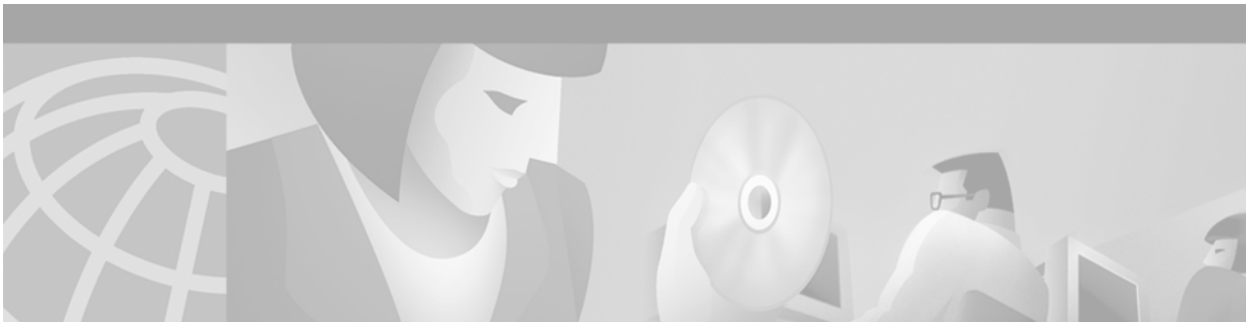

Distributed Compressed Real-Time Transport Protocol

This feature module describes the distributed Compressed Real-Time Transport Protocol (dCRTP) feature.

This document includes the following sections:

Feature Overview

The dCRTP feature compresses the combined 40-byte IP/UDP/RTP packet headers to between two and four bytes on packets traveling on a Cisco 7500 series router with a Versatile Interface Processor (VIP) in distributed fast-switching and distributed Cisco Express Forwarding (dCEF) environments. This compression reduces the packet size, improves the speed of packet transmission, and reduces packet latency.

Before Cisco IOS Release 12.1(5)T, if compression of TCP or Real-Time Transport Protocol (RTP) headers was enabled on a Cisco 7500 series router with a VIP, the compression was performed in the process-switching path. That meant that packets traversing interfaces that had TCP or RTP header compression enabled were queued and passed up to the Route Switch Processor (RSP) to be switched. This procedure slowed down transmission of the packet, and therefore some users preferred to fast-switch uncompressed TCP and RTP packets rather than enable TCP and RTP compression.

If the dCRTP feature is enabled, the header compression of the combined IP/UDP/RTP header occurs by default in the distributed fast-switched path or the distributed Cisco Express Forwarding-switched (dCEF-switched) path, depending on which switching method is enabled on the interface.

If distributed fast-switching or distributed Cisco Express Forward switching are disabled, TCP or RTP header compression will occur in the process-switched path as before.

Benefits

Additional Functionality Capabilities for the RSP

The dCRTP feature offloads the IP/UDP/RTP header compression from the Route Switch Processor (RSP), scaling it for other functionality.

Enhanced 7500 Series Router Scalability for Enterprise and Service Provider Networks

The dCRTP feature helps support cRTP for large Enterprise and Service Provider networks on a single Cisco 7500 series router acting as an aggregation point.

Additional Support for Voice over IP Streams

The dCRTP feature allows for more Voice over IP (VoIP) streams to be supported without any major performance degradation on the RSP.

Accelerates Speed of Packet Transmission

The dCRTP feature reduces the size of the packet, which allows for a higher packet transmission speed.

Improved Latency

The dCRTP feature reduces the size of the packet. The smaller packet leaves less latency on a transmission ring, allowing for higher data quality.

Restrictions

- Because statistical updates are sent to the RSP by the VIP once every 10 seconds. a 10-second delay may be experienced when displaying traffic statistics using the **show ip rtp header-compression** or **show ip tcp header-compression** commands.
- The detail option is not available with the **show ip rtp header-compression** and **show ip tcp header-compression** commands when distributed fast-switching is enabled. Users who need the detailed information for either of these commands can retrieve this information by disabling distributed fast-switching and then entering the **show ip rtp header-compression detail** or **show ip tcp header-compression detail** commands.
- This restriction affects Multilink PPP interfaces that use link fragmentation and interleaving (LFI). In this case, if RTP header compression is configured, RTP packets originating on or destined to the router will be fast-switched if the link is limited to one channel. If the link has more than one channel, the packets will be process-switched.
- This feature is not available for Async and Dialer interfaces.

Related Documents

- *Configuring Compressed Real-Time Protocol* document
- *Express RTP and TCP Header Compression* feature module

Supported Platforms

This feature is supported on Cisco 7500 series routers with a Versatile Interface Processor

Supported Standards, MIBs, and RFCs

Standards

No new or modified Standards are supported by this feature.

MIBs

No new or modified MIBs are supported by this feature.

For descriptions of supported MIBs and how to use MIBs, see the Cisco MIB web site on CCO at http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml.

RFCs

- RFC 1144, *Compressing TCP/IP Headers for Low-Speed Serial Links*
- RFC 2507, *IP Header Compression*
- RFC 2508, *Compressing IP/UDP/RTP Headers for Low-Speed Serial Links*

Prerequisites

In order for this feature to work, the following prerequisites must be met:

- Distributed CEF switching or distributed fast switching must be enabled on the interface.
- High-level Data Link Control (HDLC), PPP, or Frame Relay encapsulation must be configured.
- TCP or RTP header compression, or both, must be enabled.
  - For information on configuring RTP header compression, see the *Configuring Compressed Real-Time Protocol* document on CCO and the Documentation CD-ROM.
  - For information on configuring TCP header compression, see the "Compress TCP Packet Headers" section of the *Configuring IP Services* document on CCO and the Documentation CD-ROM.

Configuration Tasks

This document assumes that TCP or RTP header compression (or both) is already enabled. For information on configuring RTP header compression, see the *Configuring Compressed Real-Time Protocol* document on CCO and the Documentation CD-ROM. For information on configuring TCP header compression, see the "Compress TCP Packet Headers" section of the *Configuring IP Services* document on CCO and the Documentation CD-ROM.

If TCP or RTP header compression is enabled, the header compression is performed in the distributed CEF-switched or distributed fast-switched path automatically. No additional configuration tasks are required.

The following task is optional:

- Changing the Number of Header Compression Connections (Optional)

Changing the Number of Header Compression Connections

By default, for Frame Relay encapsulation, there can be 256 TCP header compression connections and 256 RTP header compression connections (128 calls for each type). The maximum value is fixed, not configurable.

By default, for PPP or HDLC encapsulation, the software allows 32 TCP header compression connections (16 calls). This default can be increased to a maximum of 256 TCP header compression connections. The software also allows 32 RTP header compression connections (16 calls). This default can be increased to a maximum of 1000 RTP header compression connections on an interface.

To change the number of compression connections supported, use the appropriate command in interface configuration mode:

Command	Purpose
ip tcp compression-connections *number*	Specifies the total number of TCP header compression connections supported on the interface.
ip rtp compression-connections *number*	Specifies the total number of RTP header compression connections supported on the interface.

Configuration Examples

This section contains the following express RTP header compression examples:

- Distributed Compressed RTP Header Compression
- Express TCP Header Compression Example

Distributed Compressed RTP Header Compression

The following example shows the output of the **show ip rtp header** command when a Cisco 7500 with a VIP has the dCRTP feature enabled. When the dCRTP feature is disabled, the distributed fast switched line of the output, which is in italics for emphasis, does not appear.

```
Router# show ip rtp header
RTP/UDP/IP header compression statistics:
   Interface Serial4/1/1:
   Distributed fast switched:
   8 seconds since line card sent last stats update
     Rcvd:   0 total, 0 compressed, 0 errors
              0 dropped, 0 buffer copies, 0 buffer failures
     Sent:   0 total, 0 compressed,
              0 bytes saved, 0 bytes sent
     Connect:16 rx slots, 16 tx slots,
              0 long searches, 0 misses 0 collisions
```

Express TCP Header Compression Example

The following example shows the output of the **show ip tcp header** command when a Cisco 7500 with a VIP has the dCRTP feature enabled. When the dCRTP feature is disabled, the distributed fast switched line of output, which is in italics for emphasis, does not appear.

```
Router# show ip tcp header
TCP header compression statistics:
   Interface Serial4/1/1:
   Distributed fast switched:
     8 seconds since line card sent last stats update
     Rcvd:   0 total, 0 compressed, 0 errors
              0 dropped, 0 buffer copies, 0 buffer failures
     Sent:   0 total, 0 compressed,
              0 bytes saved, 0 bytes sent
     Connect:16 rx slots, 16 tx slots,
              0 long searches, 0 misses 0 collisions
```

Command Reference

This section documents the following revised commands. All other commands used in this document can be found in the Cisco IOS 12.1 documentation set.

- **show ip rtp header-compression**
- **show ip tcp header-compression**

show ip rtp header-compression

To show RTP header compression statistics, use the **show ip rtp header-compression** EXEC command.

show ip rtp header-compression [*type number*] [*detail*]

Syntax Description

type	(Optional) Specifies the interface type.
number	(Optional) Specifies the interface number.
detail	(Optional) Displays details of each connection.

Defaults

No default behavior or values.

Command Modes

EXEC

Command History

Release	Modification
11.3	This command was introduced.
12.1(5)T	The command output was modified to include information related to the Distributed Compressed Real-Time Transport Protocol (dCRTP) feature.

Usage Guidelines

The **detail** option is not available with the **show ip rtp header-compression** command on the RSP. However, the **detail** option is available with the **show ip rtp header-compression** commands on the VIP. Enter the **show ip rtp header-compression** *interface* **detail** command on the VIP to retrieve detailed information regarding RTP header compression on a specific interface.

Examples

The following example shows the output of the **show ip rtp header-compression** command when a Cisco 7500 with a VIP has the dCRTP feature enabled. When the dCRTP feature is disabled, the distributed fast switched line on output, which is italicized for emphasis, does not appear.

```
Router# show ip rtp header-compression
RTP/UDP/IP header compression statistics:
   Interface Serial4/1/1:
   Distributed fast switched:
   8 seconds since line card sent last stats update
     Rcvd:   0 total, 0 compressed, 0 errors
              0 dropped, 0 buffer copies, 0 buffer failures
     Sent:   0 total, 0 compressed,
              0 bytes saved, 0 bytes sent
     Connect:16 rx slots, 16 tx slots,
              0 long searches, 0 misses 0 collisions
```

Related Commands

Command	Description
ip rtp header-compression	Enables RTP header compression
ip rtp compression-connections *number*	Specifies the total number of RTP header compression connections supported on the interface.

show ip tcp header-compression

To show TCP header compression statistics, use the **show ip tcp header-compression** EXEC command.

show ip tcp header-compression [*type number*] [*detail*]

Syntax Description

type	(Optional) Specifies the interface type.
number	(Optional) Specifies the interface number.
detail	(Optional) Displays details of each connection.

Defaults

No default behavior or values.

Command Modes

EXEC

Command History

Release	Modification
11.3	This command was introduced.
12.1(5)T	The command output was modified to include information related to the Distributed Compressed Real-Time Transport Protocol (dCRTP) feature.

Usage Guidelines

The detail option is not available with the **show ip rtp header-compression** and **show ip tcp header-compression** commands when distributed fast-switching is enabled. Users who need the detailed information for either of these commands can retrieve this information by disabling distributed fast-switching and then entering the **show ip rtp header-compression detail** or **show ip tcp header-compression detail** commands.

Examples

The following example shows the output of the **show ip tcp header** command when a Cisco 7500 with a VIP has the dCRTP feature enabled. When the dCRTP feature is disabled, the distributed fast switched line of output, which is italicized for emphasis, does not appear.

```
Router# show ip tcp header-compression
TCP header compression statistics:
   Interface Serial4/1/1:
   Distributed fast switched:
   8 seconds since line card sent last stats update
     Rcvd:   0 total, 0 compressed, 0 errors
              0 dropped, 0 buffer copies, 0 buffer failures
     Sent:   0 total, 0 compressed,
              0 bytes saved, 0 bytes sent
     Connect:16 rx slots, 16 tx slots,
              0 long searches, 0 misses 0 collisions
```

Related Commands

Command	Description
ip tcp header-compression	Enables TCP header compression
ip tcp compression-connections *number*	Specifies the total number of TCP header compression connections supported on the interface.