



MGCP CAS PBX and PRI Signaling Backhaul on Cisco 7200 Routers

Feature History

Release	Modification
12.1(3)T	This feature was introduced on Cisco 2600 series and Cisco 3600 series routers and Cisco MC3810 multiservice concentrators.
12.2(2)T	This feature was introduced on Cisco 7200 routers.

This feature module describes the Media Gateway Control Protocol (MGCP) CAS PBX and PRI/Q.931 Signaling Backhaul for Cisco 7200 routers in Cisco IOS Release 12.2(2)T.

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Feature Overview

The MGCP CAS PBX feature extends the earlier Simple Gateway Control Protocol (SGCP) channel-associated signaling (CAS) onto the merged SGCP/MGCP software base to enable various service provider solutions.

The PRI/Q.931 Signaling Backhaul feature enables you to reliably transport the signaling (Q.931 and above layers) from a PRI trunk that is physically connected to a media gateway (for example, a Cisco 7200 router) to a media gateway controller (Cisco VSC3000) for processing. Additionally, the Cisco VSC3000 can respond through the same interface.

MGCP CAS PBX Features

- CAS termination and translation to MGCP on Business Gateways (BGWs) and Trunking Gateways (TGWs)

Digital CAS (E&M) interfaces are supported in addition to the analog (FXO, FXS, and E&M) interfaces.

- Support for CAS PBX and Feature Group D CAS functions

MGCP 0.1 has been expanded to support CAS packages that handle CAS PBX and Feature Group D CAS functions, including Barge-In/Busy Line Verify, and 911 capabilities on the TGW.

The essential difference for current SGCP users is that support for the SGCP application has been replaced with the MGCP application. The MGCP application supports both SGCP commands and MGCP commands, permitting access to a larger feature set than with the SGCP application alone. The MGCP CAS PBX software assumes the MGCP mode as the default environment. This allows the gateway to recognize MGCP messages sent by the call agent.

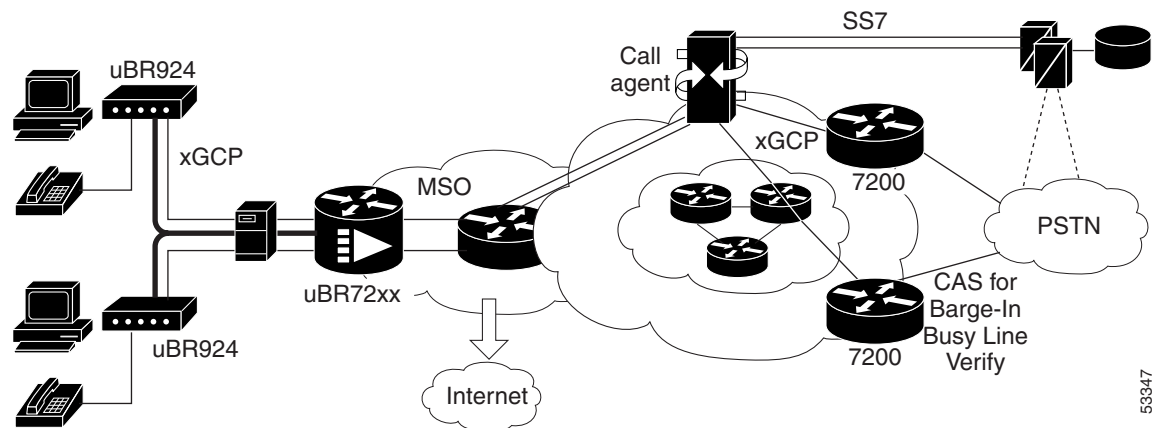
Examples of Service Provider Solutions

The MGCP CAS PBX feature supports several types of service provider solutions:

- Residential cable access

A Competitive Local Exchange Carrier (CLEC) can use residential cable access to provide residential customers with basic telephony and data services. Figure 1 illustrates a possible residential cable access solution.

Figure 1 Residential Cable Access Solution

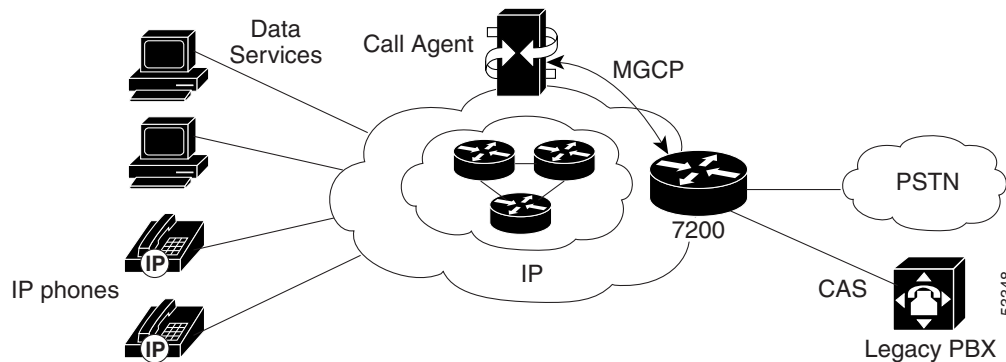


Note that in Figure 1, the trunking gateway (the Cisco 7200 router) requires support of incoming and outgoing multifrequency pulsing (MF) signaling for the Barge-In and Busy-Line Verify features. The residential gateway (the Cisco uBR924 cable access router) must support the CLASS features and 911 capability.

- IP Centrex and IP PBX

In these solutions, a call agent provides business voice services traditionally offered by a circuit-based PBX. Figure 2 illustrates an IP Centrex solution.

Figure 2 IP Centrex Solution



In Figure 2, the BGW (the Cisco 7200 router) requires PBX connectivity to interface with the legacy PBX.

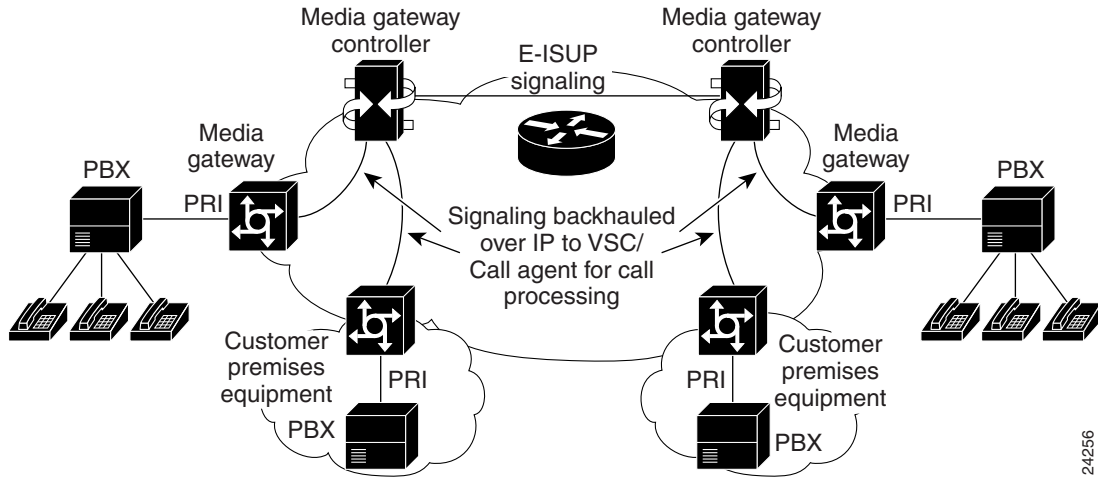
PRI/Q.931 Signaling Backhaul Features

Signaling backhaul takes place between a media gateway and a Virtual Switch Controller (VSC). The gateways provide an interface between the Public Switched Telephone Network (PSTN) and the packet network world (IP or ATM). The VSC provides call processing and gateway control. Signaling backhaul is the ability to reliably pass as many layers of a protocol stack as possible through a gateway directly to a VSC.

Signaling backhaul occurs at a common boundary for all protocols. For ISDN, the signaling backhaul takes place at the Layer 2 (Q.921) and Layer 3 (Q.931) boundary. The lower layers of the protocol are terminated and processed on the gateway, while the upper layers are backhauled to the VSC. The upper layers of the protocol are backhauled, or transported, to the VSC using Reliable User Datagram Protocol (RUDP) over IP. RUDP provides autonomous notification of connected and failed sessions, and in-sequence, guaranteed delivery of signaling protocols across an IP network. Backhaul session manager is a software function on the VSC and gateway that manages RUDP sessions. The session manager groups sessions between endpoints, establishes a selection priority, and collects these groups together to form a set.

Signaling backhaul provides the additional advantage of distributed protocol processing, enabling greater expandability and scalability while offloading lower-layer protocol processing from the VSC.

Figure 3 Signaling Backhaul



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Signaling Backhaul and Backhaul Session Manager

The backhaul session manager enables signaling applications to backhaul signaling information to a remote or local VSC, and also provides redundancy and transparent management of transport paths. To configure the backhaul session manager, you must create a new session-set, add session-groups in that session-set, and then add sessions to the session-group.

A session is an RUDP connection between two endpoints. An endpoint is defined by the IP address and the UDP port.

A session-group is a logically ordered list of sessions based on priority of the sessions. All of the sessions in the session-group *must* be configured to connect the same physical machines and, for reliability, these sessions can be defined to take different paths through the network. The backhaul session manager always uses the highest priority session available in the session-group to transport all PRI signaling traffic, regardless of the number of sessions configured in the session-group (note that RUDP keepalive traffic would exist on all sessions).

If the session currently being used fails, or a higher priority session within that session-group gets established, backhaul session manager and RUDP support a function in which messages waiting to be transmitted on the current session are transferred to another session automatically, while maintaining guaranteed, in-sequence delivery. This is sometimes referred to as *session failover*. Thus, a session-group enables network path redundancy between the gateway and the VSC. A session-group cannot be deleted unless the sessions associated with it are deleted first.

A session-set is a collection of session-groups. A session-set enables VSC redundancy and is used to implement VSC switchover. A session-set cannot be deleted unless the groups associated with it are deleted first.

In a fault-tolerant configuration, a session-set on the signaling gateway (Cisco 7200) can have more than one session-group, each session-group connecting the Cisco 7200 to a different VSC. In non-fault-tolerant configuration, a session-set on the signaling gateway can contain only one session-group, because there is only one VSC available.



Note

Each session-set on the VSC always has one session-group, regardless of the configuration being used.

Benefits

- The merged SGCP/MGCP software for RGWs, BGWs, and TGWs enables easier development and growth of Cisco and customer solutions.
- MGCP CAS PBX provides CAS connectivity to traditional PBXs and regulatory requirements for support of 911, Barge-In, and Busy-Line Verify features.
- Signaling backhaul integrates gateways into a virtual switch with the call control centralized in the Cisco VSC.
- PRI/Q.931 signaling backhaul provides the infrastructure to support the backhaul of the ISDN signaling protocol in a non-fault-tolerant manner.

Restrictions

The MGCP CAS PBX and PRI Backhaul features do not support the following:

- Backhauls of protocols other than PRI ISDN
- CLASS features
- Transmission Group Control Protocol (TGCP)
- Multiple connections in an MGCP endpoint
- Non-Facility Associated Signaling (NFAS) with D Channel Backup

Related Features and Technologies

- Voice over IP (VoIP)

Related Documents

- [Cisco IOS Voice, Video, and Fax Configuration Guide, Release 12.2](#)
- [Cisco IOS Voice, Video, and Fax Command Reference, Release 12.2](#)
- [MGCP Basic CLASS and Operator Services](#)
- [Media Gateway Control Protocol Residential Gateway Support](#)
- [Voice Over ATM with AAL2 Trunking on Cisco on Cisco 7200 Series Routers](#)

Supported Platforms

- Cisco 7200 series

Supported codecs

- g711alaw—G.711 A Law 64000 bps, works with all complexity DSPs
- g711ulaw—G.711 U law 64000 bps, works with all complexity DSPs
- g723ar53—G.723.1 ANNEX-A 5300 bps, work with high complexity DSPs
- g723ar63—G.723.1 ANNEX-A 6300 bps, works with high complexity DSPs

- g723r53—G.723.1 5300 bps, works with high complexity DSPs
- g723r63—G.723.1 6300 bps, works with high complexity DSPs
- g726r16—G.726 16000 bps, works with medium and high complexity DSPs
- g726r24—G.726 24000 bps, works with medium and high complexity DSPs
- g726r32—g.726 32000 bps, works with medium and high complexity DSPs
- g729br8—G.729b 8000 bps, works with high complexity DSPs
- g729r8—G.729 8000 bps, works with high complexity DSPs

Determining Platform Support Through Feature Navigator

Cisco IOS software is packaged in feature sets that support specific platforms. To get updated information regarding platform support for this feature, access Feature Navigator. Feature Navigator dynamically updates the list of supported platforms as new platform support is added for the feature.

Feature Navigator is a web-based tool that enables you to quickly determine which Cisco IOS software images support a specific set of features and which features are supported in a specific Cisco IOS image.

To access Feature Navigator, you must have an account on Cisco.com. If you have forgotten or lost your account information, send a blank e-mail to cco-locksmith@cisco.com. An automatic check will verify that your e-mail address is registered with Cisco.com. If the check is successful, account details with a new random password will be e-mailed to you. Qualified users can establish an account on Cisco.com by following the directions at <http://www.cisco.com/register>.

Feature Navigator is updated regularly when major Cisco IOS software releases and technology releases occur. For the most current information, go to the Feature Navigator home page at the following URL:

<http://www.cisco.com/go/fn>

Supported Standards, MIBs, and RFCs

Standards

- RTP and RTCP 1889 and 1890
- IETF MGCP draft version 0.1 dated November 9, 1998

MIBs

XGCP-MIB

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

SDP 2327 is not completely implemented.

Prerequisites

Complete the following tasks before configuring MGCP CAS PBX:

- Configure IP routing

For more information on IP routing, refer to [Cisco IOS IP Configuration Guide](#),

- Configure voice ports

For more information on configuring voice ports, refer to [Cisco IOS Voice, Video, and Fax Configuration Guide](#), Release 12.2.

- Configure Voice over IP

For more information on configuring Voice over IP, refer to [Cisco IOS Voice, Video, and Fax Configuration Guide](#), Release 12.2.

- Set up the call agents

For more information on setting up call agents, refer to the documentation that accompanies the call agents used in your network configuration.

Configuration Tasks

See the following sections for configuration tasks for the MGCP CAS PBX, and PRI signaling backhaul features. Each task in the list indicates if the task is optional or required.

Some tasks indicate one or more configuration examples affected by the command. Refer to the specific configuration example listing for the parameter values.

Perform the following tasks to configure MGCP CAS PBX:

- [Configuring the Gateway, page 8](#) (required)

Perform the following tasks to configure PRI Signaling Backhaul:

- [Configuring Backhaul Session Manager, page 10](#) (required)
- [Configuring ISDN Signaling Backhaul, page 12](#) (required)
- [Configuring the VSC, page 14](#) (required)



Caution

When the Fast Ethernet interface is configured for autonegotiation, it can take up to two seconds for this interface to be enabled when the interface has to initialize. Two examples of the interface initializing are when the **no shutdown** command is executed and if the cable is removed and then plugged back in. This autonegotiation will also affect the traffic flow on the Ethernet interface, and can therefore interrupt the traffic flow of existing RUDP connections, causing them to fail. To avoid these problems, the Fast Ethernet interface should not be configured for autonegotiation. The duplex and speed parameters should be set according to the requirements of the network, and should not be set to auto.

Configuring the Gateway

	Command	Purpose
Step 1	Router(config)# mgcp	(Required) Starts the MGCP daemon.
Step 2	Router(config)# mgcp call-agent [hostname] [serice-type mgcp] version version-number	(Required) Configures the MGCP call agent and service type.
Step 3	Router(config)# mgcp dtmf-relay voip codec {all low-bit-rate} mode {cisco nse out-of-band}	(Optional) Specifies compressed codecs for digit forwarding.
Step 4	Router(config)# mgcp package-capability { as-package dtmf-package gm-package hs-package line-package mf-package rtp-package script-package trunk-package }	(Optional) Assigns packages to the gateway. <ul style="list-style-type: none"> • as-package—Selects the Announcement Server Package. • dtmf-package—Selects the dual tone multifrequency (DTMF) package. • gm-package—Selects the Generic Media package. • hs-package—Selects the Handset package. • line-package—Selects the line package. • mf-package—Selects the MF package. • rtp-package—Selects the RTP package. • script-package—Selects the Script package. • trunk-package—Selects the Trunk package.
Step 5	Router(config-if)# mgcp modem passthrough [voip] codec {g711ulaw g711alaw} [mode nse]	(Optional for Named Service Elements (nse) mode.) Enables the gateway to process fax or modem messages. This command is disabled by default. <ul style="list-style-type: none"> • voip—Enables MGCP fax/modem passthrough for VOIP calls. • codec—Selects the codec to be used for MGCP fax/mode passthrough. • g711ulaw—G.711 U Law 64000 bps • g711alaw—G.711 A Law 64000 bps
Step 6	Router(config)# mgcp tse payload type	(Required for nse mode.) Enables the Telephony Signalling Events (TSE) payload for fax and modem messages. The default for the <i>type</i> value is 0 (meaning the command is disabled), and the valid values are between 98 and 119.
Step 7	Router(config)# no mgcp timer receive-rtcp	(Required for non-RGWs) Turns off the RTP RTCP receive timeout interval at the gateway.
Step 8	Router(config)# mgcp timer net-cont-test timer	(Optional for non-RGWs) Turns on the continuity test timeout interval at the gateway. <ul style="list-style-type: none"> • <i>timer</i>—Timeout period for continuity test in milliseconds. Valid range is 100 through 3000.

	Command	Purpose
Step 9	Router(config)# controller T1 slot/port	(Required for ATM mode) Selects the T1 controller.
Step 10	Router(config-controller)# mode atm	(Required for ATM mode) Specifies that the controller will support ATM encapsulation and create ATM interface 0. When the controller is set to ATM mode, the following takes place: <ul style="list-style-type: none"> • Controller framing is automatically set to Extended SuperFrame (ESF). • The linecode is automatically set to B8ZS.
Step 11	Router(config-controller)# no shutdown	(Optional for ATM mode) Ensures that the controller is activated.
Step 12	Router(config-controller)# exit	(Required for ATM mode) Exits the controller configuration mode.
Step 13	Router(config)# mgcp quarantine mode process	(Optional) Turns on processing for MGCP quarantine mode.
Step 14	Router(config)# controller T1 slot/port	(Required) Selects the T1 controller.
Step 15	Router(config-controller)# mode cas	(Optional) Configures the controller to support CAS.
Step 16	Router(config-controller)# ds0-group channel-number timeslots range type signaling-type tone type	(Required) Configures the T1 time slots for CAS calls. Use the following three DS-0 definitions: <ul style="list-style-type: none"> • ds0-group 1 timeslots 1-8 type e&m-immediate-start • ds0-group 2 timeslots 9-16 type e&m-wink-start • ds0-group 3 timeslots 17-24 type fxs-ground-start
Step 17	Router(config-controller)# exit	(Required) Exits controller configuration mode.
Step 18	Router(config)# dial-peer voice number pots	(Required) Enters dial-peer configuration mode for the POTS dial peer. <ul style="list-style-type: none"> • <i>number</i>—Voice dial-peer tag. Valid values are 1 through 2147483647.
Step 19	Router(config-dial-peer)# application MGCPAPP	(Required) Initiates the MGCP protocol for the voice ports.
Step 20	Router(config-dial-peer)# port slot/port	(Required) Defines a port number in the dial peer.

Configuring Backhaul Session Manager

The backhaul session manager enables signaling applications to backhaul signaling information to a remote or local virtual switch controller (VSC), and also provides redundancy and transparent management of transport paths.

To configure the backhaul session manager, complete the following steps in the following order starting in global configuration mode:

	Command	Purpose
Step 1	Router(config)# backhaul-session-manager	Enters backhaul session manager configuration mode.
Step 2	Router(config-bsm)# set set-name client [ft nft]	<p>Creates a new session-set and sets the session-set mode.</p> <ul style="list-style-type: none"> ft—Sets the session-set mode as fault-tolerant. nft—Sets the session-set mode as non-fault-tolerant. <p>Fault tolerance is the level of ability within a system to operate properly even if a group in the set fails.</p> <p>Note If the router is configured for non-fault-tolerant operation, then the VSC should also be configured for non-fault-tolerant operation. See “Configuring the VSC” section on page 14.</p>
Step 3	Router(config-bsm)# group group-name set set-name	Adds a new session-group to the session-set.

	Command	Purpose
Step 4	<pre>Router(config-bsm)# session group group-name ip-address remote-port local-ip-address local-port session-priority</pre>	<p>Adds a session in the session-group.</p> <ul style="list-style-type: none"> <i>group-name</i>—Specifies the group name to which you want to add the new session. <i>ip-address</i>—Specifies the remote IP address <i>remote-port</i>—Specifies the remote port. Choose a number in the range of 1024 through 9999. Make sure that this number is not already being used by another service such as MGCP on the VSC. <i>local-ip-address</i>—Specifies the local IP address. <i>local-port</i>—Specifies the local port. The range is 1024 through 9999. <p>Note We recommend using a high port number to ensure that the port is not being used by another application.</p> <ul style="list-style-type: none"> <i>session-priority</i>—Specifies the priority of the session within the session-group. Range is 0 through 9999, 0 being the highest priority. <p>Although you can configure multiple sessions in the group with the same priority, we recommend that the priority of the session be unique within that session-group.</p> <p>We recommend to have at least two sessions to support session failover.</p>

**Caution**

Do not change the following parameters unless instructed to do so by Cisco technical support. There are relationships between them that can cause sessions to fail if not set correctly.

Step 5	<pre>Router(config-bsm)# group group-name auto-reset 0-255</pre>	<p>(Optional) Sets the RUDP auto reset maximum. The default is 6.</p>
Step 6	<pre>Router(config-bsm)# group group-name cumulative-ack 0-255</pre>	<p>(Optional) Configures RUDP cumulative ack maximum. The default is 4.</p>
Step 7	<pre>Router(config-bsm)# group group-name out-of-sequence 0-255</pre>	<p>(Optional) Configures RUDP out-of-sequence maximum. The default is 4.</p>
Step 8	<pre>Router(config-bsm)# group group-name receive 1-64</pre>	<p>(Optional) Configures RUDP receive maximum. The default is 32.</p>

	Command	Purpose
Step 9	Router(config-bsp)# group <i>group-name</i> retrans 0-255	(Optional) Configures RUDP retransmit maximum. The default is 3.
Step 10	Router(config-bsp)# group <i>group-name</i> timer cumulative-ack 100-65535	(Optional) Configures the RUDP cumulative acknowledgment timer. The default is 325 milliseconds.
Step 11	Router(config-bsp)# group <i>group-name</i> timer keepalive 0 100-65535	(Optional) Configures the RUDP keepalive timer. The default is 2050 milliseconds.
Step 12	Router(config-bsp)# group <i>group-name</i> timer retransmit 100-65535	(Optional) Configures the RUDP retransmit timer. The default is 650 milliseconds.
Step 13	Router(config-bsp)# group <i>group-name</i> timer transfer-state 0-65535	(Optional) Configures the RUDP state transfer timer. The default is 1800 milliseconds.

Repeat Step 1 through Step 5 to add a second group of sessions for fault-tolerant configuration.

Configuring ISDN Signaling Backhaul

You must configure ISDN in order to backhaul Q.931 signaling to the VSC.

	Command	Purpose
Step 1	Router(config)# controller t1 e1 <i>slot/port</i>	Enters controller configuration mode.
Step 2	Router(config-controller)# clock source [internal line]	Configures the clock source. Configures the clock source used by the T1 or E1 controller. <ul style="list-style-type: none"> • internal—The clocking source is obtained from the port adapter line. • line—The clocking source is obtained from the network.

	Command	Purpose
Step 3	<pre>Router(config-controller)# cablelength long {-15db -22.5db -7.5db 0db} or Router(config-controller)# cablelength short {110ft 220ft 330ft 440ft 550ft 600ft}</pre>	<p>The cable length setting must conform to the actual cable length you are using. For example, if you attempt to enter the cablelength short command on a long-haul T1 link, the command is rejected.</p> <p>To set a cable length longer than 600 feet for a T1 link, use the cablelength long command. The keywords are as follows:</p> <ul style="list-style-type: none"> • -15db—Specifies the decibel pulse level at -15 dB. • -22.5db—Specifies the decibel pulse level at -22.5 dB. • -7.5db—Specifies the decibel pulse level at -7.5dB. • 0db—Specifies the decibel pulse level at 0 dB. This is the default pulse rate. <p>To set a cable length 600 feet or less for a T1 link, use the cablelength short command. There is no default for cablelength short. The keywords are as follows.</p> <ul style="list-style-type: none"> • 110ft—Specifies a cable length from 0 to 110 feet. • 220ft—Specifies a cable length from 111 to 220 feet. • 330ft—Specifies a cable length from 221 to 330 feet. • 440ft—Specifies a cable length from 331 to 440 feet. • 550ft—Specifies a cable length from 441 to 550 feet. • 600ft—Specifies a cable length from 551 to 600 feet. <p>If you do not set the cable length, the system defaults to a setting of cablelength long 0 dB.</p>
Step 4	<pre>Router(config-controller)# pri-group timeslots list-of-timeslots service mgcp</pre>	<p>Specifies MGCP as the control protocol used for backhaul.</p> <p>The controller time slots cannot be shared between backhaul and other Layer 3 protocols.</p>
Step 5	<pre>Router(config-controller)# exit</pre>	Returns to configuration mode.
Step 6	<pre>Router(config)# interface serial slot/port:signalling channel {23 15}</pre>	<p>Enters serial interface configuration mode.</p> <ul style="list-style-type: none"> • 23—for T1 controllers • 15—for E1 controllers

	Command	Purpose
Step 7	Router(config-if)# isdn switch-type [primary-5ess primary-ni primary-net5]	Configures the ISDN switch type. This can be done in either global configuration mode or interface configuration mode. <ul style="list-style-type: none"> • primary-5ess—Works with T1. • primary-ni—Works with T1. • primary-net5—Works with E1.
Step 8	Router(config-if)# isdn bind-13 backhaul <i>set-name</i> Router(config-if)# exit	Configures ISDN to backhaul Q.931 to the VSC. You must use the set-name that was defined for the backhaul session manager configuration. Repeat the above steps for each T1/E1 interface on the router that you configure to utilize backhaul.

Configuring the VSC

The Cisco VSC3000 is the signaling controller software which provides call control installed on, for example, a Sun Netra 1800. Man Machine Language (MML) is the user interface into the signaling controller software. Use this interface to configure the parameters of your signaling controller software and to display information about the current settings.

To configure the VSC to perform signaling backhaul, follow the steps in the table below:



Note The commands shown below are not case sensitive.

	Command	Purpose
Step 1	mml> prov-sta::srcver="new", dstver="dsltesting1"	Establishes a new session named "dsltesting1".
Step 2	mml> prov-add:CARD:NAME="card1", DESC="Ethernet Card 1", TYPE="EN, SLOT=1"	Defines the hardware available for accessing the gateway from the Sun machine.
Step 3	mml> prov-add:ENETIF:NAME="enif1:", DESC="Ethernet IF 1:", CARD="card1"	Defines the card, card type, and slot, to configure.
Step 4	mml> prov-add:extnode:name="bh1", desc="7200", desc="7200 at VSC"	Defines the media gateway, or the external node (7200). This node describes any interaction with the 7200 gateway.
Step 5	mml> prov-add:mgcppath:name="mgcpsvc1", extnode="bh1", desc="MGCP service to 7200"	Defines the MGCP path.
Step 6	mml> prov-add:MLTIPFAS:NAME="bhsvc1", extnode="bh1", side="user", mdo="BELL_1268", custgrpID="2222", pathsize="2" sigslot=1, SIGPORT=0, IF1="enig1", IPADDR1="IP_Addr1: Port=7007, PEERADDR1="17.0.0.11", PEERPORT=7007, desc="Backhaul service to c7200"	Defines the PRI backhaul service, the ISDN variant, the interface, customer group ID, or which dial plan to use for this connection (2222), the PRI (user), and optional description (Backhaul service to a Cisco 7200).

	Command	Purpose
Step 7	<pre>mm1> prov-add:iplnk:name="iplnk6N",if="enif1", ipaddr="IP_Addr1",port=7007,pri=1, peeraddr="172.18.72.198",peerport=7007,slot=0, sigport=0,svc="bh6NI2",desc="MGCP Service to 7200"</pre>	<p>Defines the IP network connection to the backhaul service, the ethernet interface name for the VSC ethernet card (enif1), "IP_Addr1" as defined in ../etc/XECfgParm.dat, the port number used by the VSC (7007), the IP link priority, (1) the media gateway's IP address (172.18.72.198), the media gateway's IP port (7007), the media gateway's PRI physical card slot (0), the media gateway's PRI port or the T1/E1 controller number (0), the ipfas service, which matches the name in Step 6, and an optional description (MGCP Service to 7200).</p> <p>Note The media gateway's IP port does not have to match the VSC port.</p>
Step 8	<pre>mm1>prov-add:mgcppath:name="mgcpsvc1", extnode="bh1",desc="MGCP service to 7200"</pre>	<p>Defines the MGCP signaling service. This maps to the same external node name as for MGCPSPATH (Step 6).</p>
Step 9	<pre>mm1>prov-add:iplnk:name="mgcplnk2",if="enif1", ipaddr="IP_Addr1",port=2427,peeraddr= "17.0.0.1",peerport=2427,svc="mgcpsvc2", pri=1,desc="MGCP link to 7200"</pre>	<p>Defines the IP network connection to the MGCP signaling service. Defines the ethernet interface name for the VSC ethernet card (enif1), "IP_Addr1" as defined in ../etc/XECfgParm.dat, the port used by the VSC (2427), the media gateway's IP address (17.0.0.1), the media gateway's IP port (2427), the name for MGCP signaling service (mgcpsvc2), the IP link priority (1), and the optional description (MGCP link to 7200).</p>

**Note**

If the VSC is set up for fault-tolerant operation, configure the backhaul session manager also for fault-tolerant operation. For more information, refer to the *Cisco MGC Software Release 7 Provisioning Guide*.

Verifying the Configurations

Use these commands to verify the configuration settings:

	Command	Purpose
Step 1	Router# show dial-peer voice sum	Displays the status of the dial peer. The dial peer should be active. If it is not, enter the following command: Router(config-dial-peer)# no shutdown
Step 2	Router# show isdn status *00:03:34.423 UTC Sat Jan 1 2000 Global ISDN Switchtype = primary-net5 ISDN Serial1:23 interface dsl 0, interface ISDN Switchtype = primary-net5 L2 Protocol = Q.921 L3 Protocol(s) = BACKHAUL Layer 1 Status: ACTIVE Layer 2 Status: TEI = 0, Ces = 1, SAPI = 0, State = MULTIPLE_FRAME_ESTABLISHED Layer 3 Status: NLCB:callid=0x0, callref=0x0, state=31, ces=0 event=0x0 NLCB:callid=0x0, callref=0x0, state=0, ces=1 event=0x0 0 Active Layer 3 Call(s) Activated dsl 0 CCBs = 0 Number of active calls = 0 Number of available B-channels = 23 Total Allocated ISDN CCBs = 0	Verifies successful ISDN configuration for backhaul. The following output shows that Layers 1, 2, and 3 are enabled and active. Layer 3 shows the number of active ISDN calls. In this example, notice that the Layer 2 protocol is Q.921, and the Layer 3 protocol is BACKHAUL. This verifies that it is configured to backhaul ISDN. Also, if you are connected to a live line, you should see Layer 1 status is active, and Layer 2 state is MULTIPLE_FRAME_ESTABLISHED. This means that the ISDN line is up and active.

Command	Purpose
<p>Step 3</p> <pre>Router# show backhaul-session-manager set all Session-Set Name :set1 State :BSM_SET_OOS Mode :Fault-Tolerant(FT) Option :Option-Client Groups :1 statistics Successful switchovers:0 Switchover Failures:0 Set Down Count 0 Group:grp1</pre>	<p>Displays all session-sets. This set contains one group called grp1 and it is configured in fault-tolerant mode.</p> <p>Possible session-set states are:</p> <ul style="list-style-type: none"> • SESS_SET_IDLE—A session-set has been created. • SESS_SET_OOS—Sessions have been added to session-groups. No ACTIVE notification has been received from VSC. • SESS_SET_ACTIVE_IS—An ACTIVE notification has been received over one in-service session-group. STANDBY notification has not been received on any available session-groups. • SESS_SET_STNDBY_IS—A STANDBY notification is received, but there is no in-service active session-group available. • SESS_SET_FULL_IS—A session-group in-service that has ACTIVE notification and at least one session-group in-service that has STANDBY notification. • SESS_SET_SWITCH_OVER—An ACTIVE notification is received on session-group in-service, which had received STANDBY notification.
<p>Step 4</p> <pre>Router# show backhaul-session-manager group status all Session-Group Group Name :grp1 Set Name :set1 Status :Group-OutOfService Status (use) :Group-None</pre>	<p>Displays the state of all session-groups.</p> <p>The Status field can display:</p> <ul style="list-style-type: none"> • Group-OutOfService—No session in the group has been established. • Group-Inservice—At least one session in the group has been established. <p>The Status (use) field can display:</p> <ul style="list-style-type: none"> • Group-Standby—The VSC connected to the other end of this group will go into standby mode. • Group-Active—The VSC connected to the other end of this group will be the active VSC. • Group-None—The VSC has not declared its intent yet.

Command	Purpose
<p>Step 5 Router# show backhaul-session-manager session all</p> <pre> Session information -- Session-id:35 Group:grp1 Configuration: Local:10.1.2.15 , port:8303 Remote:10.5.0.3 , port:8303 Priority:2 RUDP Option:Client, Conn Id:0x2 State: <!--see "Purpose" column for details--> Status:OPEN_WAIT, Use-status:OOS <!--see "Purpose" column for details--> Statistics: # of resets:0 # of auto_resets 0 # of unexpected RUDP transitions (total) 0 # of unexpected RUDP transitions (since last reset) 0 Receive pkts - Total:0 , Since Last Reset:0 Recieve failures - Total:0 ,Since Last Reset:0 Transmit pkts - Total:0, Since Last Reset:0 Transmit Failures (PDU Only) Due to Blocking (Not an Error) - Total:0, Since Last Reset:0 Due to causes other than Blocking - Total:0, Since Last Reset:0 Transmit Failures (NON-PDU Only) Due to Blocking(Not an Error) - Total:0, Since Last Reset:0 Due to causes other than Blocking - Total:0, Since Last Reset:0 RUDP statistics Open failures:0 Not ready failures:0 Conn Not Open failures:0 Send window full failures:0 Resource unavailble failures:0 Enqueue failures:0 </pre>	<p>Displays all sessions.</p> <p>The State can be:</p> <ul style="list-style-type: none"> • OPEN—The connection is established. • OPEN_WAIT—The connection is awaiting establishment. • OPEN_XFER—Session failover is in progress for this session, which is a transient state. • CLOSE—This session is down, also a transient state. The session will move to OPEN_WAIT after waiting a fixed amount of time. <p>The Use-status indicates whether PRI signaling traffic is currently being transported over this session. The Use-status field can be:</p> <ul style="list-style-type: none"> • OOS—This session is not being used to transport signaling traffic. • IS—This session is being used currently to transport all PRI signaling traffic.
<p>Step 6 Router# show running-config</p>	<p>Displays the current configuration settings.</p>

Monitoring and Maintaining MGCP CAS PBX and Signaling Backhaul

Use the following commands at any time to monitor the MGCP and signaling backhaul configurations:

Command	Purpose
clear backhaul-session-manager group	Resets the statistics for all available session-groups or a specified session-group.
clear mgcp statistics	Resets the MGCP statistical counters.
debug mgcp [all errors events packets parser]	Turns on debugging for the gateway.

Command	Purpose
<code>show backhaul-session-manager group</code>	Displays status, statistics, or configuration of all available session-groups.
<code>show backhaul-session-manager session</code>	Displays status, statistics, or configuration of all available sessions.
<code>show backhaul-session-manager set</code>	Displays status, statistics, or configuration of all available session-sets.
<code>show isdn status</code>	Displays status of ISDN backhaul. If the connection to the VSC is lost, the router will shut down Layer 2 so that it cannot receive more calls. When the VSC connection is back up, you may use this to verify that Layer 2 was also brought back up correctly.
<code>show mgcp [connection endpoint statistics]</code>	Displays all active MGCP connections on the router.

Configuration Examples

This section provides the following configuration diagrams and software examples:

- [MGCP Residential Gateway Example, page 19](#)
- [Fast Ethernet Example, page 21](#)
- [VSC for E1 Example, page 22](#)
- [VSC for T1 Example, page 24](#)

MGCP Residential Gateway Example

The following example illustrates the configuration for a Cisco 7200 router with CAS running the MGCP application:

```

version 12.1
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname mgcp2_vxr
!
card type t1 1
enable secret 5.
enable password password
!
dspint DSPfarm1/0
!
ip subnet-zero
ip host router 192.168.0.0
ip host CALLGEN-SECURITY-V2 64.37.2.70 64.88.0.0
ip dhcp smart-relay
!
!
!
mgcp

```

```

mgcp call-agent 10.0.0.10 service-type mgcp version 0.1
mgcp sdp simple
mgcp package-capability dtmf-package
mgcp package-capability mf-package
mgcp package-capability rtp-package
mgcp default-package gm-package
mgcp tse payload 100
no mgcp timer receive-rtcp
!
voice service voip
  h323 call start fast
!
!
!
!
!
!
!
controller T1 1/0
  clock source internal
  cablelength long 0db
  ds0-group 0 timeslots 1-24 type e&m-immediate-start
!
controller T1 1/1
  cablelength long 0db
!
!
!
interface Loopback0
  ip address 10.0.0.0 10.255.255.255
  shutdown
!
interface FastEthernet0/0
  no ip address
  no ip mroute-cache
  shutdown
  half-duplex
!
interface Ethernet2/0
  no ip address
  no ip mroute-cache
  shutdown
!
interface Ethernet2/1
  ip address 10.0.1 255.255.255.255
  no ip mroute-cache
  no keepalive
!
interface Ethernet2/2
  ip address 192.168.0.2 255.255.255.0
  no ip mroute-cache
  no keepalive
!
interface Ethernet2/3
  no ip address
  no ip mroute-cache
  shutdown
!
interface Ethernet2/4
  no ip address
  no ip mroute-cache
  shutdown
!
interface Ethernet2/5

```

```

no ip address
no ip mroute-cache
shutdown
!
interface Ethernet2/6
no ip address
no ip mroute-cache
shutdown
!
interface Ethernet2/7
ip address 10.0.0.0 255.255.255.255
no ip mroute-cache
no keepalive
!
ip default-gateway 16.7.0.1
ip classless
ip route 10.0.0.1 255.255.255.255 Ethernet2/2
ip route 192.168.0.2 255.255.255.255 Ethernet2/7
no ip http server
!
dialer-list 1 protocol ip permit
dialer-list 1 protocol ipx permit
!
voice-port 1/0:0
!
dial-peer voice 1 pots
application mgcpapp
port 1/0:0
!
!
gatekeeper
shutdown
!
!
line con 0
exec-timeout 0 0
transport input none
line aux 0
line vty 0 4
password password_a
login
line vty 5 15
login
!
end

```

Fast Ethernet Example

In the following example, the Fast Ethernet interface is configured to not have autonegotiation configured:

```

Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# interface fast ethernet 0
Router(config-if)# duplex full
Router(config-if)# speed 10
Router(config-if)# ^Z
Router#

```

VSC for E1 Example

In the following example, the VSC is configured for an E1 connection to perform signaling backhaul:

```

prov-sta::srcver="new",dstver="E1testing1215"
prov-add:CARD:NAME="card1",DESC="Ethernet Card 1",TYPE="EN",SLOT=1
prov-add:CARD:NAME="card2",DESC="Ethernet Card 2",TYPE="EN",SLOT=2
prov-add:ENETIF:NAME="enif1",DESC="Ethernet IF 1",CARD="card1"
prov-add:ENETIF:NAME="enif2",DESC="Ethernet IF 2",CARD="card2"
prov-add:extnode:name="bh1",type="7200",desc="7200 at VSC"
prov-add:mgcppath:name="mgcpsvc1",extnode="bh1",desc="MGCP service to 7200"
prov-add:iplnk:name="mgcplnk1",if="enif1",ipaddr="IP_Addr1",port=2427,peeraddr="17.0.0.11",peerport=2427,svc="mgcpsvc1",pri=1,desc="MGCP link to 7200"
prov-add:extnode:name="bh2",type="7200",desc="7200 at VSC"
prov-add:mgcppath:name="mgcpsvc2",extnode="bh2",desc="MGCP service to 7200"
prov-add:iplnk:name="mgcplnk2",if="enif1",ipaddr="IP_Addr1",port=2427,peeraddr="17.0.0.1",peerport=2427,svc="mgcpsvc2",pri=1,desc="MGCP link to 7200";
prov-add:MLTIPFAS:NAME="bhsvc1",extnode="bh1",SIDE="user",mdo="ETS_300_102",custgrpid="2222",pathsize=2,sigslot=1,SIGPORT=0,IF1="enif1",IPADDR1="IP_Addr1",PORT=7007,PEERADDR1="17.0.0.11",PEERPORT=7007
prov-add:MLTIPFAS:NAME="bhsvc2",extnode="bh1",SIDE="user",mdo="ETS_300_102",custgrpid="2222",pathsize=2,sigslot=3,SIGPORT=0,IF1="enif1",IPADDR1="IP_Addr1",PORT=7007,PEERADDR1="17.0.0.11",PEERPORT=7007
prov-add:MLTIPFAS:NAME="bhsvc3",extnode="bh1",SIDE="user",mdo="ETS_300_102",custgrpid="2222",pathsize=2,sigslot=5,SIGPORT=0,IF1="enif1",IPADDR1="IP_Addr1",PORT=7007,PEERADDR1="17.0.0.11",PEERPORT=7007;
prov-add:MLTIPFAS:NAME="bhsvc4",extnode="bh2",SIDE="network",MDO="ETS_300_102",CUSTGRPID="2222",pathsize=2,sigslot=1,SIGPORT=0,IF1="enif1",IPADDR1="IP_Addr1",PORT=7007,PEERADDR1="17.0.0.1",PEERPORT=7007
prov-add:MLTIPFAS:NAME="bhsvc5",extnode="bh2",SIDE="network",MDO="ETS_300_102",CUSTGRPID="2222",pathsize=2,sigslot=5,SIGPORT=0,IF1="enif1",IPADDR1="IP_Addr1",PORT=7007,PEERADDR1="17.0.0.1",PEERPORT=7007
prov-add:MLTIPFAS:NAME="bhsvc6",extnode="bh2",SIDE="network",MDO="ETS_300_102",CUSTGRPID="2222",pathsize=2,sigslot=6,SIGPORT=0,IF1="enif1",IPADDR1="IP_Addr1",PORT=7007,PEERADDR1="17.0.0.1",PEERPORT=7007;
prov-add:mlttrngrp:name="0001",svc="bhsvc1",CLLI="8260002",numtrngrp=2,carrieridentity="0001",custgrpid="2222",borigstartindex="1",btermstartindex="2",compressiontype="2",trnkmemnum=1,spansize=31,DCHAN=16,cic=1,cu="bh1",endpoint="s1/ds1-0/1@mgcp_vxr"
prov-add:mlttrngrp:name="0003",svc="bhsvc2",CLLI="8260002",numtrngrp=2,carrieridentity="0001",custgrpid="2222",borigstartindex="1",btermstartindex="2",compressiontype="2",trnkmemnum=1,spansize=31,DCHAN=16,cic=1,cu="bh1",endpoint="s3/ds1-0/1@mgcp_vxr"
prov-add:mlttrngrp:name="0005",svc="bhsvc3",CLLI="8260002",numtrngrp=2,carrieridentity="0001",custgrpid="2222",borigstartindex="1",btermstartindex="2",compressiontype="2",trnkmemnum=1,spansize=31,DCHAN=16,cic=1,cu="bh1",endpoint="s5/ds1-0/1@mgcp_vxr";
prov-add:mlttrngrp:name="0007",svc="bhsvc4",CLLI="8260003",numtrngrp=2,carrieridentity="0002",custgrpid="2222",borigstartindex="1",btermstartindex="2",compressiontype="2",trnkmemnum=2,spansize=31,DCHAN=16,cic=1,cu="bh2",endpoint="s1/su0/ds1-0/1@mgcp2_7200"
prov-add:mlttrngrp:name="0009",svc="bhsvc5",CLLI="8260003",numtrngrp=2,carrieridentity="0002",custgrpid="2222",borigstartindex="1",btermstartindex="2",compressiontype="2",trnkmemnum=2,spansize=31,DCHAN=16,cic=1,cu="bh2",endpoint="s5/su0/ds1-0/1@mgcp2_7200"
prov-add:mlttrngrp:name="0011",svc="bhsvc6",CLLI="8260003",numtrngrp=2,carrieridentity="0002",custgrpid="2222",borigstartindex="1",btermstartindex="2",compressiontype="2",trnkmemnum=2,spansize=31,DCHAN=16,cic=1,cu="bh2",endpoint="s6/su0/ds1-0/1@mgcp2_7200";
numan-add:dialplan:custgrpid="2222"
numan-add:resultset:custgrpid="2222",name="rset1"
numan-add:resultset:custgrpid="2222",name="rset2"
numan-add:resultset:custgrpid="2222",name="rset3"
numan-add:resultset:custgrpid="2222",name="rset4"
numan-add:resultset:custgrpid="2222",name="rset5"
numan-add:resultset:custgrpid="2222",name="rset6"
numan-add:resultset:custgrpid="2222",name="rset7"
numan-add:resultset:custgrpid="2222",name="rset8"
numan-add:resultset:custgrpid="2222",name="rset9"

```

```

numan-add:resultset:custgrpid="2222", name="rset10"
numan-add:resultset:custgrpid="2222", name="rset11"
numan-add:resultset:custgrpid="2222", name="rset12"
prov-add:rttrnkgrp:name="1", type=7, reattempts=3, queuing=0, cutthrough=2
prov-add:rttrnkgrp:name="2", type=7, reattempts=3, queuing=0, cutthrough=2
prov-add:rttrnkgrp:name="3", type=7, reattempts=3, queuing=0, cutthrough=2
prov-add:rttrnkgrp:name="4", type=7, reattempts=3, queuing=0, cutthrough=2
prov-add:rttrnkgrp:name="5", type=7, reattempts=3, queuing=0, cutthrough=2
prov-add:rttrnkgrp:name="6", type=7, reattempts=3, queuing=0, cutthrough=2
prov-add:rttrnkgrp:name="7", type=7, reattempts=3, queuing=0, cutthrough=2
prov-add:rttrnkgrp:name="8", type=7, reattempts=3, queuing=0, cutthrough=2
prov-add:rttrnkgrp:name="9", type=7, reattempts=3, queuing=0, cutthrough=2
prov-add:rttrnkgrp:name="10", type=7, reattempts=3, queuing=0, cutthrough=2
prov-add:rttrnkgrp:name="11", type=7, reattempts=3, queuing=0, cutthrough=2
prov-add:rttrnkgrp:name="12", type=7, reattempts=3, queuing=0, cutthrough=2
prov-add:rttrnk:name="rtnk12", trnkgrpnum=12
prov-add:rttrnk:name="rtnk11", trnkgrpnum=11
prov-add:rttrnk:name="rtnk10", trnkgrpnum=10
prov-add:rttrnk:name="rtnk9", trnkgrpnum=9
prov-add:rttrnk:name="rtnk8", trnkgrpnum=8
prov-add:rttrnk:name="rtnk7", trnkgrpnum=7
prov-add:rttrnk:name="rtnk6", trnkgrpnum=6
prov-add:rttrnk:name="rtnk5", trnkgrpnum=5
prov-add:rttrnk:name="rtnk4", trnkgrpnum=4
prov-add:rttrnk:name="rtnk3", trnkgrpnum=3
prov-add:rttrnk:name="rtnk2", trnkgrpnum=2
prov-add:rttrnk:name="rtnk1", trnkgrpnum=1
prov-add:rtlist: name="rlst1", rtname="rtnk1", carrierid=0001
prov-add:rtlist: name="rlst2", rtname="rtnk2", carrierid=0002
prov-add:rtlist: name="rlst3", rtname="rtnk3", carrierid=0003
prov-add:rtlist: name="rlst4", rtname="rtnk4", carrierid=0004
prov-add:rtlist: name="rlst5", rtname="rtnk5", carrierid=0005
prov-add:rtlist: name="rlst6", rtname="rtnk6", carrierid=0006
prov-add:rtlist: name="rlst7", rtname="rtnk7", carrierid=0007
prov-add:rtlist: name="rlst8", rtname="rtnk8", carrierid=0008
prov-add:rtlist: name="rlst9", rtname="rtnk9", carrierid=0009
prov-add:rtlist: name="rlst10", rtname="rtnk10", carrierid=0010
prov-add:rtlist: name="rlst11", rtname="rtnk11", carrierid=0011
prov-add:rtlist: name="rlst12", rtname="rtnk12", carrierid=0012
numan-add:resulttable:custgrpid="2222", name="rtab1", resulttype="ROUTE", dw1="rlst1",
setname="rset1"
numan-add:resulttable:custgrpid="2222", name="rtab2", resulttype="ROUTE", dw1="rlst2",
setname="rset2"
numan-add:resulttable:custgrpid="2222", name="rtab3", resulttype="ROUTE", dw1="rlst3",
setname="rset3"
numan-add:resulttable:custgrpid="2222", name="rtab4", resulttype="ROUTE", dw1="rlst4",
setname="rset4"
numan-add:resulttable:custgrpid="2222", name="rtab5", resulttype="ROUTE", dw1="rlst5",
setname="rset5"
numan-add:resulttable:custgrpid="2222", name="rtab6", resulttype="ROUTE", dw1="rlst6",
setname="rset6"
numan-add:resulttable:custgrpid="2222", name="rtab7", resulttype="ROUTE", dw1="rlst7",
setname="rset7"
numan-add:resulttable:custgrpid="2222", name="rtab8", resulttype="ROUTE", dw1="rlst8",
setname="rset8"
numan-add:resulttable:custgrpid="2222", name="rtab9", resulttype="ROUTE", dw1="rlst9",
setname="rset9"
numan-add:resulttable:custgrpid="2222", name="rtab10", resulttype="ROUTE", dw1="rlst10",
setname="rset10"
numan-add:resulttable:custgrpid="2222", name="rtab11", resulttype="ROUTE", dw1="rlst11",
setname="rset11"
numan-add:resulttable:custgrpid="2222", name="rtab12", resulttype="ROUTE", dw1="rlst12",
setname="rset12"

```

```

numan-add:bdigtrees:custgrp="2222",digitstring="525",callside="originating",setname="rset
1"
numan-add:bdigtrees:custgrp="2222",digitstring="526",callside="originating",setname="rset
2"
numan-add:bdigtrees:custgrp="2222",digitstring="527",callside="originating",setname="rset
3"
numan-add:bdigtrees:custgrp="2222",digitstring="528",callside="originating",setname="rset
4"
numan-add:bdigtrees:custgrp="2222",digitstring="529",callside="originating",setname="rset
5"
numan-add:bdigtrees:custgrp="2222",digitstring="530",callside="originating",setname="rset
6"
numan-add:bdigtrees:custgrp="2222",digitstring="531",callside="originating",setname="rset
7"
numan-add:bdigtrees:custgrp="2222",digitstring="532",callside="originating",setname="rset
8"
numan-add:bdigtrees:custgrp="2222",digitstring="533",callside="originating",setname="rset
9"
numan-add:bdigtrees:custgrp="2222",digitstring="534",callside="originating",setname="rset
10"
numan-add:bdigtrees:custgrp="2222",digitstring="535",callside="originating",setname="rset
11"
numan-add:bdigtrees:custgrp="2222",digitstring="536",callside="originating",setname="rset
12"
prov-cpy
prov-stp

```

VSC for T1 Example

In the following example, the VSC is configured for a T1 connection to perform signaling backhaul:

```

prov-sta::srcver="new",dstver="ds1testing1"
prov-add:CARD:NAME="card1",DESC="Ethernet Card 1",TYPE="EN",SLOT=1
prov-add:CARD:NAME="card2",DESC="Ethernet Card 2",TYPE="EN",SLOT=2
prov-add:ENETIF:NAME="enif1",DESC="Ethernet IF 1",CARD="card1"
prov-add:ENETIF:NAME="enif2",DESC="Ethernet IF 2",CARD="card2"
prov-add:extnode:name="bh1",type="7200",desc="7200 at VSC"
prov-add:mgcppath:name="mgcpsvc1",extnode="bh1",desc="MGCP service to 7200"
prov-add:iplnk:name="mgcplnk1",if="enif1",ipaddr="IP_Addr1",port=2427,peeraddr="17.0.0.11",
peerport=2427,svc="mgcpsvc1",pri=1,desc="MGCP link to 7200"
prov-add:extnode:name="bh2",type="7200",desc="7200 at VSC"
prov-add:mgcppath:name="mgcpsvc2",extnode="bh2",desc="MGCP service to 7200"
prov-add:iplnk:name="mgcplnk2",if="enif1",ipaddr="IP_Addr1",port=2427,peeraddr="17.0.0.1",
peerport=2427,svc="mgcpsvc2",pri=1,desc="MGCP link to 7200";
prov-add:MLTIPFAS:NAME="bhsvc1",extnode="bh1",SIDE="user",mdo="BELL_1268",custgrp="2222",
pathsize=2,sigslot=1,SIGPORT=0,IF1="enif1",IPADDR1="IP_Addr1",PORT=7007,PEERADDR1="17.0.0.
11",PEERPORT=7007
prov-add:MLTIPFAS:NAME="bhsvc2",extnode="bh1",SIDE="user",mdo="BELL_1268",custgrp="2222",
pathsize=2,sigslot=3,SIGPORT=0,IF1="enif1",IPADDR1="IP_Addr1",PORT=7007,PEERADDR1="17.0.0.
11",PEERPORT=7007
prov-add:MLTIPFAS:NAME="bhsvc3",extnode="bh1",SIDE="user",mdo="BELL_1268",custgrp="2222",
pathsize=2,sigslot=5,SIGPORT=0,IF1="enif1",IPADDR1="IP_Addr1",PORT=7007,PEERADDR1="17.0.0.
11",PEERPORT=7007;
prov-add:MLTIPFAS:NAME="bhsvc4",extnode="bh2",SIDE="network",MDO="BELL_1268",CUSTGRP="22
22",pathsize=2,sigslot=1,SIGPORT=0,IF1="enif1",IPADDR1="IP_Addr1",PORT=7007,PEERADDR1="17.
0.0.1",PEERPORT=7007
prov-add:MLTIPFAS:NAME="bhsvc5",extnode="bh2",SIDE="network",MDO="BELL_1268",CUSTGRP="22
22",pathsize=2,sigslot=5,SIGPORT=0,IF1="enif1",IPADDR1="IP_Addr1",PORT=7007,PEERADDR1="17.
0.0.1",PEERPORT=7007
prov-add:MLTIPFAS:NAME="bhsvc6",extnode="bh2",SIDE="network",MDO="BELL_1268",CUSTGRP="22
22",pathsize=2,sigslot=6,SIGPORT=0,IF1="enif1",IPADDR1="IP_Addr1",PORT=7007,PEERADDR1="17.
0.0.1",PEERPORT=7007;

```

```

prov-add:mlttrnkgrp:name="0001",svc="bhsvc1",CLLI="8260002",numtrnkgrp=2,carrieridentity="
0001",custgrpid="2222",borigstartindex="1",btermstartindex="2",compressiontype="2",trnkmem
num=1,spansize=24,DCHAN=24,cic=1,cu="bh1",endpoint="s1/ds1-0/1@mgcp_vxr"
prov-add:mlttrnkgrp:name="0003",svc="bhsvc2",CLLI="8260002",numtrnkgrp=2,carrieridentity="
0001",custgrpid="2222",borigstartindex="1",btermstartindex="2",compressiontype="2",trnkmem
num=1,spansize=24,DCHAN=24,cic=1,cu="bh1",endpoint="s3/ds1-0/1@mgcp_vxr"
prov-add:mlttrnkgrp:name="0005",svc="bhsvc3",CLLI="8260002",numtrnkgrp=2,carrieridentity="
0001",custgrpid="2222",borigstartindex="1",btermstartindex="2",compressiontype="2",trnkmem
num=1,spansize=24,DCHAN=24,cic=1,cu="bh1",endpoint="s5/ds1-0/1@mgcp_vxr";
prov-add:mlttrnkgrp:name="0007",svc="bhsvc4",CLLI="8260003",numtrnkgrp=2,carrieridentity="
0002",custgrpid="2222",borigstartindex="1",btermstartindex="2",compressiontype="2",trnkmem
num=2,spansize=24,DCHAN=24,cic=1,cu="bh2",endpoint="s1/su0/ds1-0/1@mgcp2_7200"
prov-add:mlttrnkgrp:name="0009",svc="bhsvc5",CLLI="8260003",numtrnkgrp=2,carrieridentity="
0002",custgrpid="2222",borigstartindex="1",btermstartindex="2",compressiontype="2",trnkmem
num=2,spansize=24,DCHAN=24,cic=1,cu="bh2",endpoint="s5/su0/ds1-0/1@mgcp2_7200"
prov-add:mlttrnkgrp:name="0011",svc="bhsvc6",CLLI="8260003",numtrnkgrp=2,carrieridentity="
0002",custgrpid="2222",borigstartindex="1",btermstartindex="2",compressiontype="2",trnkmem
num=2,spansize=24,DCHAN=24,cic=1,cu="bh2",endpoint="s6/su0/ds1-0/1@mgcp2_7200";
numan-add:dialplan:custgrpid="2222"
numan-add:resultset:custgrpid="2222", name="rset1"
numan-add:resultset:custgrpid="2222", name="rset2"
numan-add:resultset:custgrpid="2222", name="rset3"
numan-add:resultset:custgrpid="2222", name="rset4"
numan-add:resultset:custgrpid="2222", name="rset5"
numan-add:resultset:custgrpid="2222", name="rset6"
numan-add:resultset:custgrpid="2222", name="rset7"
numan-add:resultset:custgrpid="2222", name="rset8"
numan-add:resultset:custgrpid="2222", name="rset9"
numan-add:resultset:custgrpid="2222", name="rset10"
numan-add:resultset:custgrpid="2222", name="rset11"
numan-add:resultset:custgrpid="2222", name="rset12"
prov-add:rttrnkgrp:name="1",type=7,reattempts=3,queuing=0,cutthrough=2
prov-add:rttrnkgrp:name="2",type=7,reattempts=3,queuing=0,cutthrough=2
prov-add:rttrnkgrp:name="3",type=7,reattempts=3,queuing=0,cutthrough=2
prov-add:rttrnkgrp:name="4",type=7,reattempts=3,queuing=0,cutthrough=2
prov-add:rttrnkgrp:name="5",type=7,reattempts=3,queuing=0,cutthrough=2
prov-add:rttrnkgrp:name="6",type=7,reattempts=3,queuing=0,cutthrough=2
prov-add:rttrnkgrp:name="7",type=7,reattempts=3,queuing=0,cutthrough=2
prov-add:rttrnkgrp:name="8",type=7,reattempts=3,queuing=0,cutthrough=2
prov-add:rttrnkgrp:name="9",type=7,reattempts=3,queuing=0,cutthrough=2
prov-add:rttrnkgrp:name="10",type=7,reattempts=3,queuing=0,cutthrough=2
prov-add:rttrnkgrp:name="11",type=7,reattempts=3,queuing=0,cutthrough=2
prov-add:rttrnkgrp:name="12",type=7,reattempts=3,queuing=0,cutthrough=2
prov-add:rttrnk:name="rtnk12", trnkgrpnum=12
prov-add:rttrnk:name="rtnk11", trnkgrpnum=11
prov-add:rttrnk:name="rtnk10", trnkgrpnum=10
prov-add:rttrnk:name="rtnk9", trnkgrpnum=9
prov-add:rttrnk:name="rtnk8", trnkgrpnum=8
prov-add:rttrnk:name="rtnk7", trnkgrpnum=7
prov-add:rttrnk:name="rtnk6", trnkgrpnum=6
prov-add:rttrnk:name="rtnk5", trnkgrpnum=5
prov-add:rttrnk:name="rtnk4", trnkgrpnum=4
prov-add:rttrnk:name="rtnk3", trnkgrpnum=3
prov-add:rttrnk:name="rtnk2", trnkgrpnum=2
prov-add:rttrnk:name="rtnk1", trnkgrpnum=1
prov-add:rtlist: name="rlst1", rtname="rtnk1", carrierid=0001
prov-add:rtlist: name="rlst2", rtname="rtnk2", carrierid=0002
prov-add:rtlist: name="rlst3", rtname="rtnk3", carrierid=0003
prov-add:rtlist: name="rlst4", rtname="rtnk4", carrierid=0004
prov-add:rtlist: name="rlst5", rtname="rtnk5", carrierid=0005
prov-add:rtlist: name="rlst6", rtname="rtnk6", carrierid=0006
prov-add:rtlist: name="rlst7", rtname="rtnk7", carrierid=0007
prov-add:rtlist: name="rlst8", rtname="rtnk8", carrierid=0008
prov-add:rtlist: name="rlst9", rtname="rtnk9", carrierid=0009

```

```

prov-add:rtlist: name="rlst10", rtname="rtnk10", carrierid=0010
prov-add:rtlist: name="rlst11", rtname="rtnk11", carrierid=0011
prov-add:rtlist: name="rlst12", rtname="rtnk12", carrierid=0012
numan-add:resulttable:custgrpId="2222",name="rtab1",resultttype="ROUTE",dw1="rlst1",
setname="rset1"
numan-add:resulttable:custgrpId="2222",name="rtab2",resultttype="ROUTE",dw1="rlst2",
setname="rset2"
numan-add:resulttable:custgrpId="2222",name="rtab3",resultttype="ROUTE",dw1="rlst3",
setname="rset3"
numan-add:resulttable:custgrpId="2222",name="rtab4",resultttype="ROUTE",dw1="rlst4",
setname="rset4"
numan-add:resulttable:custgrpId="2222",name="rtab5",resultttype="ROUTE",dw1="rlst5",
setname="rset5"
numan-add:resulttable:custgrpId="2222",name="rtab6",resultttype="ROUTE",dw1="rlst6",
setname="rset6"
numan-add:resulttable:custgrpId="2222",name="rtab7",resultttype="ROUTE",dw1="rlst7",
setname="rset7"
numan-add:resulttable:custgrpId="2222",name="rtab8",resultttype="ROUTE",dw1="rlst8",
setname="rset8"
numan-add:resulttable:custgrpId="2222",name="rtab9",resultttype="ROUTE",dw1="rlst9",
setname="rset9"
numan-add:resulttable:custgrpId="2222",name="rtab10",resultttype="ROUTE",dw1="rlst10",
setname="rset10"
numan-add:resulttable:custgrpId="2222",name="rtab11",resultttype="ROUTE",dw1="rlst11",
setname="rset11"
numan-add:resulttable:custgrpId="2222",name="rtab12",resultttype="ROUTE",dw1="rlst12",
setname="rset12"
numan-add:bdigtrees:custgrpId="2222",digitstring="525",callside="originating",setname="rset
1"
numan-add:bdigtrees:custgrpId="2222",digitstring="526",callside="originating",setname="rset
2"
numan-add:bdigtrees:custgrpId="2222",digitstring="527",callside="originating",setname="rset
3"
numan-add:bdigtrees:custgrpId="2222",digitstring="528",callside="originating",setname="rset
4"
numan-add:bdigtrees:custgrpId="2222",digitstring="529",callside="originating",setname="rset
5"
numan-add:bdigtrees:custgrpId="2222",digitstring="530",callside="originating",setname="rset
6"
numan-add:bdigtrees:custgrpId="2222",digitstring="531",callside="originating",setname="rset
7"
numan-add:bdigtrees:custgrpId="2222",digitstring="532",callside="originating",setname="rset
8"
numan-add:bdigtrees:custgrpId="2222",digitstring="533",callside="originating",setname="rset
9"
numan-add:bdigtrees:custgrpId="2222",digitstring="534",callside="originating",setname="rset
10"
numan-add:bdigtrees:custgrpId="2222",digitstring="535",callside="originating",setname="rset
11"
numan-add:bdigtrees:custgrpId="2222",digitstring="536",callside="originating",setname="rset
12"
prov-cpy
prov-stp

```

Command Reference

This section documents modified commands. All other commands used with this feature are documented in the Cisco IOS Release 12.2 command reference publications.

- **application**
- **backhaul-session-manager**
- **clear backhaul-session-manager group**
- **clear rudpv1 statistics**
- **debug backhaul-session-manager set**
- **debug backhaul-session-manager session**
- **debug mgcp**
- **debug rudpv1**
- **dial-type**
- **ds0-group**
- **group**
- **group auto-reset**
- **group cumulative-ack group out-of-sequence**
- **group receive**
- **group retransmit**
- **group timer cumulative-ack**
- **group timer keepalive**
- **group timer retransmit**
- **group timer transfer**
- **isdn bind-l3**
- **isdn protocol-emulate**
- **mgcp**
- **mgcp call-agent**
- **mgcp codec**
- **mgcp default-package**
- **mgcp dtmf-relay**
- **mgcp explicit hookstate**
- **mgcp ip-tos**
- **mgcp modem passthrough codec**
- **mgcp modem passthrough mode**
- **mgcp modem passthrough voip redundancy**
- **mgcp package-capability**
- **mgcp quality-threshold**
- **mgcp quarantine mode**

- **mgcp quarantine persistent-events disable**
- **mgcp request retries**
- **mgcp request timeout**
- **mgcp restart-delay**
- **mgcp sgcp restart notify**
- **mgcp timer**
- **mgcp tse payload**
- **mgcp vad**
- **mode (Voice over ATM)**
- **session**
- **set**
- **show backhaul-session-manager group**
- **show backhaul-session-manager session**
- **show backhaul-session-manager set**
- **show mgcp**
- **show rudpv1**

application

To enable a specific application on a dial peer, use the **application** command in dial-peer configuration mode. To remove the application from the dial peer, use the **no** form of this command.

application *name*

no application *name*

Syntax Description

<i>name</i>	Indicates the name of the application enabled on the dial peer. Valid value is MGCPAPP (or mgcpapp).
-------------	---

Defaults

No default behavior or values.

Command Modes

Dial-peer configuration

Command History

Release	Modification
11.3(6)NA2	This command was introduced.
12.0(5)T	The SGCPAPP application was first supported on the Cisco AS5300 in a private release that was not generally available.
12.0(7)XK	Support for the SGCPAPP application was extended to the Cisco MC3810 series and the Cisco 3600 series routers (except for the Cisco 3620) in a private release that was not publicly available.
12.1(3)T	The MGCPAPP application was first supported on the Cisco AS5300 router.
12.1(5)XM	Support for the MGCPAPP application was extended to the Cisco MC3810 series and Cisco 3660 platforms. SGCPAPP was removed as a valid application name.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines

Enter the **MGCPAPP** value in uppercase or lowercase characters. The SGCPAPP application is no longer a valid entry for *name*.

Examples

The following example shows how to apply the MGCP application to a dial peer:

```
Router(config)# dial-peer voice 1 pots
Router(config-dial-peer)# application MGCPAPP
```

Related Commands

Command	Description
mgcp	Starts the MGCP daemon.

backhaul-session-manager

To enter backhaul session manager configuration mode, use the **backhaul-session-manager** command in global configuration mode.

backhaul-session-manager

Syntax Description This command has no arguments or keywords.

Defaults No default behavior or values.

Command Modes Global configuration mode

Command History

Release	Modification
12.1(1)T	This command was introduced.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Examples

Enter backhaul-session-manager configuration mode using this example:

```
Router(config)# backhaul-session-manager
Router(config-bsm)#
```

clear backhaul-session-manager group

To reset the statistics or traffic counters for a specified session-group, use the **clear backhaul-session-manager group** command in privileged EXEC mode.

```
clear backhaul-session-manager group stats {all | name group-name}
```

Syntax Description

all	All available session-groups.
name <i>group-name</i>	A specified session-group.

Defaults

The statistical information accumulates.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.1(1)T	This command was introduced.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines

A session is the connection between a client and a server, and a session-group is a collection of sessions in a group to implement switchover in case of a session failure. This command clears all statistics.

Examples

The following example clears all statistics for all available session-groups:

```
Router# clear backhaul-session-manager group stats all
```

The following example clears all statistics for session-group abc:

```
Router# clear backhaul-session-manager group stats name abc
```

Related Commands

Command	Description
show backhaul-session-manager group	Displays status, statistics, or configuration of a specified or all session-groups.

clear rudpv1 statistics

To clear the counters that track RUDP statistics for all available session-groups, use the **clear rudpv1 statistics** command in privileged EXEC mode.

clear rudpv1 statistics

Syntax Description This command has no arguments or keywords.

Defaults The statistical information accumulates.

Command Modes Privileged EXEC

Command History	Release	Modification
	12.1(1)T	This command was introduced.
	12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines This command clears all RUDP statistics.

Examples The following example clears all RUDP statistics for all available session-groups:

```
Router# clear rudpv1 statistics
```

Related Commands	Command	Description
	debug rudpv1	Displays debugging information for RUDP.
	show rudpv1	Displays RUDP statistics.

debug backhaul-session-manager set

To trace state changes and receive messages and events for all the available session-sets or a specified session-set, use the **debug backhaul-session-manager set** command in privileged EXEC mode. To turn off debugging, use the **no** form of this command.

```
debug backhaul-session-manager set {all | name set-name}
```

```
no debug backhaul-session-manager set {all | name set-name}
```

Syntax Description

all	All available session-sets.
name <i>set-name</i>	A specified session-set.

Defaults

Debugging for backhaul session-sets is not enabled.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.1(1)T	This command was introduced.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Examples

The following example displays output for the **debug backhaul-session-manager set all** command:

```
Router# debug backhaul-session-manager set all
```

```
Router# debug_bsm_command:DEBUG_BSM_SET_ALL
```

```
Function set_proc_event() is called
Session-Set :test-set
Old State   :BSM_SET_OOS
New State   :BSM_SET_OOS
  Active-Grp :NONE
  Session-Grp :g-11
  Old State   :Group-None
  New State   :Group-None
  Event rcvd  :EVT_GRP_INS
```

```
BSM:Event BSM_SET_UP is sent to user
Session-Set :test-set
Old State   :BSM_SET_OOS
New State   :BSM_SET_ACTIVE_IS
  Active-Grp :g-11
  Session-Grp :g-11
  Old State   :Group-None
  New State   :Group-Active
  Event rcvd  :BSM_ACTIVE_TYPE
```

The following example displays output for the **debug backhaul-session-manager set name** *set-name* command for a session-set named set1:

```
Router# debug backhaul-session-manager set name set1
Router# debug_bsm_command:DEBUG_BSM_SET_NAME

Router# Function set_proc_event() is called
Session-Set :test-set
Old State   :BSM_SET_OOS
New State   :BSM_SET_OOS
  Active-Grp :NONE
  Session-Grp :g-11
  Old State   :Group-None
  New State   :Group-None
  Event rcvd  :EVT_GRP_INS

Router#BSM:Event BSM_SET_UP is sent to user
Session-Set :test-set
Old State   :BSM_SET_OOS
New State   :BSM_SET_ACTIVE_IS
  Active-Grp :g-11
  Session-Grp :g-11
  Old State   :Group-None
  New State   :Group-Active
  Event rcvd  :BSM_ACTIVE_TYPE
```

Related Commands

Command	Description
debug backhaul-session-manager session	Debugs all available sessions or a specified session.

debug backhaul-session-manager session

To debug all the available sessions or a specified session, use the **debug backhaul-session-manager session** command in privileged EXEC mode. To turn off debugging, use the **no** form of this command.

```
debug backhaul-session-manager session {state | xport} {all | session-id}
```

```
no debug backhaul-session-manager session {state | xport} {all | session-id}
```



Caution

Use caution when enabling this debug in a live system. It produces significant amounts of output that could lead to a disruption of service.

Syntax Description

state	Shows information about state transitions. Possible states are: <ul style="list-style-type: none"> • SESS_SET_IDLE—A session-set has been created. • SESS_SET_OOS—Sessions have been added to session-groups. No ACTIVE notification has been received from VSC. • SESS_SET_ACTIVE_IS—An ACTIVE notification has been received over one in-service session-group. STANDBY notification has not been received on any available session-groups. • SESS_SET_STNDBY_IS—A STANDBY notification is received, but there is no in-service active session-group available. • SESS_SET_FULL_IS—A session-group in-service that has ACTIVE notification and at least one session-group in-service that has STANDBY notification. • SESS_SET_SWITCH_OVER—An ACTIVE notification is received on session-group in-service, which had received STANDBY notification.
xport	Provides traces for all PDUs (packets), application PDUs, and also session-manager messages. Use caution while enabling this debug command in a live system.
all	All available sessions.
<i>session-id</i>	A specified session.

Defaults

Debugging for backhaul-session-manager session is not enabled.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.1(1)T	This command was introduced.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Examples

The following example displays output for the **debug backhaul-session-manager session all** command:

```

Router# debug backhaul-session-manager session all
Router# debug_bsm_command:DEBUG_BSM_SESSION_ALL

23:49:14:SESSION:XPORT:sig rcvd. session = 34, connid = 0x80BA12FC, sig = 5 (CONN-RESET)

23:49:14:SESSION:STATE:(34) old-state:OPEN_WAIT, new-state:CLOSE
23:49:14:SESSION:STATE:(34) state:OPEN_WAIT, use-state:OOS

23:49:14:SESSION:STATE:(34) old-state:OPEN_WAIT, new-state:OPEN_WAIT
23:49:14:SESSION:STATE:(34) state:OPEN_WAIT, use-state:OOS

23:49:19:SESSION:XPORT:sig rcvd. session = 34, connid = 0x80BA12FC, sig = 5 (CONN-RESET)

23:49:19:SESSION:STATE:(34) old-state:OPEN_WAIT, new-state:CLOSE
23:49:19:SESSION:STATE:(34) state:OPEN_WAIT, use-state:OOS

23:49:19:SESSION:STATE:(34) old-state:OPEN_WAIT, new-state:OPEN_WAIT
23:49:19:SESSION:STATE:(34) state:OPEN_WAIT, use-state:OOS

23:49:24:SESSION:XPORT:sig rcvd. session = 34, connid = 0x80BA12FC, sig = 5 (CONN-RESET)

23:49:24:SESSION:STATE:(34) old-state:OPEN_WAIT, new-state:CLOSE
23:49:24:SESSION:STATE:(34) state:OPEN_WAIT, use-state:OOS

23:49:24:SESSION:STATE:(34) old-state:OPEN_WAIT, new-state:OPEN_WAIT
23:49:24:SESSION:STATE:(34) state:OPEN_WAIT, use-state:OOS

23:49:29:SESSION:XPORT:sig rcvd. session = 34, connid = 0x80BA12FC, sig = 5 (CONN-RESET)

23:49:29:SESSION:STATE:(34) old-state:OPEN_WAIT, new-state:CLOSE
23:49:29:SESSION:STATE:(34) state:OPEN_WAIT, use-state:OOS

23:49:29:SESSION:STATE:(34) old-state:OPEN_WAIT, new-state:OPEN_WAIT
23:49:29:SESSION:STATE:(34) state:OPEN_WAIT, use-state:OOS

23:49:34:SESSION:XPORT:sig rcvd. session = 34, connid = 0x80BA12FC, sig = 5 (CONN-RESET)

23:49:34:SESSION:STATE:(34) old-state:OPEN_WAIT, new-state:CLOSE
23:49:34:SESSION:STATE:(34) state:OPEN_WAIT, use-state:OOS

23:49:34:SESSION:STATE:(34) old-state:OPEN_WAIT, new-state:OPEN_WAIT
23:49:34:SESSION:STATE:(34) state:OPEN_WAIT, use-state:OOS

23:49:34:SESSION:XPORT:sig rcvd. session = 33, connid = 0x80BA14EC, sig = 1 (CONN-FAILED)

23:49:34:SESSION:STATE:(33) old-state:OPEN, new-state:CLOSE_WAIT

```

The following example displays output for the **debug backhaul-session-manager session state all** command:

```
Router# debug backhaul-session-manager session state all
Router# debug_bsm_command:DEBUG_BSM_SESSION_STATE_ALL

23:50:54:SESSION:STATE:(34) old-state:OPEN_WAIT, new-state:CLOSE
23:50:54:SESSION:STATE:(34) state:OPEN_WAIT, use-state:OOS

23:50:54:SESSION:STATE:(34) old-state:OPEN_WAIT, new-state:OPEN_WAIT
23:50:54:SESSION:STATE:(34) state:OPEN_WAIT, use-state:OOS
```

The following example displays output for the **debug backhaul-session-manager session xport all** command:

```
Router# debug backhaul-session-manager session xport all
Router# debug_bsm_command:DEBUG_BSM_SESSION_XPORT
23:51:39:SESSION:XPORT:sig rcvd. session = 34, connid = 0x80BA12FC, sig = 5 (CONN-RESET)

23:51:42:SESSION:XPORT:sig rcvd. session = 33, connid = 0x80BA14EC, sig = 5 (CONN-RESET)

23:51:44:SESSION:XPORT:sig rcvd. session = 34, connid = 0x80BA12FC, sig = 5 (CONN-RESET)
```

Related Commands

Command	Description
debug backhaul-session-manager set	Traces state changes and receives messages and events for all available session-sets or a specified session-set.

debug mgcp

To enable debug traces for errors, events, packets, and the parser, use the **debug mgcp** command in privileged EXEC mode. To disable debugging output, use the **no** form of this command.

debug mgcp [**all** | **errors** | **events** | **packets** | **parser**]

no debug mgcp [**all** | **errors** | **events** | **packets** | **parser**]

Syntax Description

all	(Optional) Debugs errors, events, packets, and the parser for MGCP modules.
errors	(Optional) Debugs errors for MGCP modules.
events	(Optional) Debugs events for MGCP modules.
packets	(Optional) Debugs packets for MGCP modules.
parser	(Optional) Debugs the parser for MGCP modules.

Defaults

Debugging for Duplicate Ring Protocol (DRiP) packets is not enabled.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.1(1)T	This command was introduced for the Cisco AS5300.
12.1(3)T	Additional information is displayed for the gateways.
12.1(5)XM	The output was modified to display parameters for the MGCP CAS PBX and AAL2 PVC features.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Examples

The following example displays output for the **debug mgcp all** command:

```
Router# deb mgcp all
```

```
Media Gateway Control Protocol all debugging is on.
```

```
Router#
00:04:52: MGC stat - 17.0.0.10, total=120, succ=119, failed=0
00:04:52: MGCP Packet received -
DLCX 422361185 S1/ds1-1/1 MGCP 0.1
S: dt/rel
R: dt/sup
X: 183936595
00:04:52: -- mgcp_parse_packet() - call mgcp_parse_header
- mgcp_parse_header()- Request Verb FOUND DLCX
- mgcp_parse_packet() - out mgcp_parse_header
- SUCCESS: mgcp_parse_packet()-MGCP Header parsing was OK
- mgcp_parse_parameter_lines(), code_str:: dt/rel, code_len:2, str:S: dt/rel
- mgcp_parse_parameter_lines(str:S: dt/rel) -num_toks: 19
```

```

- mgcp_parse_parameter_lines() check NULL str(dt/rel), in_ptr(S: dt/rel)
- mgcp_parse_parameter_lines() return Parse function in mgcp_parm_rules_array[8]
- mgcp_parse_sig_requests(in_ptr:dt/rel, len: 6)
- mgcp_parse_sig_requests()- protocol is MGCP_V01 call get_package_name buf_ptr:dt/rel
- mgcp_parse_sig_requests()- call get_event_name() buf_ptr:rel
- mgcp_get_event_name()- event_type is MGCP_SIGNAL_EVT
- mgcp_get_event_name looking for event string rel in event table

00
- mgcp_parse_req_event()- protocol is MGCP_V01 call get_package_name buf_ptr:dt/sup

MGC stat - 17.0.0.10, total=129, succ=128, failed=0:04:52: mgcp_need_to_parse_params:
event = 69, param-is-optional = 0- mgcp_parse_sig_requests()-call mgcp-associate_pkg_evt()
- mgcp_associate_pkg_evt
- mgcp_parse_sig_requests()- mgcp-associate_pkg_evt(SUCC) buf_ptr:, len:0
- mgcp_parse_sig_requests() - NOT mp_emb_syntax_checking
- mgcp_parse_sig_requests() - add evt_node to rsd_- mgcp_parse_req_event()- call
get_event_name()buf_ptr:sup
- mgcp_get_event_name()- event_type is MGCP_REQUEST_EVT
- mgcp_get_event_name looking for event string sup in event table

00:04:52: mgcp_need_to_parse_params: event = 86, param-is-optional = 0-
mgcp_associate_pkg_evt
- mgcp_parse_req_event() -Check action: buf_ptr:
[additional display text omitted]

```

Related Commands

Command	Description
mgcp	Initiates the MGCP daemon.

debug rudpv1

For debug information for RUDP, use the **debug rudpv1** command in privileged EXEC mode. To turn off debugging, use the **no** form of this command.

```
debug rudpv1 { application | performance | retransmit | segment | signal | state | timer | transfer }
```

```
no debug rudpv1 { application | performance | retransmit | segment | signal | state | timer | transfer }
```



Caution

Use this command only during times of low traffic.

Syntax Description

application	Application debugging.
performance	Performance debugging.
retransmit	Retransmit/soft reset debugging
segment	Segment debugging.
signal	Signals sent to applications.
state	State transitions.
timer	Timer debugging.
transfer	Transfer state information.

Defaults

Debugging for rudpv1 is not enabled.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.1(1)T	This command was introduced.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Examples

The following is output for the **debug rudpv1 application** command:

```
Router# debug rudpv1 application
```

```
Rudpvl:Turning application debugging on
*Jan 1 00:20:38.271:Send to appl (61F72B6C), seq 12
*Jan 1 00:20:48.271:Send to appl (61F72B6C), seq 13
*Jan 1 00:20:58.271:Send to appl (61F72B6C), seq 14
*Jan 1 00:21:08.271:Send to appl (61F72B6C), seq 15
*Jan 1 00:21:18.271:Send to appl (61F72B6C), seq 16
*Jan 1 00:21:28.271:Send to appl (61F72B6C), seq 17
*Jan 1 00:21:38.271:Send to appl (61F72B6C), seq 18
```

```
*Jan 1 00:21:48.275:Send to appl (61F72B6C), seq 19
*Jan 1 00:21:58.275:Send to appl (61F72B6C), seq 20
*Jan 1 00:22:08.275:Send to appl (61F72B6C), seq 21
*Jan 1 00:22:18.275:Send to appl (61F72B6C), seq 22
*Jan 1 00:22:28.275:Send to appl (61F72B6C), seq 23
*Jan 1 00:22:38.275:Send to appl (61F72B6C), seq 24
*Jan 1 00:22:48.279:Send to appl (61F72B6C), seq 25
*Jan 1 00:22:58.279:Send to appl (61F72B6C), seq 26
*Jan 1 00:23:08.279:Send to appl (61F72B6C), seq 27
*Jan 1 00:23:18.279:Send to appl (61F72B6C), seq 28
*Jan 1 00:23:28.279:Send to appl (61F72B6C), seq 29
```

The following is output for the **debug rudpv1 performance** command:

```
Router# debug rudpv1 performance
```

```
Rudpv1:Turning performance debugging on
corsair-f#
*Jan 1 00:44:27.299:
*Jan 1 00:44:27.299:Rudpv1 Sent:Pkts 11, Data Bytes 236, Data Pkts 9
*Jan 1 00:44:27.299:Rudpv1 Rcvd:Pkts 10, Data Bytes 237, Data Pkts 9
*Jan 1 00:44:27.299:Rudpv1 Discarded:0, Retransmitted 0
*Jan 1 00:44:27.299:
*Jan 1 00:44:37.299:
*Jan 1 00:44:37.299:Rudpv1 Sent:Pkts 11, Data Bytes 236, Data Pkts 9
*Jan 1 00:44:37.299:Rudpv1 Rcvd:Pkts 10, Data Bytes 237, Data Pkts 9
*Jan 1 00:44:37.299:Rudpv1 Discarded:0, Retransmitted 0
*Jan 1 00:44:37.299:
*Jan 1 00:44:47.299:
*Jan 1 00:44:47.299:Rudpv1 Sent:Pkts 11, Data Bytes 236, Data Pkts 9
*Jan 1 00:44:47.299:Rudpv1 Rcvd:Pkts 11, Data Bytes 236, Data Pkts 9
*Jan 1 00:44:47.299:Rudpv1 Discarded:0, Retransmitted 0
*Jan 1 00:44:47.299:
```

The following is output for the **debug rudpv1 retransmit** command:

```
Router# debug rudpv1 retransmit
```

```
Rudpv1:Turning retransmit/softreset debugging on
*Jan 1 00:52:59.799:Retrans timer, set to ack 199
*Jan 1 00:52:59.903:Retrans timer, set to ack 200
*Jan 1 00:53:00.003:Retrans timer, set to ack 201
*Jan 1 00:53:00.103:Retrans timer, set to ack 202
*Jan 1 00:53:00.203:Retrans timer, set to ack 203
*Jan 1 00:53:00.419:Retrans timer, set to ack 97
*Jan 1 00:53:00.503:Retrans handler fired, 203
*Jan 1 00:53:00.503:Retrans:203:205:
*Jan 1 00:53:00.503:
*Jan 1 00:53:00.607:Retrans timer, set to ack 207
*Jan 1 00:53:00.907:Retrans timer, set to ack 210
*Jan 1 00:53:01.207:Retrans handler fired, 210
*Jan 1 00:53:01.207:Retrans:210:211:212:
*Jan 1 00:53:01.207:
*Jan 1 00:53:01.207:Retrans timer, set to ack 213
*Jan 1 00:53:01.311:Retrans timer, set to ack 214
*Jan 1 00:53:01.419:Retrans timer, set to ack 98
*Jan 1 00:53:01.611:Retrans timer, set to ack 215
*Jan 1 00:53:01.711:Retrans timer, set to ack 218
*Jan 1 00:53:01.811:Retrans timer, set to ack 219
*Jan 1 00:53:01.911:Retrans timer, set to ack 220
*Jan 1 00:53:02.011:Retrans timer, set to ack 221
*Jan 1 00:53:02.311:Retrans handler fired, 221
*Jan 1 00:53:02.311:Retrans:221:
*Jan 1 00:53:02.311:
```

```
*Jan 1 00:53:02.311:Retrans timer, set to ack 222
*Jan 1 00:53:02.415:Retrans timer, set to ack 225
```

The following is output for the **debug rudpv1 segment** command:

```
Router# debug rudpv1 segment
```

```
Rudpv1:Turning segment debugging on
*Jan 1 00:41:36.359:Rudpv1: (61F72DAC) Rcvd ACK 61..198 (32)
*Jan 1 00:41:36.359:Rudpv1: (61F72DAC) Send ACK 199..61 (32)
*Jan 1 00:41:36.459:Rudpv1: (61F72DAC) Rcvd ACK 62..199 (8)
*Jan 1 00:41:36.459:Rudpv1: (61F72DAC) Rcvd ACK 62..199 (32)
*Jan 1 00:41:36.459:Rudpv1: (61F72DAC) Send ACK 200..62 (32)
*Jan 1 00:41:36.559:Rudpv1: (61F72DAC) Rcvd ACK 63..200 (32)
*Jan 1 00:41:36.559:Rudpv1: (61F72DAC) Send ACK 201..63 (32)
*Jan 1 00:41:36.659:Rudpv1: (61F72DAC) Rcvd ACK 64..201 (32)
*Jan 1 00:41:36.659:Rudpv1: (61F72DAC) Send ACK 202..64 (32)
*Jan 1 00:41:36.759:Rudpv1: (61F72DAC) Rcvd ACK 65..202 (32)
*Jan 1 00:41:36.759:Rudpv1: (61F72DAC) Send ACK 203..65 (32)
*Jan 1 00:41:36.859:Rudpv1: (61F72DAC) Rcvd ACK 66..202 (32)
*Jan 1 00:41:36.859:Rudpv1: (61F72DAC) Send ACK 204..66 (32)
*Jan 1 00:41:36.959:Rudpv1: (61F72DAC) Rcvd ACK 67..202 (32)
*Jan 1 00:41:36.959:Rudpv1: (61F72DAC) Rcvd ACK EAK 68..202 (9)
*Jan 1 00:41:36.959:Rudpv1: (61F72DAC) Send ACK 203..67 (32)
*Jan 1 00:41:36.963:Rudpv1: (61F72DAC) Send ACK 205..67 (32)
*Jan 1 00:41:36.963:Rudpv1: (61F72DAC) Rcvd ACK 68..204 (8)
*Jan 1 00:41:37.051:Rudpv1: (61F72B6C) Send ACK NUL 118..96 (8)
*Jan 1 00:41:37.051:Rudpv1: (61F72B6C) Rcvd ACK 97..118 (8)
*Jan 1 00:41:37.059:Rudpv1: (61F72DAC) Rcvd ACK 68..205 (32)
*Jan 1 00:41:37.063:Rudpv1: (61F72DAC) Send ACK 206..68 (32)
*Jan 1 00:41:37.263:Rudpv1: (61F72DAC) Rcvd ACK 70..206 (32)
*Jan 1 00:41:37.363:Rudpv1: (61F72DAC) Send ACK EAK 207..68 (9)
*Jan 1 00:41:37.363:Rudpv1: (61F72DAC) Rcvd ACK 71..206 (32)
*Jan 1 00:41:37.363:Rudpv1: (61F72DAC) Rcvd ACK 69..206 (32)
*Jan 1 00:41:37.363:Rudpv1: (61F72DAC) Send ACK 207..71 (8)
*Jan 1 00:41:37.363:Rudpv1: (61F72DAC) Send ACK 207..71 (32)
*Jan 1 00:41:37.363:Rudpv1: (61F72DAC) Send ACK 208..71 (32)
*Jan 1 00:41:37.363:Rudpv1: (61F72DAC) Send ACK 209..71 (32)
*Jan 1 00:41:37.367:Rudpv1: (61F72DAC) Rcvd ACK 72..209 (8)
*Jan 1 00:41:37.463:Rudpv1: (61F72DAC) Rcvd ACK 72..209 (32)
*Jan 1 00:41:37.463:Rudpv1: (61F72DAC) Send ACK 210..72 (32)
*Jan 1 00:41:37.563:Rudpv1: (61F72DAC) Rcvd ACK 73..210 (32)
*Jan 1 00:41:37.563:Rudpv1: (61F72DAC) Send ACK 211..73 (32)
```

The following is output for the **debug rudpv1 signal** command:

```
Router# debug rudpv1 signal
```

```
Rudpv1:Turning signal debugging on
*Jan 1 00:39:59.551:Rudpv1:Sent CONN_FAILED to connID 61F72DAC, sess 33
*Jan 1 00:39:59.551:
*Jan 1 00:39:59.551:Rudpv1:Sent CONN_TRANS_STATE to connID 61F72B6C, sess 34
*Jan 1 00:39:59.551:
*Jan 1 00:39:59.551:Rudpv1:Sent CONN_TRANS_STATE to connID 61F72DAC, sess 33
*Jan 1 00:39:59.551:
*Jan 1 00:39:59.551:Rudpv1:Sent CONN_OPEN to connID 61F72B6C, sess 34

*Jan 1 00:39:59.551:Rudpv1:Sent AUTO_RESET to connID 61F72DAC, sess 33
*Jan 1 00:39:59.551:
*Jan 1 00:40:00.739:%LINK-5-CHANGED:Interface FastEthernet0, changed state
to administratively down
*Jan 1 00:40:01.739:%LINEPROTO-5-UPDOWN:Line protocol on Interface
FastEthernet0, changed state to down
*Jan 1 00:40:04.551:Rudpv1:Sent CONN_RESET to connID 61F72DAC, sess 33
```

```

*Jan 1 00:40:04.551:
*Jan 1 00:40:05.051:Rudpv1:Clearing conn rec values, index 2, connid
61F72DAC
*Jan 1 00:40:10.051:Rudpv1:Sent CONN_RESET to connID 61F72DAC, sess 33
*Jan 1 00:40:10.051:
*Jan 1 00:40:10.551:Rudpv1:Clearing conn rec values, index 2, connid
61F72DAC
*Jan 1 00:40:15.551:Rudpv1:Sent CONN_RESET to connID 61F72DAC, sess 33
*Jan 1 00:40:15.551:
*Jan 1 00:40:16.051:Rudpv1:Clearing conn rec values, index 2, connid
61F72DAC

*Jan 1 00:40:21.051:Rudpv1:Sent CONN_RESET to connID 61F72DAC, sess 33
*Jan 1 00:40:21.051:
*Jan 1 00:40:21.551:Rudpv1:Clearing conn rec values, index 2, connid
61F72DAC
*Jan 1 00:40:25.587:%LINK-3-UPDOWN:Interface FastEthernet0, changed state
to up
*Jan 1 00:40:26.551:Rudpv1:Sent CONN_RESET to connID 61F72DAC, sess 33
*Jan 1 00:40:26.551:
*Jan 1 00:40:26.587:%LINEPROTO-5-UPDOWN:Line protocol on Interface
FastEthernet0, changed state to up
*Jan 1 00:40:27.051:Rudpv1:Clearing conn rec values, index 2, connid
61F72DAC
*Jan 1 00:40:28.051:Rudpv1:Sent CONN_OPEN to connID 61F72DAC, sess 33

```

The following is output for the **debug rudpv1 state** command:

```

Router# debug rudpv1 state

Rudpv1:Turning state debugging on

*Jan 1 00:38:37.323:Rudpv1: (61F72DAC) State Change:OPEN -> CONN_FAILURE
*Jan 1 00:38:37.323:Rudpv1: (61F72B6C) State Change:OPEN -> TRANS_STATE
*Jan 1 00:38:37.323:Rudpv1: (61F72DAC) State Change:CONN_FAILURE ->
TRANS_STATE
*Jan 1 00:38:37.323:Rudpv1: (61F72B6C) State Change:TRANS_STATE -> OPEN
*Jan 1 00:38:37.323:Rudpv1: (61F72DAC) State Change:TRANS_STATE -> SYN_SENT
*Jan 1 00:38:37.455:%LINK-5-CHANGED:Interface FastEthernet0, changed state
to administratively down
*Jan 1 00:38:38.451:%LINEPROTO-5-UPDOWN:Line protocol on Interface
FastEthernet0, changed state to down
*Jan 1 00:38:42.323:Rudpv1: (61F72DAC) State Change:SYN_SENT -> CLOSED
*Jan 1 00:38:42.823:Rudpv1: (61F72DAC) State Change:INACTIVE -> SYN_SENT
*Jan 1 00:38:47.823:Rudpv1: (61F72DAC) State Change:SYN_SENT -> CLOSED
*Jan 1 00:38:48.323:Rudpv1: (61F72DAC) State Change:INACTIVE -> SYN_SENT
*Jan 1 00:38:53.323:Rudpv1: (61F72DAC) State Change:SYN_SENT -> CLOSED
*Jan 1 00:38:53.823:Rudpv1: (61F72DAC) State Change:INACTIVE -> SYN_SENT
*Jan 1 00:38:56.411:%LINK-3-UPDOWN:Interface FastEthernet0, changed state
to up
*Jan 1 00:38:57.411:%LINEPROTO-5-UPDOWN:Line protocol on Interface
FastEthernet0, changed state to up
*Jan 1 00:38:57.823:Rudpv1: (61F72DAC) State Change:SYN_SENT -> OPEN

```

The following is output for the **debug rudpv1 timer** command:

```

Router# debug rudpv1 timer

Rudpv1:Turning timer debugging on
*Jan 1 00:53:40.647:Starting Retrans timer for connP = 61F72B6C, delay = 300
*Jan 1 00:53:40.647:Stopping SentList timer for connP = 61F72B6C
*Jan 1 00:53:40.747:Starting NullSeg timer for connP = 61F72B6C, delay = 1000
*Jan 1 00:53:40.747:Stopping Retrans timer for connP = 61F72B6C
*Jan 1 00:53:40.747:Starting Retrans timer for connP = 61F72B6C, delay = 300
*Jan 1 00:53:40.747:Stopping SentList timer for connP = 61F72B6C

```

```

*Jan 1 00:53:40.847:Starting NullSeg timer for connP = 61F72B6C, delay = 1000
*Jan 1 00:53:40.847:Stopping Retrans timer for connP = 61F72B6C
*Jan 1 00:53:40.847:Starting Retrans timer for connP = 61F72B6C, delay = 300
*Jan 1 00:53:40.847:Stopping SentList timer for connP = 61F72B6C
*Jan 1 00:53:40.947:Starting NullSeg timer for connP = 61F72B6C, delay = 1000
*Jan 1 00:53:40.947:Stopping Retrans timer for connP = 61F72B6C
*Jan 1 00:53:40.947:Starting Retrans timer for connP = 61F72B6C, delay = 300
*Jan 1 00:53:40.947:Stopping SentList timer for connP = 61F72B6C
*Jan 1 00:53:41.047:Starting NullSeg timer for connP = 61F72B6C, delay = 1000
*Jan 1 00:53:41.147:Starting NullSeg timer for connP = 61F72B6C, delay = 1000
*Jan 1 00:53:41.151:Starting NullSeg timer for connP = 61F72B6C, delay = 1000
*Jan 1 00:53:41.151:Starting NullSeg timer for connP = 61F72B6C, delay = 1000
*Jan 1 00:53:41.151:Stopping Retrans timer for connP = 61F72B6C
*Jan 1 00:53:41.151:Starting SentList timer for connP = 61F72B6C, delay = 300
*Jan 1 00:53:41.419:Timer Keepalive (NullSeg) triggered for conn = 61F72DAC
*Jan 1 00:53:41.419:Starting Retrans timer for connP = 61F72DAC, delay = 300
*Jan 1 00:53:41.419:Stopping SentList timer for connP = 61F72DAC
*Jan 1 00:53:41.419:Starting NullSeg timer for connP = 61F72DAC, delay = 1000
*Jan 1 00:53:41.419:Stopping Retrans timer for connP = 61F72DAC
*Jan 1 00:53:41.451:Timer SentList triggered for conn = 61F72B6C
*Jan 1 00:53:41.451:Starting SentList timer for connP = 61F72B6C, delay = 300
*Jan 1 00:53:41.451:Starting NullSeg timer for connP = 61F72B6C, delay = 1000
*Jan 1 00:53:41.451:Stopping SentList timer for connP = 61F72B6C
*Jan 1 00:53:41.551:Starting NullSeg timer for connP = 61F72B6C, delay = 1000
*Jan 1 00:53:41.551:Starting NullSeg timer for connP = 61F72B6C, delay = 1000
*Jan 1 00:53:41.551:Starting NullSeg timer for connP = 61F72B6C, delay = 1000
*Jan 1 00:53:41.551:Starting NullSeg timer for connP = 61F72B6C, delay = 1000

```

The following is output for the **debug rudpv1 transfer** command:

```
Router# debug rudpv1 transfer
```

```

Rudpv1:Turning transfer debugging on
*Jan 1 00:37:30.567:Rudpv1:Send TCS, connId 61F72B6C, old connId 61F72DAC
*Jan 1 00:37:30.567:Rudpv1:Initiate transfer state, old conn 61F72DAC to
new conn 61F72B6C
*Jan 1 00:37:30.567:Rudpv1:Old conn send window 51 .. 52
*Jan 1 00:37:30.567:Rudpv1:New conn send window 255 .. 2
*Jan 1 00:37:30.567:Rudpv1:Rcvd TCS 142, next seq 142
*Jan 1 00:37:30.567:Rudpv1:Rcv'ing trans state, old conn 61F72DAC to new
conn 61F72B6C
*Jan 1 00:37:30.567:Rudpv1:Seq adjust factor 148
*Jan 1 00:37:30.567:Rudpv1:New rcvCur 142
*Jan 1 00:37:30.567:Rudpv1:Send transfer state, old conn 61F72DAC to new
conn 61F72B6C
*Jan 1 00:37:30.567:Rudpv1:Send TCS, connId 61F72B6C, old connId 61F72DAC,
seq adjust 208, indication 0
*Jan 1 00:37:30.567:Rudpv1:Transfer seg 51 to seg 3 on new conn
*Jan 1 00:37:30.567:Rudpv1:Finishing transfer state, old conn 61F72DAC to
new conn 61F72B6C
*Jan 1 00:37:30.567:Rudpv1:Send window 2 .. 4

```

Related Commands

Command	Description
clear rudpv1 statistics	Clears RUDP statistics and failure counters.
show rudpv1	Displays RUDP failures, parameters, and statistics.

dial-type

To specify the type of out-dialing for voice port interfaces, use the **dial-type** command in voice port configuration mode. Use the **no** form of this command to disable the selected type of dialing.

dial-type { **dtmf** | **pulse** | **mf** }

no dial-type

Syntax Description

dtmf	DTMF (touch-tone) dialing.
pulse	Pulse (rotary) dialing.
mf	Multifrequency tone dialing.

Defaults

The default dial-type is **dtmf**.

Command Modes

Voice port configuration

Command History

Release	Modification
11.3(1)T	This command was introduced.
11.3(1)MA3	The pulse-dialer option was added.
12.0(7)XK	The mf option was added.
12.1(5)XM	Support for this command was extended to the merged SGCP/MGCP software image.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines

Use the **dial-type** command to specify an out-dialing type for an FXO or E&M voice port interface; this command is not applicable to all voice ports because the ports do not generate out-dialing. Voice ports can always detect DTMF and pulse signals. This command does not affect voice port dialing detection.

The **dial-type** command affects out-dialing as configured for the dial peer.

The **dial-type** command is not supported on FXO voice port interfaces on the Cisco MC3810 series platform. If you are using the **dial-type** command with E&M wink-start, use the **mf** option.

Examples

The following example configures a voice port on a Cisco 7200 router to support a rotary (pulse tone) dialer:

```
Router(config)# voice-port 1/1
Router(config-voice-port)# dial-type pulse
```

The following example configures a voice port on a Cisco 7200 router to support a DTMF (touch-tone) dialer:

```
Router(config)# voice-port 1/0  
Router(config-voice-port)# dial-type dtmf
```

The following example configures a voice port on the Cisco 7200 router support a multifrequency tone dialer:

```
Router(config)# voice-port 1/1  
Router(config-voice-port)# dial-type mf
```

ds0-group

To configure channelized T1 time slots on a Cisco 7200 router to answer and send an analog call, use the **ds0-group** command in controller configuration mode. To disable a DS-0 configuration for one or more time slots, use the **no** form of this command.

ds0-group *channel-number* **timeslots** *range* **type** *signaling-type* **tone** *type* **addr** **info** **service** *service-type*

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

Syntax Description	
<i>channel-number</i>	Specifies the DS-0 group number, which can be from 0 to 23 for T1 interfaces, and from 0 to 30 for E1 interfaces.
timeslots <i>range</i>	Specifies the DS-0 time slot range of values from 1 to 24 for T1 interfaces, and from 1 to 31 for E1 interfaces. The default value configures 24 time slots with the channel-associated signal called E&M (Ear and Mouth), which is the default signal type.
type <i>signaling-type</i>	(Optional) Specifies the signaling type to be applied to the selected group. For MGCP functionality, choose none . For SGCP functionality, choose none or fgd-os .
tone <i>type</i>	(Optional) Specifies the tone type as dtmf or mf . This option is not available with <i>signaling-type</i> none . For fgd-os signaling, choose mf .
addr info	(Optional) Specifies that calling/called party numbers may be applied. This option is not available with signaling type none . For fgd-os signaling, use dnis-ani .
service <i>service-type</i>	(Optional) Specifies the type of service. If the <i>signaling-type</i> is none , then valid <i>service-type</i> option is mgcp . If the <i>signaling-type</i> is fgd-os , then the valid <i>service-type</i> option is voice .

Defaults No default behavior or values.

Command Modes Controller configuration

Command History	Release	Modification
	11.2	This command was introduced as the cas-group command.
	12.0(5)T	The command was renamed.
	12.1(1)T	The MGCP service type was added.
	12.1(3)T	The fgdos signaling type and voice service type were added.
	12.1(5)XM	SGCP was removed as a valid service type.
	12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines

The **fgd-os** keyword for *signaling-type* supports the Feature Group D Operator Services (FGD-OS) capability available in SGCP. This capability is not supported in MGCP.

Use **mgcp** for *service-type* if you want the full set of MGCP features and functionality. Note that FGD-OS features are not available in MGCP.

Use **voice** for *service-type* if you want SGCP functionality with the FGD-OS features.

The *service-type* value indicates the set of features to be used for the gateway once the **mgcp EXEC** command is entered to initiate MGCP functionality.

Examples

The following example illustrates setting the T1 channels for SS7 service on any TGW in MGCP mode:

```
Router(config)# ds0-group 0 timeslots 1-24 type none service mgcp
```

The following example illustrates setting the T1 channels for FGD-OS service on a Cisco 7200 in SGCP mode:

```
Router(config)# ds0-group 0 timeslots 1-24 type fgd-os mf dnis-ani service voice
```

Related Commands

Command	Description
cas-group	Configures channelized T1 time slots with robbed bit signaling.
mgcp	Starts the MGCP daemon.

group

To create a session-group and associate it to a specified session-set, use the **group** command in backhaul session manager configuration mode. To delete the group, use the **no** form of this command.

group *grp-name* **set** *set-name*

no group *grp-name* **set** *set-name*

Syntax Description

<i>grp-name</i>	Session-group name.
<i>set-name</i>	Session-set name.

Defaults

No default behavior or values.

Command Modes

Backhaul session manager configuration

Command History

Release	Modification
12.1(1)T	This command was introduced.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Examples

The following example associates the group named group5 with the set named set1:

```
Router(config-bsm) # group group5 set set1
```

Related Commands

Command	Description
group	Configures the maximum auto-reset value.
group cumulative-ack	Configures maximum cumulative acknowledgments.
group out-of-sequence	Configures maximum out-of-sequence segments that are received before an EACK is sent.
group receive	Configures maximum receive segments.
group retransmit	Configures maximum retransmits.
group timer keepalive	Configures keepalive (or null segment) timeout.
group timer cumulative-ack	Configures cumulative acknowledgment timeout.
group timer retransmit	Configures retransmission timeout.
group timer transfer	Configures state transfer timeout.

group auto-reset

To configure the maximum auto-reset value, use the **group auto-reset** command in backhaul session manager configuration mode. To set the value to default, use the **no** form of this command.

group *grp-name* **auto-reset** *count*

no group *grp-name* **auto-reset** *count*



Caution

Do not change this parameter unless instructed to do so by Cisco technical support. There are relationships between group parameters that can cause sessions to fail if not set correctly.

Syntax Description

<i>grp-name</i>	Session-group name.
<i>count</i>	Maximum number of auto-resets. Range is 0 to 255.

Defaults

The default maximum number of auto-resets is 5.

Command Modes

Backhaul session manager configuration

Command History

Release	Modification
12.1(1)T	This command was introduced.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Examples

The following example configures the maximum auto-reset value for the group named group1 to 6:

```
Router(config-bsm)# group group1 auto-reset 6
```

Related Commands

Command	Description
group timer cumulative-ack	Configures maximum cumulative acknowledgments.
group out-of-sequence	Configures maximum out-of-sequence segments that are received before an Extended Acknowledgement (EACK) is sent.
group receive	Configures maximum receive segments.
group retransmit	Configures maximum retransmits.

group cumulative-ack

To configure maximum cumulative acknowledgments, use the **group cumulative-ack** command in backhaul session manager configuration mode. Maximum cumulative acknowledgments are the maximum number of segments that are received before an acknowledgment is sent. To set the value to default, use the **no** form of this command.

```
group grp-name cumulative-ack count
```

```
no group grp-name cumulative-ack count
```



Caution

Do not change this parameter unless instructed to do so by Cisco technical support. There are relationships between group parameters that can cause sessions to fail if not set correctly.

Syntax Description

<i>grp-name</i>	Session-group name.
<i>count</i>	Maximum number of segments received before acknowledgment. Range is 0 to 255.

Defaults

The default value is 3.

Command Modes

Backhaul session manager configuration

Command History

Release	Modification
12.1(1)T	This command was introduced.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Examples

The following example sets the cumulative acknowledgment maximum for the group named group1 to 4:

```
Router(config-bsm)# group group1 cumulative-ack 4
```

Related Commands

Command	Description
group	Configures the maximum auto-reset value.
group out-of-sequence	Configures maximum out-of-sequence segments that are received before an EACK is sent.
group receive	Configures maximum receive segments.
group retransmit	Configures maximum retransmits.

group out-of-sequence

To configure maximum out-of-sequence segments that are received before an EACK is sent, use the **group out-of-sequence** command in backhaul session manager configuration mode. To set the value to default, use the **no** form of this command.

group *grp-name* **out-of-sequence** *count*

no group *grp-name* **out-of-sequence** *count*



Caution

Do not change this parameter unless instructed to do so by Cisco technical support. There are relationships between group parameters that can cause sessions to fail if not set correctly.

Syntax Description

<i>grp-name</i>	Session-group name.
<i>count</i>	Maximum number of out-of-sequence segments. Range is 0 to 255.

Defaults

The default maximum number of out-of sequence segments is 3.

Command Modes

Backhaul session manager configuration

Command History

Release	Modification
12.1(1)T	This command was introduced.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Examples

The following example sets the out-of-sequence maximum for the group named group1 to 4:

```
Router(config-bsm)# group group1 out-of-sequence 4
```

Related Commands

Command	Description
group	Configures the maximum auto-reset value.
group cumulative-ack	Configures maximum cumulative acknowledgments.
group receive	Configures maximum receive segments.
group retransmit	Configures maximum retransmits.

group receive

To configure maximum receive segments, use the **group receive** command in backhaul session manager configuration mode. To set the value to default, use the **no** form of this command.

```
group grp-name receive count
```

```
no group grp-name receive count
```



Caution

Do not change this parameter unless instructed to do so by Cisco technical support. There are relationships between group parameters that can cause sessions to fail if not set correctly.

Syntax Description

<i>grp-name</i>	Session-group name.
<i>count</i>	Maximum number of segments in a receive window. The other side should send no more than this number of segments before receiving an acknowledgment for the oldest outstanding segment. Range is 1 to 64.

Defaults

The default maximum number of segments in a receive window is 32.

Command Modes

Backhaul session manager configuration

Command History

Release	Modification
12.1(1)T	This command was introduced.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Examples

The following example sets the receive maximum to 10 for the group named group5:

```
Router(config-bsm)# group group5 receive 10
```

Related Commands

Command	Description
group	Configures the maximum auto-reset value.
group cumulative-ack	Configures maximum cumulative acknowledgments.
group out-of-sequence	Configures maximum out-of-sequence segments that are received before an EACK is sent.
group retransmit	Configures maximum retransmits.

group retransmit

To configure maximum retransmits, use the **group retransmit** command in backhaul session manager configuration mode. To set the value to default, use the **no** form of this command.

group *grp-name* **retransmit** *count*

no group *grp-name* **retransmit** *count*



Caution

Do not change this parameter unless instructed to do so by Cisco technical support. There are relationships between group parameters that can cause sessions to fail if not set correctly.

Syntax Description

<i>grp-name</i>	Session-group name.
<i>count</i>	Maximum number of retransmits. Range is 0 to 255.

Defaults

The default maximum number of retransmits is 2.

Command Modes

Backhaul session manager configuration

Command History

Release	Modification
12.1(1)T	This command was introduced.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Examples

The following example sets the retransmit maximum for the group named group5 to 3:

```
Router(config-bsm)# group group5 retransmit 3
```

Related Commands

Command	Description
group	Configures the maximum auto-reset value.
group cumulative-ack	Configures maximum cumulative acknowledgments.
group out-of-sequence	Configures maximum out-of-sequence segments that are received before an EACK is sent.
group receive	Configures maximum receive segments.

group timer cumulative-ack

To configure cumulative acknowledgment timeout, use the **group timer cumulative-ack** command in backhaul session manager configuration mode. To set the value to default, use the **no** form of this command.

group *group-name* **timer cumulative-ack** *time*

no group *group-name* **timer cumulative-ack** *time*



Caution

Do not change this parameter unless instructed to do so by Cisco technical support. There are relationships between group parameters that can cause sessions to fail if not set correctly.

Syntax Description

<i>group-name</i>	Session-group name.
<i>time</i>	Number of milliseconds RUDP will delay. Range is 100 to 65535.

Defaults

The default number of milliseconds RUDP will delay is 100.

Command Modes

Backhaul session manager configuration

Command History

Release	Modification
12.1(1)T	This command was introduced.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines

Cumulative acknowledgment timeout is the maximum number of milliseconds RUDP will delay before sending an acknowledgment for a received segment.

Examples

To set the cumulative acknowledgment timer for group5 to 325, see the following example:

```
Router(config-bsm)# group group5 timer cumulative-ack 325
```

Related Commands

Command	Description
group timer keepalive	Configures keepalive (or null segment) timeout.
group timer retransmit	Configures retransmission timeout.
group timer transfer	Configures state transfer timeout.

group timer keepalive

To configure keepalive (or null segment) timeout, use the **group timer keepalive** command in backhaul session manager configuration mode. To set the value to default, use the **no** form of this command.

group *grp-name* **timer keepalive** *time*

no group *grp-name* **timer keepalive** *time*



Caution

Do not change this parameter unless instructed to do so by Cisco technical support. There are relationships between group parameters that can cause sessions to fail if not set correctly.

Syntax Description

<i>grp-name</i>	Session-group name.
<i>time</i>	Number of milliseconds before RUDP sends a keepalive segment. Range is 100 to 65535.

Defaults

The default number of milliseconds before RUDP sends a keepalive segment is 1000.

Command Modes

Backhaul session manager configuration

Command History

Release	Modification
12.1(1)T	This command was introduced.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Examples

The following example configures the keepalive timer for the group named group5 to 2050 milliseconds:

```
Router(config-bsm)# group group5 timer keepalive 2050
```

Related Commands

Command	Description
group timer cumulative-ack	Configures cumulative acknowledgment timeout.
group timer retransmit	Configures retransmission timeout.
group timer transfer	Configures state transfer timeout.

group timer retransmit

To configure retransmission timeout, use the **group timer retransmit** command in backhaul session manager configuration mode. Retransmission timeout is the number of milliseconds RUDP will wait to receive an acknowledgment for a segment. To set the value to default, use the **no** form of this command.

group *grp-name* **timer retransmit** *time*

no group *grp-name* **timer retransmit** *time*



Caution

Do not change this parameter unless instructed to do so by Cisco technical support. There are relationships between group parameters that can cause sessions to fail if not set correctly.

Syntax Description

<i>grp-name</i>	Session-group name.
<i>time</i>	Number of milliseconds RUDP will delay. Range is 100 to 65535.

Defaults

The default number of milliseconds RUDP will delay is 300.

Command Modes

Backhaul session manager configuration

Command History

Release	Modification
12.1(1)T	This command was introduced.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines

The retransmit timer must be greater than the cumulative-ack timer.

Examples

The following example sets the retransmit timer for the group named group5 to 650 milliseconds:

```
Router(config-bsp)# group group5 timer retransmit 650
```

Related Commands

Command	Description
group timer cumulative-ack	Configures cumulative acknowledgment timeout.
group timer keepalive	Configures keepalive (or null segment) timeout.
group timer transfer	Configures state transfer timeout.

group timer transfer

To configure state transfer timeout, use the **group timer transfer** command in backhaul session manager configuration mode. To set the value to default, use the **no** form of this command.

group *grp-name* **timer transfer** *time*

no group *grp-name* **timer transfer** *time*



Caution

Do not change this parameter unless instructed to do so by Cisco technical support. There are relationships between group parameters that can cause sessions to fail if not set correctly.

Syntax Description

<i>grp-name</i>	Session-group name.
<i>time</i>	Maximum number of milliseconds RUDP will wait for a transfer request. The range is 0 to 65535 milliseconds.

Defaults

The default maximum number of milliseconds RUDP will wait for a transfer request is 2000.

Command Modes

Backhaul session manager configuration

Command History

Release	Modification
12.1(1)T	This command was introduced.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Examples

The following example sets the state transfer timer for the group named group5 to 1800 milliseconds:

```
Router(config-bsm)# group group5 timer transfer 1800
```

Related Commands

Command	Description
group timer cumulative-ack	Configures cumulative acknowledgment timeout.
group timer keepalive	Configures keepalive (or null segment) timeout.
group timer retransmit	Configures retransmission timeout.

isdn bind-l3

To configure the ISDN serial interface for backhaul, use the **isdn bind-l3** command in interface configuration mode. To disable, use the **no** form of this command.

isdn bind-l3 *set-name*

no isdn bind-l3 *set-name*

Syntax Description	<i>set-name</i>	Session-set name.
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Defaults	No default behavior or values.
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Command Modes	Interface configuration
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Command History	Release	Modification
	12.1(1)T	This command was introduced.
	12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Examples	The following example configures the ISDN serial interface for backhaul for the set named set1:
----------	---

```
Router(config-if)# isdn bind-l3 set1
```

isdn protocol-emulate

To configure and ISDN data or voice port to emulate network or user functionality, use the **isdn protocol-emulate** command in interface configuration mode. To disable, use the **no** form of this command.

isdn protocol-emulate {network | user}

no isdn protocol-emulate {network | user}

Syntax Description

network	The network side of an ISDN configuration.
user	The user side of an ISDN configuration.

Defaults

No default behavior or values.

Command Modes

Interface configuration

Command History

Release	Modification
12.0(3)XG	This command was introduced.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines

The current ISDN signaling stack can emulate the ISDN network side, but it does not conform to the specifications of the various switch types in emulating the network side. This command enables the Cisco IOS to replicate the public switched network interface to a PBX. This feature is only supported for the PRI Net5 switch type.

Examples

The following example configures the interface (configured for Net5) to emulate the network side ISDN:

```
Router(config)# interface s0:15
Router(config-if)# isdn protocol-emulate network
```

mgcp

To start and allocate resources for the MGCP daemon, use the **mgcp** command in global configuration mode. To terminate all calls, release all allocated resources, and kill the MGCP daemon, use the **no** form of this command.

mgcp [*port*]

no mgcp

Syntax Description

port (Optional) Specifies a UDP port for the MGCP gateway. Valid values are 1025 to 65535.

Defaults

The default UDP port is 2427.

Command Modes

Global configuration

Command History

Release	Modification
12.1(1)T	This command was introduced for the Cisco AS5300.
12.1(3)T	Support for this command was extended to the Cisco 3660, Cisco uBR924, and Cisco 2600 series platforms.
12.1(5)XM	Support for this command was extended to the Cisco MC3810 series platform.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines

After you start the MGCP daemon with the **mgcp** command, you can suspend it (for example, for maintenance) by using the **mgcp block-newcalls** command. When you are ready to resume normal MGCP operations, use the **no mgcp block-newcalls** command. Use the **no mgcp** command only if you intend to stop all MGCP applications and protocols.

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

If you do not specify a port in the command line, MGCP will use UDP port 2427.

If you want to change the UDP port while MGCP is running, you must shut down MGCP using the **no mgcp** command, then restart MGCP with the new port number using the **mgcp port** command.

Examples

The following example shows how to enable the MGCP daemon on port 4204:

```
Router(config)# mgcp 4204
```

Related Commands	Command	Description
	mgcp block-newcalls	Gracefully terminates all MGCP activity.
	mgcp request retries	Specifies the number of times to retry sending the mgcp command.
	debug mgcp	Enables debugging on MGCP.
	show mgcp	Displays the MGCP parameter settings.

mgcp call-agent

To configure the call agent (media gateway controller) address, use the **mgcp call-agent** command in global configuration mode. To unconfigure the call agent address, use the **no** form of this command.

```
mgcp call-agent {ipaddr | hostname} [port] [service-type type] [version version-number]
```

```
no mgcp call-agent
```

Syntax Description		
<i>ipaddr</i> <i>hostname</i>		Specifies the IP address or domain name of the call agent.
<i>port</i>		(Optional) Specifies the port for the call agent to use. Valid values are 1025 to 65535.
service-type <i>type</i>		(Optional) Specifies the type of gateway control service to be supported by the call agent. Valid value is mgcp .
version <i>version-number</i>		(Optional) Specifies the version of service-type . For mgcp , the only valid value is 0.1.

Defaults

The default port is 2427.

The default service-type is mgcp.

Command Modes

Global configuration

Command History

Release	Modification
12.1(1)T	This command was introduced for the Cisco AS5300.
12.1(3)T	The service-type parameter was added to the command.
12.1(5)XM	The command was expanded to the Cisco MC3810 series and Cisco 3600 multiservice platforms and the version parameter was added.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines

Use this command on any platform and media gateway.

If you do not specify a UDP port in the command line, MGCP will use 2427 as the default call agent UDP port.

Examples

The following example illustrates specifying the call agent and MGCP as the service-type:

```
Router(config)# mgcp call-agent 209.165.200.225 5530 service-type mgcp
```

Related Commands	Command	Description
	mgcp	Starts the MGCP daemon.
	mgcp sgcp restart notify	Starts RSIP message processing in the MGCP application.

mgcp codec

To select the default codec type and its packetization period value, use the **mgcp codec** command in global configuration mode. To set the parameters to their default values, use the **no** form of this command.

mgcp codec *type* **packetization-period** *value*

no mgcp codec

Syntax Description	<i>type</i>	The types of codec supported. Valid codecs include G711alaw, G711ulaw, G723ar53, G723ar63, G723r53, G723r63, G726r16, G726r24, G726r32, G729ar8, G729br8, G729r8.
	packetization-period <i>value</i>	This parameter is useful when the preferred compression algorithm and/or packetization period parameter is not provided by the Media Gateway Controller (call agent). The value range (in milliseconds) depends on the type of codec selected. For example, the range for G729r8 is 10 to 220 ms in increments of 10. For G711ulaw, the range is 10 to 20 ms in increments of 10. For G723ar63, the range is 30 to 270 ms in increments of 30.

Defaults The default mgcp codec is G711ulaw.

Command Modes Global configuration

Command History	Release	Modification
	12.1(1)T	This command was introduced for the Cisco AS5300.
	12.1(3)T	Support for this command was extended to the Cisco 3660, Cisco uBR924, and Cisco 2600 series platforms.
	12.1(5)XM	Support for this command was extended to the Cisco MC3810 series platform.
	12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Examples The following example illustrates setting the codec type to G729r8 with a packetization period of 150:

```
Router(config)# mgcp codec g729r8 packetization-period 150
```

Related Commands	Command	Description
	mgcp	Starts the MGCP daemon.

mgcp default-package

To configure the default package capability type for the media gateway, use the **mgcp default-package** command in global configuration mode.

This command does not support a **no** form. To change the default package, use the **mgcp default-package** command with a different, actively-supported package.

For residential gateways (RGWs):

```
mgcp default-package { dt-package | dtmf-package | gm-package | hs-package | line-package |
ms-package | rtp-package }
```

For trunking gateways (TGWs):

```
mgcp default-package { as-package | atm-package | dt-package | dtmf-package | gm-package |
hs-package | mo-package | ms-package | nas-package | rtp-package | script-package |
trunk-package }
```

Syntax Description

as-package	Announcement server package.
atm-package	ATM package.
dt-package	DTMF Trunk package (for CAS endpoints).
dtmf-package	DTMF package.
gm-package	Generic media package.
hs-package	Handset package.
line-package	Line package.
mo-package	MF Operator services package (for CAS endpoints).
ms-package	MF wink/immediate Start package (for CAS endpoints).
nas-package	NAS package.
rtp-package	RTP package.
script-package	Script package.
trunk-package	Trunk package.

Defaults

The default package capability type for the media gateway of an RGW is line-package.

The default package capability type for the media gateway of a TGW is trunk-package.

Command Modes

Global configuration

Command History	Release	Modification
	12.0(7)XR2, 12.1(1)T	This command was introduced for the Cisco AS5300.
	12.1(3)T	The line-package option and a distinction between residential and trunking gateways were added.
	12.1(5)XM	This command was expanded to the Cisco MC3810 series and Cisco 3600 platforms. atm-package , hs-package , ms-package , dt-package , and mo-package were added.
	12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines

This command is helpful when the Media Gateway Controller (call agent) does not provide the package capability to be used for the given connection. A “package” is a set of parameter values defined for a particular type of endpoint or connection.

Before selecting a package as the default, use the **show mgcp** command to ensure the package is actively supported. If the package you want does not appear in the display, use the **mgcp package-capability** command to add the package to the supported list.



Note The CAS packages (**dt-package**, **mo-package**, and **ms-package**) are available only as default package options. They do not appear as options in **mgcp package-capability**. The reason is that the non-CAS packages are configured on a per-gateway basis, while the CAS packages are defined on a per-trunk basis. Each trunk is defined using the **ds0-group** command.

If only one package is actively supported, it becomes the default package.

Examples

The following example configures the as-package type as the default package type:

```
Router(config)# mgcp default-package as-package
as-package type will be the new default package type.
```

Related Commands

Command	Description
mgcp package-capability	Includes a specific MGCP package that is supported by the gateway.
mgcp	Starts the MGCP daemon.

mgcp dtmf-relay

To ensure accurate forwarding of digits on compressed codecs, use the **mgcp dtmf-relay** command in controller configuration mode. To disable this process for noncompressed codecs, use the **no** form of this command.

Voice over IP

mgcp dtmf-relay voip codec {all | low-bit-rate} mode {cisco | nse | out-of-band}

no mgcp dtmf-relay voip

Syntax Description		
voip		Specifies Voice over IP calls.
all		Specifies use of any codec.
low-bit-rate		Specifies any version of the G.729 low-bit-rate codecs.
cisco		This mode removes DTMF tone from the voice stream and sends FRF.11 with a special payload 121 for DTMF digits.
nse		Uses the NSE-based forwarding method.
out-of-band		This mode removes DTMF tone from the voice stream and does not send FRF.11.

Defaults No dtmf-relay for all codecs

Command Modes Controller configuration

Command History	Release	Modification
	12.1(3)T	This command was added to MGCP.
	12.1(5)XM	Support for this command was expanded to include the Cisco MC3810 series platform.
	12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines Only VoIP supports the **mode** options for forwarding digits on codecs.

Examples The following example shows how to configure a low-bit-rate codec using VoIP in NSE mode:

```
Router(config)# mgcp dtmf-relay voip codec low-bit-rate mode nse
```

Related Commands	Command	Description
	mgcp	Starts the MGCP daemon.

mgcp explicit hookstate

To enable detection of explicit hookstates, use the **mgcp explicit hookstate** command in global configuration mode. To disable the hookstate detection, use the **no** form of the command.

mgcp explicit hookstate

no mgcp explicit hookstate

Syntax Description This command has no keywords or arguments.

Defaults Enabled (hookstate detection is enabled)

Command Modes Global configuration

Command History	Release	Modification
	12.1(5)XM	This command was introduced.
	12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines Explicit hookstate detection is enabled by default. In this state, the gateway returns one of the following NACK (Not Acknowledged) message in response to R:hu or R:hd event requests:

```
"401 endpoint already off hook"
"402 endpoint already on hook"
```

If you turn hookstate detection off with the **no mgcp explicit hookstate** command, the hookstate is not checked when the gateway receives R:hu or R:hd event requests. The gateway will acknowledge (ACK) these event requests.

Examples The following example illustrates how to enable the hookstate detection:

```
Router(config)# mgcp explicit hookstate
```

Related Commands	Command	Description
	mgcp	Starts the MGCP daemon.

mgcp ip-tos

To enable or disable the IP Type of Services (TOS) for MGCP-controlled connections, use the **mgcp ip-tos** command in global configuration mode. To set the parameters to their default values, use the **no** form of this command.

mgcp ip-tos { **high-reliability** | **high-throughput** | **low-cost** | **low-delay** | **rtp precedence** *value* | **signaling precedence** *value* }

no mgcp ip-tos { **high-reliability** | **high-throughput** | **low-cost** | **low-delay** | **rtp precedence** *value* | **signaling precedence** *value* }

Syntax Description

high-reliability	Specifies high-reliability TOS.
high-throughput	Specifies high-throughput TOS.
low-cost	Specifies low-cost TOS.
low-delay	Specifies low-delay TOS.
rtp precedence <i>value</i>	Specifies the IP precedence value for MGCP-controlled RTP packets. Valid values are from 0 to 7. The default RTP precedence value is 3.



Note In Cisco IOS Release 12.1(3)T, this parameter was **precedence** *value*.

signaling precedence <i>value</i>	Specifies the IP precedence value for MGCP UDP and RTCP signaling packets. Valid values are from 0 to 7. The default signaling precedence value is 3.
--	---

Defaults

Services disabled, precedence 3

Command Modes

Global configuration

Command History

Release	Modification
12.1(1)T	This command was introduced for the Cisco AS5300.
12.1(3)T	Support for this command was extended to the Cisco 3660, Cisco uBR924, and Cisco 2600 series platforms.
12.1(5)XM	Support for this command was extended to the Cisco MC3810 series platform, the precedence parameter was changed to rtp precedence , and the signaling precedence parameter was added.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines

Only one of the high-reliability, high-throughput, low-cost, or low-delay parameters can be enabled at any given time. Enabling one parameter disables any other that was active. This has no effect on the two **precedence** parameters.

When you configure a new value for **precedence**, the old value is erased.

The **no** form of the **mgcp ip-tos** command disables the first four parameters and sets the **precedence** values back to 3.

Examples

In the following example, activating **low-delay** disables the other three parameters.

```
Router(config)# mgcp ip-tos high-reliability
Router(config)# mgcp ip-tos high-throughput
Router(config)# mgcp ip-tos low-cost
Router(config)# mgcp ip-tos low-delay
Router(config)# mgcp ip-tos rtp precedence 4
Router(config)# mgcp ip-tos signaling precedence 5
```

Related Commands

Command	Description
mgcp	Starts the MGCP daemon.

mgcp modem passthrough codec

To select the codec that enables the gateway to send and receive modem and fax data in VoIP configurations, use the **mgcp modem passthrough codec** command in controller configuration mode. To disable support for modem and fax data, use the **no** form of this command.

```
mgcp modem passthrough {voip} codec {g711alaw | g711ulaw}
```

```
no mgcp modem passthrough {voip} codec
```

Syntax Description

voip	Uses Voice over IP as the voice protocol.
g711alaw	Uses the G711alaw codec for changing speeds during modem/fax switchover.
g711ulaw	Uses the G711ulaw codec for changing speeds during modem/fax switchover.

Defaults

G711ulaw

Command Modes

Controller configuration

Command History

Release	Modification
12.1(3)T	This command was added to MGCP.
12.1(5)XM	Support for the Cisco MC3810 series platform was added.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines

Use this command for fax passthrough because the answer tone can come from either modem or fax transmissions. Selecting a codec will dynamically change the codec type and speed to meet network conditions.

Examples

The following example enables a gateway to send and receive VoIP modem or fax data using the G711alaw codec:

```
Router(config)# mgcp modem passthrough voip codec g711alaw
```

Related Commands

Command	Description
mgcp	Starts the MGCP daemon.
mgcp tse payload	Enables the TSE payload for modem/fax operation.
mgcp modem passthrough mode	Sets the method for changing speeds for modem and fax transmissions on the gateway.
mgcp modem passthrough voip redundancy	Enables redundancy for VoIP modem and fax transmissions.

mgcp modem passthrough mode

To set the method for changing speeds that enables the gateway to send and receive modem and fax data in VoIP configurations, use the **mgcp modem passthrough mode** command in controller configuration mode. To disable support for modem and fax data, use the **no** form of this command.

```
mgcp modem passthrough {voip} mode {cisco | nse}
```

```
no mgcp modem passthrough {voip}
```

Syntax Description	Option	Description
	voip	Uses Voice over IP as the voice protocol.
	cisco	Uses Cisco's proprietary method for changing modem speeds, based on the protocol.
	nse	Uses the NSE-based method for changing modem speeds.

Defaults nse

Command Modes Controller configuration

Command History	Release	Modification
	12.1(3)T	This command was added to MGCP.
	12.1(5)XM	Support for the Cisco MC3810 series platform was added.
	12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines Use this command for fax passthrough because the answer tone can come from either modem or fax transmissions. The upspeed method is the method used to dynamically change the codec type and speed to meet network conditions.

If you use the **nse** option, you must also configure the [mgcp tse payload](#) command.

If you use the default **nse** option, the **show run** command does *not* display **mgcp modem passthrough mode** in the configuration output. The **mgcp modem passthrough mode** command is displayed in the configuration output for the **cisco** option. However, the **show mgcp** command displays the settings for both **nse** and **cisco**.

Examples The following example illustrates how to enable a gateway to send and receive VoIP modem or fax data using the NSE modem speed-changing method:

```
Router(config)# mgcp modem passthrough voip mode nse
```

Related Commands	Command	Description
	mgcp	Starts the MGCP daemon.
	mgcp tse payload	Enables the TSE payload for modem/fax operation.
	mgcp modem passthrough codec	Selects the codec to use for modem and fax transmissions on the gateway.
	mgcp modem passthrough voip redundancy	Enables redundancy for VoIP modem and fax transmissions.

mgcp modem passthrough voip redundancy

To enable redundancy on a gateway that sends and receives modem and fax data in VoIP configurations, use the **mgcp modem passthrough voip redundancy** command in controller configuration mode. To disable support for modem and fax data, use the **no** form of this command.

mgcp modem passthrough voip redundancy

no mgcp modem passthrough voip redundancy

Syntax Description This command has no keywords or arguments.

Defaults Disabled

Command Modes Controller configuration

Command History	Release	Modification
	12.1(5)XM	This command was introduced.
	12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines Use this command for fax passthrough because the answer tone can come from either modem or fax transmissions. The upspeed method is the method used to dynamically change the codec type and speed to meet network conditions.

Examples The following example illustrates how to enable redundancy for VoIP modem and fax transmissions on a gateway:

```
Router(config)# mgcp modem passthrough voip redundancy
```

Related Commands	Command	Description
	mgcp	Starts the MGCP daemon.
	mgcp tse payload	Enables the TSE payload for modem/fax operation.
	mgcp modem passthrough codec	Selects the codec for modem and fax transmissions.
	mgcp modem passthrough mode	Selects the upspeed method for modem and fax transmission.

mgcp package-capability

To specify an MGCP package capability for a gateway, use the **mgcp package-capability** command in global configuration mode. To remove a specific MGCP package capability from the list of capabilities, use the **no** form of this command.

All RGWs

```
mgcp package-capability { dtmf-package | gm-package | hs-package | line-package |
  rtp-package }
```

```
no mgcp package-capability { dtmf-package | gm-package | hs-package | line-package |
  rtp-package }
```

Cisco AS5300 TGW

```
mgcp package-capability { as-package | atm-package | dtmf-package | gm-package | hs-package
  | nas-package | rtp-package | script-package | trunk-package }
```

```
no mgcp package-capability { as-package | atm-package | dtmf-package | gm-package |
  hs-package | nas-package | rtp-package | script-package | trunk-package }
```

Non-Cisco AS5300 TGWs

```
mgcp package-capability { as-package | dtmf-package | gm-package | hs-package | nas-package
  | rtp-package | trunk-package }
```

```
no mgcp package-capability { as-package | dtmf-package | gm-package | hs-package |
  nas-package | rtp-package | trunk-package }
```

Syntax Description

as-package	Announcement server package
atm-package	ATM package
dtmf-package	DTMF package
gm-package	Generic media package
hs-package	Handset package
line-package	Line package
nas-package	NAS package
rtp-package	RTP package
script-package	Script package
trunk-package	Trunk package

Defaults

For all RGWs: **line-package**

For all TGWs: **trunk-package**

Command Modes

Global configuration

Command History

Release	Modification
12.1(1)T	This command was introduced for the Cisco AS5300 platform.
12.1(3)T	The command was expanded to the Cisco uBR924, Cisco 2600 series, and Cisco 3660 platforms. line-package , rtp-package , and script-package were added.
12.1(5)XM	This command was expanded to the Cisco MC3810 series platform.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines

Select packages supported by your call agent. Events specified in the MGCP messages from the call agent must belong to one of the supported packages. Otherwise, the connection requests are refused by the gateway.

Use this command before specifying a default package with the **mgcp default-package** command. Specify at least one package to have a default.



Note The CAS packages (**dt-package**, **mo-package**, and **ms-package**) are available only as default package options. They do not appear as options in **mgcp package-capability**. The reason for this is that all the other packages are configured on a per-gateway basis, while the CAS packages are defined on a per-trunk basis. The per-trunk definition is done when the trunk is configured using the **ds0-group** command.

Enter each package as a separate command.

Examples

The following examples illustrate how to set different packages on the gateway and to designate one as the default package:

```
Router(config)# mgcp package-capability trunk-package
Router(config)# mgcp package-capability dtmf-package
Router(config)# mgcp package-capability script-package
Router(config)# mgcp default-package trunk-package
```

Related Commands

Command	Description
mgcp	Starts the MGCP daemon.
mgcp default-package	Configures the default package capability type for the media gateway.

mgcp quality-threshold

To set the jitter buffer size threshold, latency threshold, and packet-loss threshold parameters, use the **mgcp quality-threshold** command in global configuration mode. To restore the default parameter values, use the **no** form of this command.

```
mgcp quality-threshold { hwm-cell-loss value | hwm-jitter-buffer value | hwm-latency value |
hwm-packet-loss value | lwm-cell-loss value | lwm-jitter-buffer value | lwm-latency value |
lwm-packet-loss value }
```

```
no mgcp quality-threshold { hwm-jitter-buffer | hwm-latency | hwm-packet-loss |
lwm-jitter-buffer | lwm-latency | lwm-packet-loss }
```

Syntax Description		
hwm-cell-loss <i>value</i>		This parameter is available when the ATM package is enabled. Specifies the high-water mark cell loss count. Valid range is 5000 to 25,000, and the default value is 10,000.
hwm-jitter-buffer <i>value</i>		Specifies the high-water mark jitter buffer size. Valid range is from 100 to 200, and the default value is 150.
hwm-latency <i>value</i>		Specifies the high-water mark latency value. Valid range is from 250 to 400, and the default value is 300.
hwm-packet-loss <i>value</i>		Specifies the high-water mark packet-loss value. Valid range is from 5000 to 25,000, and the default value is 10,000.
lwm-cell-loss <i>value</i>		This parameter is available when the ATM package is enabled. Specifies the low-water mark cell loss count. Valid range is from 1 to 3000, and the default value is 1000.
lwm-jitter-buffer <i>value</i>		Specifies the low-water mark jitter buffer size. Valid range is from 4 to 60, and the default value is 30.
lwm-latency <i>value</i>		Specifies the low-water mark latency value. Valid range is from 125 to 200, and the default value is 150.
lwm-packet-loss <i>value</i>		Specifies the low-water mark packet-loss value. Valid range is from 1 to 3000, and the default value is 1000.

Defaults The voice quality parameter defaults are (in milliseconds): **hwm-cell-loss** 10,000, **hwm-jitter-buffer** 150, **hwm-latency** 300, **hwm-packet-loss** 10,000, **lwm-cell-loss** 1000, **lwm-jitter-buffer** 30, **lwm-latency** 150, and **lwm-packet-loss** 1000.

Command Modes Global configuration

Command History

Release	Modification
11.3(3)T	The default was changed to 100 milliseconds.
12.1(1)T	This command was introduced for the Cisco AS5300.
12.1(3)T	Support for this command was extended to the Cisco 3660, Cisco uBR924, and Cisco 2600 series platforms.
12.1(5)XM	Support for this command was extended to the Cisco MC3810 series platform and the hwm-cell-loss and lwm-cell-loss parameters were added.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines

The following parameters impact the quality of voice calls:

- **cell-loss** (the number of ATM cells lost during transmission)
- **jitter-buffer** (storage area containing active call voice packets that have been received from the network and are waiting to be decoded and played)
- **packet-loss** (number of packets lost per 100,000 packets for a given call)
- **latency** (network delay in sending/receiving packets)

For good voice quality, the system should perform below the **lwm** values. As the values go higher, voice quality degrades. The system generates a report when the values go above the **hwm** levels. Set the **hwm** and **lwm** values sufficiently apart so that you receive reports on poor performance, but not so close together that you receive too much feedback.

Enter each parameter as a separate command.

Examples

The following examples show how the different parameters can be set to new values:

```
Router(config)# mgcp quality-threshold hwm-cell-loss 7500
Router(config)# mgcp quality-threshold lwm-cell-loss 2000
Router(config)# mgcp quality-threshold hwm-jitter-buffer 100
Router(config)# mgcp quality-threshold hwm-latency 250
Router(config)# mgcp quality-threshold hwm-packet-loss 5000
Router(config)# mgcp quality-threshold lwm-jitter-buffer 50
Router(config)# mgcp quality-threshold lwm-latency 200
Router(config)# mgcp quality-threshold lwm-packet-loss 20
```

Related Commands

Command	Description
mgcp payout	Tunes the jitter buffer packet size.
mgcp package-capability	Activates various packages on the gateway.
mgcp	Starts the MGCP daemon.

mgcp quarantine mode

To set the parameters for handling MGCP call events in the quarantine buffer, use the **mgcp quarantine mode** command in global configuration mode. To restore the default value, use the **no** form of the command.

mgcp quarantine mode [**discard** | **process**] [**loop** | **step**]

no mgcp quarantine mode

Syntax Description

discard	(Optional) Observed events are not reported to the call agent, even if the call agent is ready to receive them.
process	(Optional) Observed events are reported to the call agent when the call agent is ready to receive them.
loop	(Optional) The gateway reports observed events to the call agent in groups.
step	(Optional) The gateway reports observed events individually to the call agent.

Defaults

discard and **step**

Command Modes

Global configuration

Command History

Release	Modification
12.1(5)XM	This command was introduced.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines

This command supports backward compatibility with SGCP implementations running under the MGCP application. SGCP does not have a way to allow the call agent to control the quarantine mode, which determines whether a gateway will send observed events to the call agent when the CA indicates readiness to receive them. MGCP has this functionality.

Examples

The following example shows how to send observed events to the call agent:

```
Router(config)# mgcp quarantine mode process
```

The following example shows how to send observed events to the call agent in loop mode:

```
Router(config)# mgcp quarantine mode process loop
```

Related Commands	Command	Description
	mgcp	Starts the MGCP daemon.
	mgcp quarantine persistent-events disable	Disables handling of persistent MGCP call events in the quarantine buffer.

mgcp quarantine persistent-events disable

To disable handling of persistent MGCP call events in the quarantine buffer, use the **mgcp quarantine persistent-events disable** command in global configuration mode. To restore the default value, use the **no** form of the command.

mgcp quarantine persistent-events disable

no mgcp quarantine persistent-events disable

Syntax Description This command has no keywords or arguments.

Defaults No defaults (persistent events are held in the quarantine buffer)

Command Modes Global configuration

Command History

Release	Modification
12.1(5)XM	This command was introduced.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines

This command reports persistent events immediately to the call agent by a Notify message rather than holding them in quarantine. By default, all events, including persistent events, are quarantined when they are detected even though the gateway is in notification state.

Examples

The following example shows how to turn off quarantine buffer handling of persistent events:

```
Router(config)# mgcp quarantine persistent-event disable
```

Related Commands

Command	Description
mgcp	Starts the MGCP daemon.
mgcp quarantine mode	Sets the parameters for handling SGCP call events in the quarantine buffer.

mgcp request retries

To specify the number of times to retry sending the **mgcp** command, use the **mgcp request retries** command in global configuration mode. To restore the default value, use the **no** form of this command.

mgcp request retries *count*

no mgcp request retries

Syntax Description	<i>count</i>	Specifies the number of times a Notify message is retransmitted to the call agent before the request is dropped. The valid range is 1 to 10.
---------------------------	--------------	--

Defaults	A Notify message is retransmitted 3 times.
-----------------	--

Command Modes	Global configuration
----------------------	----------------------

Command History	Release	Modification
	12.1(1)T	This command was introduced for the Cisco AS5300.
	12.1(3)T	Support for this command was extended to the Cisco 3660, Cisco uBR924, and Cisco 2600 series platforms.
	12.1(5)XM	Support for this command was extended to the Cisco MC3810 series platform.
	12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines	This command applies to a trunking gateway.
-------------------------	---

Examples	The following example configures the system to send the mgcp command 10 times before dropping the request:
-----------------	---

```
Router(config)# mgcp request retries 10
```

Related Commands	Command	Description
	mgcp request timeout	Specifies how long the system will wait for a reply to a request.
	mgcp	Starts the MGCP daemon.

mgcp request timeout

To specify how long the system waits for a response to a request, use the **mgcp request timeout** command in global configuration mode. To restore the default value, use the **no** form of this command.

mgcp request timeout *timeout*

no mgcp request timeout

Syntax Description	<i>timeout</i>	Specifies the number of milliseconds to wait for a response to a request. Valid range is 1 to 10,000 (10 seconds).
---------------------------	----------------	--

Defaults	500 milliseconds
-----------------	------------------

Command Modes	Global configuration
----------------------	----------------------

Command History	Release	Modification
	12.1(1)T	
12.1(3)T		Support for this command was extended to the Cisco 3660, Cisco uBR924, and Cisco 2600 series platforms.
12.1(5)XM		Support for this command was extended to the Cisco MC3810 series platform.
12.2(2)T		Support for this command was introduced on the Cisco 7200 routers.

Examples The following example sets the system to wait 40 milliseconds for a reply to a request:

```
Router(config)# mgcp request timeout 40
```

Related Commands	Command	Description
	mgcp request retries	Specifies the number of times to retry sending the mgcp command.
	mgcp	Starts the MGCP daemon.

mgcp restart-delay

To select the delay value sent in the RSIP graceful teardown, use the **mgcp restart-delay** command in global configuration mode. To restore the default value, use the **no** form of this command.

mgcp restart-delay *value*

no mgcp restart-delay

Syntax Description	<i>value</i>	Specifies the restart delay value in seconds. Valid range is from 0 to 600.
---------------------------	--------------	---

Defaults	0 seconds
-----------------	-----------

Command Modes	Global configuration
----------------------	----------------------

Command History	Release	Modification
	12.1(1)T	This command was introduced for the Cisco AS5300.
	12.1(3)T	Support for this command was extended to the Cisco 3660, Cisco uBR924, and Cisco 2600 series platforms.
	12.1(5)XM	Support for this command was extended to the Cisco MC3810 series platform.
	12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines	Use the restart value to send a restart in progress (RSIP) message indicating when the connection in the gateway will be torn down.
-------------------------	---

Examples	The following example shows how to set the restart delay to 30 seconds:
-----------------	---

```
Router(config)# mgcp restart-delay 30
```

Related Commands	Command	Description
	mgcp	Starts the MGCP daemon.
	mgcp max-waiting-delay	Specifies the MGCP maximum waiting delay (MWD) after a restart.

mgcp sgcp restart notify

To trigger the MGCP application to process SGCP-type RSIP messages, use the **mgcp sgcp restart notify** command in global configuration mode. Use the **no** form of this command to restore the default value.

mgcp sgcp restart notify

no mgcp sgcp restart notify

Syntax Description This command has no keywords or arguments.

Defaults No defaults

Command Modes Global configuration

Command History

Release	Modification
12.1(3)T	This command was introduced for the Cisco 3600 series router.
12.1(5)XM	This command was modified for MGCP and expanded to the Cisco MC3810 series platform.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines

This command is used to send RSIP (restart in progress) messages from the router to the SGCP call agent. The RSIP messages are used to indicate whether the T1 controller is up or down so that the call agent can synchronize with the router. RSIP messages are also sent when the **mgcp** command is entered, enabling the MGCP daemon.

Examples

The following example specifies that the system sends an RSIP notification to the SGCP call agent when the T1 controller state changes:

```
Router(config)# mgcp sgcp restart notify
```

Related Commands

Command	Description
mgcp	Starts the MGCP daemon.

mgcp timer

To configure how the gateway detects the RTP stream host, use the **mgcp timer** command in global configuration mode. Use the **no** form of this command to restore the default value.

```
mgcp timer { receive-rtcp timer | net-cont-test timer }
```

```
no mgcp timer { receive-rtcp | net-cont-test }
```

Syntax Description

receive-rtcp timer	Sets multiples of the RTCP transmission interval in milliseconds. The valid range is 1 to 100, and the default is 5. This parameter is valid only for VoIP calls.
net-cont-test timer	Sets the continuity test timeout in milliseconds. The valid range is 100 to 3000, and the default is 200. This parameter is valid for VoIP and VoAAL2 calls.
Note	This option was previously named rtp-nse .

Defaults

The RTCP transmission interval default is 5 milliseconds.

The continuity test timeout default is 200 milliseconds.

Command Modes

Global configuration

Command History

Release	Modification
12.0(5)T	This command was introduced as SGCP on the Cisco AS5300.
12.0(7)XK	Support for this command was extended to the Cisco MC3810 series and Cisco 3600 series routers (except for the Cisco 3620).
12.1(5)XM	The command was modified to support MGCP. The option rtp-nse was changed to net-cont-test . Functionality was not changed, only the option name.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines

receive-rtcp is the timer used by a gateway to disconnect a VoIP call when the IP connectivity is lost with the remote gateway. After receiving each packet from the remote gateway, the receiving gateway starts a timer for the *timer* period. If the timer expires before receiving the next packet from the remote gateway, the receiving gateway will disconnect the call and notify the call agent.

net-cont-test uses the terminating gateway to verify the network connectivity with the originating gateway before ringing the called party. To do this, the terminating gateway sends a command packet to the originating gateway and starts a timer for the *timer* period. If the timer expires before receiving any acknowledgement from the originating gateway, the terminating gateway will not ring the called party, will disconnect the call, and will alert the call agent.

Examples

The following example sets the receive-rtcp timer to 25 milliseconds:

```
Router(config)# mgcp timer receive-rtcp 25
```

The following example sets the net-cont-test timer to 1500 milliseconds (1.5 seconds):

```
Router(config)# mgcp timer net-cont-test 1500
```

Related Commands

Command	Description
mgcp	Starts the MGCP daemon.
mgcp modem passthrough mode	Sets the upspeed method for fax and modem calls.
mgcp tse payload	Sets the TSE payload for fax and modem calls.

mgcp tse payload

To specify the TSE payload value to be used during fax/modem passthrough and the network continuity test, use the **mgcp tse payload** command in global configuration mode. Use the **no** form of this command to restore the default value.

mgcp tse payload *value*

no mgcp tse payload

Syntax Description	<i>value</i>	Sets the TSE payload value. The valid range is 98 to 119. The default is 0, meaning the command is disabled.
---------------------------	--------------	--

Defaults	The default TSE payload value is 0.
-----------------	-------------------------------------

Command Modes	Global configuration
----------------------	----------------------

Command History	Release	Modification
	12.0(7)XK	This command was introduced for SGCP on the Cisco MC3810 series and Cisco 3600 series routers (except the Cisco 3620).
	12.1(5)XM	This command was modified for MGCP.
	12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines	<p>Because this command is disabled by default, you must specify a TSE payload type.</p> <p>If you configure the mgcp modem passthrough mode command to the nse value, then you must configure this command.</p>
-------------------------	--

Examples	<p>The following example illustrates setting the NSE mode for VoIP modem passthrough and setting the TSE payload:</p>
-----------------	---

```
Router(config)# mgcp modem passthrough voip mode nse
Router(config)# mgcp tse payload 100
```

Related Commands	Command	Description
	mgcp	Starts the MGCP daemon.
	mgcp modem passthrough mode	Sets the upspeed method for fax and modem messages.

mgcp vad

To set the default voice activity detection (VAD) parameter for MGCP, use the **mgcp vad** command in global configuration mode. To disable the VAD parameter, use the **no** form of this command.

mgcp vad

no mgcp vad

Syntax Description This command has no arguments or keywords.

Defaults Disabled

Command Modes Global configuration

Command History	Release	Modification
	12.1(1)T	This command was introduced for the Cisco AS5300.
	12.1(3)T	Support for this command was extended to the Cisco 3660, Cisco uBR924, and Cisco 2600 series platforms.
	12.1(5)XM	Support for this command was extended to the Cisco MC3810 series platform.
	12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines Use the MGCP voice activity detection (VAD) parameter to tell the MGCP gateway to turn silence suppression on or off.

If VAD is turned on, silence is not sent over the network, only audible speech. The sound quality will be slightly degraded but the connection will monopolize much less bandwidth.

Examples The following example shows how to turn silence suppression on:

```
Router(config)# mgcp vad
```

Related Commands	Command	Description
	mgcp	Starts the MGCP daemon.

mode (Voice over ATM)

To set the mode of the T1/E1 controller and enter specific configuration commands for each mode type, use the **mode** command in controller configuration mode. Use the **no** form of this command to restore the default mode of the controller.

```
mode { atm | cas }
```

```
no mode { atm | cas }
```

Syntax Description	atm	cas
	Sets the controller into ATM mode and creates an ATM interface on the router. When ATM mode is enabled, no channel groups, CAS groups, CCS groups, or clear channels are allowed because ATM occupies all the DS-0s on the T1/E1 trunk.	Sets the controller into channel-associated signaling (CAS) mode, which allows you to create channel groups, CAS groups, and clear channels (both data and CAS modes).
	When you set the controller to ATM mode, the controller framing is automatically set to ESF for T1 or CRC4 for E1. The linecode is automatically set to B8ZS for T1 or HDLC for E1. When you remove ATM mode by entering the no mode atm command, the ATM interface is deleted.	CAS mode is supported on both controllers 0 and 1.
	ATM mode is supported only on controller 0 (T1 or E1 0).	

Defaults No mode is configured.

Command Modes Controller configuration

Command History	Release	Modification
	11.3 MA	This command was introduced.
	12.1(5)XM	Support for this command was extended to the merged SGCP/MGCP software.
	12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines

When no mode is selected, channel groups and clear channels (data mode) can be created using the **channel-group** and **tdm-group** commands, respectively.

On the Cisco 7200 routers, some DS-0s are used exclusively for different signaling modes. The DS-0 channels have the following limitations when mixing different applications (such as voice and data) on the same network trunk:

- On E1 controllers, DS-0 16 is used exclusively for either CAS or CCS, depending on which mode is configured.
- On T1 controllers, DS-0 24 is used exclusively for CCS.

Examples

The following example configures ATM mode on controller T1 0 on a Cisco 7200 router. This step is required for Voice over ATM.

```
Router(config)# controller T1 1/0
Router(config-controller)# mode atm
```

The following example configures CAS mode on controller T1 1 of a Cisco 7200 router:

```
Router(config)# controller T1 1/1
Router(config-controller)# mode cas
```

Related Commands

Command	Description
channel-group	Defines the time slots that belong to each T1 or E1 circuit.
tdm-group	Configures a list of time slots for creating clear channel groups (pass-through) for TDM cross-connect.
voice-group	Configures a list of time slots for voice CAS on the T1/E1 controller.

session

To associate a transport session with a specified session-group use the **session** command in backhaul session manager configuration mode. It is assumed that the server is located on a remote machine. To delete the session, use the **no** form of this command.

```
session group group-name remote_ip remote_port local_ip local_port priority
```

```
no session group group-name remote_ip remote_port local_ip local_port priority
```

Syntax Description

<i>group-name</i>	Session-group name.
<i>remote_ip</i>	Remote IP address.
<i>remote_port</i>	Remote port number. Range is 1024 to 9999.
<i>local_ip</i>	Local IP address.
<i>local_port</i>	Local port number. Range is 1024 to 9999.
<i>priority</i>	Priority of the session-group. Range is 0 to 9999, and 0 is the highest priority.

Command Types

No default behavior or values

Command Modes

Backhaul session manager configuration

Command History

Release	Modification
12.1(1)T	This command was introduced.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Examples

The following example associates a transport session with the session-group named group5 and specifies the parameters described above:

```
Router(config-bsm) # session group group5 161.44.2.72 5555 172.18.72.198 5555 1
```

set

To create a fault-tolerant or non-fault-tolerant session-set with the client or server option, use the **set** command in backhaul session manager configuration mode. To delete the set, use the **no** form of this command.

```
set set-name {client | server} {ft | nft}
```

```
no set set-name {client | server} {ft | nft}
```

Syntax Description

<i>set-name</i>	Session-set name.
client	Client option. The session-set should only be configured as client for backhaul.
server	Server option.
ft	Fault-tolerant. Fault-tolerance is the level of ability within a system to operate properly even if a group in the set fails.
nft	Non-fault-tolerant. Only one group is allowed in a non-fault-tolerant set.

Defaults

No default behavior or values

Command Modes

Backhaul session manager configuration

Command History

Release	Modification
12.1(1)T	This command was introduced.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines

There can be multiple groups associated with a session-set.

The session-set should only be configured for the client for backhaul (not the server).

A set cannot be deleted unless the groups associated with the set are deleted first.

Examples

To specify the client set named set1 to fault-tolerant, see the following example:

```
Router(config-bsm)# set set1 client ft
```

show backhaul-session-manager group

To display the status, statistics, or configuration for all available session-groups, use the **show backhaul-session-manager group** command in privileged EXEC mode.

```
show backhaul-session-manager group {status | stats | cfg} {all | name group-name}
```

Syntax Description	Parameter	Description
	status	Displays the status for all available session-groups.
	stats	Displays the statistics for all available session-groups.
	cfg	Displays the configuration for all available session-groups.
	all	Displays specified parameters for all session-groups.
	name group-name	Specifies a particular session-group.

Defaults No default behavior or values

Command Modes Privileged EXEC

Command History	Release	Modification
	12.1(1)T	This command was introduced.
	12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Examples The following displays statistics for all session-groups:

```
Router# show backhaul-session-manager group stats all
Session-Group grp1 statistics
  Successful Fail-Overs      :0
  Un-Successful Fail-Over attempts:0
  Active Pkts receive count  :0
  Standby Pkts receive count :0
  Total PDUs dispatch err    :0
```

The following displays the current configuration for all session-groups:

```
Router# show backhaul-session-manager group cfg all
Session-Group
  Group Name :grp1
  Set Name   :set1
  Sessions   :3
  Dest:10.5.0.3 8304 Local:10.1.2.15 8304 Priority:0
  Dest:10.5.0.3 8300 Local:10.1.2.15 8300 Priority:2
  Dest:10.5.0.3 8303 Local:10.1.2.15 8303 Priority:2
  RUDP Options
    timer cumulative ack :100
    timer keepalive      :1000
    timer retransmit     :300
    timer transfer state :2000
    receive max          :32
```

■ show backhaul-session-manager group

```

cumulative ack max :3
retrans max       :2
out-of-sequence max :3
auto-reset max    :5

```

The following displays the current state of all session-groups. This group named grp1 belongs to the set named set1.

The Status will be either Group-OutOfService (no session in the group has been established) or Group-Inservice (at least one session in the group has been established).

The Status (use) will be Group-Standby (the VSC connected to the other end of this group will go into standby mode), Group-Active (the VSC connected to the other end of this group will be the active VSC), or Group-None (the VSC has not declared its intent yet).

```

Router# show backhaul-session-manager group status all
Session-Group
Group Name   :grp1
Set Name     :set1
Status       :Group-OutOfService
Status (use) :Group-None

```

Related Commands

Command	Description
show backhaul-session-manager set	Displays session-groups associated with a specific or all session-sets.
show backhaul-session-manager session	Displays status, statistics, or configuration of sessions.

show backhaul-session-manager session

To display various information for about a session or sessions, use the **show backhaul-session-manager session** command in privileged EXEC mode.

```
show backhaul-session-manager session {all | ip ip_address}
```

Syntax Description	all	All available sessions.
	ip	IP address.
	ip_address	The IP address of the local or remote session.

Defaults No default behavior or values

Command Modes Privileged EXEC

Command History	Release	Modification
	12.1(1)T	This command was introduced.
	12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Usage Guidelines In the **show backhaul-session-manager session** command output, the State can be:

- OPEN—The connection is established.
- OPEN_WAIT—The connection is awaiting establishment.
- OPEN_XFER—Session failover is in progress for this session, which is a transient state.
- CLOSE—This session is down, also a transient state.

The session will move to OPEN_WAIT after waiting a fixed amount of time.

The Use-status field indicates whether PRI signaling traffic is currently being transported over this session. The field can be:

- OOS—This session is not being used to transport signaling traffic. OOS does not indicate if the connection is established.
- IS—This session is being used currently to transport all PRI signaling traffic. IS indicates that the connection is established.

Examples

The following example displays information for all available sessions:

```
Router# show backhaul-session-manager session all

Session information --
Session-id:35
  Group:grp1 /*this session belongs to the group named 'grp1' */
Configuration:
  Local:10.1.2.15      , port:8303
  Remote:10.5.0.3     , port:8303
  Priority:2
  RUDP Option:Client, Conn Id:0x2
State:
  Status:OPEN_WAIT, Use-status:OOS, /*see explanation below */
Statistics:
  # of resets:0
  # of auto_resets 0
  # of unexpected RUDP transitions (total) 0
  # of unexpected RUDP transitions (since last reset) 0
  Receive pkts - Total:0 , Since Last Reset:0
  Recieve failures - Total:0 ,Since Last Reset:0
  Transmit pkts - Total:0, Since Last Reset:0
  Transmit Failures (PDU Only)
    Due to Blocking (Not an Error) - Total:0, Since Last Reset:0
    Due to causes other than Blocking - Total:0, Since Last
Reset:0
  Transmit Failures (NON-PDU Only)
    Due to Blocking(Not an Error) - Total:0, Since Last Reset:0
    Due to causes other than Blocking - Total:0, Since Last
Reset:0
  RUDP statistics
    Open failures:0
    Not ready failures:0
    Conn Not Open failures:0
    Send window full failures:0
    Resource unavailble failures:0
    Enqueue failures:0
```

Related Commands

Command	Description
show backhaul-session-manager set	Displays session-groups associated with a specific or all session-sets.
show backhaul-session-manager group	Displays status, statistics, or configuration of a specific or all session-groups.

show backhaul-session-manager set

To display session-groups associated with a specified session-set or all session-sets, use the **show backhaul-session-manager set** command in privileged EXEC mode.

```
show backhaul-session-manager set {all | name session-set-name}
```

Syntax Description

all	All available session-sets.
name session-set-name	A specified session-set.

Defaults

No default behavior or values

Command Modes

Privileged EXEC

Command History

Release	Modification
12.1(1)T	This command was introduced.
12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Examples

The following example displays session groups associated with all session-sets:

```
Router# show backhaul-session-manager set all
```

Related Commands

Command	Description
show backhaul-session-manager group	Displays status, statistics, or configuration of a specific or all session-groups.
show backhaul-session-manager session	Displays status, statistics, or configuration of a session or all sessions.

show mgcp

To display MGCP configuration information, use the **show mgcp** command in EXEC mode.

show mgcp [**connection** | **endpoint** | **statistics**]

Syntax Description	connection	(Optional) Displays the active MGCP-controlled connections.
	endpoint	(Optional) Displays the MGCP-controlled endpoints.
	statistics	(Optional) Displays MGCP statistics regarding received and transmitted network messages.

Defaults None

Command Modes EXEC

Command History	Release	Modification
	12.1(1)T	This command was introduced for the Cisco AS5300.
	12.1(3)T	Output was updated to show additional gateway and platform information.
	12.1(5)XM	Output was updated to show additional gateway and platform information.
	12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Examples Following is an example of the command outputs for the **show mgcp** command:

```
Router# show mgcp

MGCP Admin State ACTIVE, Oper State ACTIVE - Cause Code NONE
MGCP call-agent: 17.0.0.10 Initial protocol service is MGCP, v. 0.1
MGCP block-newcalls DISABLED
MGCP send RSIP for SGCP is DISABLED
MGCP quarantine mode discard/step
MGCP quarantine of persistent events is ENABLED
MGCP dtmf-relay for VoIP disabled for all codec types
MGCP dtmf-relay for VoAAL2 disabled for all codec types
MGCP voip modem passthrough mode: NSE, codec: g711ulaw, redundancy: DISABLED,
MGCP voaal2 modem passthrough mode: NSE, codec: g711ulaw
MGCP TSE payload: 100
MGCP Network (IP/AAL2) Continuity Test timer: 200
MGCP 'RTP stream loss' timer: 5
MGCP request timeout 500, MGCP request retries 3
MGCP gateway port: 2427, MGCP maximum waiting delay 3000
MGCP restart delay 0, MGCP vad DISABLED
MGCP simple-sdp ENABLED
MGCP undotted-notation DISABLED
MGCP codec type g711ulaw, MGCP packetization period 20
MGCP JB threshold lwm 30, MGCP JB threshold hwm 150
```

```

MGCP LAT threshold lwm 150, MGCP LAT threshold hwm 300
MGCP PL threshold lwm 1000, MGCP PL threshold hwm 10000
MGCP CL threshold lwm 1000, MGCP CL threshold hwm 10000
MGCP playout mode is adaptive 60, 4, 200 in msec
MGCP IP ToS low delay disabled, MGCP IP ToS high throughput disabled
MGCP IP ToS high reliability disabled, MGCP IP ToS low cost disabled
MGCP IP RTP precedence 5, MGCP signaling precedence: 3
MGCP default package: gm-package
MGCP supported packages: gm-package dtmf-package mf-package trunk-package
  line-package hs-package rtp-package ms-package dt-package
  mo-package
MGCP VoAAL2 ignore-lco-codec DISABLED

```

Field Name	Description
MGCP Admin State...Oper State	The administrative and operational state of the MGCP daemon. The administrative state controls starting and stopping the application using the mgcp and mgcp block-newcalls commands. The operational state controls normal MGCP operations.
MGCP call-agent	The address of the call agent specified in the mgcp command.
Initial protocol service is...	Indicates the protocol initiated for this session.
MGCP block-newcalls	The state of the mgcp block-newcalls command.
MGCP send RSIP for SGCP	The setting for the mgcp sgcp restart notify command.
MGCP quarantine mode	Indicates how the quarantine buffer is to handle SGCP events.
MGCP quarantine of persistent events	Indicates if SGCP persistent events will be handled by the quarantine buffer.
MGCP dtmf-relay	The setting for the mgcp dtmf-relay command.
MGCP voip modem passthrough	Indicates the settings for mode, codec, and redundancy from the commands mgcp modem passthrough mode , mgcp modem passthrough codec , and mgcp modem passthrough voip redundancy .
MGCP voaal2 modem passthrough	Indicates the settings for mode, codec, and redundancy from the commands mgcp modem passthrough mode and mgcp modem passthrough codec .
MGCP TSE payload	The setting for the mgcp tse payload command.
MGCP Network (IP/AAL2) Continuity Test timer	The setting for the net-cont-test option in the mgcp timer command .
MGCP 'RTP stream loss' timer	The setting for the receive-rtcp option in the mgcp timer command .
MGCP request timeout	The setting for the mgcp request timeout command.
MGCP request retries	The setting for the mgcp request retries command.
MGCP gateway port	The UDP port specification.
MGCP maximum waiting delay	The setting for the mgcp max-waiting-delay command.
MGCP restart delay	The setting for the mgcp restart-delay command.
MGCP vad	The setting for the mgcp vad command.
MGCP sdp simple	Indicates whether the simple SDP protocol is being used.
MGCP codec type	The setting for the mgcp codec command.
MGCP packetization period	The packetization period parameter setting for the mgcp codec command.

```
show mgcp
```

MGCP JB threshold lwm	The jitter buffer minimum threshold parameter setting for the mgcp quality-threshold command.
MGCP JB threshold hwm	The jitter buffer maximum threshold parameter setting for the mgcp quality-threshold command.
MGCP LAT threshold lwm	The latency minimum threshold parameter setting for the mgcp quality-threshold command.
MGCP LAT threshold hwm	The latency maximum threshold parameter setting for the mgcp quality-threshold command.
MGCP PL threshold lwm	The packet loss minimum threshold parameter setting for the mgcp quality-threshold command.
MGCP PL threshold hwm	The packet loss maximum threshold parameter setting for the mgcp quality-threshold command.
MGCP CL threshold lwm	The cell loss minimum threshold parameter setting for the mgcp quality-threshold command.
MGCP CL threshold hwm	The cell loss maximum threshold parameter setting for the mgcp quality-threshold command.
MGCP playout mode	The jitter buffer packet size type and size.
MGCP IP ToS low delay	The low-delay parameter setting for the mgcp ip-tos command.
MGCP IP ToS high throughput	The high-throughput parameter setting for the mgcp ip-tos command.
MGCP IP ToS high reliability	The high-reliability parameter setting for the mgcp ip-tos command.
MGCP IP ToS low cost	The low-cost parameter setting for the mgcp ip-tos command.
MGCP IP RTP precedence	The rtp precedence parameter setting for the mgcp ip-tos command.
MGCP signaling precedence	The signaling precedence parameter setting for the mgcp ip-tos command.
MGCP default package	The default-package parameter setting for the mgcp default-package command.
MGCP supported packages	The packages supported in this session.

The following example shows the output for VoIP connections:

```
Router# show mgcp connection
```

```
Endpoint  Call_ID(C) Conn_ID(I) (P)ort (M)ode (S)tate (C)odec (E)vent[SIFL] (R)esult[EA]
1. S0/DS1-0/1 C=103,23,24 I=0x8 P=16586,16634 M=3 S=4,4 C=5 E=2,0,0,2 R=0,0
2. S0/DS1-0/2 C=103,25,26 I=0x9 P=16634,16586 M=3 S=4,4 C=5 E=0,0,0,0 R=0,0
3. S0/DS1-0/3 C=101,15,16 I=0x4 P=16506,16544 M=3 S=4,4 C=5 E=2,0,0,2 R=0,0
4. S0/DS1-0/4 C=101,17,18 I=0x5 P=16544,16506 M=3 S=4,4 C=5 E=0,0,0,0 R=0,0
5. S0/DS1-0/5 C=102,19,20 I=0,6 P=16572,16600 M=3 S=4,4 C=5 E=2,0,0,2 R=0,0
6. S0/DS1-0/6 C=102,21,22 I=0x7 P=16600,16572 M=3 S=4,4 C=5 E=0,0,0,0 R=0,0
```

```
Total number of active calls 6
```

Field Name	Description
Endpoint	The endpoint for each call shown in the digital endpoint naming convention of slot number (S0) and digital line (DS1-0) number (1).
Call_ID(C)	The MGCP call ID sent by the call agent, the internal Call Control Application Programming Interface (CCAPI) call ID for this endpoint, and the peer call legs CCAPI call ID. (CCAPI is an API that provides call control facilities to applications.)
Conn_ID(I)	The connection ID generated by the gateway and sent in the ACK message.
(P)ort	The ports used for this connection. The first port is the local UDP port. The second port is the remote UDP port.
(M)ode	The call mode, where: 0—Indicates an invalid value for mode. 1—Indicates the gateway should only send packets. 2—Indicates the gateway should only receive packets. 3—Indicates the gateway can send and receive packets. 4—Indicates the gateway should neither send nor receive packets. 5—Indicates the gateway should place the circuit in loopback mode. 6—Indicates the gateway should place the circuit in test mode. 7—Indicates the gateway should use the circuit for network access for data. 8—Indicates the gateway should place the connection in network loopback mode. 9—Indicates the gateway should place the connection in network continuity test mode. 10—Indicates the gateway should place the connection in conference mode. All other values are used for internal debugging.
(S)tate	The call state. The values are used for internal debugging purposes.
(C)odec	The codec identifier. The values are used for internal debugging purposes.
(E)vent [SIFL]	Used for internal debugging.
(R)esult [EA]	Used for internal debugging.

The following example shows output for VoAAL2 connections:

```
Router# show mgcp connection
```

```
Endpoint Call_ID(C) Conn_ID(I) (V)cci/cid (M)ode (S)tate (C)odec (E)vent[SIFL] (R)esult[EA]
1. aaln/S1/1 C=1,11,12 I=0x2 V=2/10 M=3 S=4,4 C=1 E=3,0,0,3 R=0,0
```

```
Total number of active calls 1
```

Field Name	Description
Endpoint	The endpoint for each call shown in the digital endpoint naming convention of slot number (S0) and digital line (DS1-0) number (1).
Call_ID(C)	The MGCP call ID sent by the call agent, the internal Call Control Application Programming Interface (CCAPI) call ID for this endpoint, and the peer call legs CCAPI call ID. (CCAPI is an API that provides call control facilities to applications.)
Conn_ID(I)	The connection ID generated by the gateway and sent in the ACK message.
Vcci/cid	The VCCI and CID used for the VoAAL2 call.
(M)ode	The call mode, where: 0—Indicates an invalid value for mode. 1—Indicates the gateway should only send packets. 2—Indicates the gateway should only receive packets. 3—Indicates the gateway can send and receive packets. 4—Indicates the gateway should neither send nor receive packets. 5—Indicates the gateway should place the circuit in loopback mode. 6—Indicates the gateway should place the circuit in test mode. 7—Indicates the gateway should use the circuit for network access for data. 8—Indicates the gateway should place the connection in network loopback mode. 9—Indicates the gateway should place the connection in network continuity test mode. 10—Indicates the gateway should place the connection in conference mode. All other values are used for internal debugging.
(S)tate	The call state. The values are used for internal debugging purposes.
(C)odec	The codec identifier. The values are used for internal debugging purposes.
(E)vent [SIFL]	Used for internal debugging.
(R)esult [EA]	Used for internal debugging.

The following example shows output for VoIP and VoAAL2 statistics:

```
Router# show mgcp statistics

UDP pkts rx 8, tx 9
Unrecognized rx pkts 0, MGCP message parsing errors 0
Duplicate MGCP ack tx 0, Invalid versions count 0
CreateConn rx 4, successful 0, failed 0
DeleteConn rx 2, successful 2, failed 0
ModifyConn rx 4, successful 4, failed 0
DeleteConn tx 0, successful 0, failed 0
NotifyRequest rx 0, successful 4, failed 0
AuditConnection rx 0, successful 0, failed 0
AuditEndpoint rx 0, successful 0, failed 0
RestartInProgress tx 1, successful 1, failed 0
```

```

Notify tx 0, successful 0, failed 0
ACK tx 8, NACK tx 0
ACK rx 0, NACK rx 0
IP address based Call Agents statistics:
IP address 10.24.167.3, Total msg rx 8, successful 8, failed 0

```

Field Name	Description
UDP pkts rx, tx	The number of UDP packets transmitted and received by the gateway's MGCP application from the call agent.
Unrecognized rx pkts	The number of unrecognized UDP packets received by the MGCP application.
MGCP message parsing errors	The number of MGCP messages received with parsing errors.
Duplicate MGCP ack tx messages	The number of duplicate MGCP acknowledgment messages transmitted to the call agents.
Invalid versions count	The number of MGCP messages received with invalid MGCP protocols version.
CreateConn rx	The number of Create Connection (CRCX) messages received by the gateway, the number that were successful, and the number that failed.
DeleteConn rx	The number of Delete Connection (DLCX) messages received by the gateway, the number that were successful, and the number that failed.
NotifyRequest rx	The number of Notify Request (RQNT) messages received by the gateway, the number that were successful, and the number that failed.
AuditConnection rx	The number of Audit Connection (AUCX) messages received by the gateway, the number that were successful, and the number that failed.
AuditEndpoint rx	The number of Audit Endpoint (AUEP) messages received by the gateway, the number that were successful, and the number that failed.
RestartInProgress tx	The number of Restart in Progress (RSIP) messages transmitted by the gateway, the number that were successful, and the number that failed.
Notify tx	The number of Notify (NTFY) messages transmitted by the gateway, the number that were successful, and the number that failed.
ACK tx, NACK tx	The number of Acknowledgment and Negative Acknowledgment messages transmitted by the gateway.
ACK rx, NACK rx	The number of Acknowledgment and Negative Acknowledgment messages received by the gateway.
IP address based Call Agents statistics: IP address, Total msg rx	IP address of the call agent, the total number of MGCP messages received from that call agent, the number of messages that were successful, and the number of messages that failed.

```
show mgcp
```

The following example shows how endpoints are configured:

```
Router# show mgcp endpoint
```

ENDPOINT-NAME	V-PORT	SIG-TYPE	ADMIN
ds1-0/1@sblab116	0:1	fxs-gs	up
ds1-0/2@sblab116	0:1	fxs-gs	up
ds1-0/3@sblab116	0:1	fxs-gs	up
ds1-0/4@sblab116	0:1	fxs-gs	up
ds1-0/5@sblab116	0:1	fxs-gs	up
ds1-0/6@sblab116	0:1	fxs-gs	up
ds1-0/7@sblab116	0:1	fxs-gs	up
ds1-0/8@sblab116	0:1	fxs-gs	up
ds1-0/9@sblab116	0:1	fxs-gs	up
ds1-0/10@sblab116	0:1	fxs-gs	up
ds1-0/11@sblab116	0:1	fxs-gs	up
ds1-0/12@sblab116	0:1	fxs-gs	up
ds1-0/13@sblab116	0:1	fxs-gs	up
ds1-0/14@sblab116	0:1	fxs-gs	up
ds1-0/15@sblab116	0:1	fxs-gs	up
ds1-0/16@sblab116	0:1	fxs-gs	up
ds1-0/17@sblab116	0:1	fxs-gs	up
ds1-0/18@sblab116	0:1	fxs-gs	up
ds1-0/19@sblab116	0:1	fxs-gs	up
ds1-0/20@sblab116	0:1	fxs-gs	up
ds1-0/21@sblab116	0:1	fxs-gs	up
ds1-0/22@sblab116	0:1	fxs-gs	up
ds1-0/23@sblab116	0:1	fxs-gs	up
ds1-0/24@sblab116	0:1	fxs-gs	up

```
Interface T1 1
```

ENDPOINT-NAME	V-PORT	SIG-TYPE	ADMIN
ds1-1/1@sblab116	1:1	e&m-imd	up
ds1-1/2@sblab116	1:1	e&m-imd	up

Related Commands

Command	Description
mgcp	Starts the MGCP daemon.

show rudpv1

To display RUDP information, use the **show rudpv1** command in privileged EXEC mode.

show rudpv1 {failures | parameters | statistics}

Syntax Description	failures	RUDP failure statistics.
	parameters	RUDP connection parameters.
	statistics	RUDP internal statistics.

Defaults No default behavior or values

Command Modes Privileged EXEC

Command History	Release	Modification
	12.1(1)T	This command was introduced.
	12.2(2)T	Support for this command was introduced on the Cisco 7200 routers.

Examples The following example shows output for **show rudpv1 failures**:

```
Router# show rudpv1 failures

**** RUDPV1 Failure Stats ****

CreateBufHdrsFailure      0
CreateConnRecsFailure     0
CreateEventQueueFailure   0
OsSpecificInitFailure     0

NotReadyFailures         0
OptionNotSupportedFailures 0
InvalidOptionFailures     0
OptionRequiredFailures   0
GetConnRecFailures       0
InvalidConnFailures       0
EventUnavailFailures     0

GetConnRecFailures       0
FindConnRecFailures      0
EmptyBufferSendFailures  0
BufferTooLargeFailures   0
ConnNotOpenFailures      0
SendWindowFullFailures   0
GetBufHdrSendFailures    0

SendInProgressFailures   0

GetDataBufFailures       0
```

```
show rudpv1
```

```
GetBufHdrFailures      0
SendFailures           0
SendEackFailures       0
SendAckFailures        0
SendSynFailures        0
SendRstFailures        0
SendTcsFailures        0
SendNullFailures       0

TimerFailures          0
ApplQueueFailures     0
FailedRetransmits      0
IncomingPktsDropped    0
CksumErrors            0
UnknownRudpv1Events    0
InvalidVersion         0
InvalidNegotiation     0
```

The following example shows output for **show rudpv1 parameters**:

```
Router# show rudpv1 parameters
```

```
*** RUDPv1 Connection Parameters ***
```

```
Next Connection Id:61F72B6C, Remote conn id 126000
```

```
Conn State      OPEN
Conn Type       ACTIVE
Accept Negot params? Yes
Receive Window  32
Send Window     32
Receive Seg Size 384
Send Seg Size   384

                Requested   Negotiated
Max Auto Reset  5             5
Max Cum Ack     3             3
Max Retrans     2             2
Max OutOfSeq    3             3
Cum Ack Timeout 100            100
Retrans Timeout 300            300
Null Seg Timeout 1000           1000
Trans State Timeout 2000          2000
Cksum type      Hdr             Hdr
```

```
Next Connection Id:61F72DAC, Remote conn id 126218
```

```
Conn State      OPEN
Conn Type       ACTIVE
Accept Negot params? Yes
Receive Window  32
Send Window     32
Receive Seg Size 384
Send Seg Size   384

                Requested   Negotiated
Max Auto Reset  5             5
Max Cum Ack     3             3
Max Retrans     2             2
Max OutOfSeq    3             3
Cum Ack Timeout 100            100
```

Retrans Timeout	300	300
Null Seg Timeout	1000	1000
Trans State Timeout	2000	2000
Cksum type	Hdr	Hdr

The following example shows output for **show rudpv1 statistics**:

```
Router# show rudpv1 statistics
```

```
*** RUDPV1 Internal Stats ***
```

```
Connection ID:63B5E240, Current State:OPEN
```

RcvdInSeq	31
RcvdOutOfSeq	0
AutoResets	0
AutoResetsRcvd	0
TotalPacketsSent	208
TotalPacketsReceived	216
TotalDataBytesSent	404
TotalDataBytesReceived	496
TotalDataPacketsSent	26
TotalDataPacketsReceived	31
TotalPacketsRetrans	0
TotalPacketsDiscarded	0

```
Cumulative RudpV1 Statistics
```

NumCurConnections	1
RcvdInSeq	504
RcvdOutOfSeq	0
AutoResets	0
AutoResetsRcvd	0
TotalPacketsSent	5575
TotalPacketsReceived	3247
TotalDataBytesSent	6426
TotalDataBytesReceived	8493
TotalDataPacketsSent	390
TotalDataPacketsReceived	504
TotalPacketsRetrans	0
TotalPacketsDiscarded	0

Glossary

Backhaul—A scheme where telephony signaling is reliably transported from a gateway to a Media Gateway Controller across a packet switched network.

BGW—see Business Gateway

Business Gateway—An xGCP media gateway, which is a business customer premises equipment that has connections to the VoIP network as well as connections to the user's telephony equipment (typically a PBX, a corporate LAN or WAN). Such gateways are used to eliminate or reduce the need for individual medium (voice, data, and so forth) connectivity.

CA—see Call Agent

Call Agent—An intelligent entity in an IP telephony network that handles call control in an MGCP model Voice over IP network.

CAS—Channel Associated Signaling

CCS—Common Channel Signaling

CID—AAL2 Channel Identifier

CLASS—Custom Local Area Subscriber Services, usually referred to as “Custom Calling” features

DS-0—64 kbps channel in a T1/E1 line

DTMF—Dual Tone Multi-frequency

E&M—Ear and Mouth analog signaling

Fault Tolerance—The level of ability within a system to operate properly even if errors occur.

FXO—Foreign Exchange Operator—An interface from a telephone to a PSTN central office or a station interface on a PBX.

FXS—Foreign Exchange Station—An interface that connects to a telephone, key set, or PBX to supply ring, voltage, and dial tone.

Layer 1—This describes the Physical Layer of the OSI Reference Model defined in ITU X.200. It is responsible for the electric signal being sent and received. This can be viewed as a bit stream coming in, and going out, of the system. Scope must be considered when using this term. For example, Layer 1 on a T1 is 1.544 Mbps but Layer 1 on a DS-0 time slot in the T1 is 64 kbps.

Layer 2—This describes the Datalink Layer of the OSI Reference Model defined in ITU X.200. It is responsible for point-to-point delivery of a PDU. Layer 2 protocols have two basic classes: reliable (meaning delivery is guaranteed or an error is reported) and unreliable (meaning delivery may not occur with no indication to the upper layers).

Layer 3—This describes the Network Layer of the OSI Reference Model defined in ITU X.200. It is responsible for the network routing and delivery of a message. Examples of Layer 3 protocols include X.25 Packet Layer Protocol and the Internet Protocol. Q.931 is not considered a Layer 3 protocol because it is not concerned with routing and delivery of a message but rather the message body itself.

Media Gateway—Equipment that connects the PSTN or a PBX with the VoIP network. It is controlled by a call agent via MGCP.

MGC—Media Gateway Controller. Another name for Call Agent.

MGCP—Media Gateway Control Protocol

MGC Switchover—The rerouting of signaling traffic by the signaling gateway as required (and requested by the MGCs) between related MGCs in the event of failure or unavailability of the currently used MGC. The traffic is rerouted from the primary MGC to the back-up MGC.

NFAS—Non-Facility Associated Signaling—This is a classification of signaling protocols that provide the signaling channel in a separate physical line from the bearer channels.

Package—A set of signals and events that define a type of voice endpoint or connection. Examples include line-package, trunk-package, dtmf-package, and atm-package. See the commands [mgcp default-package, page 66](#) and [mgcp package-capability, page 76](#), for more information on using these packages.

PDU—Protocol Data Unit. OSI term for packet.

PRI—ISDN primary rate interface

PSTN—Public Switched Telephone Network

PVC—Permanent Virtual Circuit

Q.931—Q Signaling. An inter-PBX signaling protocol for networking PBX supplementary services in a multi- or uni-vendor environment.

Residential Gateway—An xGCP media gateway, which is customer premises equipment that has connections to the VoIP network as well as connections to user's telephony equipment.

RGW—see Residential Gateway

RTCP—RTP Control Protocol. The protocol monitors an RTP connection and conveys information about the on-going session.

RTP—Real-Time Transport Protocol. The protocol provides end-to-end network transport functions for applications transmitting real-time data and services such as payload type identification, sequence numbering, timestamping, and delivery monitoring.

RUDP—Cisco Reliable UDP

Session—A session is an RUDP connection between two endpoints. An endpoint is defined by the IP address and the UDP port.

Session-Group—A session-group is a logically ordered list of sessions based on priority of the sessions. All of the sessions in the session-group *must* be configured to connect the same physical machines.

Session-Manager—Manages all the sessions in a specific client.

Session-Set—A collection of session-groups.

SG—Signaling Gateway. A Signaling Gateway transmits and receives PSTN signaling at the edge of IP/ATM network. It backhauls the signaling to a Media Gateway Controller. The Signaling Gateway function may be co-resident with the Media Gateway function to process signaling associated with line or trunk terminations controlled by the Media Gateway.

SGCP—Simple Gateway Control Protocol

SPVC—Soft Permanent Virtual Circuit

SS7—Signaling System 7. SS7 defines the procedures for the set-up, ongoing management, and subsequent clearing of calls between telephone users. It performs these functions by exchanging telephone control messages between SS7 components that support the end-user's connection.

SVC—Switched Virtual Circuit

TGW—see Trunking Gateway

Trunking Gateway—An xGCP media gateway that provides connectivity between the PSTN and VoIP networks.

TSE—Inband Telephony Signaling Events

VAD—Voice Activity Detection

VoIP—Voice over IP. The ability to carry normal telephone-style voice over an IP-based internet with POTS-like functionality, reliability, and voice quality.

VSC—Virtual Switch Controller. The Cisco VSC3000 is an intelligent call agent with universal protocol support. Functioning as a “soft switch,” the Cisco VSC3000 controls the packet telephony network by directing calls across broadband, multi-service packet infrastructures. As a primary component within the Cisco Open Packet Telephony architecture, it utilizes open and widely recognized industry-standard protocols and interfaces.

VToA—Voice Trunking on ATM