# Managing Your Catalyst 2600

To aid in management, the Catalyst 2600 allows you to obtain a variety of status, statistic, and diagnostic information. This chapter provides information on the following:

- Viewing Status and Statistic Information
  - Viewing Status Information
  - Viewing Address Tables
  - Viewing Statistics
  - Viewing Filters and Security Mode for a Specific Port
  - Viewing Spanning-Tree Information for Each Domain
  - Viewing the Message Log
  - Viewing Route Descriptors
- Configuring SNMP Parameters
- Monitoring Port Traffic
- Resetting the Catalyst 2600 and Running Diagnostic Tests

For information about setting up a console session, refer to the section "Planning for Configuration and Management."

**Note** The Catalyst 2600 allows LAN Network Manager LLC frames to flow through the switch. Therefore, communication between LAN Network Manager and existing source-route bridges and controlled access units is maintained. However, some error reporting functions and ring map functions might be lost for the rings attached to the Catalyst 2600.

# **Viewing Status and Statistic Information**

The Catalyst 2600 allows you to view status information and statistics for individual ports or for the Catalyst 2600 as a whole. This information is displayed on several panels that are accessible from the Status/Statistics Menu.

To access the Status/Statistics Menu, select **Status/Statistics** on the Main Menu. The Status/Statistics Menu (Figure 7-1) is displayed.



Figure 7-1 Status/Statistics Menu Panel

# Viewing Status Information

You can view status information for:

- The Catalyst 2600 and any installed Universal Feature Cards (UFCs)
- Each port
- Each defined TokenChannel

# Viewing Catalyst 2600 and Universal Feature Card Status

To view general information about the Catalyst 2600 and any UFCs installed, select **Module Information** on the Status/Statistics Menu. The Module Information panel (Figure 7-2) is displayed.

Edit Isoninai Garrie	ction Options Wind	ow Help				
		Module Inf	ormation			
Module	Status	Туре	Revision	Ports	Up Time	
0	up	Base Switch	15	16	0:47:42	
1	up	TR UTP/STP	0	4	0:47:42	
2	up	TR UTP/STP	0	4	0:47:42	
Return		Return to p	previous menu			
Use cu	rsor keys t	o select actio	n. Press (EN	TER> to conf	irm choice.	
1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	Pres	s (CTRL>(N) to	return to M	lain Menu.		

Figure 7-2 Module Information Panel

The following information is displayed on this panel:

- Module—The module number. The Catalyst 2600 is listed as Module 0. UFCs will be listed as Module 1 and Module 2.
- Status—Whether the module is up or down.
- Type—The type of module (Base Switch or UFC).
- Revision—The revision level of the module.
- Ports—The number of ports on the module.
- Up Time—The amount of time in hours, minutes, and seconds that the module has been up (since the last reset).

You cannot change the information that appears on this panel.

#### Viewing Port Status

To view status information for each port of the Catalyst 2600, select **Port Status** on the Status/Statistics Menu. The Port Status panel (Figure 7-3) is displayed.

			Port	Status					
Port	Switching Mode	Type	State	Link	Config	Speed	Mode	Duplay	Config
1	Adaptive	R145	Enabled	Down	Auto	FIX16	mourc		8
2	Cut-Through	R145	Enabled	Up	Auto	FTX16	Adot	Half	8
3	Adaptive	R145	Enabled	Down	Auto	FIX16			8
4	Adaptive	RJ45	Enabled	Down	Auto	FIX16			8
5	Adaptive	<b>RJ45</b>	Enabled	Down	Auto	RSA16			8
6	Adaptive	RJ45	Enabled	Down	Fixed	FIX16	Adpt	Half	8
7	Adaptive	<b>RJ45</b>	Enabled	Down	Auto	RSA16			8
8	Adaptive	<b>RJ45</b>	Enabled	Down	Auto	RSA16			8
9	Adaptive	<b>RJ45</b>	Enabled	Down	Auto	RSA16			8
10	Adaptive	<b>RJ45</b>	Enabled	Down	Auto	RSA16			8
11	Adaptive	<b>RJ45</b>	Enabled	Down	Auto	RSA16			в
12	Adaptive	<b>RJ45</b>	Enabled	Down	Auto	RSA16			8
Ret	unn Nore		Return to	o previo	ous een	1			
	Use cursor k	eys to Press	<pre>choose it (CTRL&gt;(N)</pre>	em. Pro	ess (EN urn to l	TER> to Main Mer	confir u.	m choice	-

Figure 7-3 Port Status Panel

- Switching Mode—The operating mode of the port (Cut-Through, Store-and-Forward, or Adaptive). To change the operating mode of the port, refer to "Configuring Switching Mode Thresholds."
- Type—The port type. Ports 1 through 16 are RJ45. If a UFC is installed, each of its ports and port types will be listed here.
- State—The operational status of the port.
- Link—Indicates whether the port is Up (open) or Down (closed).
- Configuration Type—The type of configuration mechanism used for the port.
  - Auto-Speed, Mode, and Duplex are automatically set by the Catalyst 2600
  - Fixed—Allows you to manually set Speed, Mode, and Duplex.
- Speed—The speed of the port in Mbps. The prefix RSA means the speed was automatically sensed and set by the Catalyst 2600. The prefix FIX means the speed was set to a fixed value via configuration.
- Mode—Indicates whether the port is used for shared or dedicated media.
  - Port Mode—In port mode only a dedicated connection to a station is supported. The Tx/Rx pinouts are the same as a concentrator's.
  - Adapter Mode—In adapter mode, the port operates like a station. The connection may be dedicated or shared. The Tx/Rx pinouts are the same as an adapter's.
- Duplex—Whether the port is operating in full or half duplex mode. Changes to the duplex settings are made immediately by the Catalyst 2600.

• Configuration Loss—The configuration loss threshold. Configuration loss occurs when a port completes a connection, allows data traffic to flow, and subsequently closes. This threshold is used to control the number of configuration losses that can occur within a specified time. When the threshold is exceeded, the port is disabled and must be enabled via this panel or an SNMP manager.

You cannot change any information on this panel. To change any of the port parameters, refer to the section "Configuring Port Parameters."

#### Viewing TokenChannel Status

To view status information for any TokenChannels configured in the Catalyst 2600, select **TokenChannel Status** on the Status/Statistics Menu. The TokenChannel Status panel (Figure 7-4) is displayed.

Ġ.	-						_				- D X
De Da	r. Ten	ane C	annection	Obraut Wurdow	TokenChann	nel Menu					*
				TokenChan	nel S	state	Ports				
				1	Up	1	2				- 1
				3	N/A	Not	Defined				
				4	N/A	Not	Defined				- 1
											- 1
											- 1
											- 1
											- 1
											- 1
											- 1
	Retu	m									- 1
											- 1
					Return to p	previous menu					
		Use	CULSO	or keys to Press	<pre>choose item. <ctrl><n> to</n></ctrl></pre>	Press (ENTE return to Ma	R> to confi in Menu.	rm ch	noice	-	-
891,1		IV.	T308-7 - T	ELNET(1721829)			7 6	mpote	Num	Cape	Hold

Figure 7-4 TokenChannel Status Panel

The following information is displayed on this panel:

- TokenChannel—The identifier of the TokenChannel (1 through 4).
- State—Indicates whether the TokenChannel is up, down, or not defined.
- Ports—Indicates which ports are assigned to this TokenChannel.

You cannot change any information on this panel. To change any of the TokenChannel parameters, refer to the section "Configuring TokenChannels."

# Viewing Address Tables

You can view the address tables, which are used in forwarding frames, for:

- The Catalyst 2600 as a whole
- Individual domains
- Individual ports

# Viewing the Master Address Table

To view all entries in the master address table, select **Master Address Tables** on the Status/Statistics Menu. The Master Address Table panel (Figure 7-5) is displayed. The master address table can contain up to 10,000 entries.

		Ports = Fi	Itered Ports	High-Ligh	hted
	Local	Base(1-8)	Base (9-16)	Slot1	Slot2
NAC Address	Port	12345678	90123456	1234	1234
000030 ACEBE6	1	XX			
0000F6 1780C8	1	XX	******		
0004AC 29B340	Swtch Base	XXXXXXXXX			
0004AC 298360	default	XXXXXXXX			
0004AC 29D580	2	XX			
0004AC 8844C0	1	ХХ			
10005A 431525	Unknown	XXXXXXXX	*******		
10005A 4315CF	Unknown	хх			
10005A 4975AC	Unknown				
800143 000000	STP Mcast	XXXXXXXX		22.2.2.2	
800143 000010	Multicast	XXXXXXXXXX	+ + + + + + + +		* * * *
Return More	Search Scroll				
		Return			

#### Figure 7-5 Master Address Table Panel

- Mac Address—The MAC address.
- Local Port—The type of address or association of the address with the listed port, such as:
  - Multicast for a multicast address.
  - Broadcast for a broadcast address.
  - Filtered for a filtered packet address.
  - STP Mcast for a BPDU multicast address reserved for the port (hello packet).
  - STP Port xx for an address reserved for a Spanning-Tree Protocol port.
  - Swtch Base for the address assigned to the Catalyst 2600.

- Domain xx for a address assigned to a virtual LAN domain.
- Unknown for a MAC address with an unknown location.

**Note** Highlighted entries indicate filtered ports.

• Base and Slots—The ports of the switch (Base) or a UFC (Slot) whose address tables include this MAC address.

То	Select	Then
Search for a specific MAC address	Search	Specify the address.

#### Viewing the Address Table for Each Domain

To view the entries in the address table for each domain, select **Domain Address Table** on the Status/Statistics Menu. The Domain Address Table panel (Figure 7-6) is displayed. The entries are listed in the order in which they were encountered.

Figure 7-6 Domain Addres	ss Table Panel
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			Ports = Fi	Itered Ports	High-Ligh	hted	
		Local	Base(1-8)	Base (9-16)	Slot1	Slot2	
NAC Add	Iress	Port	12345678	90123456	1234	1234	
000030	ACEBE6	1	XX				
0000F6	1780C8	1	ХХ	******			
0004AC	29B340	Swtch Base	XXXXXXXXX				
0004AC	29B360	default	XXXXXXXXX				
0004AC	29D580	2	ХХ				
0004AC	8844C0	1	ХХ				
10005A	431525	Unknown	XXXXXXXXX	*******			
10005A	4315CF	Unknown	хх				
10005A	4975AC	Unknown					
800143	000000	STP Mcast	XXXXXXXXX				
800143	000010	Multicast	XXXXXXXXXX	*****		* * * *	
Return	Nore	Search Change.	_Displayed_Dom	ain			
			Deturn				

- Mac Address—The MAC address.
- Local Port—The type of address or association of the address with the listed port, such as:

- Multicast for a multicast address.
- Broadcast for a broadcast address.
- Filtered for a filtered packet address.
- STP Mcast for a BPDU multicast address reserved for the port (hello packet).
- STP Port xx for an address reserved for a Spanning-Tree Protocol port.
- Swtch Base for the address assigned to the Catalyst 2600.
- Domain xx for a address assigned to a virtual LAN domain.
- Unknown for a MAC address with an unknown location.

Highlighted entries indicate filtered ports.

• Base and Slots—The ports of the switch (Base) or a UFC (Slot) whose address tables include this MAC address.

То	Select	Then
View the address table for another domain	Change_Displayed_Domain	Specify the domain.
Search for a specific MAC address	Search	Specify the address.

#### Viewing the Address Table for a Specific Port

To view the entries in the address table of a specific port, select **Port N Address Table** on the Status/Statistics Menu and specify a port number. The Port N Address Table panel (Figure 7-7) is displayed. The port address table can contain up to 1790 entries. The entries are listed in the order in which they were encountered.

DstBytes	SrcBytes	DstPkts	SrcPkts	Local Port	Iress	MAC Add
0	90438	0	1251	1	ACEBE6	000030
0	4764	0	40	1	1780C8	0000F6
0	148	0	2	1	28DAC0	0004AC
0	0	0	0	Swtch Base	29B340	0004AC
79531	0	1105	0	default	29B360	0004AC
0	92	0	1	1	2A8240	0004AC
0	0	0	0	filtered	431525	10005A
0	0	0	0	filtered	4315CF	10005A
0	0	0	0	STP Mcast	000000	800143
0	0	0	0	Multicast	000010	800143
0	0	0	0	Multicast	000020	800143
0	0	0	0	Multicast	000030	800143
0	0	0	0	Multicast	000040	800143
				Search	Nore	Return
			Return			

#### Figure 7-7 Port N Address Table Panel

The following information is displayed on this panel:

- Mac Address—The MAC address.
- Local Port—The type of address or association of the address with the listed port, such as:
  - Multicast for a multicast address.
  - Broadcast for a broadcast address.
  - Filtered for a filtered packet address.
  - STP Mcast for a BPDU multicast address reserved for the port (hello packet).
  - STP Port xx for an address reserved for a Spanning-Tree Protocol port.
  - Swtch Base for the address assigned to the Catalyst 2600.
  - Domain xx for a address assigned to a virtual LAN domain.
  - Unknown for a MAC address with an unknown location.

Highlighted entries indicate filtered ports.

- Source Packets (SrcPkts)—The number of packets received from this address.
- Destination Packets (DstPkts)—The number of packets sent to this address.
- Source Bytes (SrcBytes)—The number of bytes received from this address.
- Destination Bytes (DstBytes)—The number of bytes sent to this address.

То	Select	Then
Search for a specific MAC address	Search	Specify the address.

# **Viewing Statistics**

You can view operating statistics for:

- The Catalyst 2600 as a whole
- Individual domains
- Individual ports

# Viewing Catalyst 2600 Operating Statistics

To view operating statistics for the Catalyst 2600, select **Switch Statistics** on the Status/Statistics Menu. The Switch Statistics panel (Figure 7-8) is displayed. This panel is automatically refreshed every 10 seconds.

a La lanad Carrie	a faire links like		-02
e Par Terris Pariers	Switch Statistics	2	-
			-
	System Up Time	119 Hr, 2 Min, 13	Sec
	Board Temperature	Normal	
	Currently Active Addresses	27	
	Largest Number of Addresses	30	
	Maximum Number of Addresses	10000	
	Frames Transmitted	4277	
	Frames Received	111202	
	Error Frames Received	0	
	Frames Lost	0	
	Pending Send Requests	0	
	Frame Transmit Errors	0	
	Maximum Hash Chain	1	
	Address Table Full	0	
Return	Reset_Statistics		
1121 V. 192	Deture to everieur	6.000	
	Pross (ENTER) to an	t marrie	
	Press (CTRL>(N) to return	to Main Menu.	
823.1 VT306-7	- TELNET(172.18.2.9)	7 Compose	Num Caps Hold

#### Figure 7-8 Switch Statistics Panel

- System Up Time—The length of time (in hours, minutes, and seconds) since the last reset or power cycle.
- Board Temperature—Whether the board temperature is Normal or Unacceptably high (over 122°F or 50°C).
- Currently Active Addresses—The number of entries in the address table, that represent currently active stations, or nodes, on all ports of the Catalyst 2600.
- Largest Number of Addresses—The largest number of addresses in the address table at any one time since the last reset or power cycle.

- Maximum Number of Addresses—The maximum number of addresses that the Catalyst 2600 can support simultaneously.
- Frames Transmitted—The number of frames transmitted from the Catalyst 2600 processor.
- Frames Received—The number of frames received by the Catalyst 2600 processor.
- Error Frames Received—The number of frames received that were too long or short.
- Frames Lost—The number of frames dropped because of errors.
- Pending Send Requests—The number of frames in the send queue.
- Frame Transmit Errors—The number of frames unable to be transmitted by the processor because of transmit errors.
- Maximum Hash Chain—The largest number of addresses that have hashed to the same location in look-up tables having the same index.
- Address Table Full—The number of times the address table has reached capacity.

То	Select
Reset the counters	Reset_Statistics

## Viewing Statistics for Each Domain

To view statistics for each domain, select **Domain Statistics** on the Status/Statistics Menu. The Domain Statistics panel (Figure 7-9) is displayed.

I Igule 1-3 Domain Statistics Faile	Figure 7-9	Domain Statistics Pane
-------------------------------------	------------	------------------------

Sector sect		_ D X
Elle Edit Isaninal Connection Options Window Help	8	
Domain Statistics for Doma	in: default	-
Change_Displayed_Domain		
Currently Active Addresses	27	
Largest Number of Addresses	30	
Maximum Number of Addresses	10000	
Return		
Return to previou		_
Press (CTRL) (N) to retur	n to Main Menu.	

- Currently Active Addresses—The number of addresses currently in the master address table that are recognized by ports belonging to this domain.
- Largest Number of Addresses—The largest number of addresses in the master address table since the last reset or power cycle that are recognized by ports belonging to this domain.
- Maximum Number Of Addresses—The maximum number of addresses allowed in the domain.

То	Select	Then
View statistics for another domain	Change_Displayed_Domain	Specify the domain.

## Viewing Statistics for a Specific Port

To view statistics for a specific port, select **Port N Statistics** on the Status/Statistics Menu and specify the port number. The Port N Statistics panel (Figure 7-10) is displayed. This panel is automatically refreshed every 10 seconds.

	- 02
lle Edit Isminal Connection Options Window Help	10 C C C C C C C C C C C C C C C C C C C
Port 1 Statisti	cs
Frames Received	1388
Octets Received	107447
Frames Transmitted	1072
Octets Transmitted	171407
Multicast/Broadcast Frames Received	246
Frames Local to Port(not forwarded)	113
Frames Switched by Hardware	1275
Frames Delivered to Processor	2489
All Frames Forwarded	1275
Number of Learned Stations	9
Currently Active Addresses	26
Local Address Entries	5
Remote Address Entries	21
Largest Number of Addresses	29
Address Table Overflows	0
Time Since Last Reset 0 Hr, 1	8 Min, 11 Sec
Return More Reset_Statistics	
Return to previou	is nenu
Use cursor keys to choose item. Pres Press <ctrl><n> to retur</n></ctrl>	s (ENTER) to confirm choice. n to Main Menu.
818.1 VT300.7 - TELNET(172.18.2.9)	7 Compose Nue Caps Hold

Figure 7-10 Port N Statistics Panel 1

- Frames Received—The number of frames received by the port.
- Octets Received—The number of octets, or bytes, received.
- Frames Transmitted—The number of frames transmitted by the port.
- Octets Transmitted—The number of octets, or bytes, transmitted by the port.

- Multicast/Broadcast Frames Received—The number of frames received that have the multicast bit set or are broadcast frames.
- Frames Local to Port (not forwarded)—The number of frames that are confined to this segment and are not forwarded.
- Frames Switched by Hardware—The number of frames received on this port and forwarded by the Catalyst 2600 hardware to another port without learning.
- Frames Delivered to Processor—The number of frames received on this port and forwarded to the processor for learning.
- All Frames Forwarded—The number of frames received on this port and forwarded by the Catalyst 2600 hardware or processor.
- Number of Learned Stations—The number of addresses in the address table.
- Currently Active Addresses—The sum of local and remote addresses.
- Local Address Entries—The number of addresses on this port that belong to the local segment.
- Remote Address Entries—The number of addresses on this port that belong to another segment.
- Largest Number of Addresses—The largest number of addresses active since the last reset of the Catalyst 2600.
- Address Table Overflows—The number of times the address table has reached the maximum number of entries.
- Time Since Last Reset—Displays the time (in hours, minutes, and seconds) since the port traffic counters were last reset.

То	Select
View additional statistics	More
Reset the counters	Reset_Statistics

	-0
Edit Lenninal Connection Options Window Help	
Port 1 Statistics = Port	is Blocked
Unicast Frames Received	0
Non-Unicast Frames Received	0
Hi Port Bytes Transmitted	0
Low Port Bytes Transmitted	0
Hi Port Unicast Frames Xmt	0
Low Port Unicast Frames Xmt	0
Hi Port Non-Unicast Frames Xmt	0
Low Port Non-Unicast Frames Xmt	0
Receive Buffer Queue Full	0
Receive Internal Packet Errors	0
Receive Frames too Long	0
Hi Port Internal Packet Errors	0
Low Port Internal Packet Errors	0
Hi Port Packets in Queues	0
Low Port Packets in Queues	0
Transmit Buffer Queue Full	0
Port DATA Bus Timeout Errors	0
Return More Reset_Statistics	
Display more port st	atistics
Use cursor keys to choose item. Press Press <ctrl><n> to return</n></ctrl>	<pre> <enter> to confirm choice.  to Main Menu.</enter></pre>
142.1 VT300.7 - TELNET(172.18.2.8)	7 Compose Nue Capa Hold



The statistics shown on this panel provide additional granularity for analyzing traffic and switch performance statistics. Some error events are counted for possible fault analysis.

- Unicast Frames Received—The number of frames received by this port that are designated for a single destination address.
- Non-Unicast Frames Received—The number of frames received by this port that are designated for a general broadcast or multicast address.
- Hi Port Bytes Transmitted—The number of bytes transmitted from the high-priority transmit queue.
- Low Port Bytes Transmitted—The number of bytes transmitted from the low-priority transmit queue.
- Hi Port Unicast Frames Xmt—The number of unicast frames transmitted from the high-priority transmit queue.
- Low Port Unicast Frames Xmt—The number of unicast frames transmitted from the low-priority transmit queue.
- Hi Port Non-Unicast Frames Xmt—The number of general broadcast or multicast frames transmitted from the high-priority transmit queue.
- Low Port Non-Unicast Frames Xmt—The number of general broadcast or multicast frames transmitted from the low-priority transmit queue.
- Receive Buffer Queue Full—The number of instances in which a packet arrived on the port and there were no available receive buffers.
- Receive Internal Packet Errors—The number of times that a packet was received with an error (for example, CRC or incomplete frame) that resulted in an abnormal termination of a cut-through operation.

- Receive Frames Too Long—The number of frames received that exceed the maximum frame length limit of 4540 bytes.
- Hi Port Internal Packet Errors—The number of transmits from the high-priority transmit queue in which an abnormal frame termination occurred.
- Low Port Internal Packet Errors—The number of transmits from the low-priority transmit queue in which an abnormal frame termination occurred.
- Hi Port Packets in Queues—The current number of packets in the high-priority transmit queue awaiting transmission.
- Low Port Packets in Queues—The current number of packets in the low-priority transmit queue awaiting transmission.
- Transmit Buffer Queue Full—The number of packets lost because of the inability of the transmit queue to accept a packet from another port.
- Port DATA Bus Timeout Errors—The number of receive packets discarded because of failure of the target port to accept the packet.

То	Select
Reset the counters	Reset_Statistics
Return to the previous panel	More

# Viewing Filters and Security Mode for a Specific Port

To display the defined filters and security mode for a specific port, select **View Port N Filters** on the Status/Statistics Menu. The Port N Filters panel (Figure 7-12) is displayed.



#### Figure 7-12 Port N Filters Panel

The following information is displayed on this panel:

- Index—The identifier of the filter entry.
- MAC Address—The MAC address contained in packets to be filtered.
- Description—The filter action taken on the packet with the specified MAC address.

You cannot change any information on this panel. To change the filters or security mode, refer to the section "Limiting Scope and Access."

# Viewing Spanning-Tree Information for Each Domain

To display the spanning-tree parameters for each domain, select **Current Spanning Tree** on the Status/Statistics Menu. The Current Spanning Tree panel (Figure 7-13) is displayed.

a Isrial	Corrector	Octors	Window	Help							-
		Curr	ent Sp	anning	Tree	for Doma	in: defa	ult			
Hel Roo	lo Tim t: 327	ie: 2 68.00	, Ma 004AC29	x Mess B360,	age Ag Ro	8: 20, ot Port:	Forward This Br	Delay: idge is	15 Root		
Port	Port	Port	Desig Cost	Des Switc	ignate h/Brid	d De ID	Desig PortID	#Topo Chas	Time	Since Change	
128.01	62	FWD	0	32768.	0004AC	298360	128.01	1	48:	09:49	
128.01	62	FVD	0	32768.	0004AC	298360	128.01	0	76:	19:00	
128.03	link	down									
128.04	link	down									
128.05	link	down									
128.06	link	down									
128.07	link	down									
128.08	link	down									
Return	Chan	ige_Di	splaye	d_Doma	in						
			Re	turn t	o Stat	istics M	lain Menu				
Us	e curs	ior ke	rys to Press	select <ctrl></ctrl>	action	n. Press return	<enterd to Main</enterd 	to con Menu.	firm	choice.	
68	UT3017-	TELNETO	22 18 2.94					70	Compose	Nun Can	all r

Figure 7-13 Current Spanning Tree Panel

- Hello Time—The time (in seconds) that the root waits between sending configuration messages. This time is advertised by the root and used by all devices and switches in the active topology of the spanning-tree network.
- Max Message Age—The time at which the configuration message used by the spanning-tree algorithm should be discarded. This time is advertised by the root and used by all devices and switches in the active topology of the spanning-tree network.
- Forward Delay—The time the root waits between transitions from listening to learning, and from learning to forwarding. This time is advertised by the root and used by all devices and switches in the active topology of the spanning-tree network.
- Root—The priority and MAC address of the device in the spanning tree that this Catalyst 2600 has accepted as the root device.
- Root Port—The number of the port on this Catalyst 2600 that is closest to the root. This Catalyst 2600 communicates with the root through this port. If there is no root port, this Catalyst 2600 has been accepted as the root of the spanning-tree network.
- Port ID—The port ID that is used to determine the role of the port in the spanning tree. The port ID is expressed in the form port priority.port number.
- Port Cost—The cost associated with each port. Lower numbers are generally assigned to ports attached to faster media (such as FDX or TokenChannel), and higher numbers are generally assigned to ports attached to slower media (such as 2400-baud modem links).
- Port Status—The current status of this port within the spanning tree. Possible values are:
  - DSB (Disabled)
  - BLK (Blocked)

- LSN (Listening)
- LRN (Learning)
- FWD (Forwarding)

The rules that define the state of the port are as follows:

- A port on a network segment that contains no other switch or bridge is always forwarding.
- If two ports of the Catalyst 2600 are connected to the same network segment and there is no other bridge or switch, the port with the lower ID is forwarding and the other is blocked.
- When the switch is booted, all ports are blocked initially, and then some of them change to a different state: listening, learning, and forwarding, in that order. To see the change in states you must repeatedly exit from this menu, and then select it again. All ports that are going to change states from blocking to forwarding will have done so after two to three times the value of:

Switch Maximum Message Age  $+ (2 \times \text{Switch Forward Delay})$ 

- Designated Cost—The cost for a packet to travel from this port to the root in the current spanning-tree configuration. The slower the media, the higher the cost.
- Designated Switch/Bridge ID—The priority and MAC address of the device through which this port has determined it must communicate with the root of the spanning tree.
- Designated Port ID—The port on the designated bridge through which this Catalyst 2600 will communicate with the root of the spanning tree. This information is useful if the Catalyst 2600 is the designated bridge on one or more network segments.
- # Topo Changes—The number of topology changes, that is, the number of times the port has entered the forwarding state plus the number of times the port has made the transition from forwarding to blocking. The counter is reset when the switch is reset or the spanning tree is turned on.
- Time Since Last Change—The time since the port last entered the forwarding state or made the transition from forwarding to blocking.

You cannot change any information on this panel. To change the spanning tree parameters, refer to the section "Configuring Spanning-Tree Parameters."

То	Select	Then
View Spanning Tree parameters for another domain	Change_Displayed_Domain	Specify the domain.

# Viewing the Message Log

To view the message log, select **Message Log** on the Status/Statistics Menu. The Message Log Information panel is displayed. The data on this panel is useful to technical experts in solving complex problems.

- Log—Index number identifying the log file.
- Type—The message type. Possible values are:
  - W—Warning
  - I—Informational
- Message Content—The full text of the message.

То	Select
Delete the contents of the message log	Clear_Logs

# Viewing Route Descriptors

You can view route descriptors, which are used in forwarding source-routed frames, for:

- The Catalyst 2600 as a whole
- Individual domains
- Individual ports

### Viewing the Master Route Descriptor Table

To view all the route descriptors (and their associated ports) that have been learned by the Catalyst 2600, select **Master Route Descriptor Tables** on the Status/Statistics Menu. The Master Route Descriptor Table panel (Figure 7-14) is displayed. These descriptors are contained within the 10,000 entries allowed for the master address table.

	Master Route	Descriptor	Table		
			Ports		
Route Descriptor	Local Port	Base(1-8) 12345678	Base(9-16) 90123456	Slot1 1234	Slot2 1234
123:2:345	3	X			
123:3:345	3	X	* * * * * * * *	****	****
123:3:234	3	X	*******		
Return More					
		Return			
Use curso	proce (CIPL)/N	tem. Press	(ENTER) to c	onfirm cl	hoice.

#### Figure 7-14 Master Route Descriptor Table Panel

The following information is displayed on this panel:

• Route Descriptor—The route descriptor associated with a port in the format:

local\_segment\_number:bridge\_number:remote\_segment\_number

The local segment number is displayed in hexadecimal and is the same for all ports within a single domain.

- Local Port—The number of the port with which this route descriptor is associated.
- Ports: Base and Slots—The ports of the switch (Base) or a UFC (Slot) whose address tables include this route descriptor.

#### Viewing Route Descriptor Table for Each Domain

To view the entries in the route descriptor table for each domain, select **Domain Route Descriptor Tables** on the Status/Statistics Menu. The Domain Route Descriptor Table panel (Figure 7-15) is displayed.

e Est Isoninal Correc	tion Options Window Help					
D	omain Route Descri	ptor Table for	Domain: defa	ult		1
			Ports			
Route	Local	Base(1-8)	Base(9-16)	Slot1	Slot2	
123:2:345	3	<b>x</b>				
123:3:345	3	X	******		****	
123:3:234	3	X				
Return No	re Change_Display	ed_Domain				
		Return				
Use cu	rsor keys to choos Press (CTRL	e item. Press > <n> to return</n>	<enter> to c to Main Menu</enter>	onfirm cl	hoice.	
AND IN THE REPORT	7 - TELNET(172 18 2 9			7 Console	Num Cas	Hold

#### Figure 7-15 Domain Route Descriptor Table Panel

The following information is displayed on this panel:

• Route Descriptor—The route descriptor associated with a port in the format:

local\_segment\_number:bridge\_number:remote\_segment\_number

The local segment number is displayed in hexadecimal and is the same for all ports within a single domain.

- Local Port—The number of the port with which this route descriptor is associated.
- Ports: Base and Slots—The ports of the switch (Base) or a UFC (Slot) whose address tables include this route descriptor.

То	Select	Then
View the route descriptor tables for another domain	Change_Displayed_Domain	Specify the domain.

## Viewing the Route Descriptor Table for a Specific Port

To view the entries in the route descriptor table for a specific port, select **Port N Route Descriptor Tables** on the Status/Statistics Menu and specify a port number. The Port N Route Descriptor Table panel (Figure 7-16) is displayed. These descriptors are contained within the 1790 entries allowed for each port address table.

	La 1.	minal	Connection	Options	Window	Help					-10	9
			Port	3	Route	Descriptor	Table -	Port is	Forwardin	9		2
	Rout	te D	escript	tor	Local	Port	SrcPkts	DstPkt	s SrcByt	es Dst	Bytes	
	123	2:3	45		3	6	1		0 1	08	0	
	123	3:3	45		3		1		0 1	08	0	
	123	3:2	34		3		1		0 1	08	0	
	Ret	arn	Nore									
							Deturn					Ĺ
		Us	e curse	or ke	vs to	choose ite	. Press	(ENTER)	to confir	choice		
					Press	<ctrl><n></n></ctrl>	to return	to Main	Menu.			
4												-

Figure 7-16 Port N Route Descriptor Table Panel

• Route Descriptor—The route descriptor associated with a port in the format:

local\_segment\_number:bridge\_number:remote\_segment\_number

The local segment number is displayed in hexadecimal and is the same for all ports within a single domain.

- Local Port—The number of the port with which this route descriptor is associated.
- Source Packets (SrcPkts)—The number of packets received from this address.
- Destination Packets (DstPkts)—The number of packets sent to this address.
- Source Bytes (SrcBytes)—The number of bytes received from this address.
- Destination Bytes (DstBytes)—The number of bytes sent to this address.

# **Configuring SNMP Parameters**

To allow the Catalyst 2600 to be managed by an SNMP manager, you must first configure the SNMP parameters. To view or set SNMP parameters, such as the community names, where traps are to be sent, and whether authentication failure traps should be sent, select **SNMP Configuration** on the Configuration Menu. The SNMP Configuration panel (Figure 7-17) is displayed.

٠		- D X
Elle Edit Leaninal D	annection Options Window Help	
	SNMP Configuration	
	Send Authentication Traps Yes	
	Community Strings	
	Trap Receivers	
Return		
	Display the Configuration Menu	
Use	cursor keys to choose item. Press (ENTER) to co	nfirm choice.
	Press <ctrl><n> to return to Main Menu.</n></ctrl>	
764.1 V	/T3067 - TELNET(172 18 2 9) 7	Compose Num Caps Hold

#### Figure 7-17 SNMP Configuration Panel

The following information is displayed on this panel:

• Send Authentication Failure Traps—Indicates whether an authentication trap should be issued to Trap Receivers whenever authentication of an SNMP request fails. Traps indicating cold and warm boots are always sent.

То	Select	Then
Change the current settings	The appropriate parameter	Specify the value.
View or change SNMP community names and privileges	Community Strings	Refer to "Specifying Community Names".
View or change which SNMP managers are to receive traps for which domains	Trap Receivers	Refer to "Specifying Trap Receivers".
Save your changes	Return	

# **Specifying Community Names**

To view or change the community names for the domains of the Catalyst 2600, select **Community Strings** on the SNMP Configuration panel. The Community Strings panel (Figure 7-18) is displayed. A *community name* is a name associated with the Catalyst 2600 and a set of SNMP managers that are allowed to manage it with the specified privilege level.

Elle Edit Leaninel Connection Options Window Help	- 18 - 18 - 18 - 18 - 18 - 18 - 18 - 18
Community St	rings 🏾 🛎
Index Community Name	Mode
1 nes1	Read/Write
2 nes3	Read
3 master	Read/Write
Control Add Balata Chappan Close Isl	
Maturn Add Derece change crears a	ote
Return to pre-	vious menu
Use cursor keys to select action.	Press (ENTER) to confirm choice.
Press (CTRL>(N) to re	eturn to Main Menu.
	<u>x</u>
765.1 VT300-7 - TELNET(172.18.2.9)	7 Compose Num Caps Hold

Figure 7-18 Community Strings Panel

- Index—The identifier of the community name entry.
- Community Name—The name, or password, used to identify the SNMP managers.
- Mode—The privilege level assigned to this name. Read specifies that SNMP managers can only view SNMP information. Read/Write specifies that SNMP managers can both view and change SNMP information.

Entries are displayed in the order in which they are entered. There is a limit of 10 community names.

То	Select	Then
Add a community name	Add	Specify the community name and privilege.
Change a community name or privilege	Change	Specify the index number of the entry to be changed and enter the new information.
Delete a community name	Delete	Specify the name to be deleted.
Delete all community names	Clear_Table	
Save your changes	Return	

# **Specifying Trap Receivers**

To view or change the list of SNMP managers to which traps are sent, select **Trap Receivers** on the SNMP Configuration panel. The Trap Receivers panel (Figure 7-19) is displayed.





- Index—The identifier of the trap receivers entry.
- IP Address—The IP address of the SNMP manager.
- Community Name—The name used to identify the SNMP managers.
- Domain—The domain for which traps are sent to the specified SNMP manager.

The trap receivers list can contain a maximum of six entries.

То	Select	Then
Add an entry to the list	Add	Specify the IP address, community name, and domain.
Change an entry in the list	Change	Specify the index number of the entry to be changed and enter the new information.
Delete an entry	Delete	Specify the index number of the entry to be deleted.
Delete all entries	Clear_Table	
Save your changes	Return	

# **Monitoring Port Traffic**

The Catalyst 2600 allows you to configure a Switched Port Analyzer port for monitoring port traffic. This Switched Port Analyzer support allows you to monitor traffic on any of the Token Ring ports using a customer-supplied monitoring device or trace tool. To configure a Switched Port Analyzer port, select **Switched Port Analyzer Configuration** on the Configuration Menu. The Switched Port Analyzer Configuration panel (Figure 7-20) is displayed.

**Note** The trace tool will be able to monitor only traffic that is switched by the monitored port. MAC frames are not monitored.



Figure 7-20 Switched Port Analyzer Configuration Panel

The following information is displayed on this panel:

• Switched Port Analyzer Port Number—The port to which the network analyzer will be attached.

**Note** This port should be assigned to its own domain. For information about assigning ports to a domain, see "Configuring Multiple Domains" in the chapter "Configuring the Catalyst 2600".

• Port To Monitor—The port that will be monitored.

То	Select	Then
Change the current settings	The appropriate parameter	Specify the value.
Disable the Switched Port Analyzer port	Port to Monitor	Specify 0.
Save your changes	Return	

# **Resetting the Catalyst 2600 and Running Diagnostic Tests**

To reset the switch or to obtain diagnostic information, select **Reset/Diagnostics** on the Main Menu. The Reset/Diagnostics panel (Figure 7-21) is displayed.

Figure 7-21 Reset/Diagnostics Panel

٠.		_0X
Ele Edit Isminal	Connection Options Window Help	
	Reset/Diagnostics	Î
	Number of Resets Since Diagnostics	1
	Reset Switch Without Diagnostics	
	Reset Port Address Table	
	Clear Non-Volatile RAM	
	Power-On Diagnostics	Enabled
311 - BA	Diagnostic Test Results	
Return		
	Return to previous me	nu
Us	e cursor keys to choose item. Press (El Press (CTRL>(N) to return to	NTER> to confirm choice. Main Menu.
812.1	VT300-7 - TELNET(172.18.2.9)	7 Compose Num Caps Hold

- Number Of Resets Since Diagnostics—The number of times the unit has been reset since the unit was powered on or ran power-on diagnostics. This number is not reset to 0 when you reset a port address table.
- Power-On Diagnostics—Whether the power-on diagnostics are run when the Catalyst 2600 is powered on.

То	Select	Then
Reset the Catalyst 2600, clear all counters including address tables, and run diagnostic tests	Reset Switch With Diagnostics	You are prompted to confirm the reset and then to press any key to initiate the reset. This does not clear any user-configured parameters. When the Catalyst 2600 restarts, parameters from NVRAM are used to initiate the operational parameters.
Reset the Catalyst 2600 and clear all counters including address tables without running diagnostic tests	Reset Switch Without Diagnostics	You are prompted to confirm the reset and then to press any key to initiate the reset. This does not clear any user-configured parameters. When the Catalyst 2600 restarts, parameters from NVRAM are used to initiate the operational parameters.
Clear all table entries for a selected port or all ports, set all port traffic counter to 0, and set Time since Last Reset to 0	Reset Port Address Table	
Delete all user-configured parameters, such as IP address and baud rate information, and reset the Catalyst 2600	Clear Non-volatile RAM	
View the results of the most recent running of power-on diagnostics	Diagnostic Test Results	Refer to "Viewing Diagnostic Test Results".

**Note** Clearing NVRAM erases all configuration parameters. If you are using the TokenChannel feature, be sure to disconnect the affected ports or disable them on the corresponding switch *before* clearing NVRAM. If you are using the spanning-tree option, it will be turned off and port costs and priorities will be lost, which can result in loops. Use the menus to reestablish port costs and priorities. If you are using an SNMP manager, you will need to reconfigure all IP and SNMP parameters.

# Viewing Diagnostic Test Results

To view the results of the most recent power-on diagnostics, select Diagnostic Test Results on the Reset/Diagnostics panel. The Diagnostic Test Results panel (Figure 7-22) is displayed.

Edit Isminal Connection Options Window Help		
Diag	nostic Test Results	
Diagnostic Test	Result	
Number of Test Loops	1	
Serial Port	Passed	
Real-Time Clock	Passed	
CPU Transmit Buffers	Passed	
CPU Receive Buffers	Passed	
CPU Loopback Test	Passed	
Port Memory	Passed	
Port Registers	Passed	
T/R Port Loopback Test	Passed	
T/R Cross Port Test	Passed	
T/R Port Broadcast Test	Passed	
CPU Broadcast Test	Passed	
Return		
Ret	turn to previous menu	6- 1 <u>11</u> 1 1
Use cursor keys to sel Press (CTI	ect action. Press (ENTE RL> <n> to return to Mai</n>	R> to confirm choice. n Menu.
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Figure 7-22 Diagnostic Test Results Panel

If the Catalyst 2600 is connected to a terminal via the EIA 232 port, the diagnostic messages (similar to those in Figure 7-23) should appear after you reset the Catalyst 2600 with diagnostics. An abbreviated version of these messages will appear if you reset the Catalyst 2600 without diagnostics.

#### Figure 7-23 Diagnostics Messages

```
Catalyst 2600 Boot Firmware P/N 11152-00 RevA, Copyright 1996
- Initiating bootstrapping sequence.
- Boot image integrity check...Passed.
- Control transferred to boot process.
- Relocating main image to DRAM.....Done.
- Main image integrity...succeeded.
- Control transferred to main process.
Catalyst 2600 started on Fri. January 6, 2000 12:58:0
4 Megabytes System memory
2 Megabytes Network memory
- Initialization started
- File system initialized
- System temperature is within safe operating levels
- Warmboot initialization started
- LAN ports detected:
- Token Ring Ports: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
- Initializing Ports: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
- Initializing system address table
- No existing diagnostic information, forcing diagnostic mode
- Starting Power Up Diagnostics test
- UART loopback test on diagnostic port...Passed
- UART loopback test on console port...Passed
- RTC memory test...Passed
- Real Time Clock test...Passed
- CPU loopback test.....Passed
```

- Token Ring Port loopback test.....Passed

- Token Ring Port cross port loopback test.....Passed
- Token Ring Port broadcast test.....Passed
- CPU broadcast test...Passed
- Completing Power Up Diagnostic
- Activating Ports: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
- Activating IP
- Catalyst 2600 initiating bootp requests on one or more domains
- System initialization complete
- Press RETURN key to activate console...