CASE STUDY: TELECOMMUNICATIONS

# Nortel Realizes "Business Made Simple" through ATCA Joint Development

MOTOROLA

## Nortel teams with Motorola to create the Versatile Service Engine for IMS Wireless, Wireline and Cable Applications—realizing Nortel's vision of a common platform with carrier-grade AdvancedTCA based technology


Nortel CSC1000

### Challenge

Driven by its "Business Made Simple" initiative, Nortel pursued a plan to standardize on a new AdvancedTCA® (ATCA®) based communications server—achieving significant competitive advantage in terms of cost, efficiency, and time-to-market. To meet this challenge, Nortel sought a trusted collaborator with the right blend of innovation and telecom expertise to deliver on Nortel's design for a carrier-grade, open-standards platform.

### Solution

Building on a decades-long relationship of successful collaborative efforts, Nortel partnered closely with Motorola's Embedded Communications Computing business unit to design the common-platform—which Nortel refers to as the Versatile Service Engine (VSE). Based on new technology, this carrier-grade platform delivers a significant increase in shelf density, a carrier-grade Linux operating system, and the ability to restore systems without suffering data loss.

### Benefit

For Nortel customers around the world, Nortel's ATCA based VSE platform will help reduce the footprint of network core components, increase network capacity, improve reliability and flexibility, and provide greater choice and interoperability of product components. Nortel now has greater competitive advantage through its focus on value-added IMS applications and services such as multimedia voice, gaming, and converged mobility.

**Working together with customers in 150 countries,** Nortel's innovative network solutions help power commerce and communications across the globe. For decades, Nortel employed a traditional design model that entailed developing and testing platforms internally from the ground up. In recent years, however, it was becoming clear that industry deregulation and the presence of IP in networks had fractured the carrier business model—drastically driving down profit margins. Nortel's vertical design model resulted in significant duplication of resources and did not allow it to further streamline its internal metrics for time-to-market or differentiated features.

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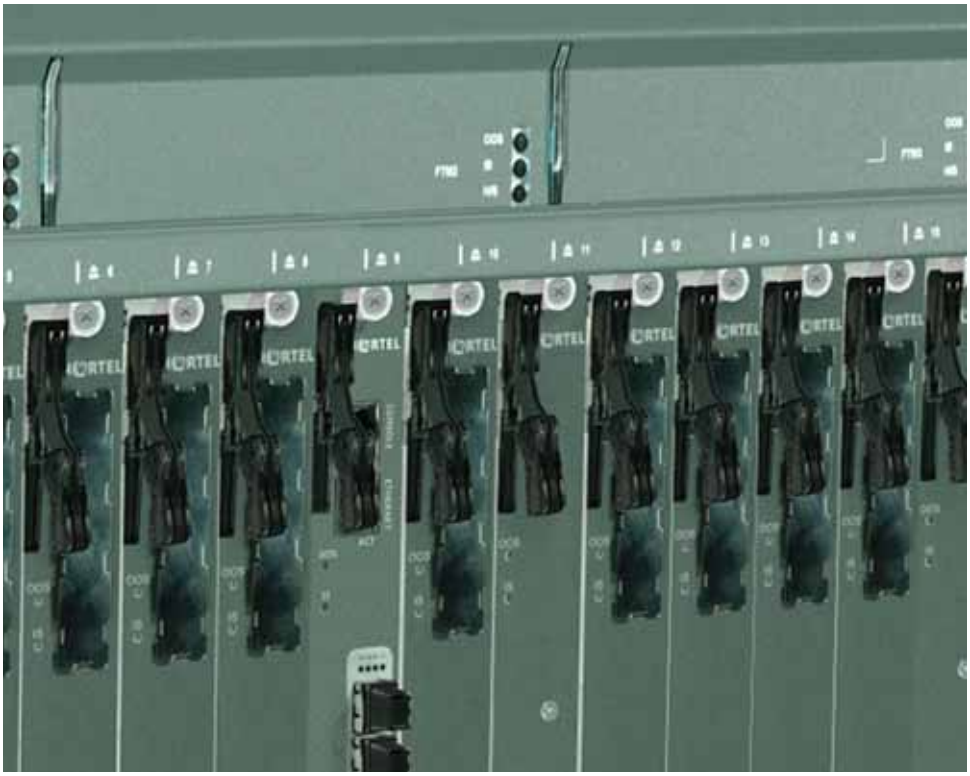
### The Shift to Platform Outsourcing

Nortel concluded that to extend its product leadership, it should adopt a more modular, scalable, standards-based architecture that shifted the company’s approach from duplicating base platforms to delivering differentiated service value. A comprehensive business analysis convinced Nortel that it could gain significant competitive advantage by sourcing its future platform as a fully integrated communications server. Such a strategy would enable Nortel to combine its value-added software and services with the economies of a communications server – an outsourced, standards-based, carrier-grade base platform.

While Nortel had the vision and the expertise, it needed a telecom-tested ally that could produce the new platform – enabling Nortel to develop its solutions more economically and efficiently, deliver more rapidly, and shift the focus of R&D to true differentiation. A trusted, progressive partner could help reduce infrastructure cost and deliver a ‘technology roadmap’ to anticipate platform requirements and new feature needs. Most significantly, an outsourcing ally could help Nortel exploit the industry trend toward standardization of telecom hardware and software.




### Nortel Taps Into Motorola’s Open-Standards Expertise

Motorola is a long-time Nortel supplier and one of the original creators of embedded computing standards. Beginning in the 1980s, the company grasped the value of standards-based architectures – making various technologies freely available to encourage wide market adoption. In doing so, Motorola essentially created an embedded computer market where none existed before. **“For the past 25 years, Motorola has focused on pushing open standards,” says Wendy Vittori, vice president and general manager, Embedded Communications Computing, Motorola. “As a company, we believe that driving costs down for our customers by making computing open and affordable is a solid value proposition.”**

As Nortel and Motorola strengthened their relationship over the years through a variety of collaborative projects, Motorola honed its expertise in new telecom technologies. This telecom-centric focus, along with the trust gained over decades of collaborative accomplishment, led Nortel to choose Motorola to help implement its common-platform vision. **“Nortel’s history with Motorola, including its hardware and software experience, its innovation, and its ability to cut time-to-market, made it the ideal collaborative partner for this visionary project,” says Paul Brescia, senior manager, PLM, OEM Platforms, Nortel.**

“Motorola was willing to do whatever was required to achieve success. Together, we’ve built an industry-leading solution.”

**JIM EINARSSON, LEADER, VERSATILE SERVICE ENGINE, NORTEL**

## NORTEL ATCA DIFFERENTIATORS

**Higher capacity**
Three chassis per frame instead of the standard two reduce the footprint and scalability of network core components.

**Higher reliability**
Enhanced fault detection, separation of elements by cooling zone, and separation of redundant elements greatly reduces the potential for service disruption.

**Increased serviceability**
The “flight recorder” capability for system restoration, ability to patch software without interrupting service, and automated one-click upgrade significantly decrease maintenance time and expense.

**Provisioning efficiency**
Common operations, administration, and management (OAM) across all elements lowers the time and cost of provisioning.

### The ATCA based Versatile Service Engine

The result of a collaborative engineering process – in which Nortel contributed its carrier-grade expertise to the content and architecture of a solution designed by Motorola – is the groundbreaking Versatile Service Engine (VSE), an open-standards platform that delivers true carrier-grade performance and availability. The engine uses standards-based hardware, a hardened Linux operating system with telecom-specific extensions, and modular, fault-tolerant middleware. The VSE is based on the global Advanced Telecommunications Computing Architecture® (AdvancedTCA or ATCA) standard, which incorporates the latest advancements in high-speed interconnect technologies, leading-edge processors, and platform management capabilities. The VSE’s next-generation technology enables Nortel’s solutions to take advantage of the processing capability continually improved upon by other major chip manufacturers.

*Compact, High-density Hardware*

Motorola leveraged its internal, carrier-grade design practices and past COTS experiences to build a platform that made the ATCA standard more operational – creating the necessary packaging, cooling, and power distribution necessary to build a carrier-grade system. The VSE cabinet supports 16-slot, 12U-high chassis that allow three chassis per frame, offering higher density than previous designs that provided 14-slot, 13U-high chassis with only two chassis per frame. Designed for superior reliability, the VSE provides enhanced fault detection and handling, separate cooling zones for redundant components, and physical separation of switch blades in the same zone to prevent accidental removal of an active switch while in service. The VSE delivers improved serviceability through PICMG® 3.x compliance and extended service interval times during cooling outages. Together, these capabilities ensure even greater availability than the 5NINES required for service provider networks.

*Robust, Fault-tolerant Software*

**“We’ve enhanced all of the ATCA platform basics, and on top of that built our carrier-grade Linux OS and middleware,” says Paul Brescia.** The VSE boasts an open-source, fault-tolerant Linux operating system and Nortel carrier-quality features such as robust event notification, powerful messaging service, a high-performance scheduler, and reliable process and system health monitors. Through its industry-standard OS, the VSE can take advantage of the latest enhancements in security, multi-threading, multi-processing, scalability, and robustness. **“We have a product that I believe is vastly superior to our competitors from an availability, capacity, and quality perspective,” Brescia says.**

*Comprehensive Professional Services*

To speed VSE development and time-to-market, Nortel utilized Motorola professional services such as architectural consulting and collaborative engineering program development, and improved installation through customized, shelf-level integration. Other Motorola services essential to the Nortel VSE rollout included integration of third-party products and platform management capabilities such as interoperability testing and availability modeling.

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**To learn more about our communications server solutions, visit us at www.motorola.com/computing.**

## Benefits of the Visionary VSE

Capitalizing on the benefits of an open, standards-based, common platform, the VSE helps Nortel reduce overall expense, enhance scalability, and significantly reduce time-to-market. In the long term, Nortel can continually return to the VSE as its core platform. If customers request a new application or service, Nortel can simply customize the core technology – avoiding the costly time and effort of redevelopment.

*Reduced Total Cost of Ownership*

The VSE requires only a handful of module types, configurable by software to handle a multitude of network roles. This commonality translates to savings for service providers on spares inventory, training, and operating costs. The VSE requires less power and space than standard solutions, and is faster and easier to install. The VSE is also easier to provision than other solutions, with a common operations, administration, and management (OAM) across all elements. Combined, these VSE characteristics significantly increase service provider efficiencies and reduce their costs.

*Increased Scalability*

The VSE scales easily to align with network growth. A modular hardware architecture and decoupled software architecture enable service providers to deploy IMS services on a small or large scale. Various dimensions that govern system capacity such as provisioning, database transactions, and signaling can all scale separately, so investments can be applied more efficiently. Modular blades enable customers to mix and match different blades for different jobs. And the blades are thoroughly scalable: customers can add subscribers by simply adding more blades (rather than additional platforms).

*Faster Time-to-Market—with Added Value*

Leveraging the carrier-grade ATCA platform and the technology rapidly becoming available through the ecosystem, Nortel can go to market much faster than designing carrier-grade platforms from scratch. **“By taking out the design cycle and the productization cycle that would have been used on a plain vanilla ATCA chassis, we’ve probably sliced a year off of time-to-market,” says Paul Brescia.** By essentially customizing standardized, reusable designs, Nortel has freed its developers to concentrate on differentiated services such as call session control and subscriber management. The company can also focus on value-added software, such as a custom Linux OS designed jointly with Wind River to be merged onto Nortel’s platform for use by other customers.

## Nortel and Motorola: Collaborating for Transformational Change

Ever-evolving market forces and customer requirements in the telecom space drive Nortel to remain progressive, nimble, and far ahead of the technology curve. This collaborative effort with Motorola represents one of Nortel’s most visionary accomplishments to date. With the ecosystem already heading toward standardization, leaders at Nortel and Motorola believe that other communication vendors will recognize the advantage of this new common-platform solution—and will have to follow their lead in order to stay competitive. **“Motorola gained the value of Nortel’s experience, and Nortel got the value of Motorola expertise that helped us diverge from our traditional iterative building process,” says Brescia. “This project is a definitive win-win for both companies.”**

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