



# Generic Transparency Descriptor for GKTMP Using SS7 Interconnect for Voice Gateways Version 2.0

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## Feature History

Release	Modification
12.2(2)XU	This feature was introduced.

This document describes the Generic Transparency Descriptor (GTD) for Gatekeeper Transaction Message Protocol (GKTMP) Using SS7 Interconnect for Voice Gateways feature in Cisco IOS Release 12.2(2)XU. (This feature is also called the GTD feature in this document.)

This document includes the following sections:

- [Feature Overview, page 1](#)
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- [Prerequisites, page 4](#)
- [Configuration Tasks, page 5](#)
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- [Command Reference, page 10](#)

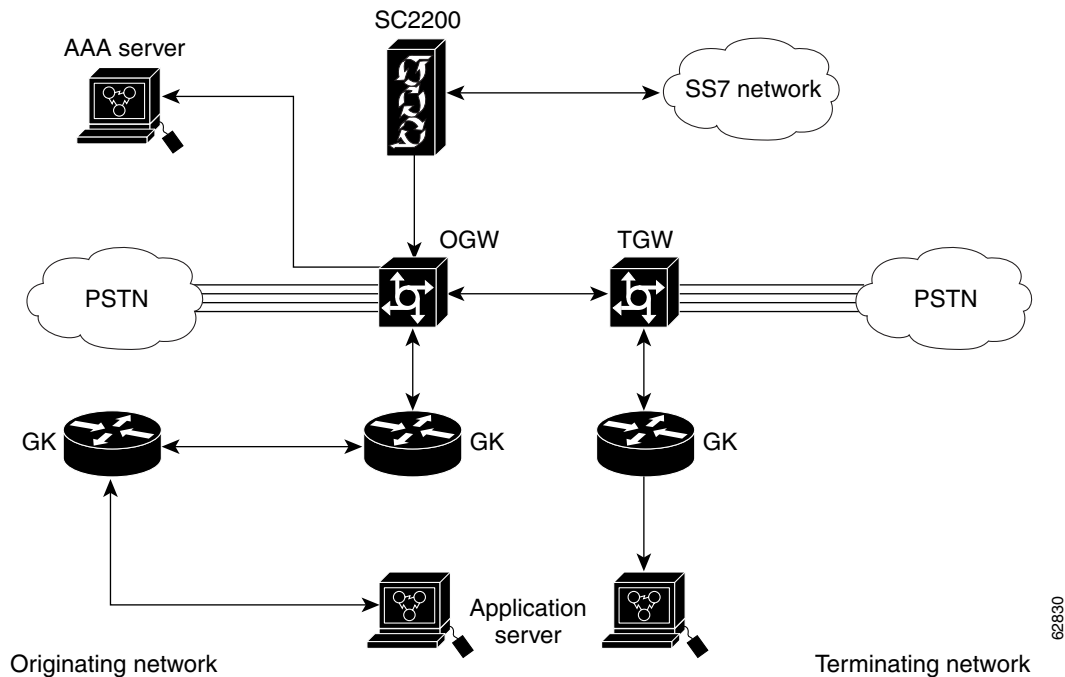
## Feature Overview

The GTD for GKTMP Using SS7 Interconnect for Voice Gateways feature provides additional functionality to Cisco gateways and gatekeepers in a Cisco SS7 Interconnect for Voice Gateways Solution. The generic transparency descriptor or generic telephony descriptor (GTD) format is defined in the a Cisco proprietary draft. GTD format defines parameters and messages of existing SS7 ISUP protocols in text format and allows SS7 messages to be carried as a payload in the H.225 registration, admission, and status (RAS) messages between the GW and GK. GTD messages can also be transported between GWs and GKs in H.323 messages. With the GTD feature, the GK extracts the GTD message and the external route server derives routing and accounting information based upon the GTD information provided from the Cisco Gatekeeper Transaction Message Protocol (GKTMP).

Currently routing on Cisco GWs is based on generic parameters such as originating number, destination number, and port source. Adding support for SS7 ISUP messages allows the VoIP network to use additional routing enhancements found in traditional TDM switches.

Figure 1 shows an example of a Cisco SS7 Interconnect for Voice Gateways solution using the GTD feature.

**Figure 1 Cisco SS7 Interconnect for Voice Gateways Solution With the GTD Feature**



In the originating network, the following events occur:

- The Cisco SC2200 receives SS7 messages from the SS7 network and encapsulates them into GTD format. The messages are then passed to the Cisco originating GW (OGW).
- Using the GTD feature, the OGW transmits the GTD payload in the Admission Request (ARQ) message to GK1.
- GK1 transmits the GTD payload in a Location Request (LRQ) message to GK2.
- GK 2 uses GKTMP with the GTD feature to decode the GTD payload and transmits it to the route server with the REQUEST LRQ message.
- The route server returns a RESPONSE LCF (Location Confirmation) message that includes the GTD payload to GK2. The route server also returns a service descriptor code (SC) field to GK2. (The SC field is transmitted to the AAA server for billing purposes. The SC field conveys the Carrier ID and trunk number information that is determined by and passed from the Route Server.)
- GK2 passes the LCF that includes the GTD payload and the SC field to GK1.
- GK1 sends an Admission Confirmation (ACF) message that includes the GTD payload to the OGW, along with the SC field.
- The OGW sends the SC field and call detail records (CDRs) to the AAA server.

- When the call ends, the Cisco SC2200 receives the SS7 messages, encodes them into GTD format, and passes them to the OGW.
- The OGW sends a Disengage Request (DRQ) with the GTD payload to GK1.
- GK1 sends the DRQ with the GTD payload to the route server.

In the terminating network, the following events occur:

- The OGW sends the GTD in H.225 the SETUP message to the terminating GW (TGW).
- The TGW sends regular RAS messages to the GK.

## Benefits

The GTD feature provides enhanced, flexible routing between gateways, gatekeepers, and application servers in a Cisco VoIP network by providing support for SS7 ISUP messages.

## Restrictions

Because the GTD feature is not yet published by Cisco and is proprietary, all equipment must be running a compatible version of Cisco IOS Software.

## Related Features and Technologies

This feature is released in conjunction with enhancements to the Cisco SC2200 signaling controller (also known as the Cisco Media Gateway Controller) and the Cisco GK that allow those entities to send and process SS7 ISUP messages in GTD format. See the “[Related Documents](#)” section on page 3 for more information on these features.

## Related Documents

### Cisco IOS Documentation

- [Cisco IOS Voice, Video, and Fax Configuration Guide](#), Release 12.2
- [Cisco IOS Voice, Video, and Fax Command Reference](#), Release 12.2

### Cisco GKTMP Documentation

- [Cisco Gatekeeper External Interface Reference](#), Version 3.1
- [Supplemental Gatekeeper External Interface Reference](#), Release 12.2(2)XU

### Cisco SS7 Interconnect for Voice Gateways Solution Documentation

- [Cisco SS7 Interconnect for Voice Gateways Solution Overview 1.3](#)
- [SS7 Interconnect for Access Servers and Voice Gateways Solutions Media Gateway Guide](#)
- [SS7 Interconnect for Voice Gateways Version 1.3 Provisioning Guide](#)

**Cisco Media Gateway Controller Documentation**

- [Cisco Media Gateway Controller Software Release 9 Provisioning Guide](#)
- [Cisco Media Gateway Controller Software Release 9 Operations, Maintenance, and Troubleshooting Guide](#)
- [Cisco Media Gateway Controller Software Release Notes](#)
- [Additional Cisco Media Gateway Controller documentation](#)

## Supported Platforms

- Cisco 3600 series
- Cisco AS5300
- Cisco AS5400
- Cisco 7200 series

## 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.

To obtain lists of supported MIBs by platform and Cisco IOS release, and to download MIB modules, go to the Cisco MIB website on Cisco.com at the following URL:

<http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>

**RFCs**

No new or modified RFCs are supported by this feature.

## Prerequisites

You must configure your VoIP network and the Cisco SS7 Interconnect for Voice Gateways Solution, including the following components:

- Cisco SC2200
- Cisco IOS GWs
- Cisco IOS GKs
- route servers
- AAA servers

For more information on configuring these components, see the documents in the [“Related Documents” section on page 3](#).

You must have the following software installed on your solution components:

- GW: Cisco IOS Release 12.2(2)XU
- Cisco GK: Cisco IOS Release 12.2(2)XU
- Cisco SC2200: Cisco MGC Software Release 9.1(5)



**Note**

For more information on software and components of the Cisco SS7 Interconnect for Voice Gateways Solution, see the release notes located at the following URL:

[http://www.cisco.com/univercd/cc/td/doc/product/access/sc/re17/soln/voip13/voip\\_rn.htm](http://www.cisco.com/univercd/cc/td/doc/product/access/sc/re17/soln/voip13/voip_rn.htm)

## Configuration Tasks

See the following sections for configuration tasks for the GTD feature. Each task in the list is identified as either required or optional.

- [Configuring GTD System-Wide](#) (optional)
- [Configuring GTD for a Dial Peer](#) (optional)

### Configuring GTD System-Wide

To configure the GTD feature system-wide for the VoIP network, enter the commands shown below. If you do not wish to enable the GTD feature system-wide, but want to configure the feature on individual dial peers, use the commands shown in the “[Configuring GTD for a Dial Peer](#)” section on page 6.

	Command	Purpose
Step 1	Router(config)# <b>voice service voip</b>	Enters the voice service configuration mode.
Step 2	Router(conf-voi-serv)# <b>signaling forward {none   unconditional}</b>	Chooses whether the GW forwards the signaling payload to another GW, or does not forward the signaling payload to an endpoint.  Use the <b>unconditional</b> keyword to forward the signaling payload received in the OGW to the remote end, even if the attached external route server has modified the GTD payload.  Use the <b>none</b> keyword to prevent the GW from passing the signaling payload to endpoints in the network. If you use the <b>none</b> keyword, the signaling payload will not be forwarded.

## Configuring GTD for a Dial Peer

To configure the GTD feature on an individual dial peer, follow the steps shown below.

	Command	Purpose
Step 1	Router(config)# <b>dial-peer voice</b> <i>number</i> <b>voip</b>	Enters dial peer configuration mode. The <i>number</i> value of the <b>dial-peer voice voip</b> command is a tag that uniquely identifies the dial peer. (This number has local significance only.)
Step 2	Router(config-dial-peer)# <b>signaling forward</b> { <b>conditional</b>   <b>unconditional</b>   <b>none</b> }	<p>Chooses whether the GW forwards the signaling payload to another GW, or does not forward the signaling payload to an endpoint.</p> <p>Using the <b>conditional</b> keyword changes the forwarding behavior based on the target defined in the <b>session target</b> command. If the target is a non-RAS target, the original signaling payload will be forwarded to the H.323 endpoint using H.225 messages.</p> <p>If the target is a RAS target, for a non-GTD signaling payload, the original payload is forwarded. For a GTD signaling payload, the payload is encapsulated in an ARQ/DRQ message and sent to the originating GK. The GK conveys the payload to the GKTMP and external route server for a flexible route decision based up the ISUP GTD parameters. The gateway then conditionally forwards the GTD payload based upon the route server's instruction.</p> <p>Use the <b>unconditional</b> keyword to forward the signaling payload received in the OGW to the remote end, even if the attached external route server has modified the GTD payload.</p> <p>Use the <b>none</b> keyword to prevent the GW from passing the signaling payload to endpoints in the network. If you use the <b>none</b> keyword, the signaling payload will not be forwarded.</p>

## Verifying GTD System-Wide

**Step 1** Use the **show running configuration** command to verify that the GTD feature is configured.

```
Router# show running configuration

Building configuration...

Current configuration : 4192 bytes
!
version 12.2
service config
```

```

no service single-slot-reload-enable
no service pad
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
service internal
service udp-small-servers
!
hostname as5300-2
!
voice service voip
  signaling forward none
  h323
.
.
.

```

---

## Verifying GTD for a Dial Peer

- Step 1** Use the **show running configuration** command to verify that the GTD feature is configured.

```

Router# show running configuration

Building configuration...

Current configuration : 4192 bytes
!
version 12.2
service config
no service single-slot-reload-enable
no service pad
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
service internal
service udp-small-servers
!
hostname as5300-2
!
.
.
.
!
dial-peer voice 1 pots
  application session
  incoming called-number 25164
  port 0:D
!
dial-peer voice 1513 voip
  destination-pattern 1513.....
  session target ipv4:1.8.156.3
!
dial-peer voice 1408525 voip
  destination-pattern 1408525...
!
dial-peer voice 1800877 voip
  destination-pattern 1800877....
  session target ipv4:1.8.156.3
!
dial-peer voice 2 pots

```

```

destination-pattern 51550
no digit-strip
direct-inward-dial
port 3:D
!
dial-peer voice 51557 voip
destination-pattern 51557
signaling forward unconditional
session target ras
!
dial-peer voice 52557 voip
destination-pattern 52557
signaling forward unconditional
session target ipv4:1.8.156.3
!
.
.
.

```

---

## Configuration Examples

This section provides the following configuration examples:

- [GTD Payload System-Wide Example](#)
- [GTD Payload on Dial Peer Example](#)

### GTD Payload System-Wide Example

The following example shows the GTD feature configured on the system:

```

Router# show running configuration

Building configuration...

Current configuration : 4192 bytes
!
version 12.2
service config
no service single-slot-reload-enable
no service pad
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
service internal
service udp-small-servers
!
hostname as5300-2
!
voice service voip
  signaling forward none
  h323
!
.
.
.

```



## GTD Payload on Dial Peer Example

The following example shows GTD configured with unconditional forwarding on two dial peers:

```
Router# show running configuration
```

```
Building configuration...
```

```
Current configuration : 4192 bytes
```

```
!  
version 12.2  
service config  
no service single-slot-reload-enable  
no service pad  
service timestamps debug uptime  
service timestamps log uptime  
no service password-encryption  
service internal  
service udp-small-servers  
!  
hostname as5300-2  
!  
.  
.  
.  
!  
dial-peer voice 1 pots  
  application session  
  incoming called-number 25164  
  port 0:D  
!  
dial-peer voice 1513 voip  
  destination-pattern 1513.....  
  session target ipv4:1.8.156.3  
!  
dial-peer voice 1408525 voip  
  destination-pattern 1408525....  
!  
dial-peer voice 1800877 voip  
  destination-pattern 1800877....  
  session target ipv4:1.8.156.3  
!  
dial-peer voice 2 pots  
  destination-pattern 51550  
  no digit-strip  
  direct-inward-dial  
  port 3:D  
!  
dial-peer voice 51557 voip  
  destination-pattern 51557  
  signaling forward unconditional  
  session target ras  
!  
dial-peer voice 52557 voip  
  destination-pattern 52557  
  signaling forward unconditional  
  session target ipv4:1.8.156.3  
!  
gateway  
!  
.  
.  
.
```

## Command Reference

This section documents the new **signaling forward** command that configures the GTD for GKTMP Using SS7 Interconnect for Voice Gateways feature. All other commands used with this feature are documented in the Cisco IOS Release 12.2 command reference publications.

# signaling forward

To choose if a Cisco IOS Gateway forwards the Generic Telephony Descriptor (GTD) payload to another gateway or gatekeeper, use the **signaling forward** command. To enable this feature system-wide, use the **signaling forward** command in global configuration mode. To enable this feature for an individual dial peer, use the **signaling forward** command in dial-peer configuration mode. To disable, use the **no** form of this command.

**signaling forward** { **conditional** | **unconditional** | **none** }

**no signaling forward**

Syntax Description		
<b>conditional</b>		Changes the forwarding behavior based on the target defined in the <b>session target</b> command. If the target is a non-Registration, Admission, and Status (RAS) target, the original signaling payload is forwarded to the H.323 endpoint using H.225 messages.  If the target is a RAS target, for a non-GTD signaling payload, the original payload is forwarded. For a GTD signaling payload, the payload is encapsulated in an Admission Request (ARQ)/Disengage Request (DRQ) message and sent to the originating GK. The GK conveys the payload to the Gatekeeper Transaction Message Protocol (GKTMP) and external route server for a flexible route decision based up the ISUP GTD parameters. The gateway then conditionally forwards the GTD payload based upon the route server's instruction.
<b>unconditional</b>		Tunnels the GTD payload in the H.225 SETUP message to the final endpoint in the network. The GK sends its own GTD back to itself in this situation.
<b>none</b>		Prevents the GW from passing the GTD payload to endpoints in the network. If you use the <b>none</b> keyword, the GTD payload is not forwarded.

**Defaults** Signaling forwarding is not enabled.

**Command Modes** Global configuration (system-wide)  
Dial-peer configuration (individual dial peers)

Command History	Release	Modification
	12.2(2)XU	This command was introduced.

**Usage Guidelines** This command is used with the Cisco SC2200 Signaling Controller in the Cisco SS7 Interconnect for Voice Gateways Solution. You must configure the Cisco SC2200 to encapsulate SS7 ISUP messages in GTD format before using this command on the Cisco GW.

**Examples**

The following example shows unconditional signaling forward on a system-wide basis, where the GTD payload is tunneled in H.225 SETUP messages to endpoints:

```
Router# configure terminal

Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)# voice service voip

Router(conf-voi-serv)# signaling forward unconditional
Router(conf-voi-serv)# ^Z
Router# show running configuration

Building configuration...

Current configuration : 4201 bytes
!
version 12.2
service config
no service single-slot-reload-enable
no service pad
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
service internal
service udp-small-servers
!
hostname as5300-2
!
no logging buffered
logging rate-limit console 10 except errors
aaa new-model
!
.
.
.
!
voice service voip
  signaling forward unconditional
  h323
!
.
.
.
```