

# Express RTP and TCP Header Compression

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This feature module describes the Express RTP and TCP Header Compression feature. It includes information on the benefits of the new feature, supported platforms, related documents, and so forth.

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## Feature Overview

Before Cisco IOS Release 12.0(7)T, if compression of TCP or Real-Time Transport Protocol (RTP) headers was enabled, 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 process to be switched. This procedure slowed down transmission of the packet, and therefore some users preferred to fast switch uncompressed TCP and RTP packets.

Now, if TCP or RTP header compression is enabled, it occurs by default in the fast-switched path or the Cisco Express Forwarding-switched (CEF-switched) path, depending on which switching method is enabled on the interface. Furthermore, the number of TCP and RTP header compression connections was increased to 1000 connections each.

If neither fast switching nor CEF switching is enabled, then if TCP or RTP header compression is enabled, it will occur in the process-switched path as before.

## Benefits

The Express RTP and TCP Header Compression feature has the following benefits:

- It reduces network overhead.
- It speeds up transmission of TCP and RTP packets. The faster speed provides a greater benefit on slower links than faster links.

### Restrictions

- 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.
- The Express RTP and TCP Header Compression feature is not available for Async and Dialer interfaces.

### Related Documents

The TCP header compression aspect of this feature is related to these documents:

- Cisco IOS Release 12.0 *Network Protocols Configuration Guide, Part 1*, the chapter “Configuring IP Services”
- Cisco IOS Release 12.0 *Network Protocols Command Reference, Part 1*, the chapter “IP Services Commands”

The RTP header compression aspect of this feature is related to these documents:

- Cisco IOS Release 12.0 *Network Protocols Configuration Guide, Part 1*, the chapter “Configuring IP Multicast Routing”
- Cisco IOS Release 12.0 *Network Protocols Command Reference, Part 1*, the chapter “IP Multicast Routing Commands”

The CEF and fast switching aspects of this feature are related to these documents:

- Cisco IOS Release 12.0 *Cisco IOS Switching Services Configuration Guide*
- Cisco IOS Release 12.0 *Cisco IOS Switching Services Command Reference*

### Supported Platforms

- Cisco 2600
- Cisco 3600
- Cisco 4000-M
- Cisco 7200 series

### Prerequisites

In order for this feature to work, the following must be in place:

- CEF switching or fast switching must be enabled on the interface.
- HDLC, PPP, or Frame Relay encapsulation must be configured.
- TCP header compression or RTP header compression or both must be enabled.

## Supported Standards, MIBs, and RFCs

### Standards

None

### 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

This feature supports the following 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*

## Configuration Tasks

Assuming the prerequisites are met, TCP and RTP header compression is performed in the CEF-switched path or fast-switched path automatically. No 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
<code>ip tcp compression-connections <i>number</i></code>	Specifies the total number of TCP header compression connections supported on the interface.
<code>ip rtp compression-connections <i>number</i></code>	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:

- Express RTP Header Compression with PPP Encapsulation
- Express RTP Header Compression with Frame Relay Encapsulation

### Express RTP Header Compression with PPP Encapsulation

The following example configures a Cisco 7200 router with express RTP header compression and PPP encapsulation:

```

version 12.0
no service pad
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname abc-1234
!
enable password lab
!
ip subnet-zero
no ip domain-lookup
ip host xy-tftp 172.17.249.2
clock timezone GMT 1
clock summer-time GMT recurring
ip routing
ip cef
!
!
controller E1 3/0
!
controller E1 3/1
!
!
interface Ethernet2/0
 ip address 9.1.72.104 255.255.255.0
 no ip directed-broadcast
 no ip route-cache
!
interface Ethernet2/1
 ip address 15.1.1.1 255.255.255.0
 no ip directed-broadcast
 ip route-cache
 no shutdown
!
interface Serial4/0
 ip address 15.3.0.1 255.255.255.0
 no ip directed-broadcast
 encapsulation ppp
 ip rtp header-compression iphc-format
 ip tcp header-compression iphc-format
 ip rtp compression-connections 1000
 no ip mroute-cache
 clockrate 2015232
 bandwidth 2000
 ip route-cache
 no shutdown
!

```

```
interface Serial4/1
  no ip address
  no ip directed-broadcast
  no ip route-cache
  shutdown
  clockrate 2015232
  !
ip default-gateway 9.1.72.1
ip classless
ip route 0.0.0.0 0.0.0.0 9.1.72.1
!
router igrp 1
  network 15.0.0.0
  !
line con 0
  exec-timeout 0 0
  transport input none
line aux 0
line vty 0 4
  password lab
  login
  !
no scheduler max-task-time
end
```

## Express RTP Header Compression with Frame Relay Encapsulation

The following example configures a Cisco 7200 router with express RTP header compression and Frame Relay encapsulation:

```
version 12.0
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname ed1-72a
!
enable password lab
!
ip subnet-zero
no ip domain-lookup
ip host xy-tftp 172.17.249.2
clock timezone GMT 1
clock summer-time GMT recurring
ip routing
ip cef
!
!
controller E1 3/0
!
controller E1 3/1
!
interface Ethernet2/0
  ip address 9.1.72.104 255.255.255.0
  no ip directed-broadcast
  no ip route-cache
  no ip mroute-cache
  ntp broadcast client
  !
interface Ethernet2/1
  ip address 15.1.1.1 255.255.255.0
  no ip directed-broadcast
  ip route-cache
```

## Configuration Examples

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```
no ip mroute-cache
no shutdown
!
interface Serial4/0
ip address 15.3.0.1 255.255.255.0
encapsulation frame-relay
frame-relay map ip 15.3.0.2 100 broadcast compress
frame-relay ip rtp header-compression
frame-relay ip tcp header-compression
no ip mroute-cache
ip route-cache
bandwidth 2000
no keepalive
no shutdown
!
interface Serial4/1
no ip address
no ip directed-broadcast
no ip route-cache
no ip mroute-cache
shutdown
no fair-queue
!
router igrp 1
network 15.0.0.0
!
!
ip default-gateway 9.1.72.1
ip classless
!
map-class frame-relay frag
frame-relay cir 64000
frame-relay bc 1000
frame-relay be 0
frame-relay mincir 64000
frame-relay adaptive-shaping becn
frame-relay fair-queue
frame-relay fragment 70
!
dialer-list 1 protocol ip permit
dialer-list 1 protocol ipx permit
!
line con 0
exec-timeout 0 0
transport input none
line aux 0
line vty 0 4
password lab
login
!
!
ntp clock-period 17179866
end
```

## Command Reference

This section documents the following revised commands. All other commands used in this document can be found in the Cisco IOS 12.0 documentation set.

- **ip rtp compression-connections**
- **ip tcp compression-connections**

## ip rtp compression-connections

To specify the total number of Real-Time Transport Protocol (RTP) header compression connections that can exist on an interface, use the **ip rtp compression-connections** interface configuration command. To restore the default value, use the **no** form of this command.

**ip rtp compression-connections** *number*  
**no ip rtp compression-connections**

### Syntax Description

*number*                      Number of RTP header compression connections the cache supports, in the range from 3 to 1000. The default is 32 connections (16 calls).

### Defaults

32 connections

### Command Modes

Interface configuration

### Command History

Release	Modification
11.3	This command was introduced.
12.0(7)T	<ul style="list-style-type: none"> <li>For PPP and High-Level Data Link Control (HDLC) encapsulation, the maximum number of connections increased from 256 to 1000.</li> <li>For Frame Relay encapsulation, the maximum number of connections increased to 256. The maximum value for Frame Relay is fixed, not configurable.</li> </ul>

### Examples

The following example changes the number of RTP header compression connections supported to 150:

```
interface serial 0
 encapsulation ppp
 ip rtp header-compression
 ip rtp compression-connections 150
```

### Related Commands

Command	Description
<b>frame-relay ip rtp header-compression</b>	Enables RTP header compression for all Frame Relay maps on a physical interface.
<b>frame-relay map ip rtp header-compression</b>	Enables RTP header compression per DLCI.
<b>ip rtp header-compression</b>	Enables RTP header compression.

<b>Command</b>	<b>Description</b>
<b>ip tcp header-compression</b>	Enables TCP header compression.
<b>show ip rtp header-compression</b>	Displays RTP header compression statistics.



Related Commands

<b>Command</b>	<b>Description</b>
<b>ip rtp header-compression</b>	Enables RTP header compression.
<b>ip tcp header-compression</b>	Enables TCP header compression.
<b>show ip rtp header-compression</b>	Displays RTP header compression statistics.

