Configuring Header Compression Using IPHC Profiles

Header compression is a mechanism that compresses the IP header in a packet before the packet is transmitted. Header compression reduces network overhead and speeds up the transmission of either Real-Time Transport Protocol (RTP) or Transmission Control Protocol (TCP) packets.

One method of configuring header compression on your network is to use an IP header compression (IPHC) profile. An IPHC profile is a kind of template within which you can configure the type of header compression that you want to use, set all of the optional features and parameters for header compression, and then apply the profile to an interface, subinterface, or Frame Relay permanent virtual circuit (PVC).

This module describes the concepts and tasks for configuring header compression using IPHC profiles.

Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see Bug Search Tool and the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the feature information table at the end of this module.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Prerequisites for Using IPHC Profiles

Before using IPHC profiles to configure header compression, read the information in the "Header Compression" module.

Restrictions for Using IPHC Profiles

IPHC profiles are not supported on L2TP networks.

Information About Using IPHC Profiles

Benefits of Using IPHC Profiles

An IPHC profile provides a flexible means of enabling header compression and the options associated with header compression. For example, header compression (and the header compression options) can be enabled *once* in an IPHC profile, and then the IPHC profile can be applied to one or more of the following:

- An interface
- A subinterface
- A Frame Relay PVC

IPHC Profile Types

You use the **iphc-profile** command to create the IPHC profile. When you create an IPHC profile, you must specify the IPHC profile type. The IPHC profile choices are Internet Engineering Task Force (IETF) or van-jacobson. You specify the IPHC profile type with the **ietf** keyword or the **van-jacobson** keyword of the **iphc-profile** command.

The ietf profile type conforms with and supports the standards established with RFC 2507, RFC 2508, RFC 3544, and RFC 3545 and is typically associated with non-TCP header compression (for example, RTP header compression). The van-jacobson profile type conforms with and supports the standards established with RFC 1144 and is typically associated with TCP header compression.

Considerations When Specifying the IPHC Profile Type

When specifying the IPHC profile type, consider whether you are compressing TCP traffic or non-TCP (that is, RTP) traffic. Also consider the header compression format capabilities of the remote network link to which you will be sending traffic.

The IPHC profile type that you specify directly affects the header compression format used on the remote network links to which the IPHC profile is applied. *Only* TCP traffic is compressed on remote network links using a van-jacobson IPHC profile, whereas *both* TCP and non-TCP (for example, RTP) traffic is compressed on remote network links using an ietf IPHC profile.

Note The header compression format in use on the router that you are configuring and the header compression format in use on the remote network link must match.

Configurable Header Compression Features and Settings

The specific header compression features and settings that you can configure (that is, enable or modify) are determined by the IPHC profile type that you select (either van-jacobson or ietf) when you create the IPHC profile. There is one set of features and options for the van-jacobson IPHC profile type and another set for the ietf IPHC profile type. Both sets are listed below.

Features and Settings for van-jacobson IPHC Profile Type Header Compression

If you specify van-jacobson as the IPHC profile type, you can enable TCP header compression and set the number of TCP contexts. The table below lists the van-jacobson IPHC profile type header compression features and settings that are available and the command used to enable that feature or setting.

Table 1: van-jacobson IPHC Profile Type Header Compression Features and Settings

Feature or Setting	Command
TCP header compression	**tcp**
Number of contexts available for TCP header compression	**tcp contexts**

Features and Settings for ietf IPHC Profile Type Header Compression

If you specify ietf as the IPHC profile type, you can enable non-TCP header compression (that is, RTP header compression), along with a number of additional features and settings. The table below lists the ietf IPHC profile type header compression features and settings that are available and the command used to enable that feature or setting.

Table 2: ietf IPHC Profile Type Header Compression Features and Settings

Feature or Setting	Command
Non-TCP header compression	**non-tcp**
Number of contexts available for non-TCP header compression	**non-tcp contexts**
RTP header compression	**rtp**
Enhanced Compressed Real-Time Transport Protocol (ECRTP) on an interface	**recoverable-loss**

Feature or Setting	Command
Context refresh (full-header refresh) options, such as the amount of time to wait before a full-header is refreshed	**refresh max-time refresh max-period refresh rtp**
Context-status feedback messages from the interface or link	**feedback**
Maximum size of the compressed IP header	**maximum header**
TCP header compression	**tcp**
Number of contexts available for TCP header compression	**tcp contexts**

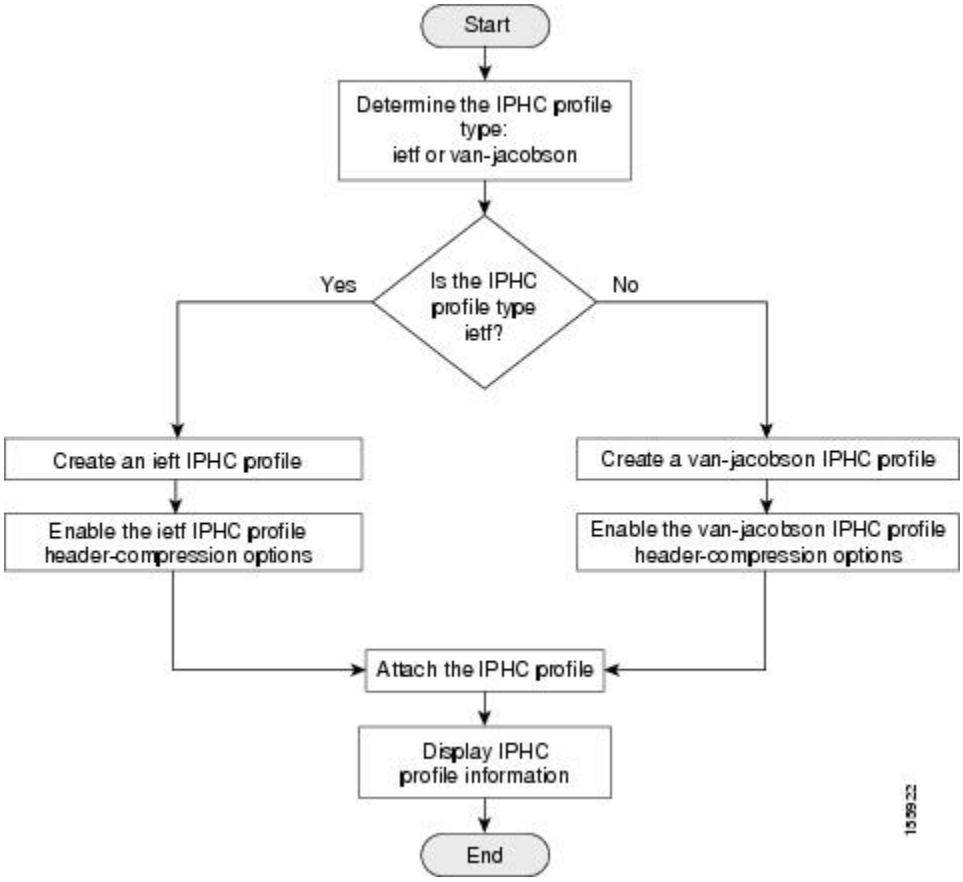
Tasks for Using IPHC Profiles

The tasks for configuring header compression using an IPHC profile are described below.

1. Create the IPHC profile and specify the IPHC profile type (ietf or van-jacobson) that you want to use.
2. Enable or set the header compression features available for the IPHC profile type that you specified when you created the IPHC profile. The header compression features vary by IPHC profile type.
3. Attach the IPHC profile to an interface, subinterface, or Frame Relay PVC.
4. Display information about the IPHC profiles that you have created.

The figure below illustrates the high-level processes for configuring header compression using IPHC profiles.

Figure 1: Flowchart for Configuring Header Compression Using IPHC Profiles



How to Configure Header Compression Using IPHC Profiles

Creating an IPHC Profile

The first task is to create an IPHC profile. When you create an IPHC profile, you can create either an ietf IPHC profile or a van-jacobson IPHC profile, by using the corresponding keyword of the **iphc-profile** command.

To create either an ietf IPHC profile or a van-jacobson IPHC profile, complete the following steps.

Before You Begin

Before completing the steps listed below, determine the type of IPHC profile that you want to create: ietf or van-jacobson. The IPHC profile type that you create directly affects the header compression options available for you.

For more information about IPHC profile types and considerations for selecting one or the other, see the IPHC Profile Types, on page 2.

Note The IPHC profile name must be unique and cannot be longer than 32 characters. IPHC profile names exceeding this maximum are truncated to 32 characters.

>

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **iphc-profile** *profile-name* {**ietf** | **van-jacobson**}
4. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**iphc-profile** *profile-name* {**ietf**	**van-jacobson**} **Example:** `Router(config)# iphc-profile profile2 ietf`	Creates an IPHC profile and enters IPHC-profile configuration mode. • Enter the IPHC profile name and the IPHC profile type keyword.
Step 4	**end** **Example:** `Router(config-iphcp)# end`	(Optional) Exits IPHC-profile configuration mode.

What to Do Next

So far you have created either an ietf IPHC profile or a van-jacobson IPHC profile.

The next step is to enable or set any additional header compression features or options available for the type of IPHC profile that you created.

Choose one of the following:

- To enable or set any of the header compression features available for a van-jacobson IPHC profile, complete the steps in the Enabling the Options for van-jacobson IPHC Profile Type Header Compression, on page 7 section below.
- To enable or set any of the header compression features available for an ietf IPHC profile, complete the steps in the Enabling the Options for ietf IPHC Profile Type Header Compression, on page 8.

Enabling the Options for van-jacobson IPHC Profile Type Header Compression

If you created a van-jacobson IPHC profile, you can enable TCP header compression and set the number of TCP contexts.

Note If you created an ietf IPHC profile, the header compression options available to you are documented in the Enabling the Options for ietf IPHC Profile Type Header Compression, on page 8.

To enable TCP header compression set the number of TCP contexts, complete the following steps.

Before You Begin

The IPHC profile must exist.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **iphc-profile** *profile-name*
4. **tcp**
5. **tcp contexts** {**absolute** *number-of-contexts* | **kbps-per-context** *kbps*}
6. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.

	Command or Action	Purpose
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**iphc-profile** *profile-name* **Example:** `Router(config)# iphc-profile profile2`	Specifies the IPHC profile and enters IPHC-profile configuration mode. • Enter the IPHC profile name.
Step 4	**tcp** **Example:** `Router(config-iphcp)# tcp`	(Optional) Enables TCP header compression.
Step 5	**tcp contexts** {**absolute** *number-of-contexts* | **kbps-per-context** *kbps*} **Example:** `Router(config-iphcp)# tcp contexts absolute 25`	(Optional) Sets the number of TCP contexts. • Enter either the **absolute** keyword and the fixed number or the **kbps-per-context** keyword and the number of kbps to allow for each context.
Step 6	**end** **Example:** `Router(config-iphcp)# end`	(Optional) Exits IPHC-profile configuration mode.

What to Do Next

The next step is to attach the IPHC profile to an interface, a subinterface, or a Frame Relay PVC. For the instructions to follow, see the Attaching the IPHC Profile, on page 11.

Enabling the Options for ietf IPHC Profile Type Header Compression

Note If you created a van-jacobson IPHC profile, complete the tasks in the Enabling the Options for van-jacobson IPHC Profile Type Header Compression, on page 7.

If you created an ietf IPHC profile, you can enable or set a variety of header compression options. These options include enabling non-TCP header compression, enabling RTP header compression, and enabling

ECRTP. For a list of the additional header compression features or settings available with an ietf IPHC profile, see the Enabling the Options for ietf IPHC Profile Type Header Compression, on page 8.

Before You Begin

The IPHC profile must exist.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **iphc-profile** *profile-name*
4. **non-tcp**
5. **non-tcp contexts** {**absolute** *number-of-contexts* | **kbps-per-context** *kbps* }
6. **rtp**
7. **recoverable-loss** {**dynamic** | *packet-drops*}
8. **refresh max-period** {*number-of-packets* | **infinite**}
9. **refresh max-time** {*length-of-time* | **infinite**}
10. **refresh rtp**
11. **feedback**
12. **maximum header** *max-header-size*
13. **tcp**
14. Router(config-iphcp)# tcp contexts absolute 75
15. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**iphc-profile** *profile-name* **Example:** `Router(config)# iphc-profile profile3`	Specifies the IPHC profile and enters IPHC-profile configuration mode. • Enter the IPHC profile name.

	Command or Action	Purpose
Step 4	**non-tcp** **Example:** `Router(config-iphcp)# non-tcp`	(Optional) Enables non-TCP header compression.
Step 5	**non-tcp contexts** {**absolute** *number-of-contexts* | **kbps-per-context** *kbps* } **Example:** `Router(config-iphcp)# non-tcp contexts absolute 75`	(Optional) Sets the number of contexts available for non-TCP header compression. • Enter either the **absolute** keyword and the fixed number or the **kbps-per-context** keyword and the number of kbps to allow for each context.
Step 6	**rtp** **Example:** `Router(config-iphcp)# rtp`	(Optional) Enables RTP header compression. **Note** This command automatically enables non-TCP header compression.
Step 7	**recoverable-loss** {**dynamic** | *packet-drops*} **Example:** `Router(config-iphcp)# recoverable-loss 5`	(Optional) Enables ECRTP.
Step 8	**refresh max-period** {*number-of-packets* | **infinite**} **Example:** `Router(config-iphcp)# refresh max-period 700`	(Optional) Sets the number of packets sent between full-header refresh occurrences. • Enter the number of packets sent between full-header refresh occurrences, or enter the **infinite** keyword to indicate no limitation on the number of packets sent between full-header refresh occurrences. **Note** Non-TCP header compression must be enabled first.
Step 9	**refresh max-time** {*length-of-time* | **infinite**} **Example:** `Router(config-iphcp)# refresh max-time infinite`	(Optional) Sets the amount of time to wait before a full-header refresh occurrence. • Enter the length of time, in seconds, to wait before a full-header refresh occurrence, or enter the **infinite** keyword to indicate no limitation on the time between full-header refreshes. **Note** Non-TCP header compression must be enabled first.
Step 10	**refresh rtp** **Example:** `Router(config-iphcp)# refresh rtp`	(Optional) Enables a context refresh for RTP header compression. **Note** RTP header compression must be enabled first.

	Command or Action	Purpose
Step 11	**feedback** **Example:** `Router(config-iphcp)# feedback`	(Optional) Disables the context-status feedback messages from the interface or link. **Note** TCP or non-TCP header compression must be enabled first.
Step 12	**maximum header** *max-header-size* **Example:** `Router(config-iphcp)# maximum header 75`	(Optional) Specifies the maximum size of the compressed IP header. • Enter the maximum size of the compressed IP header, in bytes. **Note** TCP or non-TCP header compression must be enabled first.
Step 13	**tcp** **Example:** `Router(config-iphcp)# tcp`	(Optional) Enables TCP header compression.
Step 14	Router(config-iphcp)# tcp contexts absolute 75	(Optional) Sets the number of contexts available for TCP header compression. • Enter either the **absolute** keyword and the fixed number or the **kbps-per-context** keyword and the number of kbps to allow for each context.
Step 15	**end** **Example:** `Router(config-iphcp)# end`	(Optional) Exits IPHC-profile configuration mode.

Attaching the IPHC Profile

You can attach the IPHC profile (either an ietf IPHC profile or a van-jacobson IPHC profile) to an interface, a subinterface, or a Frame Relay PVC.

Choose one of the following:

Attaching an IPHC Profile to an Interface

To attach an IPHC profile to an interface or subinterface, complete the following steps.

Before You Begin

- The IPHC profile must exist.
- IP must be enabled on the interface or subinterface.

- The type of encapsulation in use on the interface or subinterface must support header compression. Two types of encapsulation that typically support header compression are PPP and HDLC encapsulation.
- Header compression must not already be enabled.
- The interface or subinterface must have sufficient memory.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface** *type number* [*name-tag*]
4. **iphc-profile** *profile-name*
5. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**interface** *type number* [*name-tag*] **Example:** `Router(config)# interface fastethernet0`	Configures an interface type and enters interface configuration mode. • Enter the interface type and the interface number.
Step 4	**iphc-profile** *profile-name* **Example:** `Router(config-if)# iphc-profile profile1`	Attaches the IPHC profile to the interface. • Enter the IPHC profile to be attached to the interface specified in Attaching an IPHC Profile to an Interface.
Step 5	**end** **Example:** `Router(config-if)# end`	(Optional) Exits IPHC-profile configuration mode.

Attaching an IPHC Profile to a Frame Relay PVC

To attach an IPHC profile to a Frame Relay PVC, complete the following steps.

Before You Begin

- The IPHC profile must exist.
- On a network that is using Frame Relay encapsulation, IPHC profiles are supported only in the Frame Relay map-class infrastructure.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **map-class frame-relay** *map-class-name*
4. **frame-relay iphc-profile** *profile-name*
5. **exit**
6. **interface** *type number* [*name-tag*]
7. **encapsulation frame-relay**
8. **ip address** *ip-address mask*
9. **frame-relay interface-dlci** *dlci*
10. **class** *name*
11. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**map-class frame-relay** *map-class-name* **Example:** `Router(config)# map-class frame-relay mapclass1`	Creates a map class and enters static map class configuration mode. • Enter the Frame Relay map class name.
Step 4	**frame-relay iphc-profile** *profile-name*	Attaches the IPHC profile to the Frame Relay map class.

	Command or Action	Purpose
	Example: `Router(config-map-class)# frame-relay iphc-profile profile2`	• Enter the IPHC profile to be attached to the Frame Relay map class created in Attaching an IPHC Profile to a Frame Relay PVC.
Step 5	**exit** **Example:** `Router(config-map-class)# exit`	Exits static map class configuration mode.
Step 6	**interface** *type number* [*name-tag*] **Example:** `Router(config)# interface serial2/0`	Configures an interface type and enters interface configuration mode. • Enter the interface type and the interface number.
Step 7	**encapsulation frame-relay** **Example:** `Router(config-if)# encapsulation frame-relay`	Enables Frame Relay encapsulation on the interface.
Step 8	**ip address** *ip-address mask* **Example:** `Router(config-if)# ip address 209.165.200.225 255.255.255.224`	Sets a primary IP address for an interface. • Enter the IP address and mask for the associated IP subnet.
Step 9	**frame-relay interface-dlci** *dlci* **Example:** `Router(config-if)# frame-relay interface-dlci 100`	Assigns a data-link connection identifier (DLCI) to a specified Frame Relay interface on the router or access server and enters Frame Relay DLCI configuration mode. • Enter the DLCI number to be used on the specified interface.
Step 10	**class** *name* **Example:** `Router(config-fr-dlci)# class mapclass1`	Associates a map class with a specified DLCI. • Enter the name of the map class to associate with the specified DLCI.
Step 11	**end** **Example:** `Router(config-fr-dlci)# end`	(Optional) Exits Frame Relay DLCI configuration mode.

Displaying the IPHC Profile Statistics

In this task, you can display statistical information about the IPHC profiles that you have created and configured. Displaying the IPHC profile statistics allows you to confirm that the IPHC profile is configured as you intended.

Information reported includes the IPHC profile name and profile type, the type of header compression enabled, whether any optional header compression features (such as the number of contexts) are enabled, and the name of the interface to which the IPHC profile is attached (if applicable).

To display the IPHC profile statistics, complete the following steps.

Before You Begin

The IPHC profile must exist.

SUMMARY STEPS

1. **enable**
2. **show iphc-profile** [*profile-name*]
3. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**show iphc-profile** [*profile-name*] **Example:** `Router# show iphc-profile profile1`	Displays configuration information for one or more IPHC profiles. • (Optional) Enter the name of the IPHC profile you want to display. If you do not specify an IPHC profile name, all IPHC profiles are displayed.
Step 3	**end** **Example:** `Router# end`	(Optional) Exits privileged EXEC mode.

Configuration Examples for Using IPHC Profiles

Example Creating an IPHC Profile

In the following example, a van-jacobson IPHC profile called profile1 has been created.

```
Router> enable
Router# configure terminal
Router(config)# iphc-profile profile1 van-jacobson
Router(config-iphcp)# end
```

In the following example, an ietf IPHC profile called profile2 has been created.

```
Router> enable
Router# configure terminal
Router(config)# iphc-profile profile2 ietf
Router(config-iphcp)# end
```

Example Enabling TCP Header Compression

In the following example, TCP header compression has been enabled in a van-jacobson IPHC profile called profile1. Additionally, the number of TCP contexts has been set to 25.

```
Router> enable
Router# configure terminal
Router(config)# iphc-profile profile1
Router(config-iphcp)# tcp
Router(config-iphcp)# tcp contexts absolute 25
Router(config-iphcp)# end
```

Example Enabling Non-TCP Header Compression

In the following example, RTP header compression has been enabled in an ietf IPHC profile called profile2. Additionally, ECRTP has been enabled with the **recoverable-loss** command, and the size of the compressed IP header has been set to 75 bytes.

```
Router> enable
Router# configure terminal
Router(config)# iphc-profile profile2
Router(config-iphcp)# rtp
Router(config-iphcp)# recoverable-loss 5
Router(config-iphcp)# maximum header 75
Router(config-iphcp)# end
```

Example Attaching the IPHC Profile

In the following example, an IPHC profile called profile1 is attached to serial interface 0.

```
Router> enable
Router# configure terminal
Router(config)# interface serial0
Router(config-if)# iphc-profile profile1
Router(config-if)# end
```

In the following example, an IPHC profile called profile2 is attached to a Frame Relay map class called mapclass1.

```
Router> enable
Router# configure terminal
Router(config)# map-class frame-relay mapclass1
Router(config-map-class)# frame-relay iphc-profile profile2
Router(config-map-class)# exit
Router(config)# interface serial2/0
Router(config-if)# encapsulation frame-relay
Router(config-if)# ip address 209.165.200.225 255.255.255.224
Router(config-if)# frame-relay interface-dlci 100
Router(config-fr-dlci)# class mapclass1
Router(config-fr-dlci)# end
```

Example Reporting IPHC Profile Statistics

The following is sample output from the **show iphc-profile** command. In this output, information about two IPHC profiles, profile21 and 20, is displayed.

```
Router# show iphc-profile
IPHC Profile "profile21"
Type: VJ
  Compressing: TCP
  Contexts   : TCP fixed at 150
  Controlled interfaces: (1)
    Se3/1
IPHC Profile "profile20"
Type: IETF
  Compressing: TCP NON-TCP (RTP)
  Contexts   : TCP 1 for each 0 kbits NON-TCP 1 for each 0 kbits
  Refresh    : NON-TCP and RTP every 5 seconds or 256 packets
  Controlled interfaces: (1)
    Se3/0
```

Additional References

The following sections provide references related to IPHC profiles.

Related Documents

Related Topic	Document Title
Cisco IOS commands	Cisco IOS Master Commands List, All Releases

Related Topic	Document Title
QoS commands: complete command syntax, command modes, command history, defaults, usage guidelines, and examples	*Cisco IOS Quality of Service Solutions Command Reference*
QoS functionality overview	"Quality of Service Overview" module
Header compression overview	"Header Compression" module
RTP header compression	"Configuring RTP Header Compression" module
TCP header compression	"Configuring TCP Header Compression" module
Class-based RTP and TCP header compression	"Configuring Class-Based RTP and TCP Header Compression" module

Standards

Standard	Title
No new or modified standards are supported, and support for existing standards has not been modified.	--

MIBs

MIB	MIBs Link
No new or modified MIBs are supported, and support for existing MIBs has not been modified.	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

RFCs

RFC	Title
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*
RFC 3544	*IP Header Compression over PPP*

RFC	Title
RFC 3545	*Enhanced Compressed RTP (CRTP) for Links with High Delay, Packet Loss and Reordering*

Technical Assistance

Description	Link
The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.	http://www.cisco.com/cisco/web/support/index.html

Feature Information for Configuring Header Compression Using IPHC Profiles

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Table 3: Feature Information for Configuring Header Compression Using IPHC Profiles

Feature Name	Releases	Feature Information
IPHC Profiles	12.4(9)T	The IPHC Profiles feature allows you to configure header compression in a kind of template ("profile") and to apply the profile to interfaces, subinterfaces, or Frame Relay PVCs. The following commands were introduced by this feature: **feedback**, **iphc-profile**, **maximum header**, **non-tcp**, **non-tcp contexts**, **recoverable-loss**, **refresh max-period**, **refresh max-time**, **refresh rtp**, **rtp**, **show iphc-profile**, **tcp**, **tcp contexts**.