

## Cisco MGX 8880 Media Gateway

The Cisco® MGX® 8880 Media Gateway is part of the Cisco IP/MPLS product portfolio that offers service providers the capability to consolidate their core infrastructure and deliver differentiated IP Communications services.

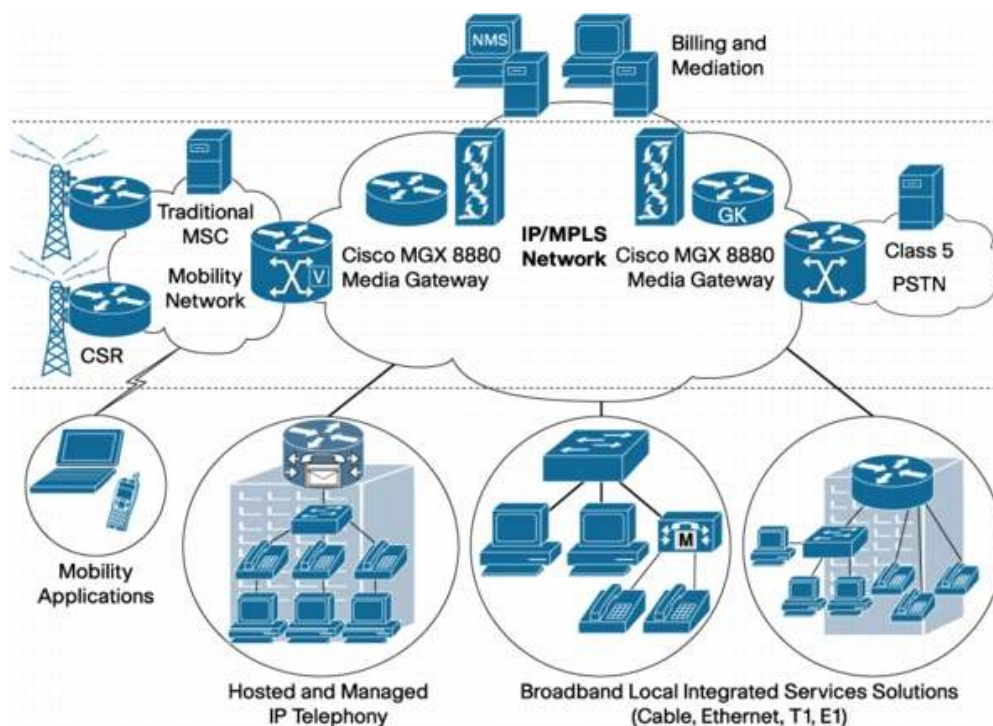
With its superior density, scalability, and performance, the Cisco MGX 8880 Media Gateway (Figure 1) helps service providers to deploy a comprehensive set of voice over IP (VoIP) applications that help lower operational expenses and generate new services revenue.

**Figure 1.** Cisco MGX 8880 Media Gateway



### Cisco MGX 8880 Media Gateway Applications

The Cisco MGX 8880 Media Gateway enables a range of packet voice applications for wireline, wireless and cable. With its comprehensive suite of quality of service (QoS) features and high-availability hardware and software, the Cisco MGX 8880 Media Gateway allows service providers to optimize their existing network infrastructure and lay the foundation for the delivery of IP Next Generation Network (IP-NGN) advanced services and applications (Figure 2).

**Figure 2.** Cisco MGX 8880 Media Gateway Applications

## Wireline Solutions

### Cisco Broadband Local Integrated Services Solutions

Cisco Broadband Local Integrated Services Solutions (BLISS) allow service providers to deliver multiple data, voice, and video services over a common broadband access network. Cisco BLISS offerings demonstrate how service providers can deliver local telephony services to residential and small and medium-sized business customers using VoIP technology.

Cisco BLISS solutions are supported over a variety of broadband access technologies, including cable, metropolitan (metro) Ethernet, and T1/E1. Cisco BLISS solutions combine proven network components and structured network architectures to deliver innovative and profitable multiservice networks.

### Cisco Voice Infrastructure and Applications

Cisco Voice Infrastructure and Applications (VIA) is a VoIP solution for service providers building advanced networks to lower network costs and rapidly deliver revenue-generating voice transport applications and services.

Cisco VIA extends network reach through worldwide compatibility. Its support for industry-standard signaling protocols such as H.323, Session Initiation Protocol (SIP), Media Gateway Control Protocol (MGCP), and H.248 make Cisco VIA the easy way to link a service provider's network to numerous interconnect partners and customers.

## Mobile Wireless Solutions

### Cisco Wireless Trunking Solution

The Cisco Wireless Trunking solution provides mobile wireless service providers an immediate return on investment by significantly lowering the cost of voice transport using sophisticated bandwidth-saving technologies. Many service providers have successfully used the wireless trunking solution as a first step in taking advantage of the IP/MPLS or ATM core network for transport of mobile voice traffic.

### Cisco Wireless Transit and Gateway MSC Solution

The Cisco Wireless Transit and Gateway Mobile Switching Center (G MSC) solution provides a highly efficient mobile core network and dynamic routing of calls for Global System for Mobile Communications (GSM) or Code Division Multiple Access (CDMA) environments. While providing the benefits of the Cisco Wireless Trunking solution, the Cisco Wireless Transit and Gateway MSC solution alleviates the MSC trunk and port exhaustion problem by efficiently routing the calls to their destinations.

### Cisco Distributed MSC Solution

The Cisco Distributed MSC solution provides complete MSC functions, offering advantages over circuit switch-based MSCs. The Cisco Distributed MSC solution offers service providers many deployment options, including the placement of media gateways at the periphery of the mobile network, significantly reducing backhaul costs. In addition, the Cisco MGX 8880 Media Gateway helps enable deployment of revenue-generating packet-based services such as multimedia messaging and enterprise IP telephony.

### Cisco IP Radio Access Network Transport Solution

The Cisco IP Radio Access Network (RAN) Transport solution allows mobile operators to optimize the critical transport segment between the cell site Base Transceiver Stations (BTSs) and the associated Base Station Controller (BSC) and Radio Network Controller (RNC) by using IP/MPLS transport to efficiently backhaul the traffic. This significantly reduces backhaul costs and improves cell site maintenance.

The Cisco MGX 8880 Media Gateway provides a smooth transition to support next-generation 3GPP- and 3GPP2-based wireless architectures for RAN aggregation and media gateways.

## Product Overview

The Cisco MGX 8880 Media Gateway uses the latest in high-performance Digital Signal Processors (DSPs), network processor engines, and advanced Application-Specific Integrated Circuits (ASICs) to deliver high-quality and low-latency packet voice functions. The Cisco MGX 8880 Media Gateway brings to market several innovations, including ready-to-use transceivers, real-time DSP monitoring, advanced call-trace capabilities, and high-availability design.

## Product Highlights

- Highest density and scalability: The Cisco MGX 8880 Media Gateway has 45-Gbps nonblocking switching capacity with an innovative backplane design to handle 1:1 and 1:N service module redundancy. The Cisco MGX 8880 Media Gateway scales from 192 DS-0s to over 120,000 redundant VoIP DS-0s per 7-foot rack while providing flexibility for network

consolidation. The high-density, compact footprint, and low power consumption of the Cisco MGX 8880 Media Gateway significantly reduces facilities costs.

- Highest performance: With its resilient and distributed architecture, the Cisco MGX 8880 Media Gateway has a very high call-handling capacity, supporting more than 2000 calls per second per 7-foot rack.
- High availability: The advanced high-availability design of the Cisco MGX 8880 Media Gateway provides maximum service availability. Availability features of the Cisco MGX 8880 Media Gateway include the following:
  - Active call preservation
  - SONET/SDH automatic protection switching (APS)
  - Multihoming capability
  - Load-sharing network interfaces
  - Advanced hardware diagnostics for fault isolation
  - In-service software upgrades
- Maximum flexibility: The Cisco MGX 8880 Media Gateway is the industry's most open media gateway, providing maximum deployment flexibility for various packet voice networks based on MGCP, TGCP, H.248, H.323, and SIP. The Cisco MGX 8880 Media Gateway supports industry-standard VoIP and VoATM implementations on the same hardware and software.
- Broadest range of interfaces: The Cisco MGX 8880 Media Gateway has the broadest range of packet interfaces – Fast Ethernet, Gigabit Ethernet, Packet over SONET (POS), T1/E1 to OC-48c/STM-16-with full Cisco IOS<sup>®</sup> Layer 3 networking capabilities, including MPLS. The Cisco MGX 8880 Media Gateway also provides various interfaces: T1/E1, T3 and OC-3/STM-1-TDM connectivity.
- Network management: The fully integrated network management application suite provides comprehensive de vice management, an intuitive GUI, and open northbound interfaces for flexible integration with operations support systems.
- Investment protection: With its broad application support, evolutionary design, and compatibility with various premises, edge, and core network equipment, the Cisco MGX 8880 Media Gateway offers tremendous investment protection for evolving service provider networks.

## Features and Specifications of the Cisco MGX 8880 Media Gateway

Table 1 lists the features and Tables 2 through 5 give specification information about the Cisco MGX 8880 Media Gateway.

**Table 1.** Features

Features	Description
System	45-Gbps nonblocking switching capacity 12 double-height (24 single-height) slots for service modules and 2 processor switch module slots
Node Synchronization	Internal Stratum Level 3 clock source Building Integrated Timing Supply (BITS) source External source received in band over the network Synchronization to software-programmable primary and secondary sources, with automatic switchover

Features	Description
Network Interfaces	VoIP-Ethernet, Fast Ethernet, Gigabit Ethernet, POS OC-12/STM-4, T1/E1, T3/E3, OC-3c/STM-1, OC-12c/STM-4, OC-48c/STM-16 VoATM-T1/E1, T3/E3, OC-3c/STM-1, OC-12c/STM-4, OC-48c/STM-16
TDM Interfaces	T1/E1, T3, OC-3/STM-1
Network Protocols	IPv4, MPLS, Border Gateway Protocol Version 4 (BGPv4), Intermediate System-to-Intermediate System (IS-IS), Open Shortest Path First Version 2 (OSPFv2), Bidirectional Forwarding Detection (BFD), Enhanced Interior Gateway Routing Protocol (EIGRP), Routing Information Protocol Version 2 (RIPv2), and Internet Group Management Protocol (IGMP) ATM User-Network Interface Version 3 (UNlv3), UNlv3.1, and UNlv4; ITU-T I.361; ITU-T I.432; Integrated Local Management Interface Version 4 (ILMlv4); Private Network-Network Interface Version 1 (PNNlv1); permanent virtual circuit (PVC); switched virtual circuit (SVC); and soft permanent virtual connection (SPVC)
Signaling and Call Control	H.248 (over UDP, TCP and SCTP) MGCP (over UDP) TGCP (over UDP) H.323, SIP (enabled via a softswitch proxy) ISDN Primary Rate Interface (PRI) over RUDDP and IUA Signaling System 7 (SS7) over M3UA DPNSS/DASS over DUA Channel associated signaling (CAS) Feature group D multi frequency support for E911 and operator services
Voice Quality Monitoring	RTCP-XR/H.248.30
QoS	Connection Admission Control IP Differentiated Services (DiffServ) using IP type of service (ToS) and DiffServ code point (DSCP) MPLS DiffServ DiffServ-aware traffic engineering Low-latency queuing (LLQ), Weighted Random Early Detection (WRED), Class-Based Weighted Fair Queuing (CB-WFQ) Constant bit rate (CBR), real-time variable bit rate (VBR-rt), and non-real-time variable bit rate (VBR-nrt) classes of service for ATM Congestion and Overload Control (H.248.10, H.248.11)
Bearer Services	VoIP and VoATM (ATM Adaptation Layer 1 [AAL1], AAL2, AAL5) G.168 programmable echo cancellation up to 128 ms on all channels G.711, G.723.1, G.726, G.729a/b, and Clear Channel codecs Silence suppression and Comfort Noise Generation T.38 Fax Relay (Call Agent or Media Gateway controlled) Fax and modem pass-through TTY/TDD Standards-based AAL2 subcell multiplexing Standards-based AAL2 type 3 cells for Dual Tone Multi Frequency (DTMF) relay DTMF detection and generation Onboard announcements and tones Legal intercept framework (e.g. enabling support for Communications Assistance for Law Enforcement ACT [CALEA]) Support for call content Onboard conferencing RFC 2833 DTMF relay Fax and modem tone detection DTMF relay to softswitch for application control
Packet Cable	PacketCable 1.1 compliance PacketCable bearer encryption IPSec signaling encryption
Management Interfaces	Simple Network Management Protocol (SNMP), command-line interface (CLI), Telnet, Secure Shell (SSH) Protocol

**Table 2.** Physical Specifications

Specification	Description
Dimensions	Height: 24.5 in. (62.2 cm) Width: 17.7 in. (45 cm) Depth: 21.5 in. (54.6 cm) 14RU tall, 3 chassis per rack
Mounting Options	Rack-mountable in 19- and 23-in. (48.2 x 58.4 cm) EIA/RETMA and ETSI racks

**Table 3.** Electrical Specifications

Specification	Description
Power	Input power required: -42 to -60 VDC Optional 110/220 AC power Typical power consumption: 1200W-1900W

**Table 4.** Electrical and Safety Compliance

Specification	Description
EM/ESD Compliance	FCC Part 15 Bellcore GR1089-CORE IEC 801-2 EN55022 (CISPR22) CFR 47 Part 15 (FCC) AS/NZS 3548 (Australia/New Zealand) ETS 300 386-2 (EN300 386-2) EN 61000-4-2 (IEC-61000-4-2) EN 61000-4-3 (IEC-61000-4-3) EN 61000-4-4 (IEC-61000-4-4) EN 61000-4-5 (IEC-61000-4-5)
Safety Compliance	UL 1950, CSA C22.2 No. 950, EN60950, AS/NZS 3260, IEC 60950 IEC 60825-1, EN60825-1 Bellcore NEBS: Level 3 Optical safety: IEC 825-1 (Class 1)

**Table 5.** Other Standards

Specification	Description
Compliance	FCC 47 CFR Part 68 Industry Canada CS-03 ITU-T G.703 ANSI T1.102 ANSI T1.107 ANSI T1.105 ITU-T G.957, G.958 Telcordia GR-485-CORE ITU-T G.707, G.708, G.709
Telcordia CLEI	GR-485-CORE – CLEI coding GR-383-CORE – CLEI code product label GR-209-CORE – PCN Process

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