



Solution Brief

Next Generation Packet MSC solution

Nortel's Packet MSC (P-MSC) solution is a complete, full-service switching solution using field-proven 99.999 percent available components to provide operators with the value of network packetization, while continuing to support 25 years of deployed features and services in the network.

The Packet MSC solution is the industry's only softswitch solution that uniquely provides existing CDMA operators the ability to deploy both TDM and packet transport simultaneously to aid in the transition to an all-IP transport network. This strategy allows operators to effectively cap and depreciate their existing TDM investment — while growing capacity on the future-proof IP network.

Nortel's Packet MSC solution has been specifically developed to meet the changing needs of the global market for CDMA Voice Core solutions. The primary benefits of Nortel's Packet MSC solution are:

- Consolidated solution that makes voice services cheaper to operate by reducing the network footprint to fewer highly-scalable network elements. Deploying IP-based Packet MSC reduces operational and capital costs through central office footprint and utility reduction, as well as through providing optimized transport

- Crystal clear voice calls by providing integrated, patented Voice Quality features for improved subscriber satisfaction that leads to increased call duration and customer loyalty
- Capacity evolution in the wireless voice core to support remote coverage expansion
- Convergence-ready solution that supports the IMS architecture as the wireless core evolves to deliver IP technology in support of new revenue-generating applications, while providing feature transparency between the Packet MSC and the legacy TDM-based CDMA MSC

Consolidated Next-Gen Voice Core

Nortel introduces the Versatile Service Engine (VSE) platform based on 2nd Generation ATCA (Advanced Telecommunications Computing Architecture) technology and carrier-grade LINUX to provide a next-generation softswitch platform for the MSC Server. Together with Nortel's market-leading Media Gateway (MGW) and versatile Signaling Gateway, these components provide all of the necessary ingredients for a high-density, carrier-grade Voice over IP (VoIP) network that can effortlessly scale from low-end to high capacities.

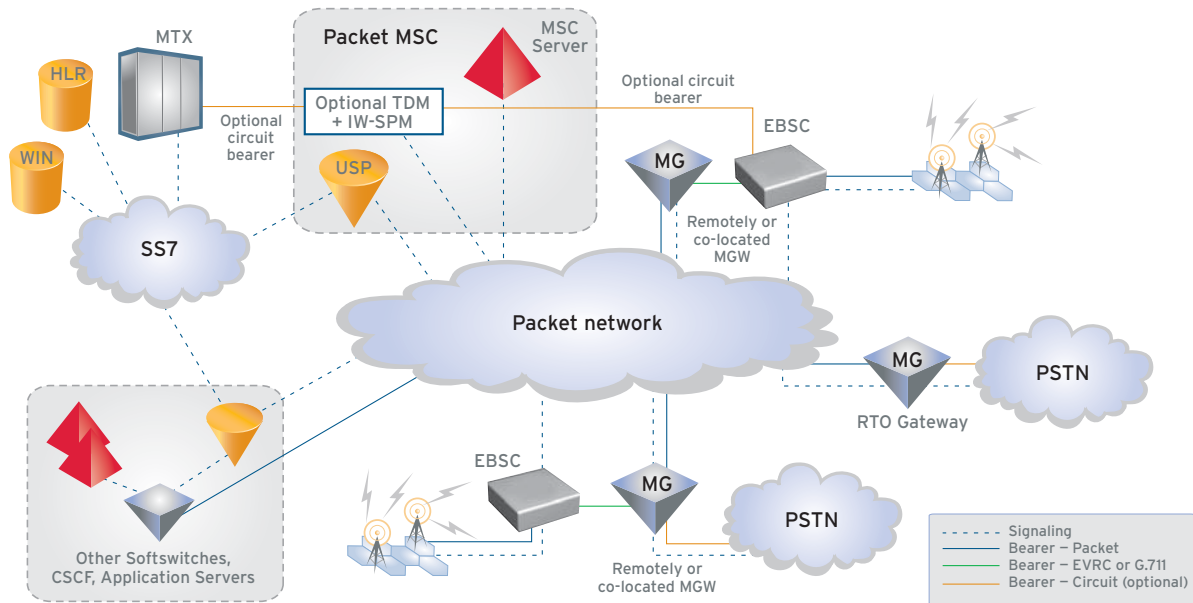
Nortel's Packet MSC applies packet switching and transport, as defined in the 3GPP2 architecture, to provide a migration path from traditional circuit

switching to more operationally efficient IP transport, and to consolidate all services and layers onto a single scalable packet infrastructure. This network simplification allows an operator to support all applications, including voice and data, on a common packet core network.

The solution provides a complete scalable system to meet network capacity growth requirements without adding growth-related complexity back into the network.



Figure 1. Packet MSC Voice Core solution



Nortel's next generation Packet MSC continues delivering:

- A fully carrier-grade voice core solution
- 'Hard' softswitch technology for MSC Server and Integrated HLR
- Seamless scalable capacity without proliferating network nodes
- Network simplification through the consolidation of network elements and centralized network management
- Cost savings from operational efficiency gains
- Best-in-class voice quality to reduce subscriber churn and increase wireline substitution
- Reduction in transmission network costs and central office footprint
- Ability to provide coverage to extended areas with Remote BSC deployments

This network solution delivers:

- Consolidation of voice core transport and routing from Packet MSCs and Media Gateways onto a common IP core
- IP transport and routing of all bearer packets between Media Gateways
- IP transport and routing of signaling using SIP signaling between Packet MSCs

High capacity with seamless scalability

The Packet MSC solution is Nortel's response to customer demands for a highly scalable solution, ranging from small systems to a high-density next generation network. Nortel VSE-based Packet MSC provides:

- High-capacity, scalable network to suit customer deployments
- Modular, single-platform scalability without compromising reliability

Nortel's ATCA-compliant VSE-based MSC Server differentiates over competition offerings by providing carrier-grade reliability features over conventional



Nortel's ATCA-compliant VSE-based MSC Server

softswitches. The VSE-based MSC Server delivers increased capacity, scalability and density to support small, medium or high capacity networks.

Nortel's MGW also provides further improvements to equipment density with support for more than one million connections¹ in a single frame. Through its modular design, Nortel's MGW scales by simply adding more Voice Services Processor (VSP) blades, shelves and eventually equipment racks — up to the capacity of the MSC Server that is controlling it.

Service transparency

Nortel Packet MSC is a simple extension of the existing TDM investment, reusing Nortel's 25 years of wireless telecommunications features and services. The Packet MSC smoothly transitions support for subscriber features, like advanced features utilizing Wireless Intelligent Network support, Color Ring Back Tone and prepaid services, along with mission-critical operational features like Lawful Intercept.

¹ Nortel Standard Call Model

Clear voice quality with bandwidth efficiency

The feature-rich fourth generation VSP4e blades in Nortel's market-leading Media Gateway implement an 'in-skin' approach to voice processing and provide all speech processing for voice calls in CDMA solutions. The comprehensive suite of voice quality features in the VSP4e provides an excellent example of Nortel's performance and technical leadership.

Enabling operators to provide superior voice quality is also the result of empowering the operator to control the voice codecs used and to limit the need for transcoding between codecs in the network. Nortel introduces Transcoder Free Operation (TrFO) and Remote Transcoder Operations (RTO) to enable both superior voice quality and bandwidth savings in the voice-transport IP core. These Transcoder negotiation features provide:

- Improved voice quality by avoiding unnecessary transcoding stages
- Transmission network cost-saving efficiencies using compressed speech, providing customers with better voice quality in all conditions.

In addition to TrFO/RTO, Nortel supports additional voice quality features

like Automatic Gain Control, Mobile Echo Cancellation and Integrated PSTN Echo Cancellation to provide outstanding voice clarity.

Carrier-grade DNA

The Wireless Telephony application remains the primary source of revenue for wireless operators globally, and therefore demands continuous service availability. This service availability requirement means that new Voice Core equipment must meet stringent standards of reliability. Nortel is proud of our reputation for reliability, built on more than 110 years of innovation and telephony experience; the term 'carrier-grade' is ingrained into the company's DNA.

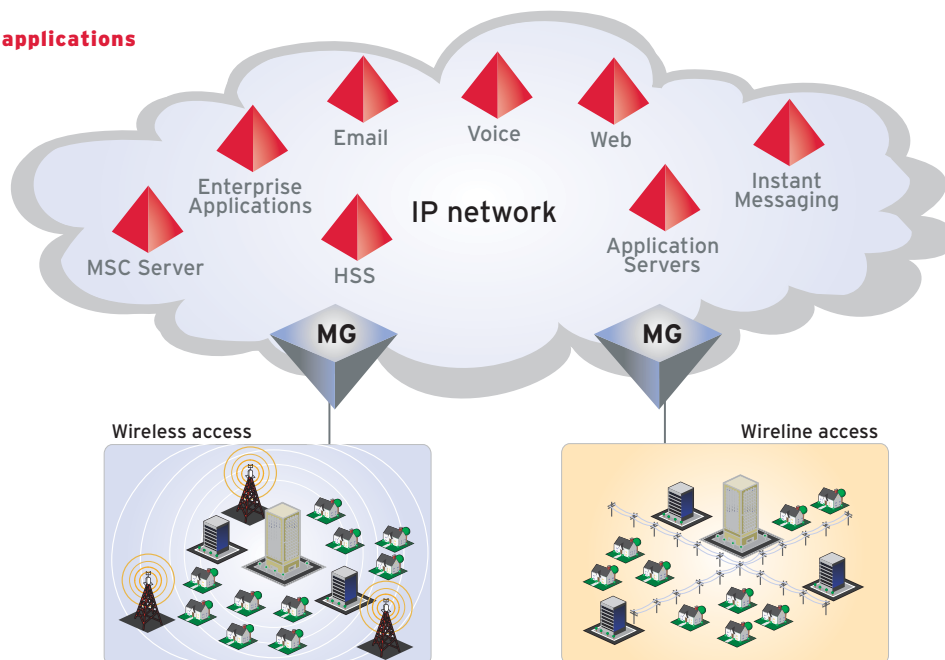
Nortel's Packet MSC solution for CDMA is a field-proven, carrier-grade platform available today. Nortel began delivering high-quality CDMA networks more than 12 years ago and has provided industry-leading Voice over Packet solutions to carriers since 1999. The CDMA Packet MSC leverages — and enjoys the benefits of — an unprecedented level of global packet network leadership. In fact, Dell'Oro Group lists Nortel as the worldwide leader in Carrier VoIP for five years running (2002-2006).

Nortel's introduction of Next Generation Voice Core for CDMA brings with it high expectations of carrier-grade availability that are met with a unique set of Nortel features:

- 2nd Generation ATCA with Nortel carrier-grade LINUX creates the Versatile Service Engine that provides a 'Hard' softswitching for MSC Server platform
- Re-use of mature, market-proven, high-stability software for MSC Server and HLR
- 4th Generation Media Gateway technology with unique Nortel reliability features

Nortel endorses and utilizes a 2nd Generation ATCA platform for the MSC Server. In this respect, Nortel believes that ATCA standards alone are not a guarantee of carrier-grade performance for commercial off-the-shelf computing technology. As such, Nortel has worked with the ATCA vendor community, specifically the PCI Industrial Computer Manufacturers Group, to create a fully third-party 'Hard' softswitch platform. Nortel's solution utilizes Commercial-Off-The-Shelf (COTS) ATCA equipment that is fully compliant to PICMG standards; therefore, this equipment is available to any other vendor or ATCA application developer.

Figure 2. All-IP applications



A key strength for Nortel is the ability to port Nortel's stable, mature, feature-rich software onto the 'Hard' softswitch platform. This pragmatic 'best of both worlds' approach to softswitch evolution has enabled Nortel to create a fully-functional, high-density and highly-scalable product with field-proven software that continues to maintain 'mission-critical' application stability.

Nortel is a recognized market leader for high-density Media Gateways with consistent global leadership in both port shipments and revenues. Nortel's Media Gateway has an impeccable reputation as the industry's leader in deployments with state-of-the-art Voice Services Processor technology. Now in its fourth generation, Nortel's VSP4e technology exceeds the existing carrier-grade reliability benchmark of its predecessors through the application of integrated optical TDM transmission interfaces with automatic protection switching and with unique 'on-board' component-sparing features.

Simplified management

Nortel is simplifying the management of CDMA networks by providing a consolidated OA&M solution. With the deployment of packet-based CDMA wireless networks to deliver next-generation technologies, Nortel's CDMA

Network Manager (CNM) provides a single clean, consistent management interface, regardless of network element type. The easy-to-use graphical user interface significantly reduces operational tasks, including managing faults, controlling operational access to system nodes, provisioning network equipment, and tracking and reporting system performance. The intuitive activity-based actions allow personnel to quickly perform their desired function, even if it is to drill down to the source of an issue, in order to keep networks running at optimal efficiency. CNM makes it simple to maintain CDMA Core networks.

Technology convergence

Nortel continues to evangelize its vision of mission-critical All-IP converged applications based on a common packet core. Nortel uses 2nd Generation ATCA technology for the next generation platform for mission-critical infrastructure: the CDMA MSC Server and other applications, such as the IMS components: HSS, MGCF and CSCF, GSM/UMTS MSC Server and HLR, next-generation packet Access Gateway for LTE and UMB, as well as wireline applications. Therefore, Nortel is realizing and deploying the network vision that includes the convergence of multiple applications onto common platform technology.

Nortel's wireless and wireline network solution utilizes Nortel's market-leading fourth-generation gateway-on-a-blade VSP technology. Consequently, convergence in the bearer plane is achieved through the convergence of multiple media gateway applications onto this same Media Gateway technology.

Summary

The Packet MSC solution benefits from Nortel's expertise as a leader in Carrier VoIP and CDMA networks to deliver a consolidated cost-efficient solution that makes voice services cheaper to operate.

Nortel's Packet MSC solution provides the highly scalable capacity solution for all customer network deployments.

Nortel's Packet MSC solution is convergence-ready, making the core network ready to take the next step in the IMS architecture evolution.

Operators deploying Nortel Packet MSC are confident that this best-in-class solution meets or exceeds expectations of reliability and crystal clear voice service in CDMA networks today.

For more information, visit Nortel on the Web at www.nortel.com. For the latest Nortel news, visit www.nortel.com/news.

For more information, contact your Nortel representative, or call 1-800-4 NORTEL or 1-800-466-7835 from anywhere in North America.

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