

Error Statistics on the Cisco Aironet 340 Series Bridge

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Introduction

This document explains the causes of errors on the Cisco Aironet 340 Series Bridge and suggests actions to alleviate potential problems.

The menu system of the Cisco Aironet 340 Series Bridge provides a synopsis of error conditions that have occurred on the Ethernet interface and the radio interface. While certain events are listed as errors, not all errors negatively affect the network; some errors are normal for the circumstances where the bridge is employed.

Note: In most cases you must run the latest available software on the bridge. If you experience unusual behavior, upgrade the firmware on the bridge before you troubleshoot extensively.

You can download the latest software and drivers at the Cisco Downloads (registered customers only) page.

Refer to Upgrading Firmware on the Cisco Aironet 340 Series Bridge for more information on firmware upgrades.

Prerequisites

Requirements

There are no specific prerequisites for this document.

Components Used

The information in this document is based on the Cisco Aironet 340 Series Bridge.

Conventions

Refer to Cisco Technical Tips Conventions for more information on document conventions.

Connect to the Bridge and Navigate the Menus

The most common ways to access the menu system for the bridge are:

- Direct console connection to the console port
- Telnet session to the internal IP address of the bridge
- HTTP connection to the internal IP address of the bridge

Console

In order to gain access through the console or serial port, the bridge must be connected to a terminal or a PC that runs a terminal emulation program. Use a 9-pin male to 9-pin female straight-through cable to connect the console port to the serial port on a terminal or a PC that runs a terminal emulation program. Set the session to:

```
9600 bits per second (bps)
No parity
8 data bits
1 stop bit
Xon/Xoff flowcontrol
```

Telnet

If you perform the initial configuration of the bridge to the point that an IP address is assigned, you can use a Telnet command to connect to the IP address and gain access to the menu system.

```
C:\WINDOWS> telnet <IP address of the bridge>
```

The menus that appear are identical to those you see when you use a direct console connection.

HTTP

You can use a web browser to connect to the bridge for access to the menus. Type this in the Location or Address box of your browser:

```
http://<IP address of the bridge> [ENTER]
```

Note: Menus from HTTP appear different from the console menus. However, the same options are present. Instead of a text box where you can type commands, each of the menu options is a hyperlink. Click the appropriate hyperlink to access the sub-menu you want.

Menu Navigation

Select Statistics from the Main menu. The Statistics menu provides a broad array of information about the performance of the bridge. However, this document only considers options #2 Radio and #3 Ethernet. For information about other displays, refer to Using the Cisco Aironet 340 Series Bridge.

Radio Error Statistics

The Radio Error Statistics Display provides a detailed summary of radio receiver and transmitter errors. In order to access the Error Statistics Display, select **Main > Statistics > Radio**.

RADIO ERROR STATISTICS			
Receive		Transmit	
Buffer full frames lost	0	Retries	45
Duplicate frames	0	Max retries / frame	7 +7
CRC errors	0	Excessive retries	0
		Queue full discards	0
Enter space to redisplay, C[lear stats], q[uit]:			

Receive Errors

Buffer Full Frames Lost

This error indicates the number of frames lost due to lack of buffer space in the unit.

When the bridge receives frames, the bridge must buffer the frames until they are sent to the Ethernet. If you see a large number of these errors, check the Ethernet error statistics for transmit problems.

Duplicate Frames

This error displays the number of frames received more than once. This error usually occurs due to the loss of a frame acknowledgment.

CRC Errors

CRC errors indicate the number of frames received with an invalid CRC. These errors usually occur due to interference from nearby radio traffic, but can also occur due to poor radio link characteristics or random radio noise when the receiver is idle.

If you see a high number of CRC errors, perform these actions:

- Check the Line of Sight (LOS) between the transmitter and the receiver. Try to ensure that the LOS is clear.
- Change the frequency to one with less interference.
- Ensure that the antennae and cables are appropriate for the distance of the radio link. Download the Antenna Calculation Tool (Microsoft Excel format) and verify the configuration of the physical elements of your connection.

Transmit Errors

Retries

This type of error provides a cumulative count of the number of times a frame was retransmitted because an acknowledgment was not received.

At times an ACK is not seen from the remote. Here are some common reasons:

- The packet to be acknowledged is received with a CRC error.
- The ACK becomes corrupt in transit.

Treat this issue as you would treat a CRC problem.

Another possibility is an improper configuration of the **Distance** parameter. The radio link between bridges can be long. Therefore, the radio signal takes so long to travel between the radios that the delay on the link is longer than the time the bridge waits for an ACK. The **Distance** parameter is used to adjust the various timers used in the radio protocol to account for the extra delay. Refer to Using the Cisco Aironet 340 Series Wireless Bridges for configuration details.

Max Retries/Frame

This error indicates the maximum number of times a frame was retransmitted. Excessive retries indicate a poor quality radio link.

Queue Full Discards

This error displays the number of times a packet was not transmitted due to excessive retries to the same destination. Discards only occur if packets destined to this address take up more than their share of transmit buffers.

Queue Full Discards occur when traffic enters the bridge from the Ethernet faster than the bridge can forward the traffic across the radio link. When the radio transmit queue fills up, packets are discarded.

This problem occurs if the radio link is of poor quality. This means the effective throughput of the radio link can be somewhat below 11 Mbps (due to CRCs and retries). When a high volume of traffic travels from the Ethernet, the transmit buffers get full and discard frames.

Holdoffs

Holdoffs indicate the number of times that the radio transmitter could not transmit because the receiver detected the "carrier busy" message. Large numbers of holdoffs can occur due to many other Wireless LAN devices that transmit in the area, or due to the presence of other devices, for example, cordless telephones, that operate in the 2.4GHz range.

Ethernet Error Statistics

The Ethernet Error Statistics Display provides a detailed summary of Ethernet errors. In order to access this Ethernet Errors Statistics Display, select **Menu > Statistics > Ethernet**.

ETHERNET ERROR STATISTICS			
Cleared 19:36:31 ago			
Receive		Transmit	

Buffer full frames lost	0	Excessive collisions	0
CRC errors	0	Deferrals	273
Collisions	2 +2	Excessive deferrals	0
Frame alignment errors	0	No carrier sense present	0
Over-length frames	0	Carrier sense lost	0
Short frames	0	Out of window collisions	0
Overruns	0	Underruns	0
Misses	0	Bad length	0
Enter space to redisplay, C[lear stats], q[uit] :			

Receive Errors

Buffer Full Frames Lost

This error indicates the number of frames lost due to a lack of receiver buffer space in the unit.

Buffer Full Frames Lost is the counterpart to the Queue Full Discard radio transmit error. If the radio transmit buffers are full, frames from the ethernet cannot be queued for transmit and are buffered until no space remains. When no space remains, the frames are discarded.

CRC Errors

CRC errors occur when a number of frames arrive with an invalid CRC.

CRCs on the Ethernet are usually an indication of cabling problems. Verify whether all network cable connections are clean, and ensure there is nothing that can cause electromagnetic interference on the cabling.

Collisions

Collisions indicate the number of times a collision occurs while the frame arrives. A large number of collisions indicates a hardware problem with an Ethernet node on the infrastructure.

Frame Alignment Errors

These errors indicate the number of frames received with size in bits that are not a multiple of eight. Occasionally, extra bits of data are inadvertently attached to a transmitted packet and cause a frame alignment error.

Over-length Frames

Over-length frames indicate the frames received that are longer than the configured maximum packet size.

Short Frames

Short frames indicate frames received that are shorter than the allowed minimum packet size of 64 bytes.

Overruns

Overruns indicate the number of times the hardware receives First-In-First-Out (FIFO) overflow. This must be a rare occurrence.

Misses

Misses are the Ethernet packets that are lost due to lack of buffer space on the unit.

Transmit Errors

Excessive Collisions

These transmit errors display the number of times transmissions fail due to excessive collisions. This type of error usually indicates the continuous retrial of a frame due to heavy traffic on the Ethernet infrastructure.

Deferrals

Deferrals indicate the number of times frames wait before transmission due to activity on the cable.

Excessive Deferrals

This indicates the number of times the frame fails to transmit due to excessive deferrals, and usually indicates the continuous retrial of a frame due to heavy traffic on the Ethernet infrastructure.

No Carrier Sense Present

These errors provide the number of times the carrier is not present when a transmission starts. This type of error usually indicates a problem with a cable on the Ethernet infrastructure.

Carrier Sense Lost

Carrier Sense Lost indicates the number of times the carrier is lost during a transmission, and usually indicates a problem with a cable on the Ethernet infrastructure.

Out of Window Collisions

This error represents the number of times a collision occurs after the 64th byte of a frame is transmitted. This error usually indicates a problem with a cable on the Ethernet infrastructure.

Underruns

Underruns indicate the number of times the hardware transmit FIFO became empty during a transmit. This is a rare occurrence.

Bad Length

Bad Length indicates the number of attempts to transmit frames that are longer than the configured maximum packet size.

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