Alcatel·Lucent

Alcatel-Lucent 5020 MGC-8
MEDIA GATEWAY CONTROLLER | RELEASE 6.4

The Alcatel-Lucent 5020 Media Gateway Controller – 8 (MGC-8), a key component of the Alcatel-Lucent Next-Generation Network (NGN)/IP Call Server (ICS) and Session Control portfolio, offers carriers flexible and cost-effective network renovation and IP network transformation. This product supports multiple applications, including NGN Class 4 local, access and toll tandems, Code Division Multiple Access (CDMA) Gateway Mobile Switching Center (GMSC) and IMS Media Gateway Control Function (MGCF).

The Alcatel-Lucent 5020 MGC-8 provides the MGCF for TDM and Voice over IP (VoIP) networks with any-to-any switching, including TDM to TDM, TDM to IP, and IP to IP, while delivering a full range of local, access and toll tandem services and protocols. Carriers can integrate the signal transfer and endpoint functionality in the same chassis, or deploy a standalone Alcatel-Lucent 5025 Voice Signaling Gateway (VSG).

To optimize the routing of incoming Public Switched Telephone Network (PSTN) calls, the Alcatel-Lucent MGC-8 supports CDMA GMSC functionality. By consolidating the network inter-connection points and optimizing call routing, the Alcatel-Lucent CDMA GMSC can significantly reduce the carrier's capital expenditures (CAPEX) and operational expenditures (OPEX). The Alcatel-Lucent CDMA GMSC simplifies network engineering, expansion and maintenance.

The Alcatel-Lucent MGC-8 provides IP Multimedia Subsystem (IMS) MGCF functionality, acting as a seamless bridge between the new converged multiservice networks and the legacy PSTN. By supporting the MGCF inside, the Alcatel-Lucent MGC-8 offers carriers an investment for the all-IP evolution.

The Alcatel-Lucent MGC-8 keeps the network flexible, cost effective and easy to maintain; it provides carrier-class reliability, scalability and performance.
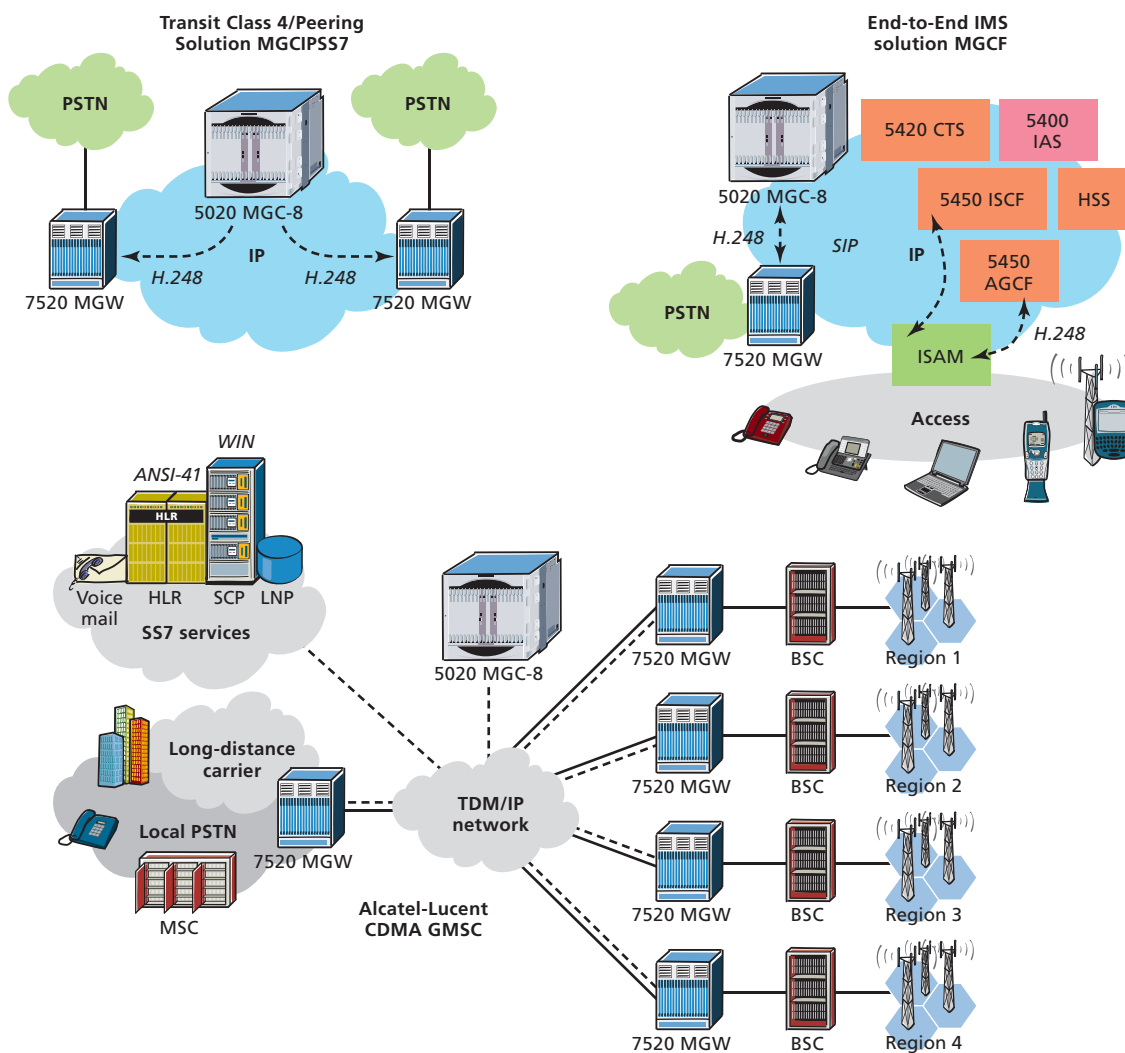
Key features

- NGN Class-4 features
  - ¬ Flexible translations and routing
  - ¬ High network reliability and availability
  - ¬ Multiprotocol support for legacy and converged networks
- CDMA GMSC features
  - ¬ LMSD SIP compliance for inter-vendor TrFO/RTO support for improved voice quality
  - ¬ Multiprotocol support for legacy and converged network operations
  - ¬ Flexible support for network features

- IMS MGCF features
  - ¬ Multiprotocol support for legacy and converged networks
  - ¬ Flexible Session Initiation Protocol (SIP) interworking

Key benefits

- Single, easy to manage, self-contained package
- Seamless migration from legacy TDM through VoIP to converged IMS on the same platform
- Simultaneous multi-application support on the same platform

- Supports legacy revenue streams while enabling growth of next-generation services
- High reliability with purpose-built hardware
- Simplified operations with a management system shared with other Alcatel-Lucent IMS components
- Reduced operating and maintenance costs with distributed NGN solutions
- SIP-T/SIP-I interoperability with other call servers

Figure 1. Applications in the Alcatel-Lucent 5020 MGC-8

NGN Class 4 features

- IP-IP LEC peering with MG insertion to support transcoding requirements
- Flexible dialing plans
- Digit manipulation
- Intelligent network (IN) triggers support
- Incoming exclusion screening
- Class 4 optimized multikey routing with built-in recursion support
- Time-of-day routing
- Reroute on release
- Re-origination
- Alternate routing
- Configurable hunting algorithms
- Source trunk group routing/partitions
- Routing to announcements, treatments and tones
- Load-sharing trunk groups
- Overflow trunk groups
- ENUM/domain-based routing
- 99.999% availability
- No single point of failure
- 1:1 local equipment redundancy
- Geographic redundancy with active and standby configurations
- Ongoing calls preserved during in-service upgrades and processor/system failovers
- Billing records preserved during in-service upgrades and system failovers
- Standards-based protocols and interfaces
- ANSI ISDN User Part (ISUP)
- ITU/ETSI ISUP
- Broad range of country-specific ISUP variants
- SS7
- Multifrequency (MF)
- ISDN
- SIP-I/SIP-T with full protocol interworking
- SIP for communicating with next-generation feature servers, including Alcatel-Lucent Feature Servers

CDMA GMSC features

- LMSD SIP support for MSC inter-vendor TrFO/RTO support
- ANSI, ITU, and ETSI ISUP
- Broad range of country-specific ISUP variants
- SS7
- ANSI IS-41 D
- GSM Mobile Application Part (MAP)
- IS-771
- IS-826
- CAMEL
- SIP-T/SIP-I/SIP
- Voice mail forwarding
- Customized ringback tone
- Customized ringback tone bypass
- IS-826 Wireless Intelligent Network (WIN) prepaid service
- IS-771 WIN services
- WIN service bypass
- SIP-T/SIP-I/SIP TrFO/RTO with Alcatel-Lucent Packet Switch (MSC)
- CALEA bypass
- Availability of all fixed NGN Class 4 features
- CODECs supported: G.711, G.729 a/b, EVRC 0/B
- MG included for transcoding

IMS MGCF key features

- FEMTO BSR hand-off support
- SIP Mg/Mj interfaces to Call Session Control Function/ Border Gateway Control Function (CSCF/BGCF)
- Diameter Rf interface to Call Control Function (CCF)
- ANSI ISUP
- ITU/ETSI ISUP
- Broad range of country-specific variants
- Transaction Capabilities Application Part (TCAP) N11 for IMS user equipment
- SIP interworking with ANSI ISUP
- SIP interworking with ITU/ETSI ISUP
- SIP interworking with various country-specific ISUP variants
- Availability of all fixed NGN Class 4 features
- Supports Alcatel-Lucent 7510 Media Gateway (MGW) for International markets
- Supports Alcatel-Lucent 7515 MGW as ISUP trunking gateway

Technical specifications

Capacity

- Cost effectively scales to 4 million busy hour call attempts (BHCA) in a single shelf
- Supports 250,000 SS7 trunks
- Supports 10,000 trunk groups
- A high-capacity (hundreds of thousands of subscribers) flexible database to store subscribers, features and routing information

Interfaces and protocols

- IEEE 802.3 10/100 Base-T for IP interfaces
- ITU-T G.732 (E1) for N7 signaling
- ITU-T G.733 (T1) for N7 signaling
- Media Gateway Control (MEGACO)/H.248 for MGW communication
- SIP-Mg/Mj interface for IMS MGCF communication
- SIP-T/SIP-I for inter-softswitch communication
- SIP for integrated access device/ residential gateway (IAD/RGW) communication
- SIP towards application/feature servers
- SS7 protocols: (ITU/ANSI) Message Transfer Part Level 2 (MTP2), (ITU/ANSI)
- MTP3, ISUP (ANSI, ETSI and country variants)
- SS7 protocols: (ITU/ANSI) MTP2, (ITU/ANSI)
- Transaction Capabilities Application Part (TCAP), Intelligent Network Application Part (INAP), Local Number Portability (LNP), BR-317, GR-394, IS-41, Global System for Mobile Communications (GSM)
- MAP, Advanced Intelligent Network (AIN), Wireless Number Portability (WNP), CAMEL, IS-826, IS-771
- ISDN Protocols: Q.921 LAP-D, Q.931 PRI GR-1268

- Primary Rate Interface (PRI), 5E/4E ISDN PRI, DMS-250 ISDN PRI
- SIGTRAN (M2UA, M3UA, M2PA, SCTP including multi-homing) for SS7 signaling transport over IP
- SIGTRAN (IUA, Stream Control Transmission Protocol [SCTP]) for ISDN PRI/Primary Rate Access (PRA) signaling transport over IP
- Channel Associated Signaling (CAS) Protocols: FG-D, centralized automatic message accounting (CAMA) MF, line or trunk, operations support system (OSS), and E911
- GR-1298/1299 AIN 0.1/0.2
- IP Protocols: IPv4, Telnet, FTP, TFTP, SSH, SFTP, ICMP, ARP
- SNMP V1, V2, V3 support for fault management
- TL1 command-line interface

Management

- Alcatel-Lucent 1300 OMC-P Element Management System support
- FCAPS
- Billing
- Order entry
- Advanced reporting
- Advanced traffic collection

Physical dimensions

- 21 slots – mounts in standard 585 mm (23 in) rack
- Height: 622 mm (24.5 in)
- Width: 546 mm (21.5 in)
- Depth: 455 mm (18 in) including cabling
- 81.65 kg (180 lb), fully loaded

- Redundant -48V DC power inputs
- -40 to -56.7 V DC, 1450 watts fully loaded
- 200 linear feet per minute (LFM) airflow
- NEBS and ETSI compliant for CO operating environment
- Redundant building integrated timing support (BITS) with internal Stratum 2 sources
- Temperature: 5°C to 40°C long term

Product certifications

- Certified to NEBS Level 3
- Telcordia SS7 ISUP verified
- Illuminet SS7 certified
- Telcordia ISDN verified
- Certified to ISO 9002:194
- Telcordia hardware reliability study – 99.99994%
- GR-1100 billing AMA format; GR-1343 AMA
- UL 60950 listed
- FCC Part 15 compliant
- IEC 60950 certified under IEC CB scheme
- CE mark
- EN 60950 compliant
- EN 300 386 compliant
- CISPR 22/EN 55022 compliant
- CISPR 24/EN 55024 compliant

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