Alcatel 7515 Media Gateway
A Compact and Cost-effective NGN Component
As a key component of Alcatel’s next generation network (NGN) solution, the Alcatel 7515 Media Gateway (MG) provides seamless interworking of voice connections between the public switched telephone network (PSTN) and IP networks — on any port, at any time. This compact and cost-effective platform is competitively priced and is ideally suited for a centralized network model that requires gateway capacity of less than 2,000 ports.
Each step in the evolution of a public switched telephone network (PSTN) to a next generation network (NGN) must immediately generate value for the network operator. This value can include:

- Reduced costs
- New revenues
- Future growth possibilities
- Improved asset productivity

As a key transitional element between today’s circuit-switched and tomorrow’s packet-switched telephony networks, the Alcatel 7515 Media Gateway (MG) facilitates the evolution to voice over packet (VoP) networks while generating the value that network operators demand. This single platform enables multiple media gateway applications and can be deployed with Alcatel softswitches as well as integrated into any multi-vendor NGN.

By enabling voice services to be transported over data networks, you can maximize the value of your current investments while enabling future service rollouts that incorporate the latest technologies — and scale up when you need to. Featuring an advanced architecture and interfaces optimized for packet voice applications together with carrier class reliability, availability and quality, the Alcatel 7515 MG combines the reliability and simplicity of voice with the speed and efficiency of data networks.

The Alcatel 7515 MG enables new revenue-generating services and future scalability. It also offers reduced costs today, with high performance packet voice processing and signaling at a competitive price.

The Alcatel 7515 MG provides the right business solutions to ensure immediate value today as well as flexibility and scalability for the future.
As IP-based services gain momentum, more and more IP telephony solutions are being deployed. This increases the need for PSTN/IP interworking.

In addition to telephony services, users require fax and modem connections across IP networks without any restrictions. Users also demand trouble-free access to voice mail systems and effective interactive voice response (IVR)-based services — from digital subscriber line (DSL), wireless local loop (WLL) and cable TV/hybrid fiber coax (HFC).

Your network evolution plans may be to cap and grow, using VoP to accommodate network growth while maintaining the installed PSTN base. Or, you may want to completely replace a legacy TDM switch with the appropriate NGN softswitch and VoP media gateway components. Either way, you require multiple media gateway applications, to meet your needs and the needs of your users.

The Alcatel 7515 MG offers multiple media gateway applications on a single platform:
> Voice over Internet Protocol (VoIP) trunking
> VoIP termination
> TDM hairpinning
> Public branch exchange (PBX) access

This wide variety of media gateway applications facilitates the evolution of the PSTN to a voice over packet network (see Figure 1).

Figure 1 - Alcatel 7515 MG Multiple Media Gateway Applications
**VoIP Trunking**

VoIP trunking enables service providers to bypass high international tariff rates by using IP networks for long-distance and international voice connections. The long distance bypass application, shown in Figure 2, reduces your costs and improves asset productivity.

**VoIP Termination**

The huge volume of VoIP traffic generated from IP phones in corporate environments and residential PC-Phone applications brings tremendous revenue opportunities. With the Alcatel 7515 MG, IP telephony users can reach any PSTN phone worldwide.

**TDM Hairpinning**

The TDM-to-TDM hairpinning capabilities of the Alcatel 7515 MG mean that LEXes connected to media gateways no longer need inter-LEX TDM connections. The switching of calls between these LEXes can now be done by the Alcatel 7515 MG, resulting in significant cost savings. In addition, the international gateway switch feature offers a very cost-effective way to convert a-law TDM traffic into μ-law TDM traffic and vice versa.

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**Figure 2 - Alcatel 7515 MG Long Distance Bypass Application**

![Diagram of Alcatel 7515 MG Long Distance Bypass Application]
**PBX Access**

Business voice and enhanced services such as Internet protocol - virtual private network (IP-VPN) are key to expanding your customer base and growing your revenues. The Alcatel 7515 MG allows for provisioning of ISDN PRI interfaces and provides direct access to public branch exchange (PBX) systems, bypassing local exchanges (LEXes) entirely.

The Alcatel 7515 MG offers broadband network access using digital subscriber line (DSL), wireless local loop (WLL) or cable (see Figure 3). Voice over broadband access enables competitive access providers to compete with incumbents by capitalizing on their investment in broadband network and access infrastructure, to offer telephony services on top of data services.

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Figure 3 - Alcatel 7515 MG Broadband Access Application
Industry-Standard Open Interfaces
The Alcatel 7515 MG fully supports the NGN model by providing open and industry-standard interfaces:
> MEGACO/H.248 v1 (RFC 3015)
> SIGTRAN IUA (ISDN PRI)
> TCP/IP
> Simple Computer Telephony Protocol (SCTP)
> Standard management interface with CLI and element management system (SNMP v2c)

As a result of its open architecture, the Alcatel 7515 MG can be deployed in NGN solutions based on an Alcatel softswitch or integrated in any multi-vendor NGN that supports MEGACO/H.248. By incorporating the SIGTRAN standards, the Alcatel 7515 MG ensures reliable and secure transport of SS7 or ISDN signaling between the PSTN and the NGN. Flexibility and interoperability generate value now and in the future.

High Port Density
The Alcatel 7515 MG provides the industry's leading port density for both TDM switching and VoP media gateway applications in a small MG.
> Up to 480 ports per 2U shelf with ETSI configuration
> Up to 384 ports per chassis with ANSI configuration
> Up to 20 shelves per 2.20 m (7-ft.) rack

High port density lowers your initial CAPEX and also reduces floor space requirements and power consumption, for lower OPEX. Scalable architecture meets your needs today and tomorrow.

The chassis configuration of the Alcatel 7515 MG is shown in Figure 4.

Figure 4 - Chassis Configuration of Alcatel 7515 MG
High Capacity
The Alcatel 7515 MG features high trunking and switching port capacity.

VoIP Trunking Port Capacity
The Alcatel 7515 MG delivers 480 concurrent VoIP connections per shelf with an ETSI (2 x 8 E1) configuration and 384 concurrent VoIP connections per shelf with an ANSI (2 x 8 T1) configuration.

TDM Switching Port Capacity
The Alcatel 7515 MG delivers 480 DS0 per shelf with an ETSI (2 x 8 E1) configuration and 384 DS0 per shelf with an ANSI (2 x 8 T1) configuration.

Voice Codecs
The Alcatel 7515 MG provides leading-edge voice codecs: G.711, G.723.1, G.726 and G.729A/B, including CNG, VAD, echo cancellation, silence suppression, and in-band/out-of-band dual-tone multi-frequency (DTMF). The variety of voice codecs support various bandwidths and levels of voice quality as well as providing better interconnection with third-party gateways.
Carrier Grade Reliability and Availability
The Alcatel 7515 MG has been engineered to provide the highest system availability in the industry for a small media gateway. Through carrier grade design, the Alcatel 7515 MG offers 99.999 percent system availability.

To achieve high fault tolerance, all system functions of the Alcatel 7515 MG are hot swappable. The carrier grade design of the Alcatel 7515 MG is fully Telcordia GR-63 and NEBS Level-3 compliant. The chassis supports hot swappable, redundant DC power supplies. These measures result in industry-leading system availability, and ensure stable call preservation in case of failure.

A System Architecture Optimized for Packet Voice Applications
To support a gradual, incremental evolution from circuit-switched to packet-switched voice networks, both domains need to be adequately supported. To address this requirement, the Alcatel 7515 MG offers dedicated, high capacity switching fabrics for circuit as well as packet connections, allowing each connection to be treated in the most efficient manner.

To deliver superior packet voice performance while maximizing port density and flexibility, the Alcatel 7515 MG hosts pooled DSP resources on dedicated media conversion modules. Equipped with high density DSPs and leading-edge voice processing features, these modules are the heart of the media gateway.

Figure 5 shows a high-level view of the Alcatel 7515 MG architecture.
A Complete Management Solution

The Alcatel 7515 MG offers two types of element management and can also be integrated into the Alcatel 1300 Convergent Network Management Center (CMC), which provides integrated network management for the complete NGN solution.

Alcatel 7515 Media Gateway CLI

The text-based Alcatel 7515 MG command line interface (CLI) can be accessed via IP Telnet sessions or from a local console. Up to eight simultaneous logins to the CLI are possible. The Alcatel 7515 MG includes an embedded simple network management protocol (SNMP) agent and supports a complete list of standards-compliant management information bases (MIBs), including an Alcatel MIB for remote SNMP-based element management.

Alcatel 7515 Media Gateway Element Manager

The graphic user interface (GUI)-based Alcatel 7515 MG Element Manager (EM) communicates with the SNMP agent to provide comprehensive remote element management of the Alcatel 7515 MG. The Alcatel 7515 MG EM supplies the flexible service capabilities that network service providers require while reducing network management complexity. It offers an easy-to-use GUI and a comprehensive suite of element management applications.

Alcatel 1300 CMC

The Alcatel 7515 MG EM can be seamlessly integrated into the Alcatel 1300 CMC, which addresses the entire operations and maintenance needs of the Alcatel softswitches and gateways. In addition to performing local management functions, the Alcatel 1300 CMC provides a network map with alarm status of all network elements, an integrated alarm list and provisioning functions. Open interface support guarantees that the Alcatel 1300 CMC can interface with your existing operations support systems.
COST-EFFECTIVE EVOLUTION
FROM CIRCUIT TO PACKET

The cost-effective Alcatel 7515 MG enables service providers to maximize the value of their current investments while enabling future revenue-generating services and facilitating the evolution to VoP networks.

CAPEX Savings
The Alcatel 7515 MG offers a competitive price as well as maximum scalability, which ensures efficient capacity expansions without added costs.

OPEX Savings
With its high port density, the Alcatel 7515 MG minimizes channel cost, floor space, and power and cooling requirements.

Optimized System Architecture
Native TDM and packet switching enable high-performance packet voice applications that combine the reliability and simplicity of voice with the speed and efficiency of data networks.

Maximum Network Uptime
Carrier class reliability and quality plus 99.999% network availability guarantee maximum network uptime.

Future-proof Investment
With the Alcatel 7515 MG, a single platform offers multiple gateway applications with the most deployment flexibility and maximum scalability, to ensure cost-efficient growth — at your pace.

A Complete Value Proposition
The Alcatel 7515 MG provides a complete value proposition that generates value today and well into the future.