Vanguard Applications Ware
IP and LAN Feature Protocols

Ethernet Basics Guide

Notice

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Part No. T0109, Rev L
Publication Code: TK
First Printing: November 1998

Manual is current for Release 7.2 of Vanguard Applications Ware.

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Overview

Introduction

Ethernet is a common implementation of LAN topology where stations are connected using a bus topology. Stations access the Ethernet using Carrier Sense with Multiple Access and Collision Detection (CSMA/CD).

This guide explains how to configure Vanguard ports for Ethernet operations.

In This Manual

Ethernet LAN

Introduction

This section provides a brief description of how Vanguard products use Ethernet.

Vanguard Support for Ethernet

Vanguard Ethernet functionality complies with the IEEE 802.3 specifications and provides Transparent Bridging to transport many different protocols over the Wide Area Network (WAN) to remote destinations. Supported protocols include:

- Novell Netware
- DECnet
- Banyan Vines

Example of Basic Ethernet Frame Format

Figure 1 shows the basic frame formats for Ethernet frames supported by Vanguard products.

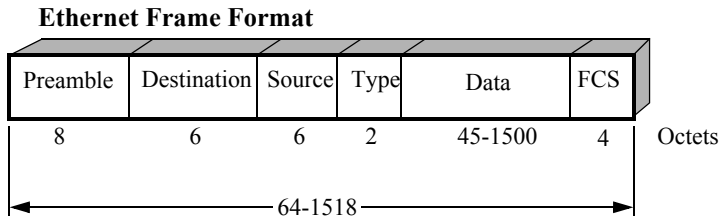

Figure 1. Frame Format for Ethernet Frames

802.3 MAC Frame Format

Figure 2 shows the supported 802.3 Ethernet MAC Frame format.

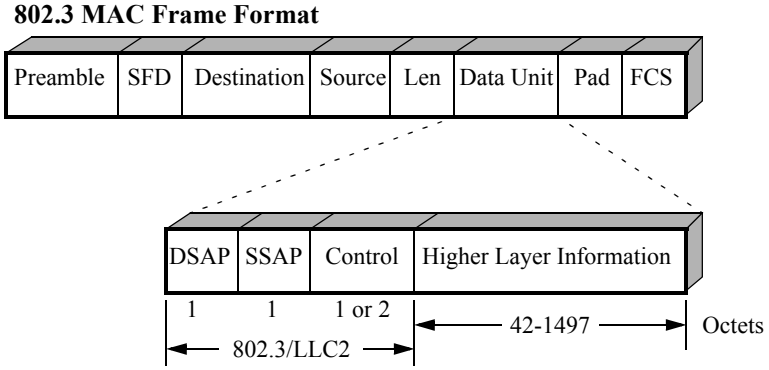

Figure 2. 802.3 Ethernet MAC Frame Format Example

Auto Negotiation

Auto Negotiation is an Ethernet procedure by which two connecting devices can determine common transmission parameters such as speed and duplex mode.

The table below is to provide guidance and assist the user in configuration. This table represents the Vanguard implementation and matches the behavior defined in IEEE 802.3, 1998 specification for 10/100 Base T, with half and full duplex capabilities.

1000 Base T Auto negotiation is specified in IEEE 802.3ab

This table assumes both the Vanguard router and the connecting device supports 10 and 100 meg speeds and both full and half duplex operations.

Vanguard Routers	*Connecting Device*	*Resulting behavior*	*Comment*
Auto Negotiate	Auto Negotiate	Both devices work at 100 meg and full duplex mode	Good match
Auto Negotiate	Fixed configuration at 10meg, **half duplex**	Both devices work at 10 meg and **half duplex**	Good match
Auto Negotiate	Fixed configuration at 10meg, **full duplex**	Vanguard Router works at 10 meg and **half duplex**	Bad match (not recommended)
Auto Negotiate	Fixed configuration at 100meg, **half duplex**	Vanguard will be set for 100 meg **half duplex**	Good match
Auto Negotiate	Fixed configuration at 100meg, **full duplex**	Vanguard will be set for 100 meg **half duplex**	Bad match (not recommended)
Fixed configuration at 10meg, **half duplex**	Auto Negotiate	Both devices work at 10 meg and **half duplex**	Good match
Fixed configuration at 10meg, **full duplex**	Auto Negotiate	Connecting device works at 10 meg and **half duplex**	Bad match (not recommended)
Fixed configuration at 100meg, **half duplex**	Auto Negotiate	Connecting device works at 100 meg and **half duplex**	Good match
Fixed configuration at 100meg, **full duplex**	Auto Negotiate	Connecting device works at 100 meg and **half duplex**	Bad match (not recommended)
Fixed configuration	Fixed configuration	Both devices work as configured	Good Match Assumming matching configurations

Best Practice

As the table shows certain mismatched combinations can work. Nonetheless, the best practice is to configure both connecting devices to match, e.g., Auto-to-Auto or fixed-to-fixed.

802.1Q Ethernet Frame Format

Figure 3 shows the supported 802.1Q Ethernet Frame format.

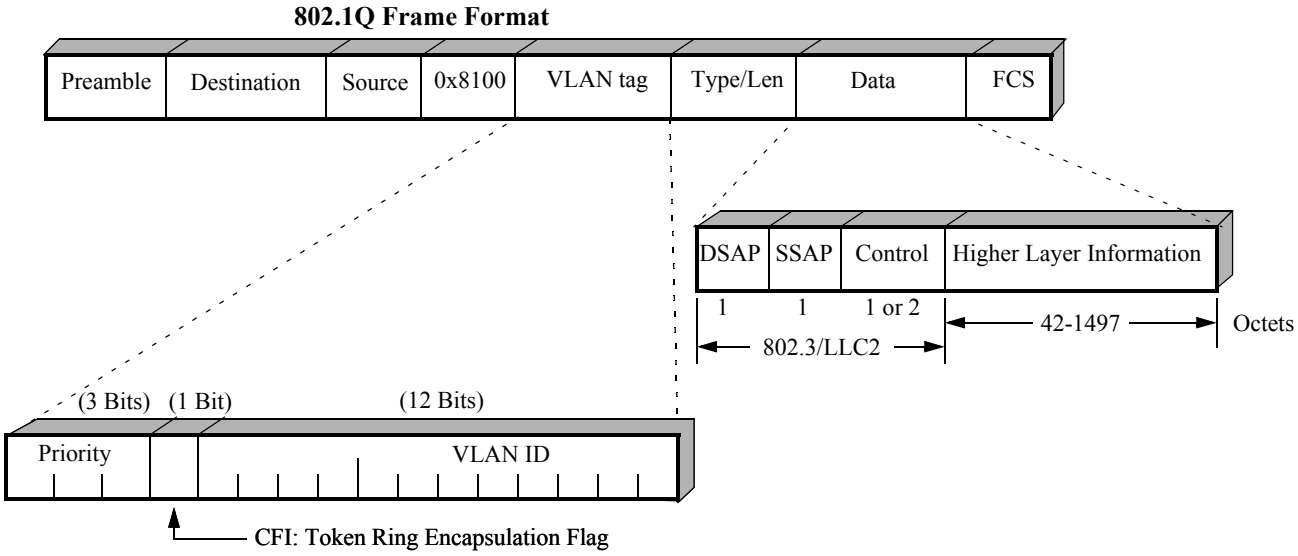

Figure 3. 802.1Q Ethernet Frame Format Example

Example of Ethernet Bridge Operation

Figure 4 shows an example of two Ethernet LANs connected across a WAN using two Vanguard products as bridges. The example shows a Frame Relay WAN application, but you can also bridge across an X.25 WAN.

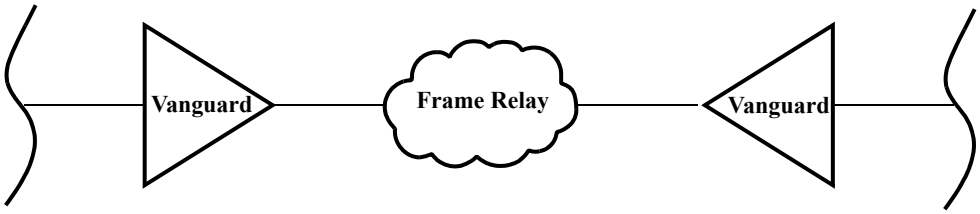

Figure 4. Ethernet Bridge Example

Example of Ethernet Switching

Figure 5 shows a typical example of Ethernet Switching. In this illustration, Port 24 is a member of both VLAN-1 and VLAN-2. Port 25 is a member of VLAN-1 and VLAN-2. Because Station A and Station C are members of VLAN-1, they are able to transmit and receive MAC Frames between each other through the 3480 Ethernet Switch. Similarly, since Station B and Station D are members of VLAN-2, they can communicate via MAC Frames through the 3480 Ethernet Switch.

In this example, the following ports of the 3480 are configured as follows:

- Port 23: ROUTER_ONLY
- Port 24: SWITCH_TO_ROUTER_UPLINK
- Port 25: SWITCH_PORT
- Port 26: NOT USED
- Port 27: ROUTER_ONLY

Refer to page -13 for more information on the Switch Capabilities Parameter and the Switch to Router Uplink Port Parameter.

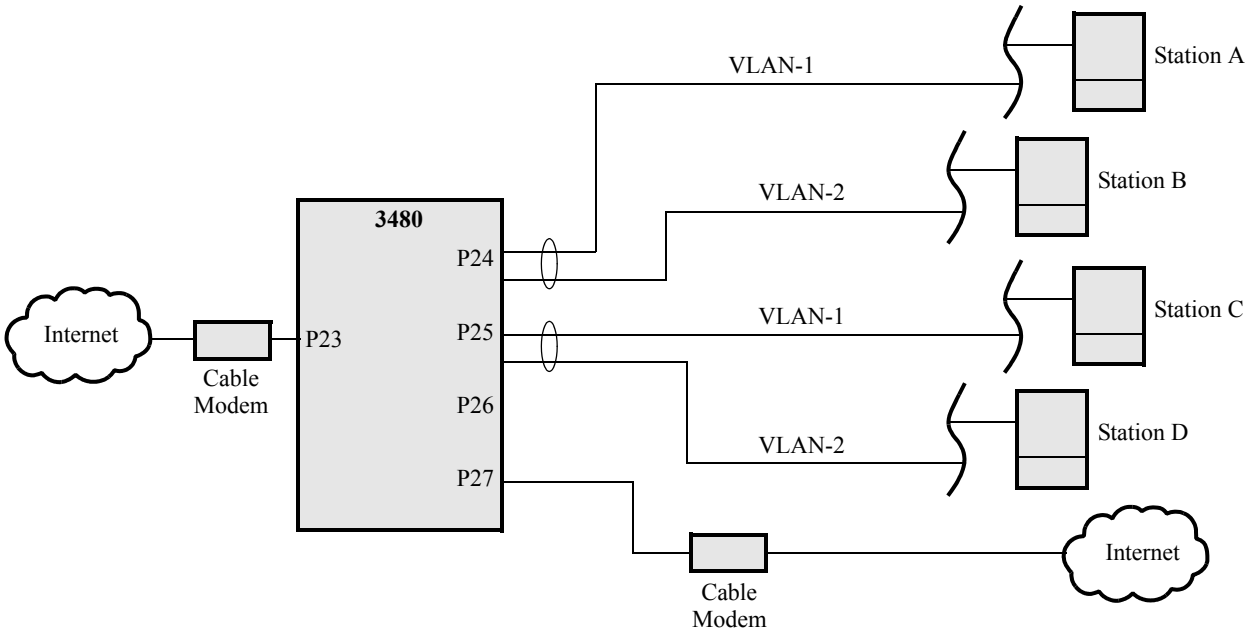

Figure 5. Ethernet Switching Using the 3480 Ethernet Switch Example

Multiple LAN Ethernet

What Is It?

The Multiple LAN Ethernet feature lets your Vanguard 3460 nodes perform bridging and routing of LAN traffic across multiple LANs.

Before Multiple Ethernet LAN, the Vanguard 3460 supported only one Ethernet LAN port for remote bridging and routing of LAN traffic. However, with the Multiple Ethernet LAN feature, you can bridge and route LAN traffic locally and remotely using up to two LAN ports on each Vanguard 3460 node, as shown in Figure 6.

You should configure the first LAN card in your device as Bridge Link Number 1 or Router Interface Number 1. Failure to do so may cause your device to perform continuous resets when you power up the device after reinstalling an earlier release of operating software.

Sample Application

Figure 6 shows a sample application for the Multiple Ethernet LAN feature.

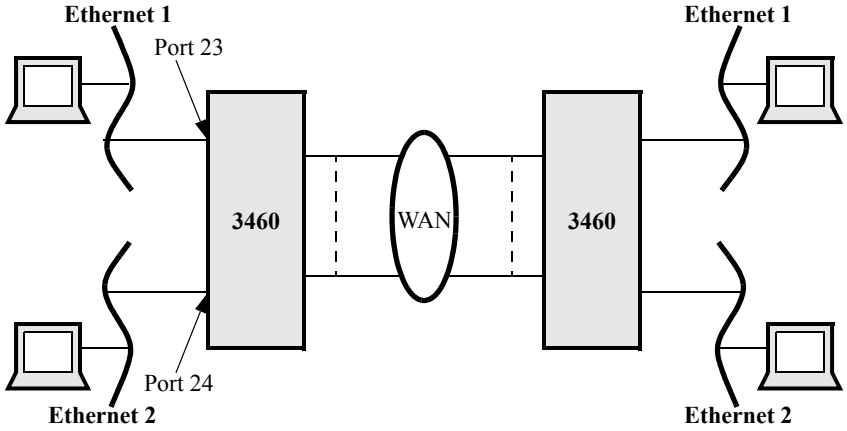

Figure 6. Example of Multiple Ethernet LAN

Limitations

The Vanguard 3460 supports only two Ethernet LAN ports at one time. If you configure more than two Ethernet ports on a Vanguard 3460, the system initializes only the first two ports you configure during system powerup.

Bridging

In a transparent Bridging environment, if you connect both Ethernet LAN ports to the same Ethernet segment, you must enable Spanning Tree. Failure to enable Spanning Tree in this configuration is a violation of the rules of transparent bridging.

Routing

In IP/IPX or AppleTalk routing environments, do not connect both Ethernet LAN ports to the same Ethernet segment with identical routing decision values. This is not supported.

Configure Multiple Ethernet LAN

Follow these steps to configure your device for Multiple Ethernet LAN.

Step	*Action*	*Result/Description*
1	Make a local CTP connection to a Vanguard 3460 node.	CTP is physically connected to the device you are configuring.
2	From the CTP Main menu, select **Configure->Port**.	The Port record appears.
3	Configure the Port record as you normally do for an Ethernet LAN connection.	The Bridge Link Number and Router Interface parameters appear in this record.
4	At the Bridge Link Number: parameter, type in a number **1 to 4** to identify the bridge link, and press Return. **Note** The default value for this parameter is 1.	This matches this port configuration to a specific bridge link number within the bridging configuration. If the bridge link you select is already used, a warning message appears, but your input is retained in the CMEM.
5	At the Router Interface Number: parameter, type in a number **1 to 4** to identify the router interface. **Note** The default value for this parameter is 1.	This matches this port configuration to a router link number within the router configuration. If the router interface number you select is already used, a warning message appears, but your input is retained in the CMEM.
6	Type **;** and press Return to save the record.	This saves the record.
7	Perform a Node boot from the Boot menu.	This implements your changes, but if you want the new bridge link to be active, you must configure the Bridge Link record under the Configure Bridge menu. Go to the following step. By default, the bridge link is not activated until you activate it.
8	To activate the bridge link, select **Configure Bridge->Bridge Link Parameters** from the CTP Main menu.	The Bridge Link Parameters menu appears.
9	Type **;** and press Return.	The record is saved.
10	Perform a Bridge Link boot from the Boot menu.	This enables the bridge link.

Configuration Example

Figure 7 is a sample configuration showing the critical parameters for configuring an RFC877 LAN Connection between two Vanguard 3460 nodes.

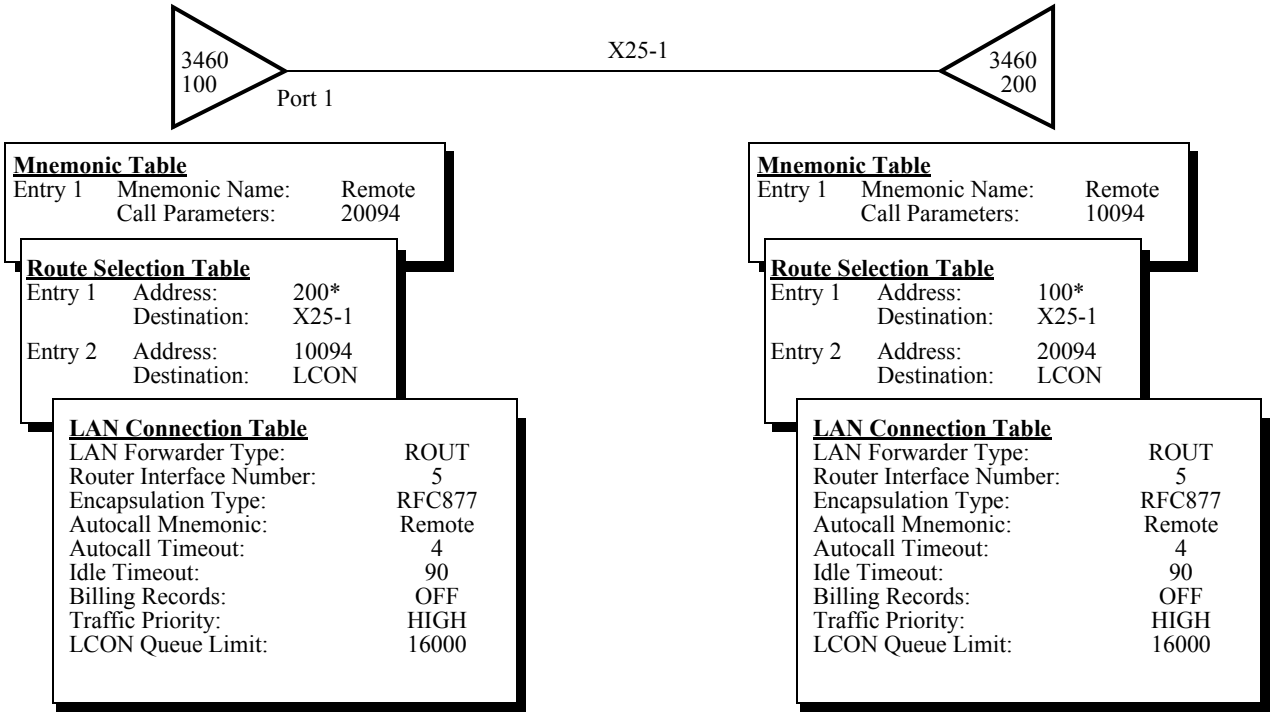

Figure 7. RFC877 LAN Connection Between Two Vanguard 3460 Nodes

Ethernet Output Rate Limit

What is it?

Rate Limit is the ability to choke down the transmit flow out the routers ethernet interface to a preconfigured value.

Vanguard network products introduced the "Rate Limit" feature in software release 7.1S100 service pack and the 7.2R00A general release. The new "Rate Limit" parameter is configured in the Ethernet port configuration.

Why do we need it?

The example shown in Figure 8 below illustrates a typical application of two private networks with access to the internet via cable modems. As shown, voice traffic is also traversing the internet via a tunnel between the two private networks. The cable modem typically provides for an upstream capacity of approximately 1meg. While the router can theoretically transmit out onto the connecting ethernet at either 10 or 100 Megabits.

The problem is that even with the Router providing QOS prioritization of the RTP (voice) data, the router can potentially feed the cable modem in excess of the 1meg available upstream bandwidth. This can cause the cable modem to drop packets indiscriminately. RTP (voice) traffic will be adversely affected under these conditions.

The rate limit setting allows for the router to throttle the traffic outbound onto the ethernet (towards the internet) thereby feeding the cable modem at the rate not exceeding its upstream capacity. This provides for an effective operation of the QOS prioritization scheme.

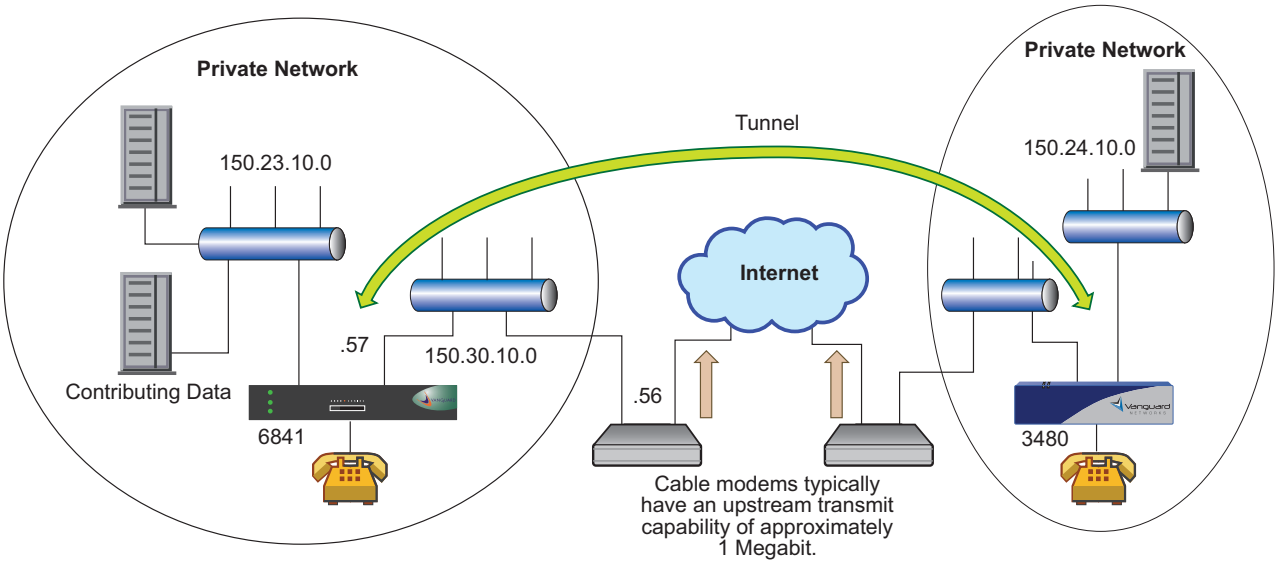

Figure 8. Typical Private Network Application with Cable Modems

Configuration

Introduction

This section describes the Ethernet Port Parameters

Figure 9 shows the location of the Ethernet Port Record and lists the parameters.

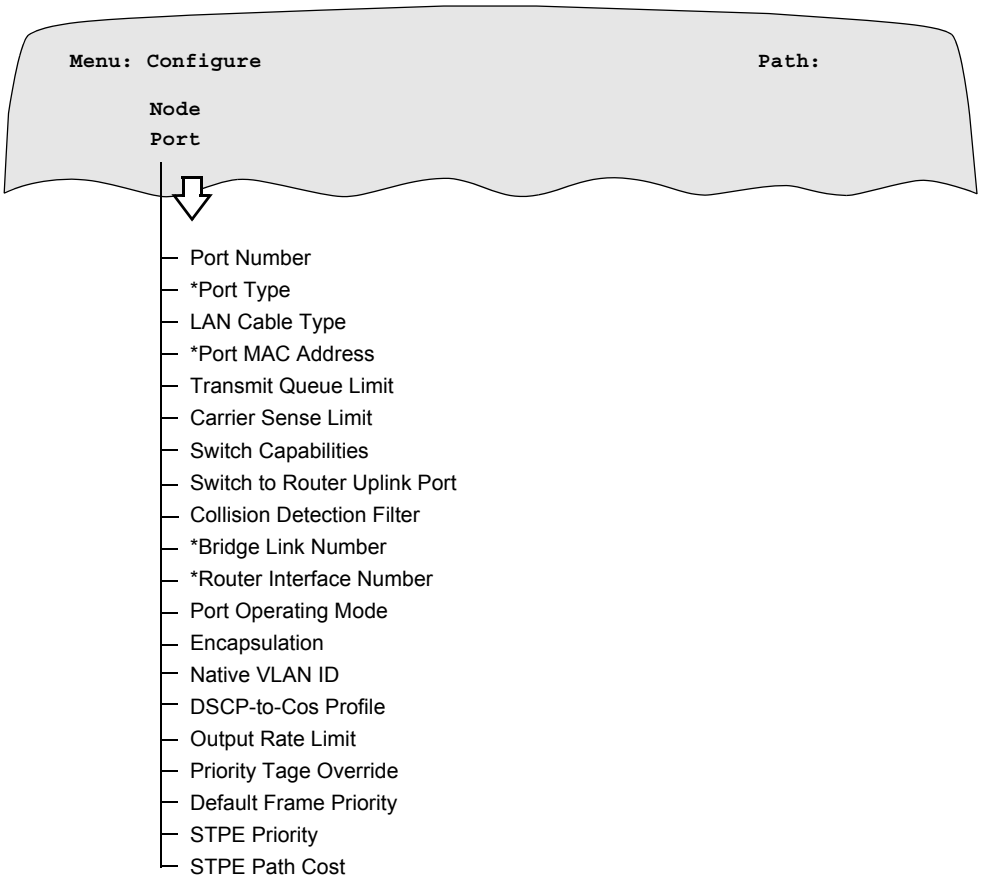

Figure 9. Ethernet Port Record

Parameters

These parameters make up the Ethernet LAN Port Record.

Note

An asterisk (*) in the parameter name indicates that a node boot is required for changes to take effect.

Port Number

Range:	Dependent on hardware platform
Default:	1
Description:	Represents the physical port number. **Note** You must perform a node boot for changes to this parameter to take effect.

*Port Type

Range:	NULL, ETH
Default:	ETH
Description:	Specifies the port type: NULL: Reserves the port for future use and does not require that you set any parameters. ETH: Specifies this port as an Ethernet port. **Note** You must perform a node boot for changes to this parameter to take effect.

LAN Cable Type

Range:	AUI, UTP
Default:	AUI
Description:	Specifies the type of cable and connector to use for the LAN interface: • UTP: Unshielded Twisted Pair (RJ-45) • AUI: Attachment Unit Interface (DB-15) **Note** You must perform a node boot for changes to this parameter to take effect.

*Port MAC Address

Range:	00-00-00-00-00-00 to FE-FF-FF-FF-FF-FF
Default:	00-00-00-00-00-00
Description:	Specifies the MAC address of the LAN port. If you enter 00-00-00-00-00-00, the Burned In Address (BIA) of the LAN hardware (if present) is used. **Note** You must perform a node boot for changes to this parameter to take effect.

Transmit Queue Limit

Range:	20 to 500
Default:	50
Description:	Specifies the number of frames that can be queued to the LAN transmitter before any frame is dropped. In multiple Ethernet systems, you may need to set this to a high value. **Note** You must perform a node boot for changes to this parameter to take effect.

Switch Capabilities

Range:	ROUTER_ONLY, SWITCH_TO_ROUTER_UPLINK, SWITCH_PORT
Default:	ROUTER ONLY
Description:	Specifies the capabilities of Ethernet Ports 24 through 27 of the 3480 and selects the mode of operation for the Ethernet Switch. ROUTER_ONLY This setting creates an Ethernet port with direct access to layer 3 via the associated Router Interface and isolates this port from any switch functionality. SWITCH_TO_ROUTER_UPLINK This setting creates an Ethernet port that is attached to the internal Ethernet switch and provides access to layer 3 of the router via the Router Interface specified below. This port and its associated Switch Ports are automatically assigned the VLAN ID(s) of the Router Interface. SWITCH_PORT This setting creates an Ethernet port that is attached to the internal Ethernet switch. Frames received on this port are forwarded to layer 3 via the associated uplink port. This port's VLAN ID is automatically assigned with the VLAN ID of the associated uplink port's Router Interface. **Note** You must perform a node boot for changes to this parameter to take effect.

Switch to Router Uplink Port

Range:	24 to 27
Default:	24
Description:	Specifies the uplink port associated with an Ethernet Port with a Switch Capabilities Field of SWITCH_PORT. The uplink port is used by this port to get access to layer 3. The port entered here must have its Switch Capabilities configured as SWITCH_TO_ROUTER_UPLINK

Carrier Sense Filter

Range:	0 to 7
Default:	0
Description:	Specifies the width required of the carrier sense signal, in bit times, before it is recognized as active. Carrier sense deactivation is recognized immediately. This function is useful in noisy cable environments. **Note** You must perform a node boot for changes to this parameter to take effect.

Collision Detect Filter

Range:	0 to 7
Default:	0
Description:	Specifies the width required of the collision detection signal, in bit times, before the network recognizes that a collision has occurred. **Note** You must perform a node boot for changes to this parameter to take effect.

*Bridge Link Number

Range:	1 to 4
Default:	1
Description:	Specifies the number of the Bridge Link associated with this LAN port. This parameter is not supported for the 3480 ports 24 through 27. **Note** Make sure that the corresponding Bridge Link Record is configured. **Note** You must perform a node boot for changes to this parameter to take effect.

*Router Interface Number

Range:	1 to 5
Default:	1
Description:	Specifies the Router Interface Number associated with this LAN port. For 3480 ports 24 through 27 that are configured with a Switch Capabilities of SWITCH_PORT, this parameter is not used. The Router Interface Number of the Switch To Router Uplink Port determines the Router Interface of a port with Switch Capabilities set to SWITCH_PORT. **Note** You must perform a node boot for changes to this parameter to take effect.

Port Operating Mode

Range:	AUTO, 1000FD, 100FD, 100HD, 10FD, 10HD
Default:	AUTO
Description:	Specifies whether this LAN port runs in 1000Mbit Full-Duplex, 100Mbit Full-Duplex, 100Mbit Half-Duplex, 10Mbit Full-Duplex, 10Mbit Half-Duplex, or Auto-Negotiation mode. **Note** Vanguard 7300 Series - Release 6.4 and greater software supports 1000FD on ports 101 and 103 using the IBM750FX CPU card. ETH1 is port 101, ETH2 is port 103. Port 102 is the COM port.

802.1Q Encapsulation

Range:	None, 802.1Q
Default:	None
Description:	This parameter selects the Ethernet frame encapsulation methods supported on this port. The possible options are: None - Standard Ethernet frame format is supported. 802.1Q - IEEE 802.1Q format Ethernet frame formats are supported.
Boot Type:	Port

Native VLAN ID

Range:	1 to 4093
Default:	1
Description:	This parameter configures the native VLAN ID for this port. Untagged frames received on this port will be assigned to the native VLAN. No frame will be transmitted with the native VLAN ID in the VLAN header. For the 3480, ports 24 though 27 that are configured with a Switch Capabilities of SWITCH_PORT must use the same native VLAN ID as their uplink port. For 3480 ports 24 through 27 that are configured with a Switch Capabilities of SWITCH_TO_ROUTER_UPLINK, the Native VLAN ID must match the VLAN ID configured in the corresponding Router Interface. **Note** For the 3480 ports 24 through 27, an Ethernet Switch Boot is required after the Ethernet Port Boot for this parameter to take effect.
Boot Type:	Port

DSCP-to-Cos Profile

Range:	0 to 4
Default:	0
Description:	This parameter selects the DSCP-to-Cos mapping profile to use when setting CoS values in outgoing frames based on the DSCP field in outgoing packets. Values 1 through 4 select the associated profile. A setting of 0 means no profile is used and that CoS values are not based on DSCP values. The DSCP to COS Profile does not apply to 3480 ports 24 through 27 that are configured with a Switch Capabilities of SWITCH_PORT. These are affected by the DSCP to COS Profile of the Switch to Router Uplink Port.
Boot Type:	Port

Output Rate Limit

Range:	0 to 12000
Default:	0
Description:	This parameter specifies, in (KBPS), the average maximum throughput at which the Ethernet port is allowed to transmit data. This Output Rate Limit Parameter is set in cases where the neighboring device cannot receive and forward the data that it is receiving from this Ethernet Port's Transmitter. For instance, if this Ethernet Port a 100MBPS port, and the Output Rate Limit Parameter is 12000KBPS, the 100MBPS Ethernet Port is not allowed to transmit at an average maximum rate exceeding 12000KBPS. However, if this Ethernet port is a 10MBPS port, and the Output Rate Limit Parameter is 12000KBPS, the Ethernet Port is limited by the physical Ethernet rate (10MBPS). If the Output Rate Limit value is zero, the Output Transmit Rate limit is not imposed and the Ethernet Transmitter is allowed to transmit up to the Physical Ethernet Rate. The Output Rate Limit is specified in KBPS (kilobytes/second). The Output Rate Limit Parameter is available on the 3480 for ports 24 through 27 when their Switch Capabilities parameter is configured as ROUTER_ONLY.

Priority Tag Override

Range:	NONE, VLAN
Default:	NONE
Description:	This parameter is used to override the VLAN priority tag field for ingressing frames on the 3480 ports 24 through 27 with a Switch Capabilities setting of SWITCH_PORT or SWITCH_TO_ROUTER _UPLINK. NONE- The priority tag field is not modified for ingressing frames. VLAN- The priority tag field of ingressing frames is set to the priority field configured for this VLAN in the VLAN Configuration Table.

Default Frame Priority

Range:	0-7
Default:	0
Description:	This parameter configures the default priority for this port. Untagged frames received on this port will be assigned this priority. This parameter applies to the 3480 ports 24 through 27 with a Capabilities Setting of SWITCH_PORT or SWITCH_TO_ROUTER _UPLINK.

STPE Priority

Range:	0-255
Default:	128
Description:	This parameter is the value of the first octet of the Port ID. The second octed is the Port Number. This parameter applies only to the 3480 ports 24 through 27 with a SWITCH_PORT or SWITCH_TO_ROUTER _UPLINK. **Note** A change to this parameter requires a node boot to take effect.

STPE Path Cost

Range:	1-65535
Default:	19
Description:	This contribution of this link to the path cost towards the spanning tree root which includes this link. This parameter applies only to the 3480 ports 24 through 27 with a SWITCH_PORT or SWITCH_TO_ROUTER _UPLINK. **Note** A change to this parameter requires a node boot to take effect.

Ethernet LAN Port Statistics

Introduction

When you select Detailed LAN Port Statistics, a screen appears containing information about LAN Ports.

This section describes the statistics available for an Ethernet LAN connection.

What You See in This Screen

Figure 10 is an example of the Detailed LAN Port Statistics screen page 1 for Ethernet.

```
Detailed LAN Port Statistics: Port 23                        Page:  1 of  5

Port Number:           23     Port Type: ETH              Port Status: ENABLE
Bridge Link Number:    1                 Router Interface Number:  1
RX Error Condition:    Normal            Carrier:         Present
TX Error Condition:    Normal            Port Address:    00-08-D5-01-94-AB
Output Rate Limit:          0Kbps        Port Mode   : 100Mbps Full Duplex(AUTO)
Number of PPPoE sockets: 0  Last Statistics Reset: 07-JAN-2000 23:20:03

Physical Summary:
 RX FCS Errors:              0           TX Carrier Sense Discards:  2
 RX Alignment Errors:        0           TX Max Collisions Discards: 0
 RX Collisions:              0           TX Total Discards:          2
 RX Short Frames:            0           TX Multi Collisions:        0
 RX Long Frames:             0           TX Late Collisions:         0
 RX Congestions:             0           TX Single Collisions:       0
 RX HA Discards:             0

Data Summary:       RX           TX
      Bytes         0            13216
      Frames        0            150
      Avg Frame Len 0            90
      FPS           0            0
 Press any key to continue ( ESC to exit ) ...
```

Figure 10. Ethernet Detailed LAN Port Statistics Screen Page 1

Description of Terms

This table describes the information in the Detailed LAN Port Statistics screen page 1:

Screen Term	*Description*
Port Number	Number of the port displaying statistics.
Port Type	ETH: Configured Value of the Port type.
Port Status	Can be either Enable or Disable depending upon the Port Control command.
Bridge Link Number	Indicates the Bridge Link Number that is configured for the port. This is not displayed for 3480 ports 24 through 27.

Screen Term	***Description*** *(continued)*
Router Interface Number	Indicates the Router Interface Number that is configured for the port. The Router Interface Number is not displayed for 3480 ports 24 through 27 with a Switch Capabilities set to SWITCH_PORT. For these ports, the Associated Switch Uplink Port is displayed instead.
RX Error Condition	Indicates if the number of errors found in the Physical Summary is either excessive or normal. RX indicates frames coming into the Vanguard product. The determination of excessive or normal is a hardcoded setting within the Vanguard product.
Carrier	Indicates if a signal has been detected from the ethernet segment.
TX Error Condition	Indicates if the number of errors found in the Physical Summary is either excessive or normal. TX indicates frames that are leaving the Vanguard product. The determination of excessive or normal is a hardcoded settting within the Vanguard product.
Port Address	Indicates the configured MAC port address assigned to this port.
Port Operating Mode	Specifies whether this LAN port runs in 1000Mbit Full-Duplex, 100Mbit Full-Duplex, 100Mbit Half-Duplex, 10Mbit Full-Duplex, 10Mbit Half-Duplex, or Auto-Negotiation mode.
RX FCS Errors	Ethernet transceiver received frame with a checksum error. Frame is discarded.
RX Alignment Errors	Ethernet transceiver received a frame that does not end on an octet boundary. Frame is discarded.
RX Collisions	While Ethernet transceiver is receiving a frame, it detects a collision on the Ethernet. These frames are discarded.
RX Short Frames	Ethernet transceiver received a frame whose length is less that 64 bytes. These frames are discarded.
RX Long Frames:	Ethernet transceiver received a frame whose length (including CRC) is greater that 1518. These frames are discarded.
RX Congestions:	Ethernet transceiver received a frame but did not have any buffer space to store the frame. These frames are discarded.
RX HA Discards:	The Ethernet LAN Card Hardware Accelerator (HA) function indicates to the Ethernet transceiver not to receive frames that are destined to Stations on the Local LAN. These frames are not received by the Ethernet transceiver, and are referred to as RX HA Discards.

Screen Term	***Description*** *(continued)*
TX Carrier Sense Discards:	The number of frames that were lost when the Ethernet transceiver detected a “No Carrier” condition on the Ethernet LAN when it was attempting to transmit. This is usually due to the Ethernet LAN Port Cable being disconnected.
TX Single Collisions	This is the number of times that the Ethernet transceiver attempted to transmit a frame and a collision occurred during the frame preamble. Collisions are usually indicative of heavy LAN traffic or 802.3 LAN length specifications being exceeded.
TX Multi Collisions	This is the number of times that the Ethernet transceiver made multiple attempts to transmit a frame and a collision occurred during the frame preamble on each attempt.
TX Max Collisions Discards:	This is the number of times that the Ethernet transceiver made 16 attempts to transmit a frame and a collision occurred during the frame preamble on each attempt. After 16 attempts, the Ethernet transceiver drops the frame it tried to transmit.
TX Late Collisions:	This is the number of times that the Ethernet transceiver attempted to transmit a frame and a collision occurred after the frame preamble, and during the actual data of the frame. A frame where a late collision occurred is lost.
TX Total Discards:	This is the number of frames that the Ethernet transceiver transmitter dropped. It is the sum of TX Carrier Sense Discards and TX Max Collisions Discards, plus the number of frame dropped due to Transmit Queue Overflow.

What You See in This Screen

Figure 11 is an example of the Detailed LAN Port Statistics screen page 2 for Ethernet.

```
Node: ethswx  Address: 101           Date: 11-AUG-2009  Time: 1:16:28
Detailed LAN Port Statistics: Port 24                   Page:  2

 Ethernet Class-of-Service Statistics:

  CoS     DSCP Mapping                          Rx Frames      Tx Frames
  ---  ------------------------------------ -------------  -------------
  0         0-7                                      25             25
  1         8-15                                     0              0
  2         16-23                                    0              0
  3         24-31                                    0              0
  4         32-39                                    0              0
  5         40-47                                    0              0
  6         48-55                                    0              0
  7         56-63                                    0              0

 Ethernet Priority Queuing Statistics:
                                                    Normal   Expedite
 Tx Queue Full Discards                               0          0
 Tx Queue High Water Mark                             0          0
```

Figure 11. Ethernet Detailed LAN Port Statistics Screen Page 2

Description of Terms

This table describes the information in the Detailed LAN Port Statistics screen page 2:

Screen Term	Description
COS	Class of Service: This is a value from 0 through 7 which corresponds to a VLAN Frame Priority value (0 through 7).
DSCP Mapping	This is the Diff Serv Code Point Map range corresponding to the COS via the ports DSCP TO COS Profile configuration.
Tx Queue Full Discards	Expedite: a count of the number of Expedite packets that were discarded due to the Transmit Queue Limit being exceeded. Normal: a count of the number of Normal packets that were discarded due to the Transmit Queue Limit being exceeded.
Tx Queue High Water Mark	Expedite: This is the Maximum number of packets that were ever place on the Expedite queue. Normal: This is the Maximum number of packets that were ever place on the Normal queue.

Note

For the 3480 ports 24 through 27 with a Switch Capabilities set to SWITCH_PORT, this statistics screen is not available. Please refer to the statistics screen of the port's Switch to Router Uplink Port.

What You See in This Screen

Figure 12 is an example of the Detailed LAN Port Statistics screen page 3 for Ethernet.

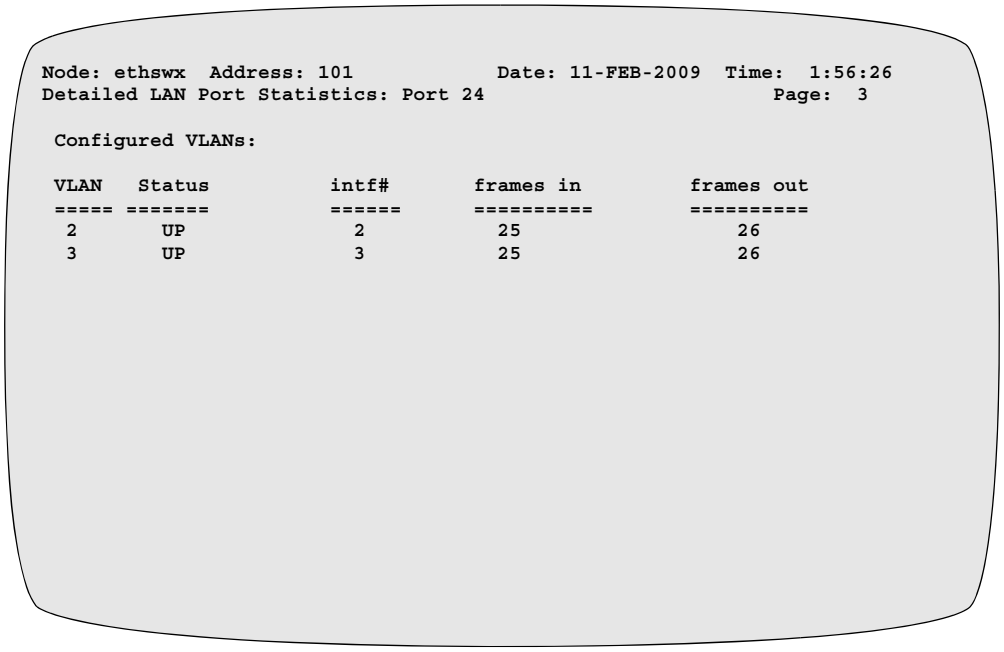

Figure 12. Ethernet Detailed LAN Port Statistics Screen Page 3

Description of Terms

This table describes the information in the Detailed LAN Port Statistics screen page 3:

Screen Term	*Description*
VLAN	This is the VLAN ID of the VLAN's associated with this port
Status	This is the state of the VLAN: UP/DOWN
Intf#	This is the Router Interface Number corresponding to this VLAN
Frames in	This is a count of the number of frames received corresponding to this VLAN.
Frames out	This is a coun t of the number of frames transmitted corresponding to this VLAN

Note

For the 3480 ports 24 through 27 with a Switch Capabilities set to SWITCH_PORT, this statistics screen is not available. Please refer to the statistics screen of the port's Switch to Router Uplink Port.

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