum time the TPAD waits for a response from the terminal after a poll in 50 millisecond increments. (For example, 5 means 250 milliseconds.)</p> <p>Note This parameter applies only to the TPAD.</p>

Acknowledgment Timeout

Range:	1 to 1000
Default:	5
Description:	<p>Specifies the maximum time the TPAD waits for acknowledgment for a transmitted frame in 50 millisecond increments. (For example, 5 means 250 milliseconds.)</p> <p>Note This parameter applies only to the TPAD.</p>

Inter-character Timeout

Range:	1 to 5
Default:	5
Description:	Specifies the maximum time period allowed between received characters in 50 millisecond increments. (For example, 5 means 250 milliseconds.)

Broadcast Hold Timeout

Range:	1 to 1000
Default:	5
Description:	<p>Specifies the time in 50 millisecond increments (For example, 5 means 250 milliseconds.) that the TPAD holds a broadcast frame from one station, when it detects a dropped frame, while waiting for the missing frame on another station.</p> <p>Note This parameter applies only to the TPAD.</p>

Idle Disconnect Timeout

Range:	0 to 1000
Default:	0
Description:	<p>Specifies the period the HPAD waits to receive a UAD-frame, an SAD-frame, or a poll from the Polling Controller before clearing the call to the TPAD in minutes. For example, 5 means 5 minutes. Setting this parameter to 0 disables Idle Disconnect Timeout.</p> <p>Note This parameter applies only to the HPAD.</p>

Solicited Response Timeout

Range:	1 to 1000
Default:	60
Description:	<p>Specifies the time that the TPAD waits for a SAD message in response to a PAD message, before re-transmitting the PAD message in 50 millisecond increments. (For example, 60 means 3 seconds.)</p> <p>Note This parameter applies only to the TPAD.</p>

Autocall Retry Timeout

Range:	1 to 1000
Default:	4
Description:	<p>Specifies the time to wait between subsequent autocall attempts on this station in 50 millisecond increments. (For example, 4 means 200 milliseconds.)</p> <p>Note This parameter applies only to the HPAD.</p>

Maximum Autocall Retries

Range:	1 to 1000
Default:	0
Description:	<p>Specifies the maximum number of autocall attempts allowed. A value of 0 allows unlimited attempts.</p> <p>Note This parameter applies only to the HPAD.</p>

N1

Range:	1 to 100
Default:	1
Description:	<p>Specifies the number of bad responses a TPAD must receive before changing a station's state from UP to DOWN.</p> <p>Note This parameter applies only to the TPAD.</p>

N2

Range:	1 to 100
Default:	3
Description:	<p>Specifies the number of good responses a TPAD must receive before changing a station's state from DOWN to UP.</p> <p>Note This parameter applies only to the TPAD.</p>

Retries

Range:	1 to 100
Default:	3
Description:	Specifies the number of times the TPAD retries a selection procedure before discarding the frame.

Port Address

Range:	0 to 15 digits
Default:	BLANK
Description:	Specifies the address that inserted into the calling address field when a GSC station makes a call.

GSC Port Options

Range:	NONE
Default:	NONE
Description:	Specifies options for this GSC port: NONE - no option selected.

Wake Up Timer

Range:	0 to 30
Default:	0
Description:	<p>Specifies the time to wait (in minutes) after autocal attempts are exhausted before attempting another autocal cycle. Setting this parameter to a value of 0 prevents subsequent attempts until the station is booted.</p> <p>■ Note This parameter applies only to the HPAD.</p>

Configuring GSC Port Station Parameters

How To...

Follow these steps to configure the GSC Port Stations parameters.

Step	Action	Result
1	Select Configure -> GSC Port Stations from the CTP main menu.	The Port Number prompt appears.
2	Type a port number for the port you are configuring. This number corresponds to the physical port at the rear of the unit.	The Station Number prompt appears.
3	Beginning with the Station Number prompt, fill out the parameters in the GSC Port Station Table. See the “GSC Port Station Parameters” section on page 17 for details.	This sets up the characteristics of the GSC Port Station.
4	Type semicolon (;) to save your changes.	This saves the GSC Port Stations Table.

GSC Port Station Parameters

Configure the following parameters on the GSC Station Record:

■ Note

Unless otherwise indicated, you must perform a Station boot for changes to these parameters to take effect.

Station Number

Range:	1 to 30
Default:	1
Description:	The number of the station associated with a device on the multidrop line. This is also used for routing.

Station Address

Range:	0 to 29
Default:	The station number minus 1 (for example, 2 for station 3).
Description:	The device address on the local line.

Remote Address

Range:	0 to 29
Default:	The station number minus 1 (for example, 2 for station 3).
Description:	The device address on the remote line.

Autocall Mnemonic

Range:	0 to 8 alphanumeric characters
Default:	BLANK
Description:	Identifies the entry in the Autocall Mnemonic table that specifies the X.25 call request parameters for this station. ■ Note No boot is required after changing this parameter.

Protocol ID

Range:	0 to 8 hexadecimal numbers.
Default:	BLANK
Description:	Specifies the protocol ID inserted in outgoing calls and checked for incoming calls.

Billing Records

Range:	OFF, ON
Default:	OFF
Description:	Specifies ON to generate Billing records.

Station Options

Range:	NONE, IBRO
Default:	IBRO
Description:	Specifies one or more options by summing (separating them by a plus sign (+)). IBRO - Inband Broadcast frames supported on this channel

Configuring Route Selection Table

Overview

For each TPAD station, configure a corresponding entry in the Route Selection Table for the TPAD node to associate the station with an X.25 address.

Select **Configure** -> **Configure Network Services** from the Main menu to access the Route Selection Table.

X.42 stations support the following formats for Routing entries:

- GSC-*nn*S*mm*, where “*nn*” is the port number and “*mm*” is the station number.
 - P*nn*S*mm* where “*nn*” is the port number and “*mm*” is the station number.
-

Configuring GSC Call Rate (Number of Calls per Second)

Overview

You can configure the number of X.25 calls generated per second by all the X.42 HPADs present in the node.

■ Note

The appropriate number of calls per second value to configure depends on how many calls the pdn on the X.25 side can handle.

How to...

Follow these steps to configure the GSC Call Rate parameter:

Step	Action
1	Select Configure->Node from the CTP main menu.
2	Type the number of X.25 calls per second you want generated from the GSC HPADs in the node.
3	Boot the Node and Table Records.

Parameter

Configure this parameter to enable the GSC Call Rate with the desired number of X.25 calls generated per second from the HPAD.

GSC Call Rate (Number of Calls per Sec.)

Range	0 to 100
Default	0
Description	<p>Specifies the number of calls per second that can be generated from the HPADs in the node.</p> <p>A zero value indicates that the feature is disabled and there is no restriction on the number of calls generated per second from all the HPADs in the entire node.</p> <p>Any other value indicates the feature is enabled and only the configured number of calls are generated from all the HPADs in the entire node.</p> <p>■ Note You must perform a Table and a Node boot for changes to this feature to take effect.</p>

Statistics

Introduction This section describes the statistics available for the GSC protocol option.

What You Can View These statistics and controls are available for the X.42 option protocol from the CTP Statistics menu:

- Detailed Port Statistics
- Detailed GSC Station Statistics
- Reset GSC Station Statistics

How to Display Statistics Follow these steps to display statistics for the X.42 protocol option.

Step	Action	Result
1	From the CTP menu, select Statistics .	The Statistics menu appears.
2	Choose one of the following: <ul style="list-style-type: none"> • Detailed Port Stats • Detailed GSC Station Stats • Reset GSC Station Stats 	<p>The Port Statistics screen appears.</p> <p>The Station Statistics screen appears.</p> <p>This resets the GSC station statistics.</p>

Detailed Port Statistics

What You See in Page 1

Figures 7 and 8 show pages 1 and 2 of the Detailed Port Statistics for GSC.

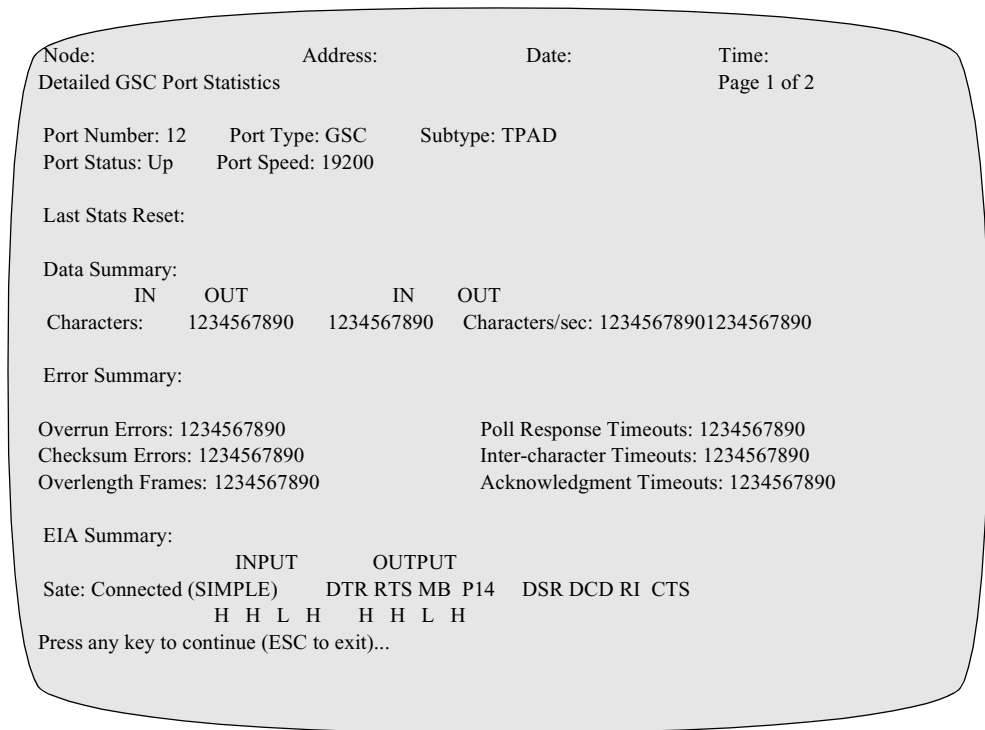


Figure 7. GSC Port Statistics - Page 1

Screen Terms

This table describes the screen terms as shown in Figure 7.

Term	Description
Port Status	One of the following values: <ul style="list-style-type: none"> • Disabled - Port is disabled. • Up - At least one station on the port is not down or disabled. • Down - All stations on the port are either down or disabled.
Characters	Number of characters received (IN) and transmitted (OUT) on the line. Data and control characters are included.
Characters/sec	Number of characters per second received (IN) and transmitted (OUT) on the line. Data and control characters are included.
Overrun Errors	The number of overrun errors detected on the line.
Checksum Errors	The number of frames received with checksum errors.
Overlength Errors	The number of frames received that were over length.
Poll Response Timeouts	The number of times a poll was issued without response from the terminal (TPAD only).
Inter-character Timeouts	The number of receive frames aborted because of inter-character timeouts.
Acknowledgment Timeouts	The number of transmitted frames that were not acknowledged.

What You See in Page 2

Figure 8 shows an example of screen terms in page 2 of the GSC Port Statistics.

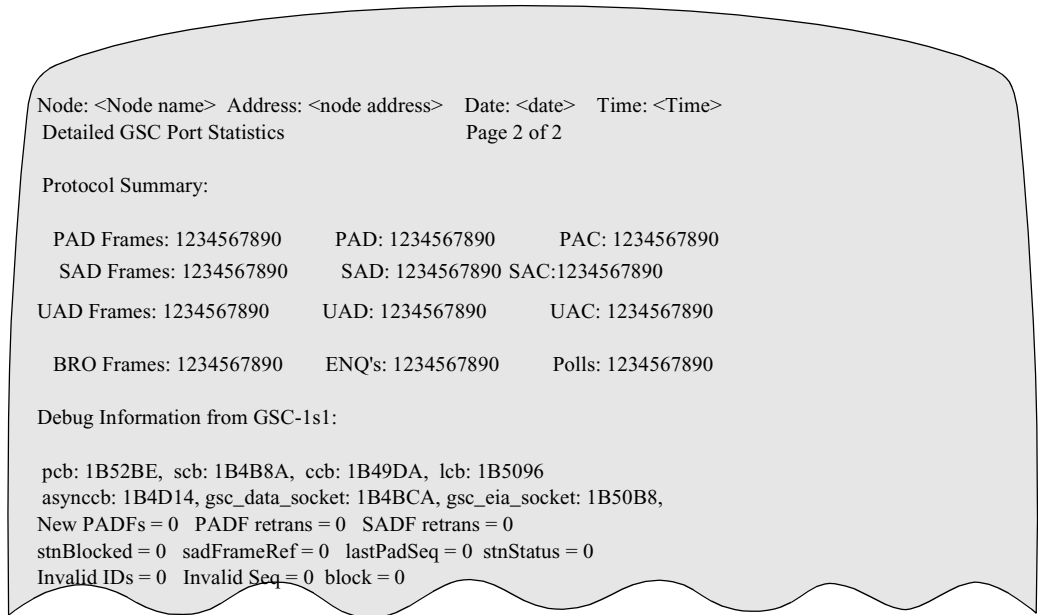


Figure 8. GSC Port Statistics - Page 2

Screen Terms

This table describes screen terms shown in Figure 8.

Term	Description
PAD Frames	The number of PAD frames received (TPAD) or transmitted (HPAD).
PAD	The number of PAD characters received (TPAD) or transmitted (HPAD).
PAC	The number of PAC characters received (TPAD) or transmitted (HPAD).
SAD Frames	The number of SAD frames transmitted (TPAD) or received (HPAD).
SAD	The number of SAD frames transmitted (TPAD) or received (HPAD).
SAC	The number of SAC characters transmitted (TPAD) or received (HPAD).
UAD Frames	The number of UAD frames transmitted (TPAD) or received (HPAD).

Term	Description
UAD	The number of UAD characters transmitted (TPAD) or received (HPAD).
UAC	The number of UAC characters transmitted (TPAD) or received (HPAD).
BRO Frames	The number of BRO frames transmitted (TPAD) or received (HPAD).
ENQ's	The number of ENQ characters received (TPAD) or transmitted (HPAD).
Polls	The number of polls transmitted (TPAD) or received (HPAD).

Detailed GSC Station Statistics

Introduction

There are three screens for the GSC Station Statistics.

What You See in Page 1

Figure 9 shows Page 1 of the GSC Station statistics.

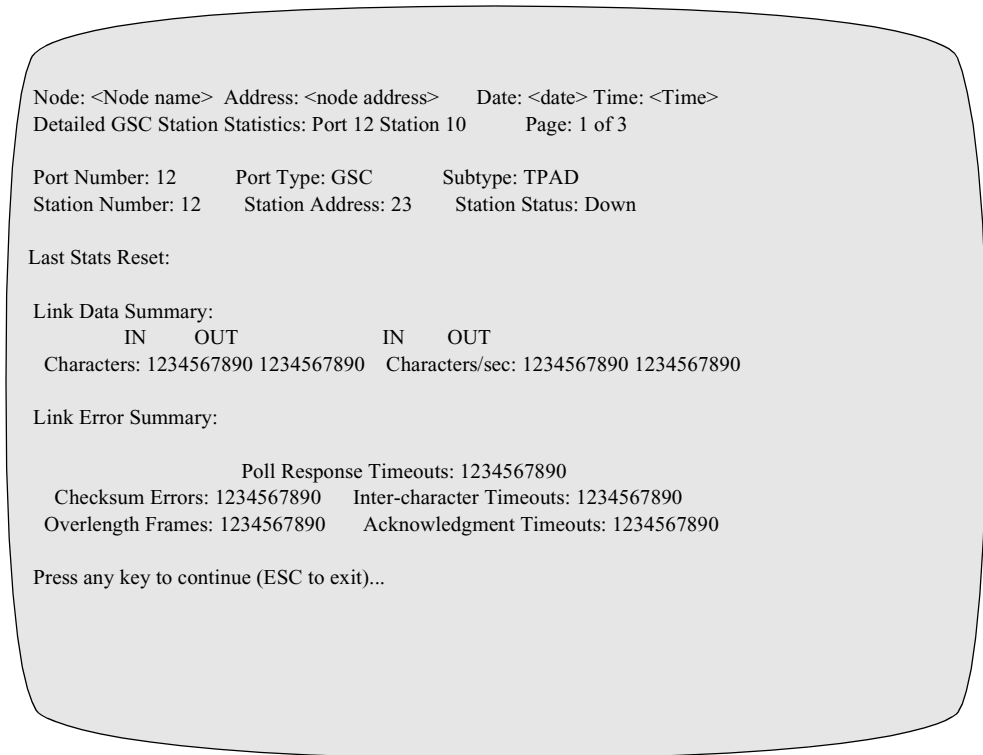


Figure 9. GSC Station Statistics - Page 1

Screen Terms

This table describes the screen terms shown in Figure 9.

Term	Description
Station Status	Displays one of the following values: <ul style="list-style-type: none"> • Disabled - Station is disabled. • Up - Station is up. • Down - Station is down.
Characters	Number of characters received (IN) and transmitted (OUT) on the line. Data and control characters are included.
Characters/sec	Number of characters per second received (IN) and transmitted (OUT) on the line. Data and control characters are included.
Checksum Errors	The number of frames received with checksum errors.

Term	Description (continued)
Overlength Frames	The number of frames received that are over length.
Poll Response Timeouts	The number of times a poll is issued without response from the terminal (TPAD only).
Inter-character Timeouts	The number of receive frames aborted because of inter-character timeouts.
Acknowledgment Timeouts	The number of transmitted frames that are not acknowledged.

What You See in Page 2

Figure 10 shows Page 2 of the GSC Station Statistics.

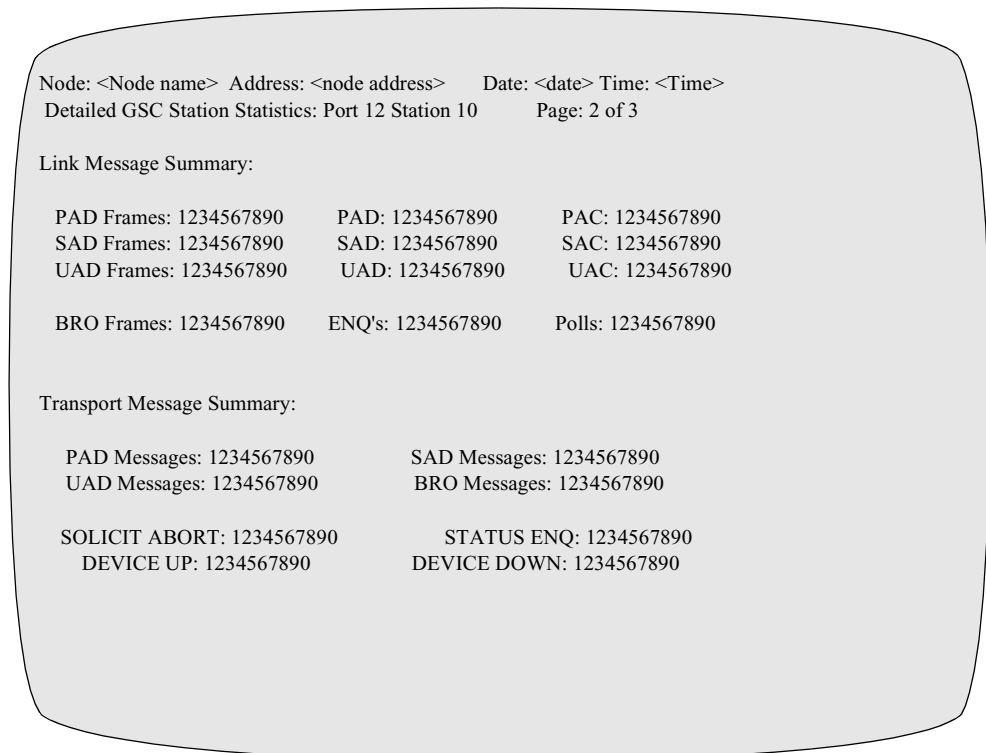


Figure 10. GSC Station Statistics - Page 2

Screen Terms

This table describes the screen terms shown in Figure 10.

Term	Description
PAD Frames	The number of PAD frames received (TPAD) or transmitted (HPAD).
PAD	The number of PAD characters received (TPAD) or transmitted (HPAD).
PAC	The number of PAC characters received (TPAD) or transmitted (HPAD).
SAD Frames	The number of SAD frames transmitted (TPAD) or received (HPAD).
SAD	The number of SAD characters transmitted (TPAD) or received (HPAD).
SAC	The number of SAC characters transmitted (TPAD) or received (HPAD).
UAD Frames	The number of UAD frames transmitted (TPAD) or received (HPAD).
UAD	The number of UAD characters transmitted (TPAD) or received (HPAD).
UAC	The number of UAC characters transmitted (TPAD) or received (HPAD).
BRO Frames	The number of BRO frames transmitted (TPAD) or received (HPAD).
ENQ's	The number of ENQ characters received (TPAD) or transmitted (HPAD).
Polls	The number of polls transmitted (TPAD) or received (HPAD).
PAD Messages	The number of PAD messages received (HPAD) or sent (TPAD).
SAD Messages	The number of SAD messages received (TPAD) or sent (HPAD).
UAD Messages	The number of UAD messages received (TPAD) or sent (HPAD).
BRO Messages	The number of BRO messages received (TPAD) or sent (HPAD).
SOLICIT ABORT	The number of SOLICIT ABORT messages received (TPAD) or sent (HPAD).
STATUS ENQ	The number of STATUS ENQ messages received (HPAD) or sent (TPAD).
DEVICE UP	The number of DEVICE UP messages received (TPAD) or sent (HPAD).
DEVICE DOWN	The number of DEVICE DOWN messages received (TPAD) or sent (HPAD).

What You See in Page 3

Figure 11 shows an example of Page 3 of the GSC Station Statistics.

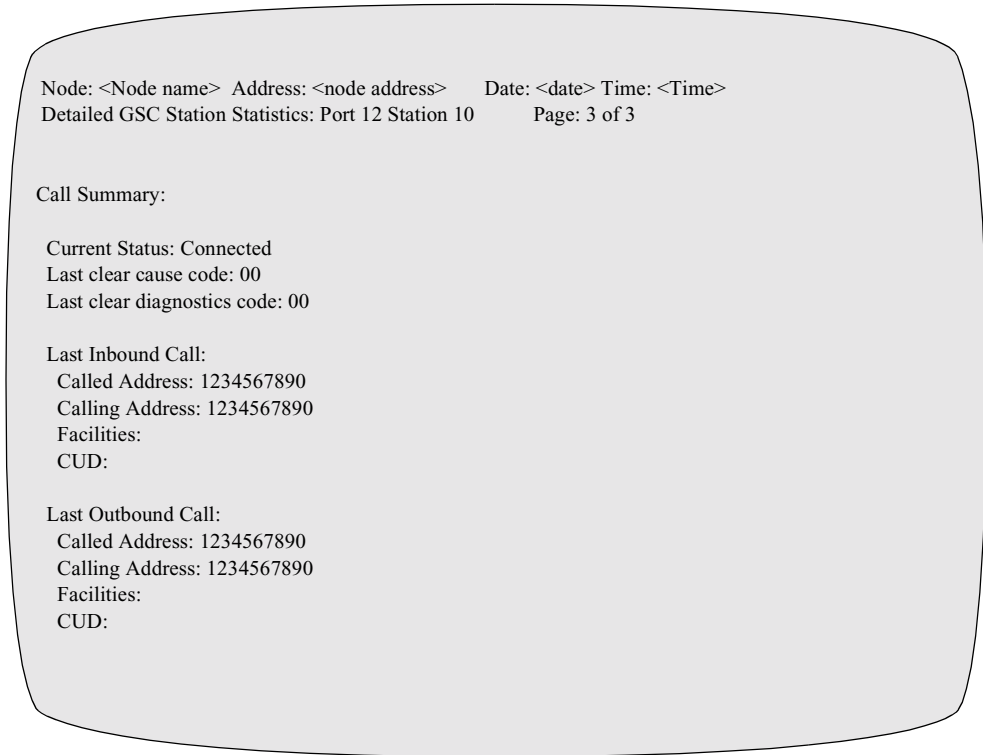


Figure 11. GSC Station Statistics - Page 3

Screen Terms

This table describes the screen terms shown in Figure 11.

Term	Description
Current Status	<ul style="list-style-type: none"> • Disconnected: There is no call in place. • Calling: A call request has been issued and the call accept or clear has not been received. • Connected: A call is in place.
Last Inbound Call	<ul style="list-style-type: none"> • Called Address: 1234567890 • Calling Address: 1234567890
Last Outbound Call	<ul style="list-style-type: none"> • Called Address: 1234567890 • Calling Address: 1234567890
Debug Information	<ul style="list-style-type: none"> • Shows debug information for port.

Alarms and Reports

Introduction

This section describes the alarms and reports generated by the X.42 protocol option.

List of Alarms

X.42 generates the following alarms.

Alarm	Priority	Description	User Action
PORT BOOT COMPLETE	HIGH	Indicates that the port boot has been performed successfully	None.
PORT BOOT FAILURE - <cause string>	HIGH	Indicates that the port boot operation has failed; the reason for the failure is specified in the cause string: “No Port Record.” - a record for this port does not exist in configuration memory. “Port type changed.” - the port record for this port in configuration memory is not a GSC port record. “Number of stations changed.” - the number of configured stations has been changed. “Port is disabled.” - the port is disabled. “Port subtype change requires a node boot.” - the port subtype has been changed.	Configure and store a record for this port and boot the port. A node boot is required to change a port type. A node boot is required to change the number of stations. Enable the port and then boot the port. A node boot is required to change the port subtype.
PORT DISABLED	HIGH	Indicates that the port has been disabled.	None.
PORT DISABLE FAILURE - Port is already disabled.	HIGH	Indicates that the port disable operation has failed because the port is already disabled.	None.
PORT ENABLED	HIGH	Indicates that the port has been enabled.	None.
PORT ENABLE FAILURE - Port is already enabled.	HIGH	Indicates that the port enable operation has failed because the port is already enabled	None.
STATION BOOT COMPLETE	HIGH	Indicates that the station boot has been performed successfully.	None.

Alarm (continued)	Priority	Description	User Action
STATION BOOT FAILURE - <cause string>	HIGH	<p>Indicates that the station boot operation has failed; the reason for the failure is specified in the cause string:</p> <p>“No Port Record.” - a record for this port does not exist in configuration memory.</p> <p>“No Station Record.” - a record for this station does not exist in configuration memory.</p> <p>“Port type changed.” - the port record for this port in configuration memory is not a GSC port record.</p> <p>“Station is not initialized” - the station being booted was not configured when the node was last booted.</p> <p>“Number of stations changed.” - the number of configured stations has been changed.</p> <p>“Port is disabled.” - the port is disabled.</p> <p>“Station is disabled.” - the station is disabled.</p> <p>“Port subtype change requires a node boot.” - the port subtype has been changed.</p>	<p>Configure and store a record for this port and boot the port.</p> <p>Configure and store a record for this station and boot the station.</p> <p>A node boot is required to change a port type.</p> <p>A node boot is required to change the number of stations.</p> <p>A node boot is required to change the number of stations.</p> <p>Enable the port and then boot the port.</p> <p>Enable the station and then boot the station.</p> <p>A node boot is required to change the port subtype.</p>
STATION DISABLED	HIGH	Indicates the station has been disabled.	None.

Alarms and Reports

Alarm (continued)	Priority	Description	User Action
STATION DISABLE FAILURE - <cause string>	HIGH	Indicates that the station disable operation has failed; the reason for the failure is specified in the cause string: “Station is not initialized” - the station being booted was not configured when the node was last booted “Station is already disabled” - the station is already disabled.	A node boot is required to change the number of stations. None.
STATION ENABLED	HIGH	Indicates the station has been enabled.	
STATION ENABLE FAILURE - <cause string>	HIGH	Indicates that the station enable operation has failed; the reason for the failure is specified in the cause string: “Station is not initialized” - the station being booted was not configured when the node was last booted. “Station is already enabled” - the station is already enabled.	A node boot is required to change the number of stations. None.
PORT STATUS WARNING - PORT DISABLED	LOW	This report warns you that the port is disabled.	None.
INTER CHARACTER TIMEOUT	LOW	A received frame was discarded due to inter-character timeout.	Replace the attached equipment or increase the configured inter-character timeout.
CHECKSUM ERROR	LOW	A received frame was discarded due to checksum error.	None.
FRAME TOO LONG	LOW	A received frame was discarded because it exceeded 1024 bytes in length.	None.
UNESCAPED CHAR FOUND	LOW	A received frame was discarded because an unescaped control character was detected in the frame before the end of the frame.	None.
UNEXPECTED FRAME	LOW	A received frame was discarded because the wrong frame type was received.	None.

Alarm (continued)	Priority	Description	User Action
FRAME DROPPED AFTER MAX RETRY	MED	A frame has been discarded after attempting to deliver it the configured maximum number of times.	None.
DEVICE NOT RESPONDING, PREVIOUS STATE-(s), CURRENT STATE-(s) ■ Note (s) denotes a string.	MED	The attached terminal is not responding to polls. PREVIOUS STATE and CURRENT STATE are the states before and after this alarm displays.	Verify that the terminal is powered on and is connected.
MESSAGES LOST, EXP SEQ (d), IN SEQ (d) ■ Note (d) denotes decimals. EXP SEQ = expected sequence IN SEQ = received sequence	HIGH	A message received from a remote PAD is out of sequence.	None.
DEVICE ACTIVE, PREVIOUS STATE -(s), CURRENT STATE - (s) ■ Note (s) denotes a string	MED	The device is active. PREVIOUS STATE and CURRENT STATE are the states before and after this alarm displays.	None.
LINK UP	HIGH	At least one terminal on a port is responding to polls.	None.
INVALID DEVICE RESPONDING	MED	The wrong device has responded to a poll.	None.
SOLICIT ABORT	HIGH	A station was polled when it was expecting a SAD-Frame.	None.
LINK DOWN	HIGH	All terminals on a port have stopped responding to polls	None.
AUTOCALL RETRIES EXHAUSTED	HIGH	The station has failed to complete an X.25 call in the configured number of attempts.	Check that the destination is available. Enable the station.
CAN NOT FORWARD - STATION DISABLED	MED	Generated by the HPAD when a frame is received for a station that is disabled.	Enable the station.
INACTIVIY TIME OUT	MED	The X.25 call for a station has been cleared because of inactivity.	None.
INBOUND LINK BLOCKED	LOW	Generated by the TPAD when it is flow controlled by the X.25 network.	None.

Alarms and Reports

Alarm (continued)	Priority	Description	User Action
INBOUND LINK UNBLOCKED	LOW	Generated by the TPAD when the flow control condition from the X.25 network is removed.	None.
OUTBOUND LINK BLOCKED	LOW	Generated by the HPAD when it is flow controlled by the X.25 network.	None.
OUTBOUND LINK UNBLOCKED	LOW	Generated by the HPAD when the flow control condition from the X.25 network is removed.	None.

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