Configuring MGCP Basic CLASS and Operator Services

This chapter provides information on configuring and troubleshooting the MGCP Basic (CLASS) and Operation Services feature. The feature provides xGCP support for three-way calling on residential and trunking gateways.

Feature benefits include the following:

- The merged SGCP/MGCP software for RGWs, BGWs, and TGWs enables easier development and growth of Cisco and customer solutions.
- MGCP BCOS satisfies the requirements for providing basic CLASS services on Cisco IOS gateways that enable multiple xGCP solutions, particularly residential gateway and IP Centrex.

For more information about this and related Cisco IOS voice features, see the following:

- "Overview of MGCP and Related Protocols" on page 3
- Entire Cisco IOS Voice Configuration Library--including library preface and glossary, other feature documents, and troubleshooting documentation--at http://www.cisco.com/en/US/docs/ios/12_3/vvf_c/cisco_ios_voice_configuration_library_glossary/vcl.htm

Feature History for MGCP Basic (CLASS) and Operation Services

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

Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see Bug Search Tool and the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the feature information table.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Prerequisites for MGCP Basic CLASS and Operator Services

Prerequisites are described in the "Prerequisites for Configuring MGCP and Related Protocols" section on page 3 .

Restrictions for MGCP Basic CLASS and Operator Services

- For the Cisco MC3810 series platform, the MGCP BCOS software is supported on an HCM version of an DSP card; it is not supported on an VCM version.

To check the type of DSP card in your Cisco MC3810 series platform, enter a **show version** command at the EXEC prompt.

- • If you have an HCM card, the following line appears as part of the **show version** information:

1 6-DSP (slot 2) High Performance Compression Module(v01.A0)

- • If you have an VCM card, the following line appears as part of the **show version** information:

1 6-DSP (slot 2) Voice Compression Module(v255.V7)

If you have an HCM card, the MGCP BCOS features will function properly. If you have an VCM card, the feature is not supported.

- The G.728 and G.723 codecs do not support three-way calling.

Information About MGCP Basic CLASS and Operator Services

The MGCP BCOS are a set of calling features, sometimes called "custom calling" features, that use MGCP to transmit voice, video, and data over the IP network. These features are usually found in circuit-based networks. MGCP BCOS brings them to the Cisco IOS gateways on packet-based networks.

The MGCP BCOS software is built on the MGCP CAS PBX and AAL2 software package, and supports MGCP 0.1 and the earlier protocol version Simple Gateway Control Protocol (SGCP) 1.1 and 1.5.

The following MGCP BCOS features are available on residential gateways (RGWs) and business gateways (BGWs):

The following two features can be run as residential gateway (RGW) or trunking gateway (TGW) features:

Distinctive Power Ring

A telephone rings in a distinctive pattern when a call comes in from a predefined telephone number. The following patterns are available:

- R1: One long ring
- R2: Long ring -long ring
- R3: Short ring-short ring-long ring
- R4: Short ring - long ring - short ring
- R5: One short ring

Visual Message Waiting Indicator

A light goes on when a message is waiting for the line.

Caller ID

The calling party's telephone number, date, and time of the call appear on the receiving telephone's display between the first and second rings. A maximum of 18 digits are shown., and private and unlisted numbers are displayed. If the called party answers the phone on the first ring, the calling party's number does not appear.

If the called party has an appropriate name display unit, the calling party's name and telephone number appear on the display. The name and number appear between the first and second rings.

If the calling party has blocked Caller ID from displaying the telephone number, the called party sees "P" for private or "Anonymous" on the display unit.

Caller ID with Call Waiting

If the called party has Caller ID and has enabled the Call Waiting feature, then the calling party's name (if an appropriate display unit is available) and telephone number appear while the called party is on the line with another call.

If the calling party has blocked Caller ID from displaying the name and telephone number, the called party will see "P" for private or "Anonymous" on the display unit.

Call Forwarding

The following scenarios are available:

- The call agent transfers all incoming calls to a designated telephone number when the called number does not answer after a predetermined interval.
- The call agent transfers all incoming calls to a designated telephone number when the called number is busy.
- The call agent transfers all incoming calls to a specific destination when the user enters a code and a destination telephone number that receives the calls. The user is responsible for all charges between the original called number and the receiving telephone number.

- A user can activate Call Forwarding remotely using a touch-tone telephone and a user-defined personal identification number (PIN), which, by default, is the last four digits of the user's telephone number. The original destination telephone emits a Ring Splash when a call is forwarded.

Ring Splash

Also known as Reminder Ring, Ring Splash is activated when the user enables Call Forwarding on the telephone. The user hears Distinctive Power Ring R5 when the line is idle and a call has been forwarded. This reminds the user that Call Forwarding is active.

Distinctive Call-Waiting Tone

The called party hears four audible tone patterns (waiting tones, or WTs) when a call is waiting on the called party's line. The call agent provides the following tone patterns in sequence as the incoming call continues to wait:

- WT1: One short tone
- WT2: Short tone-short tone
- WT3: Short tone-short tone-short tone
- WT4: Short tone-long tone-short tone

Message-Waiting Tone

For users with an active voice mail system, a special dial tone is heard when the user goes off-hook and a message is waiting. The dial tone is a sequence of 10 short tones followed by a steady tone. If the user has a telephone with a visual message indicator, the indicator light goes on when a message is waiting.

Stutter Dial Tone

This tone is used in place of the dial tone to indicate that a message is waiting. When the user goes off-hook, a sequence of three short tones followed by a steady tone is heard.

Off-Hook Warning Tone

The user hears this tone when the telephone is off-hook. The tone is repeated bursts of sound of rising pitch.

911 Calls

The user can make a 911 call to an Emergency Service Bureau (ESB), and the call is maintained as long as the ESB does not hang up. If the user hangs up, the call is maintained. If the user hangs up and picks up the phone again, the call resumes. If the user hangs up and does not pick up the phone again, the ESB can ring the user and resume the call.

This feature is available in SGCP mode on the Cisco 3660 platforms and in MGCP mode on all supported platforms.

Three-Way Calling

The user can create a 3-way call by pressing the switchhook quickly to put the first call on hold, dial a third party, and press the switchhook again quickly to join all parties to the call. This feature is supported on all five platforms.

Considerations for Three-way Calling

- The user who sets up the 3-way call must be connected to a residential gateway, which handles the call setup. TWC is transparent to a trunking gateway.
- Only the G.711u and G.711a codecs support TWC. If any part of a 3-way call is made on a codec other than the G.711u, that codec must be switched to G.711u mode before the second switchhook flash in order for the 3-way call to be set up.
- TWC supports calls originating as Voice over IP or Voice over AAL2 calls, not Voice over ATM or Voice over Frame Relay calls. However, if the network has ATM or Frame Relay as a transport protocol, the VoIP call is completed.
- The user originating the 3-way call is the controller. Each of the two other users on the call can add another person onto the call, which is referred to as call chaining. Those new users can also add another person to the call. However, when five people in total are on the call, adding more users causes voice quality to degrade.
- If the controller of the call hangs up, all the users are disconnected from the call. If one of the non-controller users hangs up, the remaining users are still connected to the call.
- If the controller presses the switchhook quickly for a third time, the last user connected to the call is dropped from the call.
- If two users are on a call and a third user calls one of them, that third user cannot be joined (bridged) into the two-party call.

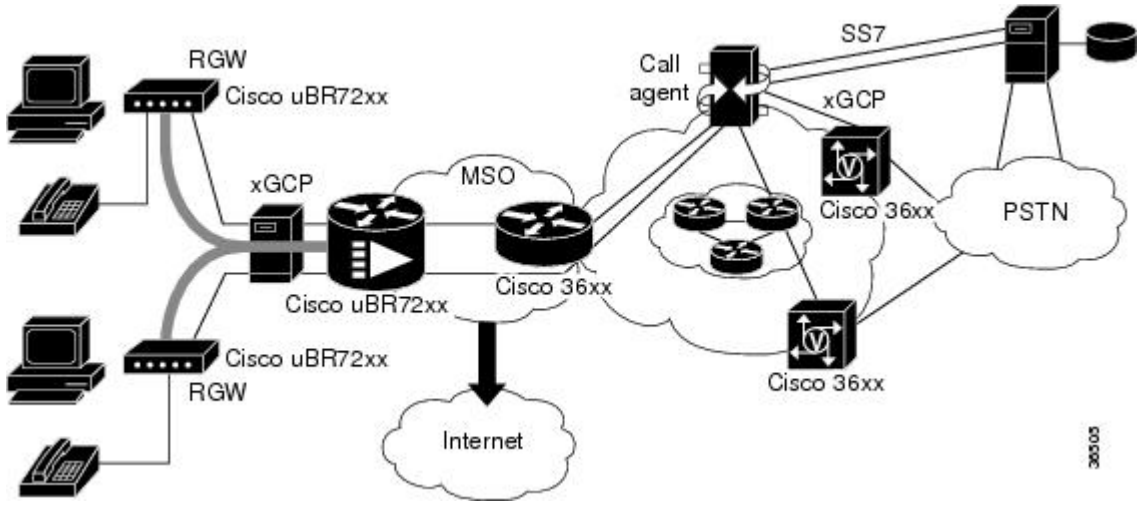
Examples of Service-Provider Solutions

The Basic CLASS and Operator Services features support MGCP solutions in the following areas:

- Residential cable access

A CLEC can use residential cable access to provide residential customers with basic telephony and data services. CLASS features and Three-way calling, Caller ID with Call Waiting, and Distinctive Call Waiting Tone are features that support these customers. The figure below illustrates a possible residential cable access solution.

Figure 1: Residential Cable Access Solution

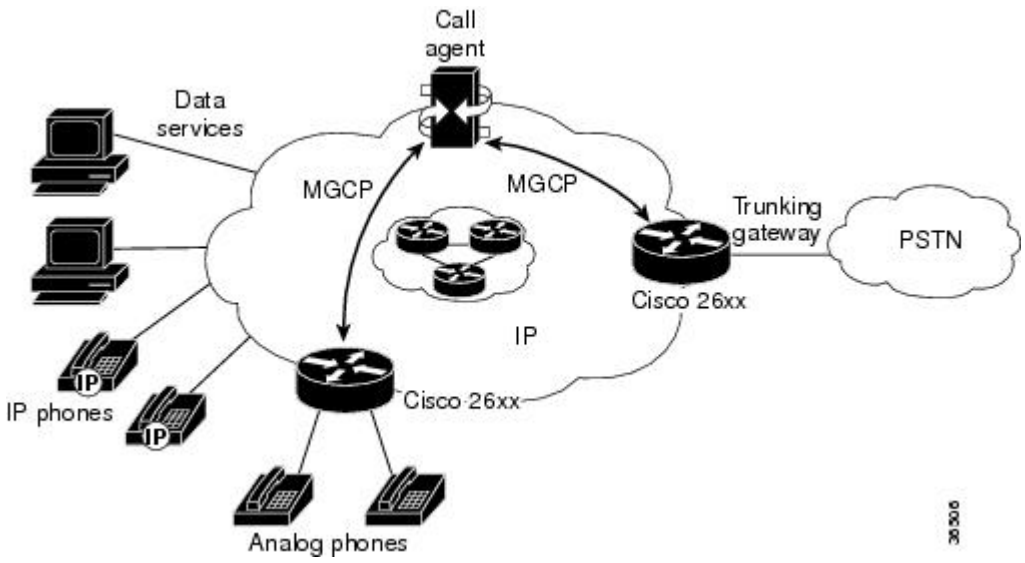


Note that, in the figure above, the residential gateway must support the CLASS features and 911 capability.

- IP Centrex and IP PBX

In these solutions, a call agent provides business voice services that are traditionally offered by a circuit-based PBX. CLASS features and Three-way calling, Caller ID with Call Waiting, Distinctive Call Waiting Tone, and Visual Message Waiting Indicator are features suitable for these customers. The figure below illustrates an IP Centrex solution:

Figure 2: IP Centrex Solution



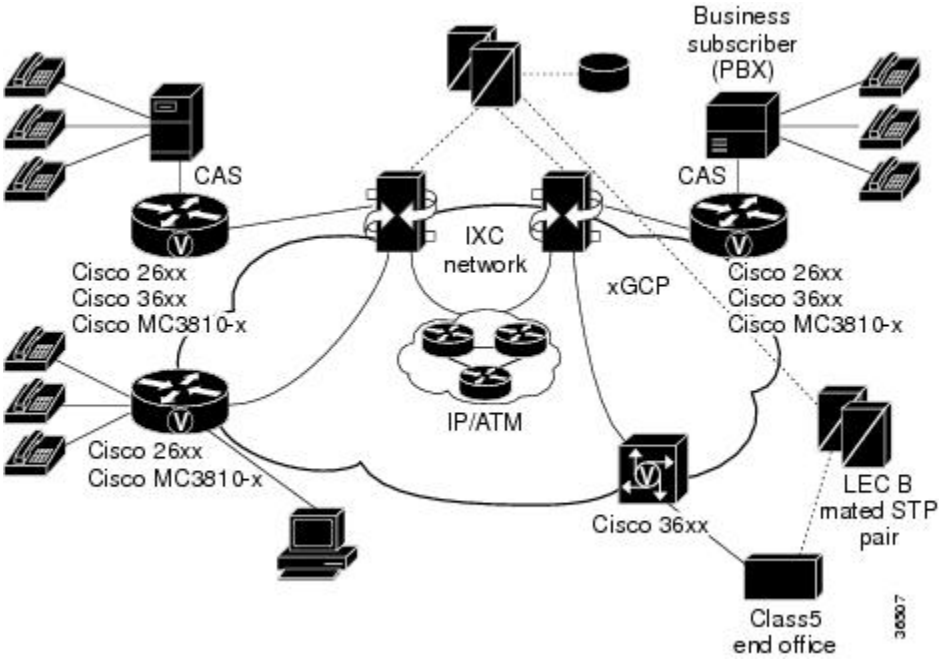
In the figure above, the residential gateway (the Cisco 2600 series platforms) must support the CLASS features.

- Integrated access

A CLEC or IXC can provide small, medium, and large businesses with integrated voice and data access services. The integrated access device can be located at the central office or on the customer's premises.

Access to the subscriber can be analog or digital, and transport of voice and data can be over IP, Frame Relay, or ATM. CLASS features and Three-way calling, Caller ID with Call Waiting, Distinctive Call Waiting Tone, and Visual Message Waiting Indicator are features suitable for these customers. The figure below illustrates an integrated access solution.

Figure 3: Integrated Access Solution

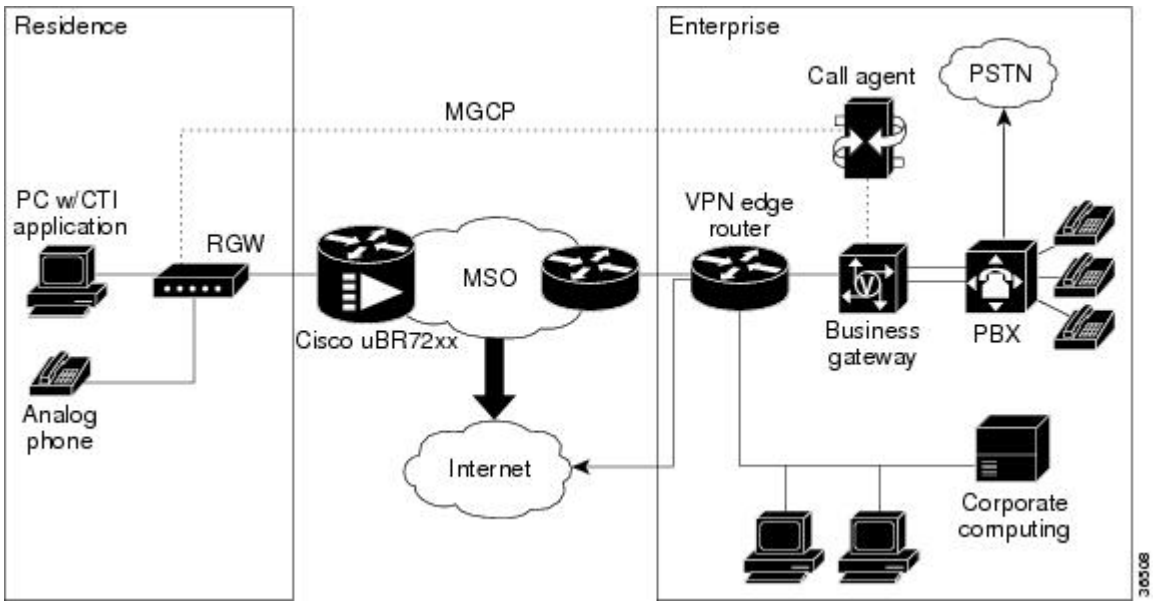


In the figure above, the residential gateway (the Cisco 2600 series and Cisco MC3810 series platforms) must support the CLASS features.

- Telecommuter or small-office-home-office solution

The figure below illustrates a telecommuter or small-office-home-office solution:

Figure 4: Telecommuter or Small Office-Home Office Solution



In the figure above, the residential gateway must support the CLASS features.

Other solutions are possible using the MGCP open protocol.

Troubleshooting MGCP Basic CLASS and Operator Services

No new or modified configuration tasks are required to initiate MGCP Basic CLASS and Operator Services. MGCP BCOS co resides with MGCP CAS PBX and AAL2 PVC software, for which configuration activities are required. These are discussed in " Appendix A: Configuring MGCP CAS PBX and AAL2 PVC .

The following MGCP BCOS features do not work on telephones from all manufacturers when the telephones are connected to a Cisco MC3810 series platform:

- CID - Caller ID
- VMWI - Visual Message Waiting Indicator
- CIDCW - Caller ID with Call Waiting

The table below summarizes the findings for the models tested.

Table 1: Telephones and Feature Capabilities

Telephone	CID	VMWI	CIDCW
Casio TI-345	Y	--	N
Casio TI-360	Y	--	N
Dial Digital CP-2892C	Y	Y	Y
GE 29299GE1-A	Y	--	Y

Telephone	CID	VMWI	CIDCW
Panasonic KX-TSC7	Y	N	N
Panasonic KX-TSC55-b	Y	Y	Y
Sony IT-ID80	Y	--	Y

To correct this operation, change the idle voltage in the voice port from low to high.

To change the voice port idle voltage, perform these additional steps:

- If the phone is already connected to the voice port, lift the phone's handset.
- If the phone is not connected to the voice port, do the following:
  1. Attach the phone to the voice port.
  2. Do a "shut" to the voice port.
  3. Do a "no shut" to the voice port.
  4. Lift the phone's handset.

Configuration Examples for MGCP Basic CLASS and Operator Services

No new or modified configuration settings are needed to implement MGCP Basic CLASS and Operator Services. See the MGCP CAS PBX and AAl2 PVC setup in "Appendix A: Configuring MGCP CAS PBX and AAL2 PVC" for sample configurations.

Tip See the "Additional References for MGCP and SGCP" section on page x for related documents, standards, and MIBs and the " Glossary " for definitions of terms in this guide.