CHAPTER 20

Troubleshooting LAN Switching Environments

This chapter presents troubleshooting information for connectivity and performance problems in LAN switching environments.

The sections in this chapter describe specific LAN switching symptoms, the problems that are likely to cause each symptom, and the solutions to those problems.

- No Connectivity to the Directly Connected LAN
- No Connectivity to LAN or WAN
- Cannot Access Out-of-Band Management
- Catalyst 1600 Token Ring Port Fails to Open
- Catalyst 1600 Does Not Forward Source-Routed Frames
- Catalyst 1600 Does Not Forward Source-Route Broadcast Frames
- Poor Performance

No Connectivity to the Directly Connected LAN

Symptom: A LAN switch cannot connect to devices on its directly connected LAN.

Table 20-1 outlines the problems that might cause this symptom and describes solutions to those problems.

Table 20-1 LAN Switching: No Connectivity to the Directly Connected LAN

Possible Problem	Solution	
Incorrect or faulty cabling	**Step 1**	Check to see whether the Connected LED on the LAN switch port is on.
	Step 2	If the LED is not on, check to make sure you are using the correct cable and that it is properly and securely attached. For example, make sure that you are not using a rolled cable where a straight-through cable is required, or vice versa.
	Step 3	Make sure the cable is correctly wired. Refer to the user guide for your LAN switch for information on cable pinouts.
	Step 4	Use a TDR or other cable-checking device to verify that the cable has no opens, shorts, or other problems.
	Step 5	Swap the cable with another of the same kind to see if the cable is bad. If connections are now possible, the cable is faulty.
	Step 6	Replace or fix the faulty cable as necessary.
Power supply problem	**Step 1**	Check the Power LED. If it is not on, make sure the LAN switch is plugged in and is powered on.
	Step 2	Check for a blown fuse. If the fuse is blown, refer to the user guide for your LAN switch for information on replacing the fuse.
Hardware problem	**Step 1**	Check to see whether the Connected LED on the port is on.
	Step 2	If the LED is not on and the cabling is intact, there might be a bad switch port or other hardware problem.
	Step 3	Check to see if the Module Enabled LED is on for FDDI and Fast Ethernet modules.
	Step 4	If the LED is not on, remove and reseat the module.
	Step 5	Check the switch hardware and replace any faulty components.

No Connectivity to LAN or WAN

Symptom: A LAN switch cannot connect to devices on another LAN or across a WAN. Attempts to **ping** the switch from remote devices or to **ping** from the switch to remote devices fail.

Table 20-2 outlines the problems that might cause this symptom and describes solutions to those problems.

Table 20-2 LAN Switching: No Connectivity to LAN or WAN

Possible Problem	Solution
IP address misconfigured or not specified	**Step 1** Check to see if there is an IP address configured on the LAN switch. Check to make sure there is an IP address on the device from which you are pinging the switch. **Step 2** If the IP address is misconfigured or is not specified on either device, change or add the IP address as appropriate. Refer to the user guide for your LAN switch for information on how to check and configure the IP address on the switch. Refer to the vendor documentation for the other device for information on how to check and configure the IP address on that device.
Subnet mask configuration error	**Step 1** Check to see if you can **ping** the switch from a device in the same subnet. **Step 2** Check the subnet mask on the device from which you are pinging. Check the subnet mask on the LAN switch. **Step 3** Determine whether the subnet mask on either device is incorrectly specified. If it is, reconfigure the switch or the device, as appropriate, with the correct subnet mask. Refer to the user guide for your LAN switch for information on how to check and configure the subnet mask on the switch. Refer to the vendor documentation for the other device for information on how to check and configure the subnet mask on that device.
No default gateway specified on switch or server	**Step 1** Check to see if there is a default gateway configured on the LAN switch. Check to make sure that all servers and other end systems on the LAN have a default gateway specification. **Step 2** If any of these devices does not have a default gateway specified, configure a default gateway using the IP address of a router interface on the directly connected LAN. Refer to the user guide for your LAN switch for information on how to configure a default gateway on the switch. Refer to the vendor documentation for the other devices for information on how to configure a default gateway on those devices.
VLAN[1] misconfiguration	**Step 1** Make sure that all nodes that should communicate are attached to ports on the same VLAN. If ports are assigned to different VLANs the attached devices cannot communicate. **Step 2** If a port belongs to two or more VLANs, make sure that the VLANs are connected only by the overlapping port. If there are other connections, an unstable network topology can be created. **Step 3** Eliminate any extraneous connections between the two VLANs.
Wrong port 25 connector option	If a switch port has two possible connectors, make sure that the physical connection matches the one configured in the Management Console.

1. VLAN=virtual LAN

Cannot Access Out-of-Band Management

Symptom: The out-of-band Management Console on the LAN switch is inaccessible.

Table 20-3 outlines the problems that might cause this symptom and describes solutions to those problems.

Table 20-3 LAN Switching: Cannot Access Out-of-Band Management

Possible Problem	Solution
Baud rate misconfigured	**Step 1** Make sure that the LAN switch and the attached terminal or modem are configured to use the same baud rate and character format. The autobaud feature on most switches can match the baud rate for incoming calls, but the switch will not change from its configured rate when it is dialing out. Also, the autobaud feature will only match a rate lower than its configured rate. When it completes a call and disconnects, the switch will return to the last configured baud rate. **Step 2** Test the connection using different baud rates. Refer to the user guide for your LAN switch for more information on how to attach a terminal or modem.
Incorrect cabling	A null-modem cable is needed when attaching a LAN switch directly to terminals or other stations. A straight-through cable is needed when attaching the switch to a modem.

Catalyst 1600 Token Ring Port Fails to Open

Symptom: Connections to a Token Ring fail because a Catalyst 1600 Token Ring switch port fails to open correctly.

Table 20-4 outlines the problems that might cause this symptom and describes solutions to those problems.

Table 20-4 LAN Switching: Catalyst 1600 Token Ring Port Fails to Open

Possible Problem	Solution
Incorrect connector	Check to make sure that the Token Ring switch port is connected to the correct connector on the attached device. For detailed information on connector types, refer to the *Catalyst 1600 Token Ring Switch User Guide*.
Interface mode incorrect	**Step 1** Make sure that the interface mode of the Token Ring switch port is appropriate for the attached device. The options are node mode and concentrator mode. **Step 2** Check the port interface mode by reading the port LEDs or LCD panel. **Step 3** You can change the port interface mode using the TrueView Catalyst 1600 Manager, or by connecting a terminal to the serial interface and using the **set port ifmode** command. For detailed information on interface modes, refer to the *Catalyst 1600 Token Ring Switch User Guide*.
Port ring speed incorrect	**Step 1** Make sure the port ring speed is correct for the ring connected to the port. The options are 4 Mbps and 16 Mbps. **Step 2** Check the ring speed by reading the port LEDs or LCD panel. **Step 3** You can change the ring speed using the TrueView Catalyst 1600 Manager, or by connecting a terminal to the serial interface and using the **set port ifspeed** command. For more information on setting the port ring speed, refer to the *Catalyst 1600 Token Ring Switch User Guide*.

Catalyst 1600 Does Not Forward Source-Routed Frames

Symptom: A Catalyst 1600 Token Ring switch fails to forward source-routed frames correctly.

Table 20-5 outlines the problems that might cause this symptom and describes solutions to those problems.

Table 20-5 LAN Switching: Catalyst 1600 Does Not Forward Source-Routed Frames

Possible Problem	Solution	
Source routing not enabled	**Step 1**	Check to see if source routing is enabled on the Catalyst 1600 and on the appropriate port. Check the status of source routing by reading the LCD panel.
	Step 2	You can enable source routing on the Catalyst 1600 and on each port using the TrueView Catalyst 1600 Manager, or by connecting a terminal to the serial interface and using the **enable port srb** command.
Bridge number misconfigured	**Step 1**	Check to see if the bridge number of the Catalyst 1600 is a hexadecimal number in the range 0 through F, and that there are no other devices with the same bridge number connecting the same rings. Check the bridge number by reading the LCD panel.
	Step 2	You can view the bridge number using the TrueView Catalyst 1600 Manager, or by connecting a terminal to the serial interface and using the **show bridge characteristics** command.
Ring number misconfigured	**Step 1**	Check the ring number of each Token Ring switch port and make sure each port has a different ring number. Check the ring number by reading the LCD panel.
	Step 2	If two Catalyst 1600 devices are connected by their Token Ring switch ports, make sure the ring number is identical for both Token Ring ports.
	Step 3	You can set the ring number using the TrueView Catalyst 1600 Manager, or by connecting a terminal to the serial interface and using the **set port segment** command.

Catalyst 1600 Does Not Forward Source-Route Broadcast Frames

Symptom: A Catalyst 1600 Token Ring switch fails to forward source-routed frames correctly.

Table 20-6 outlines the problems that might cause this symptom and describes solutions to those problems.

Table 20-6 LAN Switching: Catalyst 1600 Does Not Forward Source-Route Broadcast Frames

Possible Problem	Solution
VLAN misconfigured	**Step 1** Make sure that VLANs are configured correctly and that each Catalyst 1600 has an up-to-date record of VLANs. To check the VLAN configuration, use the TrueView Catalyst 1600 Manager. **Step 2** Before creating new VLANs, make sure you delete the existing VLANs that are causing problems with forwarding source-route broadcast frames. For detailed information on configuring VLANs, refer to the *Catalyst 1600 Token Ring Switch User Guide*.
Station type incorrect	**Step 1** Check to make sure that the type of station connected to each Token Ring switch port is defined correctly. The options are Workstations and Anything. On Novell IPX and NetBIOS networks, the Catalyst 1600 uses the station type to block broadcast frames originating on workstation-only rings from being forwarded on other workstation-only rings. **Step 2** To configure the station type for each Token Ring switch port, use the TrueView Catalyst 1600 Manager.

Poor Performance

Symptom: Connections across a LAN switch are slow or unreliable.

Table 20-7 outlines the problems that might cause this symptom and describes solutions to those problems.

Table 20-7 LAN Switching: Poor Performance

Possible Problem	Solution
Full- or half-duplex settings incorrect	**Step 1** Check the switch port statistics. **Step 2** If there are FCS and alignment errors on the port, check to see if the port is configured for full duplex. **Step 3** If the port is full duplex, check to see if the other device is a repeater or half-duplex device. If so, configure the switch port for half duplex. **Step 4** If there are late collisions, check to see if the port is configured for half duplex. **Step 5** If the port is half duplex, check to see if the other device is full duplex. If so, configure the switch port for full duplex.
Cabling distance exceeded	**Step 1** Check the switch port statistics. If you see excessive FCS, late-collision, or alignment errors, the maximum cabling distance might be exceeded. **Step 2** Check the cable distance using a cable tester or TDR. Verify that the VLAN segment lengths attached to the switch meet Ethernet/IEEE 802.3 specifications. **Step 3** If the distance is out of specification, reduce the length of the cable run or add a repeater (make sure not to use more than four repeaters).
Bad adapter in attached device	Check the switch port statistics. If excessive errors are found, run the adapter card diagnostic utility to determine the problem. Refer to the user guide for your LAN switch for more information.