

MGCP

MGCP Toolkit

For Decomposed Multimedia Gateways and Gateway Controllers

RADVISION's MGCP (Media Gateway Control Protocol) Toolkit is designed to address requirements of production IP telephony networks built using decomposed gateways. The MGCP Toolkit implements both the MG and MGC sides of the MGCP Protocol. The MGCP Toolkit can seamlessly scale from small-embedded platforms all the way up to densely populated parallel processing environments.

Products developed with the MGCP Toolkit include:

- Softswitches
- Residential Gateways
- Trunking Gateways
- Access Gateways
- IP PBX/IP Phones
- Media Control Units/Media Servers
- IVR Announcement Servers
- Conference Bridges
- Set-Top Boxes

MGCP Basics

The Media Gateway Control Protocol, or MGCP, was designed to address the requirements of production IP telephony networks that are built using "decomposed" VoIP gateways. MGCP based VoIP solutions separate call control (signaling) intelligence and media handling. MGCP functions as an internal protocol between the separate components of a decomposed MGCP compliant VoIP gateway. More specifically, MGCP is a protocol used by external call control elements called Media Gateway Controllers (MGCs) to control Media Gateways (MGs). Decomposed MGCP-compliant VoIP gateways appear to the outside as a single VoIP gateway. Examples of VoIP gateways include:

- Trunking gateways that interface the circuit switched telephony network to VoIP networks
- Residential gateways that provide traditional analog (RJ11) interfaces to VoIP networks
- Access gateways that provide traditional analog (RJ11) or digital PBX interfaces to VoIP networks
- IVR Announcement Servers that can provide interactive voice response and announcements to VoIP networks

MGCP Toolkit Components

RADVISION's MGCP Toolkit is based on the IETF MGCP specification and supports the PacketCable™ NCS and TGCP Profiles. The MGCP Toolkit contains the three main components: MGCP Stack, SDP Parser/Encoder, and RTP/RTCP Stack.

MGCP Stack

Implements Transport, Syntax and Semantics of the MGCP protocol. The MGCP Stack complies with the following standards:

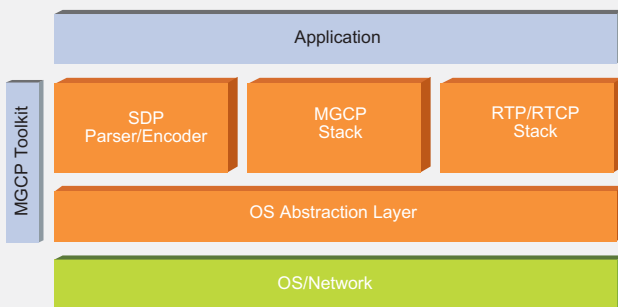
- IETF RFC 3435 (MGCP 1.0bis/2705bis)
- IETF RFC 2705 (MGCP 1.0)
- PacketCable™ NCS Profile
- PacketCable™ TGCP Profile

SDP (Session Description Protocol) Parser/Encoder

A standalone SDP Parser/Encoder used to describe multimedia session announcement, multimedia session invitation, and other forms of multimedia session initiation. The SDP Parser/Encoder complies with the following standards:

- IETF RFC 2327 (Session Description Protocol)
- IETF RFC 3266 (Support for IPv6 in Session Description Protocol)
- IETF RFC 2848 (PINT Telephone Numbers)
- IETF RFC 3108 (Conventions for the use of SDP for ATM Bearer Connections)

MGCP TOOLKIT ARCHITECTURE



RTP/RTCP Stack*

Enables application developers to send and receive realtime voice, video and data over IP networks. The RTP/RTCP Stack complies with the following standards:

- IETF RFC 1889 (RTP: A Transport Protocol for Real-Time Applications)
- IETF RFC 1890 (RTP: Profile for Audio and Video Conferences with Minimal Control)
- IETF RFC 2032 (RTP Payload Format for H.261 Video Streams)
- IETF RFC 2190 (RTP Payload Format for H.263 Video Streams)

* RADVISION also offers a standalone RTP/RTCP Toolkit providing security, IPv6, and other advanced functionality.

MGCP Stack APIs

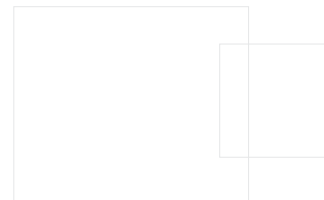
Semantic Layer

The Semantic Layer interprets the semantics of MGCP messages, allowing the application to be abstracted from the details of the protocol and accelerating development.

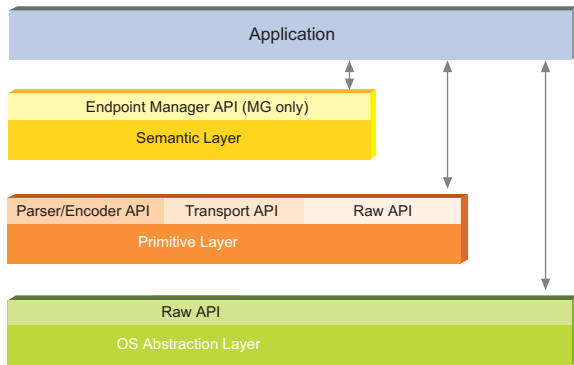
Endpoint Manager APIs

The Endpoint Manager abstracts the MGCP protocol, implementing the semantics of the protocol and providing a high-level interface. Media Gateway applications are thus relieved of the tasks of semantic processing (such as Digitmap Processing, Wildcard Matching, etc.) as well as creating, sending, and receiving messages. The Endpoint Manager implements the actual MGCP messaging without the need for the application's participation. The Endpoint Manager synthesizes MGCP messages based on events reported to it by the application and invokes callbacks in response to incoming messages. The callbacks indicate to the application when to play signals, connect/disconnect media, etc. The Endpoint Manager performs the following semantic processing:

- Quarantine Handling
- Wildcard Matching
- Digitmap Processing
- Automatic Audit Processing
- Signal Scheduling
- Event Filtering, Triggering, and Buffering
- Codec Negotiation



MGCP STACK APIS



Primitive Layer

The Primitive Layer provides the mechanism for encoding and decoding MGCP messages. This layer also performs duplicate transaction removal and transaction retransmission services, and provides a transparent interface to UDP network transports. Developers access the Primitive Layer through the Parser/Encoder API, Transport API, and Raw API.

Parser/Encoder API

The Parser/Encoder API provides functions for creating, destroying, accessing and modifying MGCP message fields.

Transport API

The Transport API provides functions for reliably transporting MGCP messages between MGs and MGCs including:

- Transaction Management
- Entity Management
- Retransmission
- Duplicate Transaction Removal

The MGCP Toolkit is delivered with:

- Source Code (ANSI C)
- Sample MG and MGC Application
- Analog Phone Simulator
- SNMP Network Management Client
- Log Viewer Utility
- Release Notes
- Complete Documentation

Raw API

The Raw API provides the application with the flexibility to access messages in raw MGCP format in either the Receive Path or the Send Path.

OS Abstraction Layer

The OS Abstraction Layer provides platform independence for the other layers, insulating the rest of the Toolkit from OS and processor differences.

Enhanced Features

Endpoint Manager

The Endpoint Manager implements the semantics of the MGCP protocol. The API greatly simplifies the development of Media Gateways by reducing the number of API calls an application developer needs to learn and use.

Highly Scalable

The MGCP Stack has been specifically designed to scale from small-embedded environments to large multi-processor systems supporting thousands of endpoints. The MGCP Stack supports multithreading, allowing it to take advantage of parallel processing architectures.

Blocking and Non-Blocking Interfaces

Both the Primitive and the Endpoint Manager APIs support blocking and non-blocking operation. Non-blocking operation can greatly improve throughput by eliminating head-of-line blocking.

Operating Systems**

- Windows
- Solaris
- Linux
- Tru64
- VxWorks
- Monta Vista
- pSOS
- OSE
- Nucleus
- QNX
- INTEGRITY

** Inquire about support for other operating systems that may be available.

Standards Compliance

- IETF RFC 3435 (MGCP 1.0bis/2705bis)
- IETF RFC 2705 (MGCP 1.0)
- PacketCable™ NCS Profile
- PacketCable™ TGCP Profile
- IETF RFC 2327 (Session Description Protocol)
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The RADVISION V²oIP MGCP Family also includes:

• *RTP/RTCP Toolkit*

a standalone RTP/RTCP stack providing IPv4/IPv6, security and advanced functionality

• *IP Phone Toolkit*

a complete set of building blocks for developing IP phone applications in RTOS or embedded environments

• *Professional Services*

a full range of design, integration and deployment consulting services

MGCP Toolkit Features

- High Performance/Small Footprint
- Object-Oriented Design/ANSI C
- Thread-Safe
- Proven Interoperability
- Multi-Threaded- highly scalable across tightly coupled parallel processors
- Blocking and Non-Blocking Operation
- Supports Multiple Stack Instances Per Process Space
- IPv4 and IPv6 Network Support
- Comprehensive Failover Support via DNS
- Supports Both MG and MGC Applications
- Helper Functions for PacketCable™ NCS and TGCP Profiles
- Standard Packages Support
- Extensible Package Mechanism
- "Canned" Message Facility for Fast Message Generation
- Endpoint Manager
 - Message-less Application Interface
 - All Standard Packages
 - Additional Proprietary Packages (events, signals, etc.) of Arbitrary Complexity
 - Semantic Level Processing on the MG Including:
 - Quarantine Handling
 - Wildcard Matching
 - Digitmap Processing
 - Automatic Audit Processing
 - Signal Scheduling
 - Event Filtering, Triggering and Buffering
 - Codec Negotiation
- Fully Functional Sample MG and MGC
- Soft Analog Phone Simulator
- Extensive Statistics
- Instrumented for SNMP
- Extensive Online Documentation

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