



Cisco PGW 2200 Softswitch Secure Real-time Transport Protocol Support Feature Module

Document Release History

Publication Date	Comments
June 2009	Initial release of document

Feature History

Release	Modification
9.8(1)	The Secure Real-time Transport Protocol Support feature is introduced on the Cisco PGW 2200 Softswitch.

This document describes the Secure Real-time Transport Protocol Support feature and includes the following sections:

- [Feature Description, page 2](#)
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Feature Description

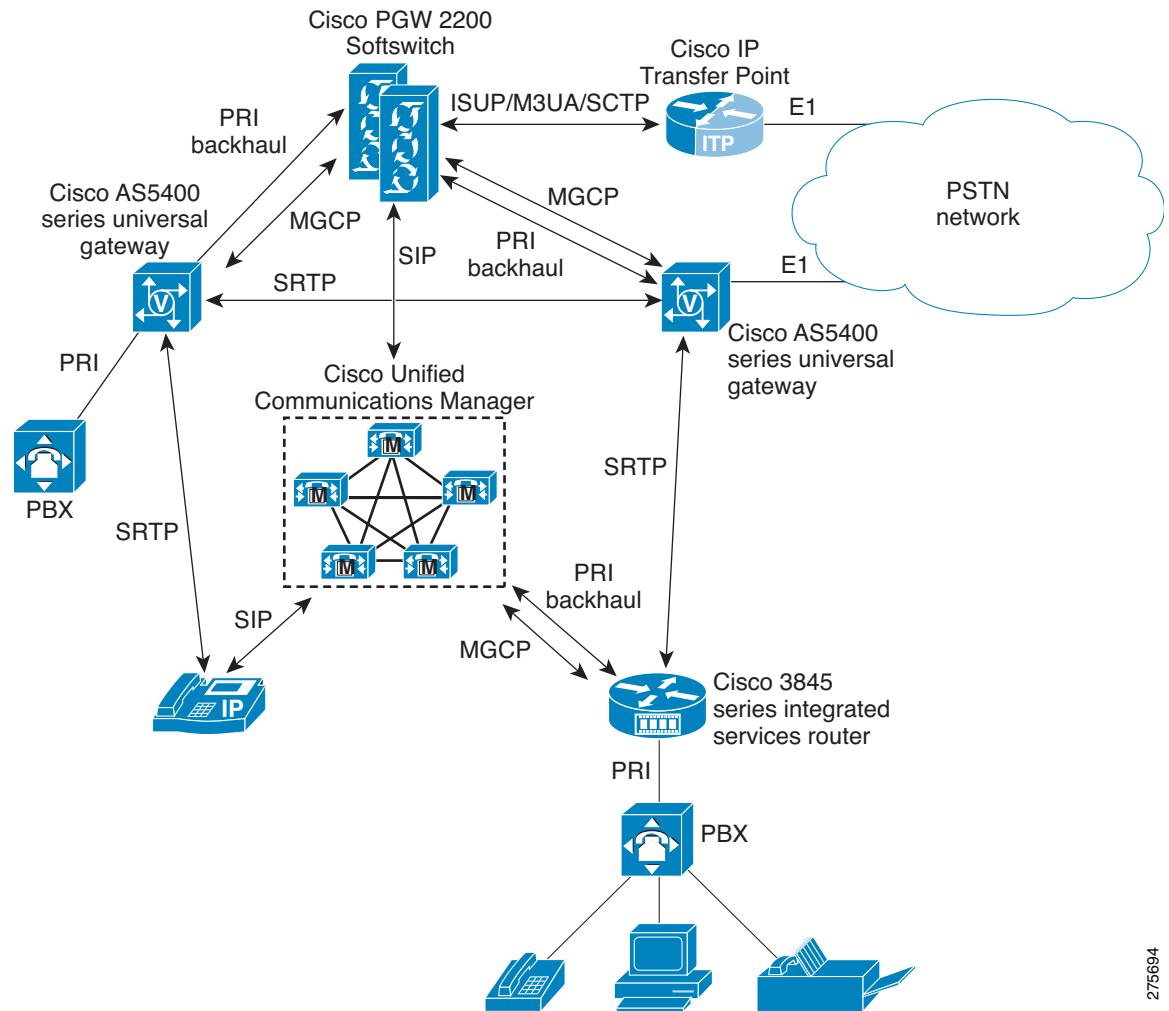
Feature Overview

The Secure Real-time Transport Protocol Support feature enables the Cisco PGW 2200 Softswitch to handle MGCP-based TDM and SIP calls that have media authentication and encryption of the Secure Real-time Transport Protocol (SRTP). This feature adds security to media traffic in your network. The Cisco PGW 2200 Softswitch can fall back from SRTP to non-secure Real-time Transport Protocol (RTP).



Note MGCP-based TDM calls are calls that originate from or terminate on MGCP-based TDM trunks. SIP calls are calls that originate from or terminate on SIP trunks.

[Figure 1](#) shows a typical deployment for this feature. In this deployment, the Cisco PGW 2200 Softswitch communicates with the Cisco Unified Communications Manager (CUCM) via SIP trunks. The Cisco PGW 2200 Softswitch connects the PSTN network via TDM trunks (PRI and ISUP interfaces). SRTP media streams terminate on endpoints or SRTP-capable media gateways (Cisco AS5400 series universal gateways and a Cisco 3845 series integrated service router).

Figure 1 Typical Deployment for This Feature

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Benefits

This feature provides the following benefits:

- Supports SRTP on SIP and TDM trunks—Users can place the Cisco PGW 2200 Softswitch into a solution where SRTP stream handling is a stated requirement. This can be particularly important when the Cisco PGW 2200 Softswitch is switching calls in an environment with a mixture of both fixed and mobile end devices.
- Controls whether SRTP is supported at the trunk group level (SIP and TDM) or the signaling service level (MGCP)—Users can allow or prohibit SRTP calls that come in on certain SIP or TDM trunks. They can also allow or prohibit SRTP calls over a certain MGCP signaling service. This feature enables the Cisco PGW 2200 Softswitch to determine whether an arriving SRTP call can be handled or must be rejected. If it is rejected, a reason code is given.
- Interoperates with the SRTP-capable CUCM and Cisco AS5400 series universal gateways—This feature enables the Cisco PGW 2200 Softswitch to cowork with other SRTP-capable devices, for example, the CUCM, and Cisco AS5400 series universal gateways.

- Handles mixes of nonsecure and secure calls—The Cisco PGW 2200 Softswitch can handle nonsecure and secure calls at the same time.
- Switches out of SRTP into RTP (and vice versa)—Users can transfer a call from a secure end device to a nonsecure one.

Prerequisites

The CUCM must be running software Release 7.1(2) or higher.

Cisco AS5400 series universal gateways must be running Cisco IOS software Release 12.4(22)YB2 or higher.

The Cisco PGW 2200 Softswitch must be running software Release 9.8(1). Prerequisites for this release can be found in the *Release Notes for the Cisco PGW 2200 Softswitch Release 9.8(1)* at

http://www.cisco.com/en/US/docs/voice_ip_comm/pgw/9/release/note/rn981.html

Restrictions or Limitations

The Secure Real-time Transport Protocol Support feature has the limitation that the Cisco PGW 2200 Softswitch does not regenerate the key for media gateways during the call.

Related Features and Technology

The following features are related to this feature:

- MGCP Phase 1 feature (for Cisco AS5400 series universal gateways)
- SIP Trunk SRTP feature (for CUCM)
- Security for MGCP Gateways (for CUCM)

Related Documents

This document contains information that is strictly related to this feature. The documents that contain additional information related to the Cisco PGW 2200 Softswitch are at

http://www.cisco.com/en/US/products/hw/vcallcon/ps2027/tsd_products_support_series_home.html

The documents that contain additional information related to the CUCM are at

http://www.cisco.com/en/US/products/sw/voicesw/ps556/tsd_products_support_series_home.html

For information on SRTP configurations on Cisco AS5400 series universal gateways or Cisco 3845 series integrated services routers, see the *Media and Signaling Authentication and Encryption Feature on Cisco IOS MGCP Gateways* at

http://www.cisco.com/en/US/docs/ios/12_3t/12_3t11/feature/guide/gtsecure.html

Supported Standards, MIBs, and RFCs

This section describes the new or modified standards, MIBs, and RFCs that are supported by this feature.

Standards

No new or modified standards are supported by this feature.

MIBs

No new or modified MIBs are supported by this feature.

For more information on the MIBs used in the Cisco PGW 2200 Softswitch software, see the *Cisco PGW 2200 Softswitch MIBs* at

http://www.cisco.com/iam/PGW_MIBS/index.html

RFCs

RFC 3711—The Secure Real-time Transport Protocol (SRTP)

RFC 4568—Session Description Protocol (SDP) Security Descriptions for Media Streams

Internet-Drafts

Media Gateway Control Protocol Package for Secure Real-time Transport Protocol

Provisioning Tasks

This section describes the provisioning tasks for this feature.

SRTP-capable media gateways deliver SRTP media streams for the MGCP-based TDM and SIP calls. In the provisioning of this feature, you must first tell the Cisco PGW 2200 Softswitch that the media gateways support SRTP. Then you specify that SIP and TDM trunk groups support SRTP.

- [Enabling SRTP on MGCP SigPaths, page 5](#)
- [Enabling SRTP on SIP Trunk Groups, page 5](#)
- [Enabling SRTP on TDM Trunk Groups, page 6](#)

For provisioning samples, see the “[Provisioning Examples](#)” section on page 6.

Enabling SRTP on MGCP SigPaths

To tell the Cisco PGW 2200 Softswitch that a media gateway supports SRTP, set the `sRtpSupported` property to 1 on the MGCP sigPath.

```
mml> prov-ed:sigsvccprop:name="as5400-path",srtpsupported="1"
```

Enabling SRTP on SIP Trunk Groups

To specify that a SIP trunk group supports SRTP, set the `sRtpAllowed` property to 1 in a SIP profile. Then attach the SIP profile to a SIP trunk group.

```
mml> prov-ed:profile:name="sipprf",srtpallowed="1"  
mml> prov-add:trnkgrp:prof:name="2000",profile="sipprf"
```


New Properties

Table 1 describes the new properties for this feature.

Table 1 ***New Properties for This Feature***

Property	Description
sRtpAllowed	This property controls whether the trunk group supports SRTP or not. This property is provisioned as either a trunk group property or a SIP profile property. Valid values: boolean (0 = does not support, 1 = supports). Default value: 0. Dynamically reconfigurable: yes.
sRtpSupported	This property indicates whether a media gateway supports SRTP or not. This property is provisioned on an MGCP sigPath. Valid values: boolean (0 = does not support, 1 = supports). Default value: 0. Dynamically reconfigurable: yes.

Troubleshooting the Feature

The section describes the three troubleshooting situations for this feature:

- SIP-to-TDM calls with delayed media don't have SRTP media streams. There are no SRTP cryptographic parameters in LCO parameters of the MGCP CRCX message.

	Action	Description
Step 1	Check the sRtpAllowed property on the SIP profile of the incoming SIP trunk group.	You use the sRtpAllowed property to determine whether the SIP trunk group supports SRTP or not. Make sure the sRtpAllowed property is set to 1. For provisioning examples, see the “Provisioning Examples” section on page 6 .
Step 2	Check the sRtpSupported property on the outgoing MGCP sigPath.	You use the sRtpSupported property to determine whether a media gateway supports SRTP or not. Make sure the sRtpSupported property is set to 1. For provisioning examples, see the “Provisioning Examples” section on page 6 .
Step 3	Check the SRTP configuration on the media gateways.	Make sure you have enabled SRTP on your media gateways. For information on SRTP configurations on media gateways, see the “Related Documents” section on page 4 .

- TDM-to-SIP calls with early media don't have SRTP media streams. There are no cryptographic parameters in the outgoing SIP INVITE message.

	Action	Description
Step 1	Check the sRtpAllowed property on the SIP profile of the outgoing SIP trunk group.	You use the sRtpAllowed property to determine whether the trunk group supports SRTP or not. Make sure the sRtpAllowed property is set to 1. For provisioning examples, see the “Provisioning Examples” section on page 6 .
Step 2	Check the sRtpSupported property on the incoming MGCP sigPath.	You use the sRtpSupported property to determine whether a media gateway supports SRTP or not. Make sure the sRtpSupported property is set to 1. For provisioning examples, see the “Provisioning Examples” section on page 6 .
Step 3	Check the SRTP configuration on the media gateways.	Make sure you have enabled SRTP on your media gateways. For information on SRTP configurations on media gateways, see the “Related Documents” section on page 4 .

- TDM-to-TDM calls don't have SRTP media streams. There are no SRTP cryptographic parameters in LCO parameters of the MGCP CRCX message.

	Action	Description
Step 1	Check the sRtpAllowed property on both incoming and outgoing TDM trunk groups.	You use the sRtpAllowed property to indicate whether the trunk group supports SRTP or not. Make sure the sRtpAllowed property is set to 1. For provisioning examples, see the “Provisioning Examples” section on page 6 .
Step 2	Check the sRtpSupported property on both incoming and outgoing MGCP sigPaths.	You use the sRtpSupported property to indicate whether a media gateway supports SRTP or not. Make sure the sRtpSupported property is set to 1. For provisioning examples, see the “Provisioning Examples” section on page 6 .
Step 3	Check the SRTP configuration on the media gateways.	Make sure you have enabled SRTP on your media gateways. For information on SRTP configurations on media gateways, see the “Related Documents” section on page 4 .

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS Version 2.0.

Media Stream Type Determination

This section contains additional information that you might find useful to understand the media stream type determination on the Cisco PGW 2200 Softswitch. The Cisco PGW 2200 Softswitch determines whether media gateways use RTP or SRTP to transport the media streams for SIP-to-TDM and TDM-to-SIP calls.

Different combinations of input message parameters and the Cisco PGW 2200 Softswitch properties on the left of the heavy vertical line cause the Cisco PGW 2200 Softswitch to make corresponding determinations on the right. The heavy vertical line in the tables indicates where the Cisco PGW 2200 Softswitch makes a determination.

[Table 2](#) describes the media stream type determination for SIP-to-TDM calls with delayed media. [Table 3](#) describes the media stream type determination for SIP-to-TDM calls with early media. [Table 4](#) describes the media stream type determination for TDM-to-SIP calls.

For example, the first row in [Table 2](#) shows that if all of the three following requirements are met, the Cisco PGW 2200 Softswitch tells media gateways to use SRTP to transport media streams for SIP-to-TDM calls with delayed media.

- The X-cisco-srtp-fallback tag is present in the SIP message.
- The sRtpAllowed property is set to 1 in the SIP profile of the incoming SIP trunk groups.
- The sRtpSupported property is set to 1 on the outgoing MGCP sigPath.

Table 2 Media Stream Type Determination for SIP-to-TDM Calls with Delayed Media

X-cisco-srtp-fallback Tag Presence in the SIP Message	sRtpAllowed (SIP Profile of the Incoming SIP Trunk Groups)	sRtpSupported (Outgoing MGCP SigPath)	Media Stream Type
Yes	1	1	SRTP
Other cases			RTP

Table 3 Media Stream Type Determination for SIP-to-TDM Calls with Early Media

Cryptographic Parameters Presence in the SDP	X-cisco-srtp-fallback Tag Presence in the SIP Message	sRtpAllowed (SIP Profile of the Incoming SIP Trunk Groups)	sRtpSupported (Outgoing MGCP SigPath)	Media Stream Type
Yes	Yes	1	1	SRTP
Yes	Yes	0	Any	Call rejected with 488 error
Yes	Yes	Any	0	Call rejected with 488 error
No	Yes	Any	Any	RTP
Any	No	Any	Any	RTP

Table 4 *Media Stream Type Determination for TDM-to-SIP Calls*

sRtpSupported (Incoming MGCP SigPath)	sRtpAllowed (SIP Profile of the Outgoing SIP Trunk Groups)	Media Stream Type
1	1	SRTP
1	0	RTP
0	1	RTP
0	0	RTP

Glossary

Table 5 *Expansions*

Acronym	Expansion
CRCX	create connection
CUCM	Cisco Unified Communications Manager (formerly known as Cisco Unified CallManager)
LCO	local connection options
MDCX	modify connection
MGCP	Media Gateway Control Protocol
PGW	PSTN gateway
RTP	Real-time Transport Protocol
SIP	Session Initiation Protocol
SRTP	Secure Real-time Transport Protocol

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