

# Simple Gateway Control Protocol for the Cisco AS5300 Voice/Gateway

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## Feature Overview

The Simple Gateway Control Protocol (SGCP) version 1.0 enables intelligent, external call agents to control gateways in a Voice over IP (VoIP) environment. Gateways include trunking gateways and residential gateways. Call agents include TransPath and third-party products. This feature is intended for use in large IP networks typical of competitive local exchange carriers (CLECs) and Internet exchange carriers (IXCs).

## Benefits

Deregulation in the telecommunications industry gives CLECs opportunities to provide alternative dial tone from the Incumbent Local Exchange Carriers (ILECs). One way of providing alternative dial tone is through Voice over IP (VoIP). SGCP is a protocol that enables an VoIP system to control call setup and teardown as well as CLASS features for less sophisticated gateways.

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**Note** When you use SGCP in a Voice over IP (VoIP) environment, you do not need to configure VoIP dial peers. The SGCP call agent provides similar functions to VoIP dial peers.

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## Restrictions

This version of SGCP supports only one T1 controller per Cisco AS5300.

## Supported Platform

Cisco Access Server 5300

## Supported MIBs and RFCs

MIBs

- CISCO-XGCP-MIB
- CISCO-SGCP-MIB

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

RFCs

- No RFCs are supported by this feature.

## Configuration Tasks

This section is divided into the following configuration and verification tasks:

- Configuring Support for SGCP
- Verifying the SGCP Configuration

## Configuring Support for SGCP

To configure SGCP on your AS5300, perform the following tasks:

- Step 1** Configure IP addresses.
- Step 2** Turn on the SGCP application.
- Step 3** Enter configuration commands, one per line. End with CNTL/Z.
- Step 4** Configure the t1 controller for being controlled by using SGCP.
- Step 5** Enter configuration commands, one per line. End with CNTL/Z.

## Verifying the SGCP Configuration

To verify your SGCP configuration and obtain SGCP statistics, enter the following commands beginning in the global configuration mode:

Step	Command	Purpose
1	<code>router(config)#show sgcp connection [interface number]</code>	Displays all active SGCP connections on the router.
2	<code>router(config)#show sgcp endpoint [interface ds1 [ds0]]</code>	Displays which timeslots have been configured as end points for SGCP.
3	<code>router(config)#show sgcp statistics</code>	Displays global statistics for the SGCP packet counts.
4	<code>router(config)#clear sgcp statistics</code>	Clears all SGCP statistics.

## Configuration Examples

```
AS5300-TGW>enable
AS5300-TGW#conf t
AS5300-TGW(config)#sgcp
AS5300-TGW(config)#controller t1 0
AS5300-TGW(config-controller)#framing esf
AS5300-TGW(config-controller)#clock source line primary
AS5300-TGW(config-controller)#linecode b8zs
AS5300-TGW(config-controller)#ds0-group 0 timeslots 1-24 type none service sgcp
AS5300-TGW(config-controller)#^z
AS5300-TGW#
```

## Command Reference

This section documents new or modified commands. All other commands used with this feature are documented in the Cisco IOS Release 12.0 command references.

**clear sgcp statistics**

**ds0-group**

**sgcp**

**sgcp graceful-shutdown**

**sgcp request retries**

**sgcp request timeout**

**show sgcp**

**show sgcp connection**

**show sgcp endpoint**

**show sgcp statistics**

## clear sgcp statistics

To clear all SGCP statistics, enter the **clear sgcp statistics** EXEC command.

**clear sgcp statistics**

### Syntax Description

This command has no arguments or keywords.

### Defaults

No default behavior or values.

### Command Modes

EXEC

### Command History

Release	Modification
12.0(5)T	This command was introduced.

### Examples

```
AS5300-TGW#clear sgcp statistics
AS5300-TGW#
```

### Related Commands

Command	Description
show sgcp statistics	Displays global statistics for SGCP packet counts.

## ds0-group

To configure channelized T1 timeslots with channel associated signaling, which enables an AS5300 modem to answer and send an analog call, enter the **ds0-group** controller configuration command. To disable channel associated signaling for one or more timeslots, enter the **no** form of this command.

**ds0-group** *channel-number* [**timeslots** *range*]

**no ds0-group** *channel-number* [**timeslots** *range*]

### Syntax Description

<i>channel-number</i>	Specifies a single channel group number. The group number can be between 0 and 23.
<b>timeslots</b> <i>range</i>	(Optional) Specifies a timeslot range of values from 1 to 24. The default value configures 24 timeslots with the channel associated signal called E&M (Ear and Mouth), which is the default signal type.

### Defaults

No default behavior or values.

### Command Modes

CONFIG

### Command History

Release	Modification
11.2	This command was originally the <b>cas-group</b> command.
12.0(5)T	This command was renamed.

### Usage Guidelines

Channel associated signaling is also known as robbed bit signaling.

### Examples

```
AS5300-TGW# ds0-group 5 timeslots 1-4
```

### Related Commands

Command	Description
<b>cas-group</b>	Configures channelized T1 timeslots with robbed-bit signaling.

## sgcp

To start and allocate resources for the SGCP daemon, enter the **sgcp** configuration command. To terminate all calls, release all allocated resources, and kill the SGCP daemon, enter the **no** form of this command.

**sgcp**  
**no sgcp**

### Syntax Description

This command has no arguments or keywords.

### Defaults

No default behavior or values.

### Command Modes

CONFIG

### Command History

Release	Modification
12.0(5)T	This command was introduced.

### Usage Guidelines

Once you start the SGCP daemon with the **sgcp** command, you can suspend it (for example, for maintenance) using the **sgcp graceful-shutdown** command. When you are ready to resume normal SGCP operations, enter the **no sgcp graceful-shutdown** command. Only enter the **no sgcp** command if you intend to kill all SGCP applications and protocols.

When the SGCP daemon is not active, all SGCP messages are ignored.

### Examples

```
AS5300-TGW(config)#sgcp
```

### Related Commands

Command	Description
<b>sgcp graceful-shutdown</b>	Gracefully terminates all SGCP activity.
<b>sgcp request retries</b>	Specifies the number of times to retry sending the <b>sgcp</b> command.
<b>debug sgcp</b>	Enable debugging on SGCP.

## sgcp call-agent

To configure the call agent's (media gateway controller) address, enter the **sgcp call-agent** configuration command. To unconfigure the call agent's address, enter the **no** form of this command.

```
sgcp call-agent [ipaddr | hostname] [port]
```

```
no sgcp call-agent
```

### Syntax Description

*ipaddr* | *hostname* (Optional) Specifies the IP address or name of the call-agent.  
**port** (Optional) Specifies the port for the call-agent to use.

### Defaults

No default behavior or values.

### Command Modes

CONFIG

### Command History

Release	Modification
12.0(5)T	This command was introduced.

### Usage Guidelines

### Examples

```
AS5300-TGW(config)#sgcp call-agent 172.22.92.17
```

### Related Commands

Command	Description
<b>sgcp graceful-shutdown</b>	Gracefully terminates all SGCP activity.
<b>sgcp request retries</b>	Specifies the number of times to retry sending the <b>sgcp</b> command.
<b>debug sgcp</b>	Enable debugging on SGCP.

## sgcp graceful-shutdown

To block new calls while maintaining existing calls, enter the **sgcp graceful-shutdown** configuration command. To resume SGCP operation, enter the **no** form of this command.

**sgcp graceful-shutdown**  
**no sgcp graceful-shutdown**

### Syntax Description

This command has no arguments or keywords.

### Defaults

No default behavior or values.

### Command Modes

CONFIG

### Command History

Release	Modification
12.0(5)T	This command was introduced.

### Usage Guidelines

Once you issue this command, all requests for new connections (CreateConnection requests) are denied. All existing calls will be maintained until users end them, or you enter the **no sgcp** command. When the last active call ends, the SGCP daemon terminates and releases all resources allocated to it. The **no sgcp graceful-shutdown** command returns the router to normal SGCP operations.

### Examples

```
AS5300-TGW(config)#sgcp graceful-shutdown  
AS5300-TGW(config)#
```

### Related Commands

Command	Description
<b>sgcp</b>	Starts and allocates resources for the SCGP daemon.

## sgcp request retries

To specify the number of times to retry sending the **sgcp** command, enter the **sgcp request retries** configuration command.

**sgcp request retries** *count*

### Syntax Description

*count* Specifies the number of times a notify message is retransmitted to the call agent before it is dropped. The valid range is 1 to 1000.

### Default

3.

### Command Modes

CONFIG

### Command History

Release	Modification
12.0(5)T	This command was introduced.

### Usage Guidelines

This command applies to a trunking gateway.

### Examples

The following example shows that the system will try to send the **sgcp** command 10 times before dropping the request:

```
AS5300-TGW(config)#sgcp request retries 10
AS5300-TGW(config)#
```

### Related Commands

Command	Description
<b>sgcp request timeout</b>	Specifies how long the system will wait for a reply to a request.

## sgcp request timeout

To specify how long the system waits for a response to a request, enter the **sgcp request timeout** configuration command.

**sgcp request timeout** *timeout*

### Syntax Description

*timeout* Specifies the number of milliseconds to wait for a response to a request. Valid range is 1 to 100,000.

### Defaults

500.

### Command Modes

CONFIG

### Command History

Release	Modification
12.0(5)T	This command was introduced.

### Examples

The following example shows that the system waits 40 milliseconds for a reply to a request:

```
AS5300-TGW(config)#sgcp request timeout 40
AS5300-TGW(config)#
```

### Related Commands

Command	Description
<b>sgcp request retries</b>	Specifies the number of times the system retries sending the <b>sgcp</b> command.

## show sgcp

To display SGCP statistics on this router, enter the **show sgcp** EXEC command.

```
show sgcp
```

### Syntax Description

This command has no arguments or keywords.

### Defaults

No default behavior or values.

### Command Modes

EXEC

### Command History

Release	Modification
12.0(5)T	This command was introduced in IOS documentation and support for the <b>sgcp graceful-shutdown</b> , <b>sgcp request timeout</b> , and <b>sgcp request retries</b> commands was added.

### Usage Guidelines

Refer to LS1010 documentation for more information on this command.

### Examples

```
AS5300-TGW#show sgcp
SGCP Admin State DOWN, Oper State DOWN
SGCP call-agent: 172.22.92.17 , SGCP graceful-shutdown enabled? FALSE
SGCP request timeout 40, SGCP request retries 10
```

**Table 1** show sgcp Field Descriptions

SGCP Admin State...	The administrative and operational state of the SGCP daemon.
SGCP call-agent	The address of the call agent specified in the <b>sgcp</b> command.
SGCP graceful-shutdown enabled	The state of the <b>sgcp graceful-shutdown</b> command.
SGCP request timeout	The setting for the <b>sgcp request timeout</b> command.
SGCP request retries	The setting for the <b>sgcp request retries</b> command.

Related Commands

<b>Command</b>	<b>Description</b>
<b>show sgcp connection</b>	Displays active SGCP connections on the specified router.
<b>show sgcp endpoint</b>	Displays which timeslots have been configured as end points for SGCP.
<b>show sgcp statistics</b>	Displays global statistics for the SGCP packet count, success and failure counts, and the like.

## show sgcp connection

To display all the active SGCP connections on this router, enter the **show sgcp connection** EXEC command.

```
show sgcp connection [interface number]
```

### Syntax Description

**interface** (Optional) Specifies an interface.

*number* (Optional) Specifies the T1 interface (controller) number. Valid values are from 0 to 1000.

### Defaults

No default behavior or values.

### Command Modes

EXEC

### Command History

Release	Modification
12.0(5)T	This command was introduced.

### Usage Guidelines

If you do not specify an interface, this command shows all the active SGCP connections on this host. If you do specify an interface, this command shows only those active connections on the specified interface.

### Examples

See the following example for a list of the active connections on this router:

```
AS5300-TGW#show sgcp connection
Endpoint Call ID Conn ID
ds1-1/3 1234 3
ds1-1/7 1235 4
ds1-2/3 1237 9
ds1-3/8 1239 12
```

See the following example for information on the active connections on interface 1:

```
AS5300-TGW#show sgcp connection interface 1
ds1-1/3 1234 3
ds1-1/7 1235 4
```

Related Commands

<b>Command</b>	<b>Description</b>
<b>show sgcp</b>	Displays Simple Gateway Control Protocol information.
<b>show sgcp endpoint</b>	Displays which timeslots have been configured as end points for SGCP.
<b>show sgcp statistics</b>	Displays global statistics for the SGCP packet count, success and failure counts, and the like.

## show sgcp endpoint

To see which timeslots have been configured as end points for SGCP, enter the **show sgcp endpoint EXEC** command.

```
show sgcp endpoint [interface ds1 [ds0]]
```

### Syntax Description

<b>interface</b>	Specifies the interface.
<i>ds1</i>	Specifies the DS1 timeslot. Valid range is from 0 to 1000.
<i>ds0</i>	(Optional) Specifies the DS0 timeslot. Valid range is from 1 to 24.

### Defaults

No default behavior or values.

### Command Modes

EXEC

### Command History

Release	Modification
12.0(5)T	This command was introduced.

### Examples

See the following example for information on the timeslots (1-24) of group 1 configured for SGCP for port 0:

```
AS5300-TGW#show sgcp endp interface 0
T1/0 ds0-group 1 timeslots 1-24
```

See the following example for information on the timeslots (1-24) of group 3 configured for SGCP for port 2:

```
AS5300-TGW#show sgcp endp interface 2
T1/2 ds0-group 3 timeslots 1-24
AS5300-TGW#
```

### Related Commands

Command	Description
<b>show sgcp</b>	Displays Simple Gateway Control Protocol information.
<b>show sgcp connection</b>	Display all the active connections on the host AS5300.
<b>show sgcp statistics</b>	Displays global statistics for the SGCP packet count, success and failure counts, and the like.

## show sgcp statistics

To display global statistics for the SGCP packet count, success and failure counts, and other information, enter the **show sgcp statistics** EXEC command.

**show sgcp statistics**

### Syntax Description

This command has no arguments or keywords.

### Defaults

No default behavior or values.

### Command Modes

EXEC

### Command History

Release	Modification
12.0(5)T	This command was introduced.

### Examples

See the following example for a display of SGCP packet statistics:

```
AS5300-TGW#show sgcp statistics
UDP pkts rx 0, tx 0
Unrecognized rx pkts 0, SGCP message parsing errors 0
Duplicate SGCP ack tx 0
Failed to send SGCP messages 0
CreateConn rx 0, successful 0, failed 0
DeleteConn rx 0, successful 0, failed 0
ModifyConn rx 0, successful 0, failed 0
DeleteConn tx 0, successful 0, failed 0
NotifyRequest rx 0, successful 0, failed 0
Notify tx 0, successful 0, failed 0
ACK tx 0, NACK tx 0
ACK rx 0, NACK rx 0
```

See the following examples for information on how you can filter the command return for specific information:

```
AS5300-TGW#show sgcp statist | begin Failed
Failed to send SGCP messages 0
CreateConn rx 0, successful 0, failed 0
DeleteConn rx 0, successful 0, failed 0
ModifyConn rx 0, successful 0, failed 0
DeleteConn tx 0, successful 0, failed 0
NotifyRequest rx 0, successful 0, failed 0
Notify tx 0, successful 0, failed 0
ACK tx 0, NACK tx 0
ACK rx 0, NACK rx 0

AS5300-TGW#show sgcp statist | exclude ACK
UDP pkts rx 0, tx 0
Unrecognized rx pkts 0, SGCP message parsing errors 0
Duplicate SGCP ack tx 0
Failed to send SGCP messages 0
CreateConn rx 0, successful 0, failed 0
DeleteConn rx 0, successful 0, failed 0
ModifyConn rx 0, successful 0, failed 0
DeleteConn tx 0, successful 0, failed 0
NotifyRequest rx 0, successful 0, failed 0
Notify tx 0, successful 0, failed 0

AS5300-TGW#show sgcp statist | include ACK
ACK tx 0, NACK tx 0
ACK rx 0, NACK rx 0
```

## Related Commands

Command	Description
<b>show sgcp</b>	Displays Simple Gateway Control Protocol information.
<b>show sgcp connection</b>	Display all the active connections on the host AS5300.
<b>show sgcp endpoint</b>	Displays which timeslots have been configured as end points for SGCP.

## Debug Commands

This section documents new **debug** commands. All other commands used with this feature are documented in the Cisco IOS Release 12.0 command references.

**debug sgcp**  
**debug xcctsp all**  
**debug xcctsp error**  
**debug xcctsp session**

## debug sgcp

To debug Simple Gateway Control Protocol, enter the **debug sgcp** EXEC command. To turn off debugging, enter the **no debug sgcp**.

```
debug sgcp {errors | events | packet}
```

### Syntax Description

<i>errors</i>	Debugs SGCP errors.
<i>events</i>	Debugs SGCP events.
<i>packet</i>	Debugs SGCP packets.

### Defaults

No default behavior or values.

### Command Modes

EXEC

### Command History

Release	Modification
12.0(5)T	This command was introduced.

### Examples

See the following examples to enable and disable debugging at the specified level:

```
AS5300-TGW#debug sgcp errors
Simple Gateway Control Protocol errors debugging is on

AS5300-TGW#no debug sgcp errors
Simple Gateway Control Protocol errors debugging is off
AS5300-TGW#

AS5300-TGW#debug sgcp events
Simple Gateway Control Protocol events debugging is on
AS5300-TGW#no debug sgcp events
Simple Gateway Control Protocol events debugging is off
AS5300-TGW#

AS5300-TGW#debug sgcp pack
Simple Gateway Control Protocol packets debugging is on
AS5300-TGW#no debug sgcp pack
Simple Gateway Control Protocol packets debugging is off
AS5300-TGW#
```

### Related Commands

Command	Description
<b>sgcp</b>	Starts and allocates resources for the SCGP daemon.

## debug xcctsp all

To debug External Call Control TSP information, enter the **debug xcctsp all** EXEC command. To turn off debugging, enter the **no** form of this command.

**debug xcctsp all**

**no debug xcctsp all**

### Syntax Description

This command has no arguments or keywords.

### Defaults

No default behavior or values.

### Command Modes

EXEC

### Command History

Release	Modification
12.0(5)T	This command was introduced.

### Examples

See the following examples to turn on and off external call control debugging:

```
AS5300-TGW#debug xcctsp all  
External call control all debugging is on
```

```
AS5300-TGW#no debug xcct all  
External call control all debugging is off
```

```
AS5300-TGW#
```

### Related Commands

Command	Description
<b>debug xcctsp error</b>	Enables debugging on external call control errors.
<b>debug xcctsp session</b>	Enables debugging on external call control sessions.

## debug xcctsp error

To debug External Call Control TSP error information, enter the **debug xcctsp error** EXEC command. To turn off error debugging, enter the **no** form of this command.

**debug xcctsp error**

**no debug xcctsp error**

### Syntax Description

This command has no arguments or keywords.

### Defaults

No default behavior or values.

### Command Modes

EXEC

### Command History

Release	Modification
12.0(5)T	This command was introduced.

### Examples

See the following examples to turn on and off error-level debugging

```
AS5300-TGW#debug xcctsp error
External call control error debugging is on
```

```
AS5300-TGW#no debug xcctsp error
External call control error debugging is off
```

### Related Commands

Command	Description
<b>debug xcctsp all</b>	Enables debugging on all external call control levels.
<b>debug xcctsp session</b>	Enables debugging on external call control sessions.

## debug xcctsp session

To debug External Call Control TSP session information, enter the **debug xcctsp session** EXEC command. To turn off debugging, enter the **no** form of this command.

**debug xcctsp session**

**no debug xcctsp session**

### Syntax Description

This command has no arguments or keywords.

### Defaults

No default behavior or values.

### Command Modes

EXEC

### Command History

Release	Modification
12.0(5)T	This command was introduced.

### Examples

See the following examples to turn on and off session-level debugging:

```
AS5300-TGW#debug xcct sess
External call control session debugging is on

AS5300-TGW#no debug xcct sess
External call control session debugging is off

AS5300-TGW#
```

### Related Commands

Command	Description
<b>debug xcctsp all</b>	Enables debugging on external call control levels.
<b>debug xcctsp error</b>	Enables debugging on external call control errors.