

Troubleshooting Transparent Bridging Environments

This chapter presents troubleshooting information for connectivity problems in transparent bridging internetworks.

Note Problems associated with source-route bridging (SRB), translational bridging, and source-route transparent (SRT) bridging are addressed in the “Troubleshooting IBM” chapter.

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

- No Connectivity
- Sessions Terminate Unexpectedly
- Looping and Broadcast Storms Occur

No Connectivity

Symptom: Client cannot connect to hosts across a transparently bridged network.

Table 18-1 outlines the problems that might cause this symptom and describes solutions to those problems.

Table 18-1 **Transparent Bridging: No Connectivity**

Possible Causes	Suggested Actions
Hardware or media problem	Step 1 Use the show bridge EXEC command to see if there is a connectivity problem. If there is, the output will not show any MAC addresses in the bridging table. Step 2 Use the show interfaces EXEC command to determine whether the interface and line protocol are up. Step 3 If the interface is down, troubleshoot the hardware or the media. Refer to the “Troubleshooting Hardware and Booting Problems” chapter. Step 4 If the line protocol is down, check the physical connection between the interface and the network. Make sure that the connection is secure and that cables are not damaged. Step 5 If the line protocol is up but input and output packet counters are not incrementing, check the media and host connectivity. Refer to the “Troubleshooting LAN Media Problems” chapter, or the “Troubleshooting Serial Line Problems” chapter as appropriate.
Hellos not being exchanged	Step 1 Check to see if bridges are communicating with one another. Use a network analyzer or the debug spanning-tree privileged EXEC command to see if spanning-tree hello frames are being exchanged. Caution: Exercise caution when using the debug spanning-tree command. This command can cause problems if used on a heavily loaded router. Step 2 If hellos are not being exchanged, check the physical connections and software configuration on bridges.
Misconfigured bridging filters	Step 1 Use the show running-config privileged EXEC command to determine whether there are bridge filters configured. Step 2 Disable bridge filters on suspect interfaces and determine whether connectivity returns. Step 3 If connectivity does not return, the filter is not the problem. If connectivity is restored after removing filters, one or more bad filters are causing the connectivity problem. Step 4 If multiple filters or filters using access lists with multiple statements exist, apply each filter individually to identify the problem filter. Check the configuration for input and output LSAP and TYPE filters, which can be used simultaneously to block different protocols. (For example, LSAP (F0F0) can be used to block NETBIOS and TYPE (6004) can be used to block LAT.) Step 5 Modify any filters or access lists that are blocking traffic. Continue testing filters until all filters are enabled and connections still work.

Possible Causes	Suggested Actions
Input and output queues full	Excessive multicast or broadcast traffic can cause input and output queues to overflow, resulting in dropped packets. Step 1 Use the show interfaces command to look for input and output drops. Drops suggest excessive traffic over the media. Step 2 Reduce broadcast and multicast traffic on attached networks by implementing bridging filters, or segment the network using more internetworking devices. Step 3 If the connection is a serial link, increase bandwidth, apply priority queuing, increase the hold queue size, or modify the system buffer size. For more information, refer to the “Troubleshooting Serial Line Problems” chapter.
Host is down	Step 1 Use the show bridge EXEC command on bridges to make sure that the bridging table includes the MAC addresses of attached end nodes. The bridging table is comprised of the source and destination MAC addresses of hosts and is populated when packets from a source or destination pass through the bridge. Step 2 If any expected end nodes are missing, check the status of the nodes to verify that they are connected and are properly configured. Step 3 Reinitialize or reconfigure end nodes as necessary and reexamine the bridging table using the show bridge command.

Sessions Terminate Unexpectedly

Symptom: Connections in a transparently bridged environment are successfully established, but sessions sometimes terminate abruptly.

Table 18-2 outlines the problems that might cause this symptom and describes solutions to those problems.

Table 18-2 Transparent Bridging: Sessions Terminate Unexpectedly

Possible Causes	Suggested Actions
Excessive retransmissions	Step 1 Use a network analyzer to look for host retransmissions. Step 2 If you see retransmissions on slow serial lines, increase the transmission timers on the host. For information on configuring your hosts, refer to the vendor documentation. For information on troubleshooting serial lines, refer to the “Troubleshooting Serial Line Problems” chapter. Step 3 If you see retransmissions on high-speed LAN media, check for packets sent and received in order, or dropped by any intermediate device such as a bridge or switch. Troubleshoot the LAN media as appropriate. For more information, refer to the “Troubleshooting LAN Media Problems” chapter. Step 4 Use a network analyzer to determine whether the number of retransmissions subsides.
Excessive delay over serial link	Increase bandwidth, apply priority queuing, increase the hold queue size, or modify the system buffer size. For more information, refer to the “Troubleshooting Serial Line Problems” chapter.
Multiple root bridges	If there are multiple root bridges in the network, the root of the spanning tree can periodically change, causing connections to drop. Step 1 Use a network analyzer to find out if there are multiple root bridges. You can also use the show span EXEC command on each bridge to see if a bridge is a root bridge. Step 2 If there are multiple root bridges in the network, eliminate the extraneous root bridges. Use the bridge group priority number command on root bridges to force the desired bridge to become the root. The lower the priority the more likely the bridge is to become the root.

Looping and Broadcast Storms Occur

Symptom: Packet looping and broadcast storms occur in transparent bridging environments. End stations are forced into excessive retransmission, causing sessions to time out or drop.

Note Packet loops are typically caused by network design problems.

Table 18-3 outlines the problems that might cause this symptom and describes solutions to those problems.

Table 18-3 **Transparent Bridging: Looping and Broadcast Storms Occur**

Possible Causes	Suggested Actions
No spanning tree implemented	Step 1 Examine a topology map of your internetwork to check for possible loops. Step 2 Eliminate any loops that exist or make sure that the appropriate links are in backup mode. Step 3 If broadcast storms and packet loops persist, use the show interfaces EXEC command to obtain input and output packet count statistics. If these counters increment at an abnormally high rate (with respect to your normal traffic loads), a loop is probably still present in the network. Step 4 Implement a spanning-tree algorithm to prevent loops.
Spanning-tree algorithm mismatch	Step 1 Use the show span EXEC command on each bridge to determine which spanning-tree algorithm is being used. Step 2 Make sure that all bridges are running the same spanning-tree algorithm (either DEC or IEEE). If both DEC and IEEE algorithms are being used, reconfigure bridges as appropriate so that all bridges use the same spanning-tree algorithm. Note: The DEC and IEEE spanning-tree algorithms are incompatible.
Multiple bridging domains incorrectly configured	Step 1 Use the show span EXEC command on bridges to ensure that all domain group numbers match for given bridging domains. Step 2 If multiple domain groups are configured for the bridge, ensure that all domain specifications are assigned correctly. Use the bridge group domain domain-number global configuration command to make any necessary changes. Step 3 Make sure that no loops exist between bridging domains. An interdomain bridging environment does not provide loop prevention based on spanning tree. Each domain has its own spanning tree which is independent of the spanning tree in another domain.

