

Monitoring Token Ring Networks Using Ring Monitor

Introduction

In this chapter you'll learn how to use Ring Monitor to configure, display, and print Token Ring statistics collected using group 10 of the RMON MIB. The RMON MIB is defined in RFC 1757. The Group 10 Token-Ring specific extensions are defined in RFC 1513. Group 10 is enabled automatically whenever a Token Ring agent is powered on and finishes its initialization sequence.

Using Ring Monitor

To use Ring Monitor to monitor a Token Ring network:

- Step 1** Select a Token Ring agent from the Agent selection list box in the TrafficDirector window.
- Step 2** Click on the Ring Monitor icon in the TrafficDirector window. The Ring Monitor window, showing the default Status View, appears.

The Status View shows a list of the stations the agent has seen since it was powered on. You can sort this listing in a number of ways. Status View is the default view. You can also select a Summary View.

Selecting Status View or Summary View

You have a choice of two Ring Monitor views: Status View and Summary View. Each view provides different information in the window's list box.

- **Status View** is the default view. It provides a list of the stations the agent has seen since it was powered on, and provides basic information about each station.
- **Summary View** provides an error summary for each station.

To select a view:

- Step 1** Select the **View** menu.
- Step 2** Click on either Status or Summary.

List Box Information

The two Ring Monitor views show different information in the list box about the stations on the ring.

The list box contains the following information when you are in Status View:

List Box Heading, Status View	What it Tells You
Ring Order	The order of this station in the ring.
Station	The name of the station.
Address	The address of the station.
Last Enter Time	The last time the station entered the ring.
Last Exit Time	The last time the station exited the ring.
RIns	Ring insertions. The number of times a station has been inserted into the ring.
Dups	Duplicate addresses.
Status	Whether a station is active or inactive.

When the Ring Monitor window is in Summary View, the list box contents are as described below.

List Box Heading, Summary View	What it Tells You
Ring Order	The order of this station in the ring.
Station Address	The address of the station.
Last NAUN Address	NAUN stands for “nearest active upstream neighbor.” The Last NAUN Address is thus the address of the nearest active upstream neighbor of the station.
Soft Errors	Soft errors are errors that occur normally in the ring. They do not cause the network to come down. Soft errors come in two types: isolating and non-isolating. An isolating soft error is an error that can be isolated to a single station; a non-isolating error cannot be isolated to a single station. Furthermore, isolating soft errors come in two types: input and output. Soft errors are explained further in Understanding and Viewing Errors, below.
Hard Errors - Beacons	A beacon is the equivalent of a ring reset. A beacon indicates a serious problem and can bring the ring down. There are two types of beacon: input and output. Beacons are explained further in Understanding and Viewing Errors, below.

Selecting Active Stations Only

You may want to see data only for active stations. To do so:

- Step 1** Select the **View** menu.
- Step 2** Click on **Active Stations Only**.

Sorting List Box Information

You can change the way TrafficDirector sorts the information provided in the window's list box. You can use any of these variables to determine the sort order:

- **Ring Order.** The position of the station in the ring. The default.
- **MAC Order.** MAC addresses in descending order.
- **Enter Time.** The last time the station has entered the Ring. The sort is in descending order.
- **Exit Time.** The last time the station has exited the Ring. The sort is in descending order.
- **Hard Errors.** (Summary window only.) Sums the two types of hard errors for the station, **In** and **Out**, and sorts in descending order. See the discussion of errors that follows.
- **Soft Errors.** (Summary window only.) Sums the three types of soft errors for the station, **In**, **Out**, and **Non** (non-isolating), and sorts them in descending order. See the discussion of errors in the section "Understanding and Viewing Errors."

To change the list box sort order:

- Step 1** Select the Sort menu.
- Step 2** Click the desired sort order. Note that two of the sort order options are available only in the Summary window.

Refreshing the Station Information

You can refresh the station list box information to display the most recent data. Click on the **Refresh** button, and TrafficDirector updates the list box data.

Removing a Station from the Token Ring

You can remove a station from the token ring using Ring Monitor.



Caution This procedure removes the selected station from the token ring. Use it with extreme caution.

To remove a station from the token ring:

- Step 1** Select the station you want to remove by highlighting it in the list box.
- Step 2** Click on the **Remove** button. A cautionary dialog box appears asking you if you really want to remove the station.
- Step 3** Click on **OK** to remove the station, or **Cancel** to quit without removing the station.

Printing the Contents of the List Box

You may want to print the contents of the Ring Monitor window list box (in either status or summary view) for future reference.

To print the contents of the list box:

Step 1 Select the **File** menu.

Step 2 Click on Print. The contents of the list box are printed on your default printer.

Exiting Ring Monitor

To exit Ring Monitor:

Step 1 Select the **File** menu.

Step 2 Click on Exit.

Viewing a Station's Configuration

Ring Monitor's **View Config** function lets you see a selected station's group address, MAC address, last update time, and functional address.

To view a station's configuration:

Step 1 Select the appropriate agent from the TrafficDirector main window.

Step 2 Select the Ring Monitor icon in the TrafficDirector main window. The Ring Monitor Station List window appears.

Step 3 Click on **View Config** from the Ring Monitor window. The Station Configuration window appears.

Step 4 You can update the configuration information for this station at any time. To do so, select the **Update** button from the Station Configuration window. The agent obtains the latest configuration from the station. To see the latest update, again click on **View Config** from the Ring Monitor window.

Step 5 Click on **OK** when you are finished viewing the station configuration.

Understanding and Viewing Errors

In this section you'll learn how to view token ring errors. This discussion provides only a brief overview of these errors. See the applicable token ring reference manuals for a complete explanation.

TrafficDirector looks at two types of token ring errors: soft errors and hard errors. There are other token ring errors, but this section covers only those that TrafficDirector uses.

Soft Errors

A soft error is an error that occurs during normal ring operation. It does not cause the ring to come down. There are two types of soft errors: isolating and non-isolating.

Isolating Errors

An isolating error is a soft error that can be isolated to a single station. There are two types of isolating soft error: input and output:

- An input isolating error is calculated by summing Line Errors plus Burst Errors. Input isolating errors usually indicate a problem with the station's NAUN (its nearest active upstream neighbor).
- An output isolating error is calculated by summing Line Errors, Burst Errors, Internal Errors, AC, and Abort Errors. Output isolation errors usually indicate a problem with the station itself.

Non-Isolating Errors

A non-isolating error is a soft error that cannot be isolated to a single station. A non-isolating error is calculated by summing Lost Frames, Congestion, Frame Copied, Token, and Frequency Errors. Non-isolating errors do not indicate a problem with a particular station but, rather, with the ring itself.

Hard Errors

A hard error is the equivalent of a system reset. It is a serious error that can bring the ring down. Hard errors are specific to a single station on the ring. There are two types:

- Input. The number of beacon frames sent.
- Output. The number of beacon frames with this station as NAUN.

Viewing Errors

There are two ways to view token ring errors:

- Errors are summarized in the Summary View in the Ring Monitor window. You obtain this view by selecting **Summary** from the **View** menu in the Token Ring Station List window.
- You can view a detailed list of errors for a particular station.

To view a detailed list of errors for a particular station:

- Step 1** Select the appropriate agent from the TrafficDirector main window.
- Step 2** Click on the Ring Monitor icon from the TrafficDirector main window. The Ring Monitor Station List window appears.
- Step 3** Select the station for which you want to view errors from the list box in the Ring Monitor window.
- Step 4** Click on **View Errors**. The Station Statistics window appears. This window lists Ring Station Information, Soft Errors, and Hard Errors.
- Step 5** Click on **OK** when you are finished viewing the station statistics.

Viewing Inter-Ring and Intra-Ring Traffic

You can see a detailed summary of both traffic passing in and out of the ring, and traffic within the ring. To do so, use TrafficDirector's Source Routing Information application.

To view a summary of ring traffic:

- Step 1** Select the appropriate agent from the TrafficDirector main window.
- Step 2** Click on the Ring Monitor icon from the TrafficDirector main window. The Ring Monitor Station List window appears.
- Step 3** In the Ring Monitor window, select the station for which you want a traffic summary.
- Step 4** Click on the **SR Monitor** button in the Ring Monitor window. The Source Routing Monitor window appears.

Selecting the Sample Interval

You can change the interval at which TrafficDirector takes new data on ring traffic. The default polling interval is 15 seconds.

To change the sample interval:

- Step 1** Select the **Sample** menu.
- Step 2** Select the desired sample interval. The range is from 15 seconds to 5 minutes.

Getting Agent Information

You can get system and interface information on the selected agent directly from the SR Monitor window. There are two ways to do so:

- Step 1** Click on the **Agent Info** button, or Select the **Tools** menu, then click on the **Agent Info selection**. The agent information window appears.
- Step 2** Click on **OK** when you are finished viewing the agent information.

Printing Source Routing Information

You can print the contents of the Source Routing Monitor window. To do so:

- Step 1** Select the **File** menu.
- Step 2** Click on Print. TrafficDirector prints the screen contents to your default printer.

Exiting the Source Routing Monitor

To exit the Source Routing Monitor window:

- Step 1** Select the **File** menu.
- Step 2** Click on Exit.