



MGCP VoIP Call Admission Control

Document Update Alert

This document was originally produced for Cisco IOS Release 12.2(11)T. This feature has been updated in subsequent releases, and more recent documentation is available.

If you are using Cisco IOS Release 12.2(11)T or higher, refer to the following documentation in the *Trunk Connections and Conditioning Features* guide, Cisco IOS Voice Configuration Library, Release 12.3:

- [Configuring MGCP VoIP Call Admission Control](#)
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Feature History

Release	Modification
12.2(2)XB	This feature was introduced on the Cisco 2650, Cisco 3660, and Cisco MC3810.
12.2(8)T	This feature was integrated into Cisco IOS Release 12.2(8)T on the Cisco 2650, Cisco 3660, and Cisco MC3810. Support was added for the Cisco 2600 series, the Cisco 3620, the Cisco 3640, and the Cisco IAD2420.
12.2(11)T	This feature was implemented on the Cisco AS5350, Cisco AS5400, and Cisco AS5850.

This document describes the MGCP VoIP Call Admission Control feature. It includes the following sections:

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Feature Overview

The MGCP VoIP Call Admission Control feature enables certain Cisco Call Admission Control (CAC) capabilities on Voice over IP (VoIP) networks that are managed by Media Gateway Control Protocol (MGCP) call agents. These capabilities permit the gateway to identify and gracefully refuse calls that are susceptible to poor voice quality.

Poor voice quality on an MGCP voice network can result from transmission artifacts such as echo, from the use of low quality codecs, from network congestion and delay, or from overloaded gateways. The first two causes can be overcome by using echo cancellation and better codec selection. The last two causes are addressed by MGCP VoIP CAC.

Before the release of MGCP VoIP CAC, MGCP voice calls were often established regardless of the availability of resources for those calls in the gateway and the network. MGCP VoIP CAC ensures resource availability by disallowing calls when gateway and network resources are below configured thresholds and by reserving guaranteed bandwidth throughout the network for each completed call.

MGCP VoIP CAC has three components for improving voice quality and reliability:

- System Resource Check (SRC) CAC evaluates memory and call resources local to the gateway. It is supported on MGCP 1.0 and MGCP 0.1.
- Resource Reservation Protocol (RSVP) CAC surveys bandwidth availability on the network. It is supported on MGCP 1.0 and MGCP 0.1.
- Cisco Service Assurance Agent (SA Agent) CAC appraises network congestion conditions on the network. It is supported only on MGCP 1.0.



Note SA Agent was called Response Time Reporter (RTR) in earlier Cisco IOS software releases.

If all three CAC types are configured on a gateway, the gateway checks resources in this order:

1. SRC CAC
2. RSVP CAC
3. SA Agent CAC

If any resource check fails, the call fails and no further checks are performed. When the call fails, the gateway refuses to accept it.

MGCP VoIP CAC supports several types of calls:

- All platforms:
 - Regular two-way calls
 - One-direction voice path calls
 - CAS PBX calls, both immediate-start and wink-start
 - NSE-based audible ringback calls
- Cisco IAD2420, Cisco 2600 series, Cisco 3620, Cisco 3640. and Cisco MC3810 only:
 - Three-way calls
 - Call-waiting calls
- Cisco 3660 only:
 - SS7/ISUP calls
 - 911 calls

Fax/modem passthrough and fax/modem relay are not supported in MGCP VoIP CAC.

**Note**

MGCP VoIP CAC is not supported on the NCS 1.0 and TGCP 1.0 profiles of MGCP 1.0.

SRC CAC

When a call agent attempts to set up or modify a call, SRC CAC measures available local resources on the gateway and compares them to the thresholds for those resources that are configured by the user. In the event that one or more resources are beyond their thresholds, SRC CAC notifies the call agent of the results and refuses the call. If resources are within bounds and a call is subsequently established, local resources are guaranteed for the duration of the call.

SRC CAC checks these gateway thresholds, as configured by the user:

- CPU usage: both finest CPU utilization and average CPU utilization
- Memory usage, including I/O memory, process memory, and total memory
- Total calls allowed on the gateway

If several types of thresholds are configured on the gateway, the gateway checks them in sequence to determine if sufficient resources are available to continue setting up the call.

**Note**

Network access server data calls are not counted by SRC in the total call calculations.

When the gateway sends an *unavailable* condition to the call agent, the call agent takes responsibility for the type of treatment to attach to the call attempt. The call agent may choose to handle such situations by rerouting the call, playing an announcement that the call cannot be completed, playing special tones, or sending the call back to take a different path. Once resources become available again, the gateway resumes the acceptance of new calls.

RSVP CAC

MGCP RSVP CAC determines if sufficient bandwidth exists across the IP network to accept a call and refuses the call if end-to-end bandwidth is not available.

To accept a call, MGCP RSVP CAC checks for and reserves the network bandwidth between the originating gateway and the terminating gateway before attempting to complete the call. If sufficient bandwidth is not available or cannot be reserved, the gateway alerts the call agent to this condition and the call agent applies a previously configured treatment to the refused call (plays an announcement or special tones, or sends the call back to take a different path).

RSVP is an out-of-band, end-to-end signaling protocol that requests a certain amount of bandwidth and latency with each network hop that supports RSVP. If a network node (router) does not support RSVP, RSVP moves on to the next hop. A network node has the option to approve or deny the reservation on the basis of the load of the interface to which the service is requested.

A voice call triggers two RSVP reservations because the reservation and admission control mechanisms provided by RSVP are unidirectional. Each voice gateway is responsible for initiating and maintaining one reservation toward the other voice gateway. RSVP CAC for a VoIP call fails if at least one of the reservations fails.

Cisco VoIP CAC applications use RSVP to limit the accepted voice load on the IP network and guarantee the quality of service (QoS) levels of calls. RSVP CAC synchronizes RSVP signaling with the call setup signaling protocol (MGCP, in this case) to ensure that the bandwidth reservation is established in both directions before a call moves to the alerting phase (ringing). This ensures that the called-party phone rings only after the resources for the call have been reserved. Using RSVP-based admission control, VoIP applications can reserve network bandwidth and react appropriately if bandwidth reservation fails.

SA Agent CAC

The Cisco SA Agent is a Cisco IOS feature that allows users to monitor network performance and congestion between a Cisco router and a remote device, which can be another Cisco router, an IP host, or a multiple virtual storage (MVS) host. Performance can be measured for real-world scenarios through the configuration of SA Agent operations that are executed periodically. Performance metrics include round-trip response time, connect time, packet loss, application performance, and inter-packet delay variance (jitter). The SA Agent feature allows users to receive notifications and perform troubleshooting and problem analysis on the basis of the statistics collected by the SA Agent.

**Note**

SA Agent was called Response Time Reporter (RTR) in earlier releases of Cisco IOS software.

SA Agent probes traverse the network to a given IP destination and measure the loss and delay characteristics of the network along the path traveled. These values are returned to the outgoing gateway to use in making a decision on the condition of the network and its ability to carry a voice call. SA Agent probes do not provide any bandwidth information, either configured or available. However, if bandwidth across a link anywhere in the path that the voice call will follow is oversubscribed, it is reasonable to assume that the packet delay and loss values that the probe returns will indeed reflect this condition, even if indirectly. The SA Agent protocol is a client/server protocol defined on User Datagram Protocol (UDP). The client builds and sends the probe, and the server (previously the RTR Responder) returns the probe to the sender.

SA Agent probe delay and loss information is used in calculating a single value that can be used as a gauge of network impairment and as a threshold for CAC decisions.

Benefits

MGCP VoIP CAC helps address QoS issues surrounding local resources, bandwidth constraints, and network resources by:

- Preserving the quality of existing calls.
- Ensuring sufficient resources to provide an adequate level of service to new calls.

Restrictions

- MGCP VoIP CAC is not supported on the NCS 1.0 and TGCP 1.0 profiles of MGCP 1.0.
- Fax/modem pass-through and fax/modem relay are not supported in MGCP VoIP CAC.
- The call agent has responsibility for treating calls that have been refused by the gateway because of insufficient resources.

- MGCP VoIP CAC does not attempt to identify the network element that is causing the resource problem. Calls may be successful if they are routed around the congested or unavailable network element.
- MGCP VoIP CAC does not support the classification of calls into different priority levels, also referred to as policy control.
- MGCP VoIP CAC does not address maintenance capabilities, such as bringing an out-of-service trunk back into service or handling lost communication with a call agent, even though such capabilities impact call processing resources.
- On routers that accept both voice and data calls, SRC CAC does not count data calls in its calculation of total calls.
- SA Agent CAC is not supported on the MGCP 0.1 protocol.

Related Features and Technologies

VoIP

Related Documents

MGCP

- [MGCP 1.0 Including NCS 1.0 and TGCP 1.0 Profiles](#), Cisco IOS Release 12.2(4)T (Note that MGCP VoIP CAC is not supported on the NCS 1.0 and TGCP 1.0 profiles of MGCP 1.0.)
- [MGCP CAS PBX and AAL2 PVC](#), Cisco IOS Release 12.2(2)T
- “[Configuring Media Gateway Control Protocol and Related Protocols](#)” chapter in the [Cisco IOS Voice, Video, and Fax Configuration Guide](#), Release 12.2

VoIP

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

SRC CAC

- [Call Admission Control for H.323 VoIP Gateways](#), Cisco IOS Release 12.2(4)T

RSVP CAC

- “[Signaling Overview](#)” chapter in the “[Signaling](#)” part of the [Cisco IOS Quality of Service Solutions Configuration Guide](#), Release 12.2
- **fair-queue (WFQ)** command reference entry in the [Cisco IOS Quality of Service Solutions Command Reference](#), Release 12.2

SA Agent CAC

- “[Network Monitoring Using Cisco Service Assurance Agent](#)” chapter in the “[System Management](#)” part of the [Cisco IOS Configuration Fundamentals Configuration Guide](#), Release 12.2
- “[VoIP Call Admission Control](#)” chapter in the [Cisco Voice over IP Solutions](#) guide

- “Configuring PSTN Fallback” section in the “Configuring Trunk Connections and Conditioning Features” chapter of the *Cisco IOS Voice, Video, and Fax Configuration Guide*, Release 12.2

Supported Platforms

- Cisco 2650
- Cisco 3620
- Cisco 3640
- Cisco 3660
- Cisco AS5350
- Cisco AS5400
- Cisco AS5850
- Cisco IAD2420
- Cisco MC3810

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

- MGCP 0.1, November 1998 (Note that SA Agent CAC is not supported on the MGCP 0.1 protocol.)

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

- Informational RFC 2705: *Media Gateway Control Protocol (MGCP) version 1.0*, October 1999
- Informational RFC 3064: *MGCP CAS Packages*, February 2001

Prerequisites

Complete the following tasks before configuring this feature:

- Ensure that the minimum software requirements are met. For all platforms: Cisco IOS Release 12.2(2)XB or a later release.
- Configure IP routing. Refer to the *Cisco IOS IP Configuration Guide*, Release 12.2.
- Configure voice ports. Refer to the *Cisco IOS Voice, Video, and Fax Configuration Guide*, Release 12.2.
- Configure Voice over IP. Refer to the *Cisco IOS Voice, Video, and Fax Configuration Guide*, Release 12.2.
- Set up the call agent or agents. Refer to the documentation that accompanies the call agent.
- Refer to the other documents listed in the “[Related Documents](#)” section on page 5 for information on configuring other MGCP, SRC, RSVP, and SA Agent parameters.

Configuration Tasks

See the following sections for configuration tasks for the MGCP VoIP Call Admission Control feature. Each task in the list is identified as either required or optional. You can configure any combination of the optional tasks.

Note that SRC CAC and SA Agent CAC are configured on the gateway. The call agent controls RSVP CAC, but the gateway needs to be configured with appropriate bandwidth to support RSVP CAC messages.

- [Configuring MGCP for Call Admission Control](#) (required)
- [Configuring MGCP SRC CAC](#) (optional)
- [Configuring MGCP RSVP CAC](#) (optional)
- [Configuring MGCP SA Agent CAC](#) (optional)

Configuring MGCP for Call Admission Control

Only the **mgcp** command and the **mgcp call-agent** command are required to configure MGCP on a gateway. Other commands may be used to fine-tune the MGCP application. They are described in the documents listed in the “[Related Documents](#)” section on page 5.

To configure MGCP for CAC, use the following commands in global configuration mode:

	Command	Purpose
Step 1	Router(config)# mgcp [<i>gw-port</i>]	Starts and allocates resources for the MGCP daemon. The argument is as follows: <ul style="list-style-type: none"> <i>gw-port</i>—(Optional) Specifies a UDP port for the MGCP gateway. Valid values are 1025 through 65,535.
Step 2	Router(config)# mgcp call-agent { <i>dns-name</i> <i>ip-address</i> } [<i>ca-port</i>] [service-type <i>type</i>] [version <i>protocol-version</i>]	Configures the MGCP call agent and service type. The keywords and arguments are as follows: <ul style="list-style-type: none"> <i>dns-name</i>—Fully qualified domain name (including host portion) for the call agent. For example, <i>ca123.example.net</i>. <i>ip-address</i>—IP address for the call agent. <i>ca-port</i>—(Optional) UDP port number over which the gateway sends messages to the call agent. Range is from 1025 to 65,535. service-type <i>type</i>—(Optional) Protocol service type. The only valid value for MGCP CAC is mgcp. version <i>protocol-version</i>—(Optional) The only valid values for MGCP CAC are 0.1 and 1.0. <p>The default call-agent UDP port is 2727 for MGCP 1.0.</p> <p>The default call-agent UDP port is 2427 for MGCP 0.1.</p> <p>The default service type and version is mgcp 0.1.</p>
Step 3	Router(config)# mgcp package-capability <i>package</i>	(Optional) Enables availability of the specified MGCP package on the gateway. Repeat this command for each additional package that you want to make available to the gateway. <p>The range of packages that you can select from depends on your platform and the type of gateway that you are configuring. Use command-line help to determine available packages by entering the following command in global configuration mode: mgcp package-capability ?</p>
Step 4	Router(config)# mgcp default-package <i>package</i>	(Optional) Defines the default package to be used for MGCP signaling.

Configuring MGCP SRC CAC

To determine if the local gateway has sufficient resources to handle voice calls, MGCP SRC CAC checks those resources against the thresholds that you specify in this configuration task. The commands listed here are the minimum required to configure MGCP SRC CAC. Other commands to fine-tune SRC CAC are described in the SRC CAC document listed in the [“Related Documents” section on page 5](#).


Note

Network access server data calls are not counted by SRC in the total calls calculations.

To set thresholds and enable MGCP SRC CAC, use the following commands in global configuration mode:

Command	Purpose
Step 1 Router(config)# call threshold global <i>trigger-name low value high value treatment</i>	<p>Enables a resource and defines its parameters. Treatment of attempted calls is enabled when the resource cost goes beyond the high value. Treatment is not disabled until the resource cost drops below the low value. The arguments and keywords are as follows:</p> <ul style="list-style-type: none"> • <i>trigger-name</i>—One of the following: <ul style="list-style-type: none"> – cpu-5sec—CPU utilization for previous 5 seconds. – cpu-avg—Average CPU utilization. – io-mem—I/O memory utilization. – proc-mem—Processor memory utilization. – total-calls—Total number of calls. – total-mem—Total memory utilization. • low value—Low threshold: ranges from 1 to 100 (%) for utilization triggers and from 1 to 10,000 (calls) for total-calls. • high value—High threshold: ranges from 1 to 100 (%) for utilization triggers and from 1 to 10,000 (calls) for total-calls. • treatment—A call treatment is to be applied by the call agent when the resource is not available. <p>If network conditions rise above the high threshold value, SRC rejects the call by sending the call agent an MGCP error message with the return code 403. The call agent applies a treatment to the rejected call.</p> <p>Note Error code 403 was originally numbered 502.</p>

	Command	Purpose
Step 2	Router(config)# call threshold poll-interval [cpu-avg number memory number]	(Optional) Establishes a testing period length for the CPU or memory. The keywords and arguments are as follows: <ul style="list-style-type: none"> • cpu-avg number—(Optional) CPU average interval. Range is from 1 to 60 seconds. • memory number—(Optional) Memory average interval. Range is from 1 to 60 seconds. The default value for cpu-average is 60 seconds. The default value for memory is 5 seconds.
Step 3	Router(config)# mgcp src-cac	Enables SRC CAC on the MGCP gateway.

Configuring MGCP RSVP CAC

MGCP RSVP CAC configuration requires the synchronization of the call setup signaling and the RSVP signaling. This synchronization guarantees that the called-party phone rings only after the resources for the call have been reserved. This synchronization also gives voice gateways the control of what action to take before the call setup moves to the alerting stage if the reservation fails or cannot be completed within a predefined period of time.

A timer can be set by using the **call rsvp-sync resv-timer** command to limit the number of seconds for which the terminating gateway waits for bandwidth reservation setup before proceeding with the call setup or releasing the call, depending on the QoS level configured in the dial peers. The timer defaults to 10 seconds.

Enable RSVP on the appropriate interfaces on your gateway by using the **ip rsvp bandwidth** interface configuration command. You must also enable fair queueing on these interfaces by using the **fair-queue** interface configuration command. For information about enabling RSVP and fair queueing, refer to the **fair-queue (WFQ)** command reference entry in the *Cisco IOS Quality of Service Solutions Command Reference*, Release 12.2.

The commands listed here are the minimum required to configure MGCP RSVP CAC. Other commands to fine-tune RSVP CAC are described in the RSVP CAC document listed in the “[Related Documents](#)” section on page 5.

To configure MGCP RSVP CAC on a media gateway, use the following commands, beginning in global configuration mode:

	Command	Purpose
Step 1	Router(config)# call rsvp-sync	Enables synchronization between RSVP and the call setup signaling protocol.
Step 2	Router(config)# call rsvp-sync resv-timer seconds	(Optional) Adjusts the timer for reservation requests. The default is 10 seconds.
Step 3	Router(config)# interface type[number]	Configures an interface type and enters interface configuration mode.

Command	Purpose
Step 4 Router(config-if)# ip rsvp bandwidth [<i>interface-kbps</i> [<i>single-flow-kbps</i>]]	Enables RSVP for IP on an interface. RSVP is disabled by default. The arguments are as follows: <ul style="list-style-type: none"> • <i>interface-kbps</i>—(Optional) Maximum amount of bandwidth, in kbps, that may be allocated by RSVP flows. The range is from 1 to 10,000,000. • <i>single-flow-kbps</i>—(Optional) Maximum amount of bandwidth, in kbps, that may be allocated to a single flow. The range is from 1 to 10,000,000.
Step 5 Router(config-if)# fair-queue [<i>congestive-discard-threshold</i> [<i>dynamic-queues</i> [<i>reservable-queues</i>]]]	(Optional) Enables weighted fair queueing (WFQ) for an interface. The arguments are as follows: <ul style="list-style-type: none"> • <i>congestive-discard-threshold</i>—(Optional) Number of messages allowed in each queue. The default is 64 messages, and a new threshold must be a power of 2 in the range 16 to 4096. When a conversation reaches this threshold, new message packets are discarded. • <i>dynamic-queues</i>—(Optional) Number of dynamic queues used for best-effort conversations (that is, a normal conversation that does not require any special network services). Values are 16, 32, 64, 128, 256, 512, 1024, 2048, and 4096. • <i>reservable-queues</i>—(Optional) Number of reservable queues used for reserved conversations in the range 0 to 1000. The default is 0. Reservable queues are used for interfaces that are configured for features such as RSVP.
Step 6 Router(config-if)# exit	Exits interface configuration mode.

Configuring MGCP SA Agent CAC

The Cisco SA Agent is an application-aware synthetic operation agent that monitors network performance by measuring response time, network resource availability, application performance, jitter (interpacket delay variance), connect time, throughput, and packet loss. Performance can be measured between any Cisco device that supports this feature and any remote IP host (server), Cisco routing device, or mainframe host. Performance measurement statistics provided by this feature can be used for troubleshooting, for problem analysis, and for designing network topologies.

The SA Agent Responder that is enabled using the **rtr responder** command is a component embedded in the target Cisco routing device that allows the system to anticipate and respond to SA Agent request packets. The responder can listen on any user-defined port for UDP and TCP protocol messages. In a client/server terminology, the SA Agent Responder is a Concurrent Multiservice Server.

The commands listed here are the minimum required to configure MGCP SA Agent CAC. Other commands to fine-tune SA Agent CAC are described in the SA Agent CAC documents listed in the [“Related Documents” section on page 5](#).



Note

The Cisco SA Agent feature is an expansion of the Response Time Reporter (RTR) feature introduced in Cisco IOS Release 11.2. SA Agent retains the use of the RTR acronym in many of the configuration commands and for the configuration mode used to configure SA Agent operations. RTR is also used throughout the command-line interface (CLI) in the output of help and show commands.

To configure MGCP SA Agent CAC, use the following commands in global configuration mode:

	Command	Purpose
Step 1	Router(config)# call fallback active	Enables a call request to fall back to alternate dial peers in case of network congestion.
Step 2	Router(config)# mgcp rtrcac	Enables MGCP SA Agent CAC.
Step 3	Router(config)# rtr responder	Enables the SA Agent Responder functionality on a Cisco device.

Verifying the MGCP VoIP CAC Configuration

To verify the configuration settings, perform the following steps:

- Step 1** Display the current configuration settings using the **show running-config** privileged EXEC command.
- Step 2** Display the MGCP configuration information using the **show mgcp** privileged EXEC command. The command output indicates whether MGCP VoIP SA Agent CAC and SRC CAC are enabled or disabled.

```
Router# show mgcp
```

```
MGCP Admin State ACTIVE, Oper State ACTIVE - Cause Code NONE
MGCP call-agent: 172.18.195.147 2300 Initial protocol service is SGCP 1.5
MGCP block-newcalls DISABLED
MGCP send RSIP for SGCP is ENABLED
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 voaal2 codec all
MGCP voip modem passthrough mode: NSE, codec: g711ulaw, redundancy: DISABLED,
MGCP voaal2 modem passthrough mode: NSE, codec: g711ulaw
MGCP TSE payload: 100
MGCP T.38 Named Signalling Event (NSE) response timer: 200
MGCP Network (IP/AAL2) Continuity Test timer: 3000
MGCP 'RTP stream loss' timer: 2
MGCP request timeout 500
MGCP maximum exponential request timeout 4000
MGCP gateway port: 2427, MGCP maximum waiting delay 3000
MGCP restart delay 0, MGCP vad DISABLED
MGCP rtrcac DISABLED
MGCP system resource check DISABLED
MGCP xpc-codec: DISABLED, MGCP persistent hookflash: DISABLED
MGCP persistent offhook: ENABLED, MGCP persistent onhook: DISABLED
MGCP piggyback msg DISABLED, MGCP endpoint offset DISABLED
MGCP simple-sdp DISABLED
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: line-package
MGCP supported packages: gm-package dtmf-package trunk-package line-package hs-package
atm-package ms-package dt-package res-package mt-package
```

- Step 3** Display the SRC CAC configuration using the **show call threshold** configuration privileged EXEC command.

```
Router# show call threshold configuration
```

```
Some resource polling interval:
CPU_AVG interval: 60
Memory interval: 5
```

IF	Type	Value	Low	High	Enable
N/A	cpu-5sec	43	0	80	treatment
N/A	cpu-avg	27	60	80	treatment

N/A	io-mem	15	60	80	treatment
N/A	proc-mem	24	60	80	treatment
N/A	total-mem	22	60	80	treatment
N/A	total-calls	0	5	12	treatment

Troubleshooting Tips

MGCP VoIP CAC has several commands available to analyze call statistics and operation of applications on the gateway. They are classified into these groups for clarity:

- [Troubleshooting MGCP](#)
- [Troubleshooting MGCP SRC CAC](#)
- [Troubleshooting MGCP RSVP CAC](#)
- [Troubleshooting MGCP SA Agent CAC](#)

Troubleshooting MGCP

To provide information about the operation of the MGCP application, use the following commands in privileged EXEC mode:

Command	Purpose
Router# debug mgcp all	Displays real-time MGCP errors, events, media, packets, parser, SRC, and VoIP CAC information.
Router# debug mgcp errors [endpoint <i>endpoint-name</i>]	Displays MGCP errors.
Router# debug mgcp events [endpoint <i>endpoint-name</i>]	Displays MGCP events.
Router# debug mgcp media [endpoint <i>endpoint-name</i>]	Displays MGCP tone and signal information.
Router# debug mgcp packets [endpoint <i>endpoint-name</i> input-hex]	Displays MGCP packet information, with input packets optionally in hexadecimal format.
Router# debug mgcp parser	Displays MGCP parser and builder information.
Router# debug mgcp src	Displays MGCP SRC CAC information.
Router# debug mgcp voipcac	Turns on debugging messages for the VoIP CAC process at the MGCP application layer.

Troubleshooting MGCP SRC CAC

To help identify SRC CAC problems, use the following commands in privileged EXEC mode:

Command	Purpose
Router# show call threshold { status [unavailable] stats }	Displays status of configured triggers or statistics for application programming interface (API) calls that were made to global and interface resources.
Router# show mgcp statistics	Displays MGCP statistics, including those for MGCP SRC VoIP CAC.
Router# clear call threshold stats	Clears call threshold statistics.

Command	Purpose
Router# clear mgcp src-stats	Clears statistics gathered for MGCP SRC CAC.
Router# debug call threshold	Displays details of trigger actions.
Router# debug mgcp src	Provides debug information for MGCP SRC CAC calls.

Troubleshooting MGCP RSVP CAC

To identify and trace RSVP CAC problems, use the following commands in privileged EXEC mode:

Command	Purpose
Router# show call fallback cache	Displays a network congestion level check result if one has been cached.
Router# show call rsvp-sync stats	Displays statistics for calls that attempted RSVP reservation.
Router# show call rsvp-sync conf	Displays the configuration settings for RSVP synchronization.
Router# show ip rsvp reservation	Displays the RSVP-related receiver information currently in the database.
Router# debug call rsvp-sync func-trace	Displays messages about software functions called by RSVP.
Router# debug call rsvp-sync events	Displays events that occur during RSVP setup.
Router# debug ip rsvp detail	Displays detailed information about RSVP-enabled and Subnetwork Bandwidth Manager (SBM) message processing.

Troubleshooting MGCP SA Agent CAC

To help identify SA Agent CAC problems, use the following commands in privileged EXEC mode:

Command	Purpose
Router# show call fallback cache	Displays a network congestion level check result if one has been cached.
Router# debug call fallback probes	Verifies that probes are being sent correctly.
Router# debug call fallback detail	Displays details of the VoIP call fallback.
Router# show rtr application [tabular full]	Displays global information about the SA Agent feature. There are a number of other options for the show rtr command; use CLI help to browse a list of choices.
Router# debug rtr error	Enables logging of SA Agent run-time errors.
Router# debug rtr trace	Traces the execution of an SA Agent operation.

Configuration Examples

This section provides the following sample configuration examples for MGCP VoIP CAC:

- [MGCP RSVP and SA Agent CAC Example](#)
- [MGCP VoIP CAC on a Trunking Gateway Example](#)
- [MGCP VoIP CAC for Residential Gateway or CAS PBX Example](#)


Note

IP addresses and host names in these examples are fictitious.

MGCP RSVP and SA Agent CAC Example

The following example shows a configuration of MGCP RSVP and SA Agent CAC on a Cisco 3660.

```

version 12.2
no service single-slot-reload-enable
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname westcoast
!
no logging buffered
no logging buffered
logging rate-limit console 10 except errors
!
!
!
ip subnet-zero
!
!
no ip finger
no ip domain-lookup
ip host lab 192.168.254.254
!
call fallback active
call rsvp-sync
!
!
interface FastEthernet0/0
 ip address 172.16.125.4 255.255.0.0
 duplex auto
 speed auto
 ip rsvp bandwidth 512 512
!
interface FastEthernet0/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
ip kerberos source-interface any
ip classless
ip route 172.16.173.1 255.255.255.255 172.16.0.1
ip route 192.168.254.254 255.255.255.255 FastEthernet0/0
no ip http server
!
!
```

```
voice-port 1/1/0
!
voice-port 1/1/1
!
mgcp
mgcp call-agent 172.16.173.1 service-type mgcp version 1.0
mgcp modem passthrough voip mode nse
mgcp modem passthrough voaal2 mode
mgcp rtrcac
no mgcp timer receive-rtcp
!
mgcp profile default
!
dial-peer cor custom
!
!
!
dial-peer voice 1 pots
  application mgcpapp
  port 1/1/0
!
dial-peer voice 2 pots
  application mgcpapp
  port 1/1/1

rtr responder
!
line con 0
  transport input none
line aux 0
line vty 0 4
  login
!
end
```

MGCP VoIP CAC on a Trunking Gateway Example

This configuration enables all three types of MGCP VoIP CAC: SRC, RSVP, and SA Agent. Comment lines are provided above the CAC commands to help you identify the commands needed for a particular CAC type.

```
version 12.2
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname eastcoast
!
!
voice-card 2
!
voice-card 3
!
ip subnet-zero
ip dhcp smart-relay
!
! The following command is used in MGCP SA Agent CAC.
call fallback active
! The following command is used in MGCP RSVP CAC.
call rsvp-sync
```

```

! The following six commands are used in MGCP SRC CAC.
call threshold global cpu-5sec low 55 high 70 treatment
call threshold global cpu-avg low 70 high 80 treatment
call threshold global total-mem low 70 high 80 treatment
call threshold global io-mem low 70 high 80 treatment
call threshold global proc-mem low 70 high 80 treatment
call threshold global total-calls low 10 high 12 treatment
!
!
!
!
!
controller T1 2/0
!
controller T1 2/1
!
controller T1 3/0
  framing esf
  clock source internal
  ds0-group 1 timeslots 1-5 type none service mgcp
  ds0-group 2 timeslots 6-24 type none service mgcp
!
controller T1 3/1
  framing esf
  ds0-group 1 timeslots 1-10 type none service mgcp
  ds0-group 2 timeslots 11-24 type none service mgcp
!
!
!
interface FastEthernet0/0
  ip address 192.168.1.61 255.255.255.0
  duplex auto
  speed auto
! The following command is used in MGCP RSVP CAC to configure the bandwidth allocated
! for VoIP calls through the interface.
  ip rsvp bandwidth 512 512
!
interface FastEthernet0/1
  ip address 172.20.1.1 255.255.0.0
  duplex auto
  speed auto
!
ip kerberos source-interface any
ip classless
ip route 10.0.0.0 10.0.0.0 192.168.1.10
no ip http server
!
snmp-server engineID local 0000000902000002B95D89F0
no snmp-server ifindex persist
snmp-server manager
!
voice-port 3/0:1
!
voice-port 3/0:2
!
voice-port 3/1:1
!
voice-port 3/1:2
!

```

```

mgcp
mgcp call-agent 10.13.57.88 service-type mgcp version 1.0
mgcp modem passthrough voip mode nse
mgcp modem passthrough voaal2 mode
mgcp package-capability trunk-package
! The following command is used for MGCP SA Agent CAC.
mgcp rtrcac
! The following command is used in MGCP SRC CAC.
mgcp src-cac
no mgcp timer receive-rtcp
!
mgcp profile default
!
dial-peer cor custom
!
dial-peer voice 1 pots
  application mgcpapp
  port 3/0:1
!
dial-peer voice 2 pots
  application mgcpapp
  port 3/0:2
!
dial-peer voice 3 pots
  application mgcpapp
  port 3/1:1
!
dial-peer voice 4 pots
  application mgcpapp
  port 3/1:2
!
! The following command is used in MGCP SA Agent CAC.
rtr responder
!
line con 0
  exec-timeout 0 0
  privilege level 15
  transport input none
line aux 0
line vty 0 4
  login
!
end

```

MGCP VoIP CAC for Residential Gateway or CAS PBX Example

This configuration enables all three types of MGCP VoIP CAC: SRC, RSVP, and SA Agent. Comment lines are provided above the CAC commands to help you identify the commands needed for a particular CAC type.

```

version 12.2
no service pad
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
!
hostname sanjose
!
logging buffered 1000000 debugging
!

```

```

network-clock base-rate 56k
ip subnet-zero
no ip domain-lookup
ip dhcp smart-relay
!
isdn voice-call-failure 0
! The following command is used in MGCP SA Agent CAC.
call fallback active
! The following command is used in MGCP RSVP CAC.
call rsvp-sync
! The following six commands are used in MGCP SRC CAC.
call threshold global cpu-5sec low 80 high 95 treatment
call threshold global cpu-avg low 80 high 90 treatment
call threshold global total-mem low 70 high 80 treatment
call threshold global io-mem low 70 high 80 treatment
call threshold global proc-mem low 45 high 55 treatment
call threshold global total-calls low 10 high 12 treatment
!
!
!
voice-card 0
!
!
!
controller T1 0
!
!
!
interface Ethernet0
ip address 192.168.1.11 255.255.255.0
no ip route-cache
no ip mroute-cache
no cdp enable
! The following command is used in MGCP RSVP CAC to configure the bandwidth allocated
! for VoIP calls through the interface.
ip rsvp bandwidth 512 512
!
interface Serial0
no ip address
no ip route-cache
no ip mroute-cache
shutdown
no fair-queue
!
interface Serial1
no ip address
no ip route-cache
no ip mroute-cache
shutdown
!
interface FR-ATM20
no ip address
no ip route-cache
shutdown
!
ip kerberos source-interface any
ip classless
ip route 10.0.0.0 10.0.0.0 192.168.1.10
no ip http server
!
dialer-list 1 protocol ip permit
dialer-list 1 protocol ipx permit
!

```

```
!
voice-port 1/1
  timing hookflash-in 1500
!
voice-port 1/2
  timing hookflash-in 1500
!
mgcp
mgcp call-agent 192.168.88.1 service-type mgcp version 1.0
mgcp modem passthrough voip mode nse
mgcp modem passthrough voaal2 mode
mgcp package-capability line-package
! The following command is used in MGCP SA Agent CAC.
mgcp rtrcac
! The following command is used in MGCP SRC CAC.
mgcp src-cac
no mgcp timer receive-rtcp
!
mgcp profile default
!
dial-peer cor custom
!
!
!
dial-peer voice 1 pots
  application mgcpapp
  port 1/1
!
dial-peer voice 2 pots
  application mgcpapp
  port 1/2
!
! The following command is used in MGCP SA Agent CAC.
rtr responder
!
line con 0
  exec-timeout 0 0
  privilege level 15
  transport input none
line aux 0
line 2 3
line vty 0 4
login
!
ntp source Ethernet0
end
```

Command Reference

This section documents new and modified commands. All other commands used with this feature are documented in the Cisco IOS Release 12.2 command reference publications or in documents listed in the “[Related Documents](#)” section on page 5.

New Commands

- [clear mgcp src-stats](#)
- [mgcp rtrcac](#)
- [mgcp src-cac](#)

Modified Commands

- [debug mgcp](#)
- [mgcp package-capability](#)
- [show mgcp](#)
- [show mgcp statistics](#)

clear mgcp src-stats

To clear the statistics gathered for Media Gateway Control Protocol (MGCP) System Resource Check (SRC) Call Admission Control (CAC) on an MGCP gateway supporting Voice over IP (VoIP), use the **clear mgcp src-stats** command in privileged EXEC mode.

clear mgcp src-stats

Syntax Description This command has no arguments or keywords.

Command Modes Privileged EXEC

Command History	Release	Modification
	12.2(2)XB	This command was introduced.
	12.2(8)T	This command was integrated into Cisco IOS Release 12.2(8)T.
	12.2(11)T	This command was implemented on the Cisco AS5350, Cisco AS5400, and Cisco AS5850.

Usage Guidelines Use the **clear mgcp src-stats** command to clear the MGCP gateway buffer that holds SRC CAC statistics gathered during the most recent inspection interval.

Examples The following example illustrates how to clear MGCP VoIP SRC CAC statistics:

```
Router# clear mgcp src-stats
```

Related Commands	Command	Description
	show mgcp statistics	Displays MGCP statistics regarding received and transmitted network messages.

debug mgcp

To enable debug traces for Media Gateway Control Protocol (MGCP) errors, events, media, packets, parser, and Call Admission Control (CAC), use the **debug mgcp** command in privileged EXEC mode. To disable debugging output, use the **no** form of this command.

```
debug mgcp [all | errors [endpoint endpoint-name] | events [endpoint endpoint-name] | media
[endpoint endpoint-name] | packets [endpoint endpoint-name | input-hex] | parser | src |
voipcac]
```

```
no debug mgcp [all | errors | events | media | packets | parser | src | voipcac]
```

Syntax Description

all	(Optional) Debugs MGCP errors, events, media, packets, parser and builder, and CAC.
errors	(Optional) Debugs MGCP errors.
endpoint <i>endpoint-name</i>	(Optional) Debugs MGCP errors, events, media, or packets per endpoint.
events	(Optional) Debugs MGCP events.
media	(Optional) Debugs MGCP tone and signal events.
nas	(Optional) Debugs MGCP network access server (NAS) (data) events.
packets	(Optional) Debugs MGCP packets.
input-hex	(Optional) Debugs MGCP input packets in hexadecimal values.
parser	(Optional) Debugs MGCP parser and builder.
src	(Optional) Debugs MGCP System Resource Check (SRC) CAC information.
voipcac	(Optional) Turns on debugging messages for the Voice over IP (VoIP) CAC process at the MGCP application layer.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.1(1)T	This command was introduced.
12.1(3)T	Additional information was 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	This command was integrated into Cisco IOS Release 12.2(2)T.
12.2(2)XA	The media keyword was added. The endpoint <i>endpoint-name</i> keyword and argument pair was added to the mgcp errors , mgcp events , and mgcp packets options. The input-hex keyword was added to the mgcp packets option.
12.2(2)XB	The nas , src , and voipcac keywords were added.

Release	Modification
12.2(8)T	This command was integrated into Cisco IOS Release 12.2(8)T.
12.2(11)T	This command was implemented on the Cisco AS5350, Cisco AS5400, and Cisco AS5850.

Usage Guidelines

There is always a performance penalty when using debug commands.

Examples

The following is sample output from the **debug mgcp events**, **debug mgcp media**, **debug mgcp nas**, **debug mgcp packets**, **debug mgcp parser**, and **debug mgcp src** commands. The **debug mgcp all** command would show a compilation of all this output, plus the **debug mgcp voipcac** output. Note that using the **debug mgcp all** command may severely impact network performance.

The following example illustrates the output from the **debug mgcp events** command:

```
Router# debug mgcp events

Media Gateway Control Protocol events debugging is on
Router#
lwd: MGC stat - 172.19.184.65, total=44, succ=7, failed=21
lwd: MGCP msg 1
lwd: remove_old_under_specified_ack:
lwd: MGC stat - 172.19.184.65, total=44, succ=8, failed=21
lwd: updating lport with 2427setup_ipsocket: laddr=172.29.248.193, lport=2427,
faddr=172.19.184.65, fport=2427
lwd: enqueue_ack: ackqhead=0, ackqtail=0, ackp=1DC1D38, msg=21A037C
```

The following example illustrates the output from the **debug mgcp media** command:

```
Router# debug mgcp media

Media Gateway Control Protocol media events debugging is on
Router#
DYNAMIC payload type
DYNAMIC payload type
*Jan 1 03:02:13.159:mgcp_verify_supp_reqdet_ev
*Jan 1 03:02:13.159:mgcp_verify_supp_signal_ev
*Jan 1 03:02:13.159:process_request_ev- callp 635368FC, voice_if 6353C1F8
*Jan 1 03:02:13.159:process_detect_ev- callp 635368FC, voice_if 6353C1F8
*Jan 1 03:02:13.159:process_signal_ev- callp 635368FC, voice_ifp 6353C1F8
*Jan 1 03:02:13.159:mgcp_process_quarantine_mode- callp 635368FC, voice_if 6353C1F8
*Jan 1 03:02:13.159:mgcp_process_quarantine_mode- new q mode:process=0, loop=0
*Jan 1 03:02:13.179:process_deferred_request_events
*Jan 1 03:02:13.479:mgcp_verify_supp_reqdet_ev
*Jan 1 03:02:13.479:mgcp_verify_supp_signal_ev
*Jan 1 03:02:13.479:process_request_ev- callp 6353BCCC, voice_if 638C3094
*Jan 1 03:02:13.479:process_detect_ev- callp 6353BCCC, voice_if 638C3094
*Jan 1 03:02:13.479:process_signal_ev- callp 6353BCCC, voice_ifp 638C3094
*Jan 1 03:02:13.479:mgcp_process_quarantine_mode- callp 6353BCCC, voice_if 638C3094
*Jan 1 03:02:13.479:mgcp_process_quarantine_mode- new q mode:process=0, loop=0
*Jan 1 03:02:13.499:process_deferred_request_events
*Jan 1 03:02:13.827:mgcp_verify_supp_reqdet_ev
*Jan 1 03:02:13.827:mgcp_verify_supp_signal_ev
*Jan 1 03:02:13.827:process_request_ev- callp 635368FC, voice_if 6353C1F8
*Jan 1 03:02:13.827:process_detect_ev- callp 635368FC, voice_if 6353C1F8
*Jan 1 03:02:13.827:process_signal_ev- callp 635368FC, voice_ifp 6353C1F8
*Jan 1 03:02:13.827:mgcp_process_quarantine_mode- callp 635368FC, voice_if 6353C1F8
*Jan 1 03:02:13.827:mgcp_process_quarantine_mode- new q mode:process=0, loop=0
*Jan 1 03:02:13.831:process_deferred_request_events
```

```

*Jan 1 03:02:23.163:mgcp_cr_and_init_evt_node:$$$ the node pointer 63520B14

*Jan 1 03:02:23.163:mgcp_insert_node_to_preprocess_q:$$$eng to preprocess,
qhead=63520B14, qtail=63520B14, count 1, evtptr=63520B14
*Jan 1 03:02:23.479:mgcp_cr_and_init_evt_node:$$$ the node pointer 63520BA8

*Jan 1 03:02:23.479:mgcp_insert_node_to_preprocess_q:$$$eng to preprocess,
qhead=63520BA8, qtail=63520BA8, count 1, evtptr=63520BA8
Router# show mgcp con
Endpoint Call_ID(C) Conn_ID(I) (P)ort (M)ode (S)tate (CO)dec (E)vent[SIFL] (R)esult[EA]
1. S7/DS1-0/5C=349384202,11,12 I=0x7 P=17506,17558 M=3 S=4,4 CO=1 E=2,0,0,2 R=0,0
2. S7/DS1-0/6C=349384202,13,14 I=0x8 P=17558,17506 M=3 S=4,4 CO=1 E=0,0,0,0 R=0,0

*Jan 1 03:02:34.979:process_stop_signal():callp=63536B9C, signal list=6214275C
*Jan 1 03:02:34.979:mgcp_cleanup_media_evt_lists
*Jan 1 03:02:34.979:process_stop_signal():callp=635368FC, signal list=6328CA70
*Jan 1 03:02:34.979:mgcp_cleanup_media_evt_lists
*Jan 1 03:02:34.979:process_stop_signal():callp=6353BCCC, signal list=6353D1DC
*Jan 1 03:02:34.979:mgcp_cleanup_media_evt_lists
*Jan 1 03:02:34.979:mgcp_events_need_dsp
*Jan 1 03:02:34.979:mgcp_events_need_dsp

```

The following example displays output for the **debug mgcp nas** command, with the **debug mgcp packets** command enabled as well:

```

Router# debug mgcp nas
Media Gateway Control Protocol nas pkg events debugging is on
Router# debug mgcp packets
Media Gateway Control Protocol packets debugging is on

Router#
01:49:14:MGCP Packet received -
CRCX 58 S7/DS1-0/23 MGCP 1.0
X:57
M:nas/data
C:3

L:b:64, nas/bt:modem, nas/cdn:3000, nas/cgn:1000

mgcp_parse_conn_mode :string past nas = data
mgcp_chq_nas_pkg:Full string:nas/bt:modem
mgcp_chq_nas_pkg:string past slash:bt
mgcp_chq_nas_pkg:string past colon:modem
mgcp_chq_nas_pkg:Full string:nas/cdn:3000
mgcp_chq_nas_pkg:string past slash:cdn
mgcp_chq_nas_pkg:string past colon:3000
mgcp_chq_nas_pkg:Full string:nas/cgn:1000
c5400#
mgcp_chq_nas_pkg:string past slash:cgn
mgcp_chq_nas_pkg:string past colon:1000
CHECK DATA CALL for S7/DS1-0/23
mgcpapp_xcsp_get_chan_cb -Found - Channel state Idle

CRCX Recv
mgcpapp_endpt_is_data:endpt S7/DS1-0/23, slot 7, port 0 chan 23
mgcpapp_data_call_hnd:mgcpapp_xcsp_get_chan_cb -Found - Channel state Idle
bw=64, bearer=E1,cdn=3000,cgn=1000

```

The following example illustrates the output from the **debug mgcp packets** command:

```
Router# debug mgcp packets

Media Gateway Control Protocol packets debugging is on
Router#
lwd: MGCP Packet received -
DLCX 408631346 * MGCP 0.1
lwd: send_mgcp_msg, MGCP Packet sent --->
lwd: 250 408631346
<---
```

The following example illustrates the output from the **debug mgcp parser** command:

```
Router# debug mgcp parser

Media Gateway Control Protocol parser debugging is on
Router#
lwd: -- 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_val_mandatory_parms()
- SUCCESS: mgcp_parse_packet()- END of Parsing
lwd: -- mgcp_build_packet()-
lwd: - mgcp_estimate_msg_buf_length() - 87 bytes needed for header
- mgcp_estimate_msg_buf_length() - 87 bytes needed after checking parameter lines
- mgcp_estimate_msg_buf_length() - 87 bytes needed after checking SDP lines
- SUCCESS: MGCP message building OK
- SUCCESS: END of building
```

The following example illustrates the output from the **debug mgcp src** command:

```
Router# debug mgcp src

Media Gateway Control Protocol System Resource Check CAC debugging is on
Router#
00:14:08: setup_indication: Set incoming_call flag=TRUE in voice_if
00:14:08: send_mgcp_msg, MGCP Packet sent --->

00:14:08: NTFY 11 aaln/S1/1@Router MGCP 0.1
N: emu@[1.4.173.1]:51665
X: 35
O: hd
<---
00:14:08: MGCP Packet received -
200 11 hello

00:14:08: MGCP Packet received -
RQNT 42 aaln/S1/1 MGCP 0.1
N: emu@[1.4.173.1]:51665
X: 41
R: D/[0-9*#T](d), hu
S: dl
D: (911|xxxx)

00:14:08: send_mgcp_msg, MGCP Packet sent --->

00:14:08: 200 42 OK
<---
00:14:12: send_mgcp_msg, MGCP Packet sent --->

00:14:12: NTFY 12 aaln/S1/1@Router MGCP 0.1
```

```

N: emu@[1.4.173.1]:51665
X: 41
O: D/2222
<---
00:14:12: MGCP Packet received -
200 12 phone-number ok

00:14:12: MGCP Packet received -
CRCX 44 aaln/S1/1 MGCP 0.1
N: emu@[1.4.173.1]:51665
C: 3
X: 43
R: hu(n)
M: recvonly
L: a:G.711u,p:5,e:off,s:off

00:14:12: mgcp_setup_conn_check_system_resource: System resource check successful
00:14:12: mgcp_voice_crcx: System resource is available
00:14:12: mgcp_set_call_counter_control: Incoming call with 1 network leg, flag=FALSE
00:14:12: send_mgcp_msg, MGCP Packet sent --->

00:14:12: 200 44
I: 4

v=0
o=- 4 0 IN IP4 1.4.120.1
s=Cisco SDP 0
c=IN IP4 1.4.120.1
t=0 0
m=audio 16404 RTP/AVP 0
<---
00:14:13: MGCP Packet received -
MDCX 48 aaln/S1/1 MGCP 0.1
N: emu@[1.4.173.1]:51665
C: 3
I: 4
X: 47
M: recvonly
R: hu
L: a:G.711u,p:5,e:off,s:off

v=0
o=- 4 0 IN IP4 1.4.120.3
s=Cisco SDP 0
c=IN IP4 1.4.120.3
t=0 0
m=audio 16384 RTP/AVP 0

00:14:13: mgcp_modify_conn_check_system_resource: System resource check successful
00:14:13: mgcp_modify_connection: System resource is available
00:14:13: send_mgcp_msg, MGCP Packet sent --->

00:14:13: 200 48 OK
<---
00:14:20: MGCP Packet received -
MDCX 52 aaln/S1/1 MGCP 0.1
N: emu@[1.4.173.1]:51665
C: 3
I: 4
X: 51

```

```
M: sendrecv
R: hu
L: a:G.711u,p:5,e:off,s:off
```

```
00:14:20: mgcp_modify_conn_check_system_resource: System resource check successful
00:14:20: mgcp_modify_connection: System resource is available
00:14:20: send_mgcp_msg, MGCP Packet sent --->
```

```
00:14:20: 200 52 OK
<---
00:14:34: MGCP Packet received -
DLCX 56 aaln/S1/1 MGCP 0.1
X: 55
N: emu@[1.4.173.1]:51665
C: 3
I: 4
R: hu
```

```
00:14:34: send_mgcp_msg, MGCP Packet sent --->
```

```
00:14:34: 250 56
P: PS=1382, OS=110180, PR=1378, OR=109936, PL=63484, JI=520, LA=2
<---
00:14:36: mgcp_reset_call_direction: Resetting incoming_call flag=FALSE in voice_if
00:14:36: send_mgcp_msg, MGCP Packet sent --->
```

```
00:14:36: NTFY 13 aaln/S1/1@tlkrgw1 MGCP 0.1
N: emu@[1.4.173.1]:51665
X: 55
O: hu
<---
```

mgcp package-capability

To specify that a Media Gateway Control Protocol (MGCP) package should be available for use on 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.

mgcp package-capability *package*

no mgcp package-capability *package*

Syntax Description	<i>package</i>	<p>One of the following keywords:</p> <ul style="list-style-type: none"> • as-package—Announcement server package. • atm-package—ATM package. MGCP for VoATM using ATM adaptation layer 2 (AAL2) permanent virtual circuit (PVC) and a subset of ATM extensions specified by Cisco is supported. Switched virtual circuit (SVC) based VoAAL2 is not supported. • dt-package—DT package. Events and signals for immediate-start and basic dual tone multifrequency (DTMF) and dial-pulse trunks. • dtmf-package—DTMF package. Events and signals for DTMF relay. • gm-package—Generic media package. Events and signals for several types of endpoints, such as trunking gateways, access gateways, or residential gateways. • hs-package—Handset package. An extension of the line package, to be used when the gateway is capable of emulating a handset. • it-package—PacketCable Trunking Gateway Control Protocol (TGCP) ISDN User Part (ISUP) trunk package. • line-package—Line package. Events and signals for residential lines. This is the default for residential gateways. • mf-package—MF package. Events and signals for multifrequency tones (MF) relay. • mo-package—MO package. Events and signals for Operator Service Signaling protocol for Feature Group D (FGD). • ms-package—MS package. Events and signals for MF single-stage dialing trunks, including wink-start and immediate-start PBX direct inward dial (DID) and direct outward dial (DOD), basic R1, and FGD Terminating protocol. • mt-package—MT package. Events and signals for the Operator Service Signaling protocol. • nas-package—NAS package. Events and signals for network access server (NAS) data lines. • res-package—RES package. Events and signals for Resource Reservation Protocol (RSVP) based bandwidth reservation. • rtp-package—RTP package. Events and signals for the Real-Time Transport Protocol (RTP) stream. • script-package—Script package. Events and signals for script loading. • trunk-package—Trunk package. Events and signals for trunk lines. This is the default for trunking gateways.
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Command Modes Global configuration

Defaults Residential gateways (RGWs): **line-package**
Trunking gateways (TGWs): **trunk-package**

Command History

Release	Modification
12.1(1)T	This command was introduced.
12.1(3)T	The line-package , rtp-package , and script-package keywords were added.
12.1(5)XM	This command was expanded with additional packages.
12.2(2)T	This command was integrated into Cisco IOS Release 12.2(2)T.
12.2(2)XB	The res-package keyword was added.
12.2(8)T	This command was integrated into Cisco IOS Release 12.2(8)T.
12.2(11)T	This command was implemented on the Cisco AS5350, Cisco AS5400, and Cisco AS5850.

Usage Guidelines

Configure package capability only for packages that are 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 media gateway.

Use this command before specifying a default package using the **mgcp default-package** command. Specify at least one package as a default.

Enter each package as a separate command.

Packages that are available to be configured with this command vary by platform and type of gateway. Use command-line interface (CLI) help to ascertain the packages available on your gateway. This example shows the CLI help output for a Cisco 3660:

```
Router# mgcp package-capability ?

as-package      Select the Announcement Server Package
atm-package     Select the ATM Package
dtmf-package    Select the DTMF Package
gm-package      Select the Generic Media Package
hs-package      Select the Handset Package
line-package    Select the Line Package
mf-package      Select the MF Package
res-package     Select the RES Package
rtp-package     Select the RTP Package
trunk-package   Select the Trunk Package
```

Examples

The following example enables the trunk package, DTMF package, and script package on the gateway, and then names the trunk package as the default package for the gateway:

```
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 and allocates resources for the MGCP daemon.
mgcp default-package	Configures the default package capability type for the media gateway.

mgcp rtrcac

To enable Media Control Gateway Protocol (MGCP) Service Assurance Agent (SA Agent) Call Admission Control (CAC) on an MGCP gateway supporting Voice over IP (VoIP), use the **mgcp rtrcac** command in global configuration mode. To disable SA Agent checking on the gateway, use the **no** form of this command.

mgcp rtrcac

no mgcp rtrcac

Syntax Description This command has no arguments or keywords.

Defaults Disabled

Command Modes Global configuration

Command History	Release	Modification
	12.2(2)XB	This command was introduced.
	12.2(8)T	This command was integrated into Cisco IOS Release 12.2(8)T.
	12.2(11)T	This command was implemented on the Cisco AS5350, Cisco AS5400, and Cisco AS5850.

Usage Guidelines Use the **mgcp rtrcac** command to initiate or disable MGCP SA Agent CAC on the MGCP gateway.

Examples The following example illustrates how to enable MGCP SA Agent CAC:

```
Router(config)# mgcp rtrcac
```

Related Commands	Command	Description
	call fallback active	Enables a call request to fall back to alternate dial peers in case of network congestion.
	mgcp	Starts and allocates resources for the MGCP daemon.
	rtr responder	Enables the SA Agent Responder feature.

mgcp src-cac

To enable System Resource Check (SRC) Call Admission Control (CAC) on a Media Gateway Control Protocol (MGCP) gateway supporting Voice over IP (VoIP), use the **mgcp src-cac** command in global configuration mode. To disable system resource checking on the gateway, use the **no** form of this command.

mgcp src-cac

no mgcp src-cac

Syntax Description This command has no arguments or keywords.

Defaults System resource checking is disabled.

Command Modes Global configuration

Command History	Releases	Modification
	12.2(2)XB	This command was introduced.
	12.2(8)T	This command was integrated into Cisco IOS Release 12.2(8)T.
	12.2(11)T	This command was implemented on the Cisco AS5350, Cisco AS5400, and Cisco AS5850.

Usage Guidelines When the **mgcp src-cac** command is configured, all system resource checks of CPU utilization, memory utilization, and maximum number of calls will be performed for every call setup or modification request from the call agent.

Examples The following example illustrates how to enable MGCP VoIP SRC CAC:

```
Router(config)# mgcp src-cac
```

Related Commands	Command	Description
	call threshold global	Sets threshold values for SRC CAC parameters.
	mgcp	Starts and allocates resources for the MGCP daemon.

show mgcp

To display values for Media Gateway Control Protocol (MGCP) parameters, use the **show mgcp** command in privileged EXEC mode.

show mgcp

Syntax Description This command has no arguments or keywords.

Command Modes Privileged EXEC

Command History	Release	Modification
	12.1(1)T	The show mgcp command was introduced for the Cisco AS5300.
	12.1(3)T	The show mgcp command output was updated to show additional gateway and platform information.
	12.1(5)XM	The show mgcp command output was updated to show additional gateway and platform information.
	12.2(2)XA	The profile keyword was added to the show mgcp command.
	12.2(2)XB	The output for the show mgcp command was enhanced to display the status of MGCP System Resource Check (SRC) Call Admission Control (CAC) and Service Assurance Agent (SA Agent) CAC. The nas dump slot port chan and nas info keywords and arguments were added to the show mgcp command. Because the number of keywords increased, the command reference for the show mgcp command was divided into entries for these commands: <ul style="list-style-type: none"> • show mgcp • show mgcp connection • show mgcp endpoint • show mgcp nas • show mgcp profile • show mgcp statistics
	12.2(8)T	This command was integrated into Cisco IOS Release 12.2(8)T.
	12.2(11)T	This command was implemented on the Cisco AS5350, Cisco AS5400, and Cisco AS5850.

Usage Guidelines The **show mgcp** command provides administrative high-level information about the values configured for MGCP parameters on the router. For more specific types of information, see the **show mgcp connection**, **show mgcp endpoint**, **show mgcp nas**, **show mgcp profile**, and **show mgcp statistics** commands.

Examples

The following is sample output from the **show mgcp** command.

```
Router# show mgcp

MGCP Admin State ACTIVE, Oper State ACTIVE - Cause Code NONE
MGCP call-agent: 172.18.195.147 2300 Initial protocol service is SGCP 1.5
MGCP block-newcalls DISABLED
MGCP send RSIP for SGCP is ENABLED
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 voaal2 codec all
MGCP voip modem passthrough mode: NSE, codec: g711ulaw, redundancy: DISABLED,
MGCP voaal2 modem passthrough mode: NSE, codec: g711ulaw
MGCP TSE payload: 100
MGCP T.38 Named Signalling Event (NSE) response timer: 200
MGCP Network (IP/AAL2) Continuity Test timer: 3000
MGCP 'RTP stream loss' timer: 2
MGCP request timeout 500
MGCP maximum exponential request timeout 4000
MGCP gateway port: 2427, MGCP maximum waiting delay 3000
MGCP restart delay 0, MGCP vad DISABLED
MGCP rtrcac DISABLED
MGCP system resource check DISABLED
MGCP xpc-codec: DISABLED, MGCP persistent hookflash: DISABLED
MGCP persistent offhook: ENABLED, MGCP persistent onhook: DISABLED
MGCP piggyback msg DISABLED, MGCP endpoint offset DISABLED
MGCP simple-sdp DISABLED
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: line-package
MGCP supported packages: gm-package dtmf-package trunk-package line-package
                        hs-package atm-package ms-package dt-package res-package
                        mt-package
```

[Table 1](#) describes the significant fields shown in the display.

Table 1 *show mgcp Field Descriptions*

Field	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 call-agent or call-agent 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.

Table 1 *show mgcp Field Descriptions (continued)*

Field	Description
MGCP quarantine mode	Indicates how the quarantine buffer is to handle Simple Gateway Control Protocol (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 mgcp modem passthrough mode , mgcp modem passthrough codec , and mgcp modem passthrough voip redundancy commands.
MGCP voaal2 modem passthrough	Indicates the settings for mode, codec, and redundancy from the mgcp modem passthrough mode and mgcp modem passthrough codec commands.
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 maximum exponential request timeout	The setting for the mgcp request timeout max command.
MGCP gateway port	The User Datagram Protocol (UDP) port specification for the gateway.
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 rtrcac	Indicates whether MGCP SA Agent CAC has been enabled with the mgcp rtrcac command.
MGCP system resource check	Indicates whether MGCP SRC CAC has been enabled with the mgcp src-cac command.
MGCP xpc-codec	Indicates whether the mgcp sdp xpc-codec command has been configured to generate the X-pc codec field for Session Description Protocol (SDP) codec negotiation in Network-based Call Signaling (NCS) and Trunking Gateway Control Protocol (TGCP).
MGCP persistent hookflash	Indicates whether the mgcp persistent hookflash command has been configured to send persistent hookflash events to the call agent.
MGCP persistent offhook	Indicates whether the mgcp persistent offhook command has been configured to send persistent offhook events to the call agent.
MGCP persistent onhook	Indicates whether the mgcp persistent hookflash command has been configured to send persistent onhook events to the call agent.
MGCP piggyback msg	Indicates whether the mgcp piggyback message command has been configured to enable piggyback messaging.
MGCP endpoint offset	Indicates whether the mgcp endpoint offset command has been configured to enable incrementing of the local portion of an endpoint name for NCS. The local portion contains the analog or digital voice port identifier.

Table 1 show mgcp Field Descriptions (continued)

Field	Description
MGCP simple-sdp	Indicates whether the mgcp sdp simple command has been configured to enable simple mode SDP operation.
MGCP undotted notation	Indicates whether the mgcp sdp notation undotted command has been configured to enable undotted SDP notation for the codec string.
MGCP codec type	The setting for the mgcp codec command.
MGCP packetization period	The packetization period parameter setting for the mgcp codec command.
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 package configured as the default package with the mgcp default-package command.
MGCP supported packages	The packages configured with the mgcp package-capability command to be supported on this gateway in this session.

Related Commands

Command	Description
debug mgcp	Enables debug traces for MGCP errors, events, media, packets, and parser.

show mgcp connection	Displays information for active MGCP-controlled connections.
show mgcp endpoint	Displays information for MGCP-controlled endpoints.
show mgcp nas	Displays MGCP NAS information for data ports.
show mgcp profile	Displays values for MGCP profile-related parameters.
show mgcp statistics	Displays MGCP statistics regarding received and transmitted network messages.

show mgcp statistics

To display Media Gateway Control Protocol (MGCP) statistics regarding received and transmitted network messages, use the **show mgcp statistics** command in privileged EXEC mode.

show mgcp statistics

Syntax Description This command has no arguments or keywords.

Command Modes Privileged EXEC

Command History	Release	Modification
	12.1(1)T	The show mgcp command was introduced for the Cisco AS5300.
	12.1(3)T	The show mgcp command output was updated to show additional gateway and platform information.
	12.1(5)XM	The show mgcp command output was updated to show additional gateway and platform information.
	12.2(2)XA	The profile keyword was added to the show mgcp command.
	12.2(2)XB	The show mgcp statistics command output was enhanced to display statistics for MGCP System Resource Check (SRC) Call Admission Control (CAC). The nas dump slot port chan and nas info keywords and arguments were added to the show mgcp command. Because the number of keywords increased, the command reference for the show mgcp command was divided into entries for these commands: <ul style="list-style-type: none"> • show mgcp • show mgcp connection • show mgcp endpoint • show mgcp nas • show mgcp profile • show mgcp statistics
	12.2(8)T	This command was integrated into Cisco IOS Release 12.2(8)T.
	12.2(11)T	This command was implemented on the Cisco AS5350, Cisco AS5400, and Cisco AS5850.

Examples

The following is sample output from the **show mgcp statistics** command for Voice over IP (VoIP) and Voice over ATM adaptation layer 2 (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
```

The following is an example of the MGCP VoIP SRC CAC portion of the **show mgcp statistics** command output for a gateway configured with MGCP VoIP SRC CAC:

```
Router# show mgcp statistics
.
.
.
MGCP System Resource Check Statistics:
-----
Total CreateConn checked by SRC :0
CreateConn accepted by SRC:0
CreateConn rejected by SRC:0
Total ModifyConn checked by SRC :0
ModifyConn accepted by SRC:0
ModifyConn rejected by SRC:0
Reason          Num. of requests rejected
-----
cpu-5sec:       0
cpu-avg:        0
total-mem:      0
io-mem:         0
proc-mem:       0
total-calls:    0
```

Table 2 describes the significant fields shown in the display.

Table 2 show mgcp statistics Field Descriptions

Field	Description
UDP pkts rx, tx	The number of User Datagram Protocol (UDP) packets transmitted and received from the call agent by the gateway MGCP application.
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.

Table 2 *show mgcp statistics Field Descriptions (continued)*

Field	Description
Invalid versions count	The number of MGCP messages received with invalid MGCP protocol versions.
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.
ModifyConn rx	The number of Modify Connection (MDCX) 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) message 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.
Total CreateConn checked by SRC	Total number of CRCX (Create Connection) messages that have been checked against the SRC component.
CreateConn accepted by SRC	Number of CRCX messages that have been accepted after being checked by the SRC component.
CreateConn rejected by SRC	Number of CRCX messages that have been rejected by SRC due to resource constraints.
Total ModifyConn checked by SRC	Total number of MDCX (Modify Connection) messages that have been checked against the SRC component.
ModifyConn accepted by SRC	Number of MDCX messages that have been accepted after being checked by the SRC component.
ModifyConn rejected by SRC	Number of MDCX messages that have been rejected by SRC due to resource constraints.
Reason	The specific threshold that was exceeded to cause the rejection.
Num. of requests rejected	Number of requests that have been rejected.
cpu-5sec	CPU utilization for previous 5 seconds threshold was exceeded.
cpu-avg	Average CPU utilization threshold was exceeded.
total-mem	Total memory utilization threshold was exceeded.
io-mem	I/O memory utilization threshold was exceeded.

Table 2 *show mgcp statistics Field Descriptions (continued)*

Field	Description
proc-mem	Processor memory utilization threshold was exceeded.
total-calls	Total number of calls threshold was exceeded.

Related Commands

Command	Description
debug mgcp	Enables debug traces for MGCP errors, events, media, packets, parser, and CAC.
show mgcp	Displays information for MGCP parameters.
show mgcp connection	Displays information for active MGCP-controlled connections.
show mgcp endpoint	Displays information for MGCP-controlled endpoints.
show mgcp nas	Displays MGCP NAS information for data ports.
show mgcp profile	Displays values for MGCP profile-related parameters.

Glossary

AAL2—ATM adaptation layer 2. One of four AALs recommended by the ITU-T. AAL2 is used for connection-oriented services that support a variable bit rate, such as some isochronous video and voice traffic.

AAL5—ATM adaptation layer 5. One of four AALs recommended by the ITU-T. AAL5 supports connection-oriented VBR services and is used predominantly for the transfer of classical IP over ATM and LANE traffic. AAL5 uses SEAL and is the least complex of the current AAL recommendations. It offers low bandwidth overhead and simpler processing requirements in exchange for reduced bandwidth capacity and error-recovery capability.

CA—call agent. An intelligent entity in an IP telephony network that handles call control in an MGCP Voice over IP network. Also known as a media gateway controller (MGW).

CAS—channel-associated signaling. A signaling technique that uses the same facility path for both voice and signaling traffic.

CCS—common channel signaling. Signaling system used in telephone networks that separates signaling information from user data. A specified channel is exclusively designated to carry signaling information for all other channels in the system.

Cisco CAC—Cisco Call Admission Control. A suite of Cisco features for maintaining voice quality by ensuring the availability of voice call resources on the gateway and in the network before attempting to complete a call. Among the features are System Resource Check (SRC) CAC, Resource Reservation Protocol (RSVP) CAC, and Service Assurance Agent (SA Agent) CAC.

DS-0—64-kbps channel in a T1/E1 line.

DTMF—dual tone multifrequency. Tones generated when a button is pressed on a telephone, primarily used in the U.S. and Canada.

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.

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.

PSTN—Public Switched Telephone Network.

PVC—permanent virtual circuit. Virtual circuit that is permanently established. PVCs save bandwidth associated with circuit establishment and teardown in situations where certain virtual circuits must exist all the time.

RGW—residential gateway. An xGCP media gateway that is customer premises equipment with at least one connection to the VoIP network and at least one connection to user telephony equipment.

RSVP—Resource Reservation Protocol. An IETF protocol for providing integrated services and reserving resources in an IP-based network. RSVP CAC is one component of Cisco CAC. It reserves adequate bandwidth throughout the network to support a call before the call is accepted.

RTCP—RTP Control Protocol. A protocol that monitors an RTP connection and conveys information about the ongoing session.

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

SA Agent—Service Assurance Agent. SA Agent CAC is one component of Cisco CAC. It appraises network congestion conditions before a call is accepted.

SGCP—Simple Gateway Control Protocol. Controls Voice over IP gateways by an external call control element (called a call agent).

SRC—System Resource Check. SRC CAC is one component of Cisco CAC. It evaluates memory and call resources local to the gateway to assess whether sufficient gateway resources exist to support a call before the call is accepted.

SVC—switched virtual circuit. Virtual circuit that is dynamically established on demand and is torn down when transmission is complete.

TGW—trunking gateway. An xGCP media gateway that provides connectivity between the PSTN and VoIP networks.

VCC—virtual channel connection (used where the connection may be a PVC or SVC).

VoIP—Voice over IP. The capability to carry normal telephony-style voice over an IP-based internet with POTS-like functionality, reliability, and voice quality. VoIP enables a router to carry voice traffic (for example, telephone calls and faxes) over an IP network. In VoIP, the DSP segments the voice signal into frames, which then are coupled in groups of two and stored in voice packets. These voice packets are transported using IP in compliance with ITU-T specification H.323.

xGCP—SGCP or MGCP.

