



## Position Paper

### Hyperconnectivity leads to enterprise transformation

You've heard Nortel executives, such as John Roesse, our CTO, talk about Hyperconnectivity and enterprise transformation. So what do these two important concepts mean to you and how are the two linked?

First, what is Hyperconnectivity? Hyperconnectivity is a mega-trend — a phenomenon through which everyone and everything that can benefit from being connected to the network *will* be connected. A recent issue of the *Economist* had a special supplement titled “When Everything Connects,” re-enforcing this mega-trend and asserting that in the near future wireless “will vanish entirely from view” — be omnipresent, and yet so finely woven into the fabric of our lives that it's invisible.

Enterprise transformation is Nortel's vision, which capitalizes on Hyperconnectivity to not only impact how work is done through rich collaboration across an increasingly mobile and virtualized organization, but also to redefine how work and business processes are organized and accelerated in a business environment in which real-time everything is demanded by clients, citizens and customers. Mike Zafirovski, Nortel CEO, has predicted that “What the Internet did for information, Hyperconnectivity will do for communications.”

Hyperconnectivity presents enterprises with challenges and at the same time creates immense opportunities.

#### Enterprise transformation: Why you should care

Enterprise transformation can positively impact your employees, your customers and clients, and your business effectiveness and productivity. Consider the following. A recent Nortel-sponsored IDC study showed that not only are 16 percent of today's information workforce ‘hyperconnected’, but there is poised behind them 36 percent of the information workforce that is ‘highly connected’. IDC predicts that, on age alone — people retiring and young people entering the workforce, within 10 years the hyperconnected could reach 25 percent of the total information workforce. And with some migration of people from the “increasingly connected” cluster, we could easily be up to 40 percent.

#### Increased personal productivity

Today, the hyperconnected and highly-connected employee has to deal with multiple devices, multiple numbers and passwords, multiple inboxes and multiple security environments. Missed calls, telephone tag and security exposures are some of the challenges today's user experiences. This has an effect on employee productivity and, when there is “a better way”, can lead to poor morale and lower loyalty.



Dofasco, one of the most profitable steel companies in North America, professes that “our product is steel, our strength is people.” The link between profitability and employee satisfaction has been well established, led by research at the Harvard Business School. One of its alumni, Frederick Reichheld, wrote in his book *The Loyalty Effect and Loyalty Rules*: “We found that there was a cause-and-effect relationship between the two; that it was impossible to maintain a loyal customer base without a base of loyal employees.” For example, in a study at Sears Roebuck & Co. a 5% improvement in employee satisfaction led to a 1.3% increase in customer satisfaction which, in turn, generated a 0.5% increase in company revenues. Satisfied employees are motivated employees.

An important employee segment is those just entering the work force. Already, IDC’s survey shows that 60 percent of hyperconnected employees are under 35. These so-called “Millennials” have grown up with the Internet and with social networking environments, using tools such as facebook, friendster, orkut, meetup, wikis and blogs. Watch them IMing and you’ll appreciate immediately that they are multi-taskers supreme. IDC confirms that Millennials view Wi-Fi access, IM, presence and such capabilities as conditions for employment. Mark Greenfield of the University of Buffalo appropriately categorizes Millennials as having “Hypertext minds”. Millennials take their well-connected lives with them when they enter the work force, and if a potential employer doesn’t match those expectations, then they may look elsewhere. In fact, Johan Krebbers, the Group IT Architect for Royal Dutch Shell, has said that one driver behind his plans to deploy unified communications on a global basis is the need to provide a working environment that meets expectations of new employees.

### **Seamless mobility**

Nemertes Research surveyed IT professionals and found that 90 percent of employees work in locations other than their headquarters. The resulting virtual workplace drives the need for anytime, anywhere communications and a “true broadband” experience over any device and over any network, to speed up decision-making and time to market.

In his blog, John Roesse offers the following on “true broadband”: “My definition of broadband communications is more associated with the experience than the technology involved. In a true broadband communications experience, the technology is so effective in delivering a rich experience that you simply forget about the underlying technology and just communicate. Most human-to-human communications, then, are broadband if this is the definition. When we meet each other in person and have a chat, for example, we use a rich set of communication modes that include visual, audio, emotes, actions and even senses. They all come together in such a way that we forget that underlying the communications experience is actually a wide range of ‘technologies’ that are in play. Do you ever think that the person you are communicating with has a vibrating vocal chord, that sound waves are propagating through the air at the speed of sound, that your ear drums are vibrating, or that your neurons are processing the data, making it real to you? I’m assuming not and that instead you just communicate.” Achieving a true broadband experience is behind Nortel’s aggressive investments in fourth generation wireless technologies such as WiMAX and IEEE 11n.

In the transformed enterprise, seamless mobility allows users to stay connected through fixed mobile convergence with

secure roaming and a “true broadband” experience across enterprise and public wireless networks. Seamless mobility also enables the all-wireless office, by supporting next-generation WiFi systems; we call this the *unwired enterprise*. Innovation at the intersection of mobile end-user needs and applications and wireless networking will profoundly change the way enterprises communicate.

### **Rich collaboration**

Virtualization, an inevitability, is driven by macroeconomic trends and enabled by maturing technologies. Virtualization is not just a set of technologies that can be applied in data centers. Virtualization reflects the critical business need for enterprises to embrace mobile working practices, ever increasing levels of partner integration and outsourced services.

Think about it. The nature of work itself is changing. Increasingly, employees are paid to make decisions, whether these decisions are related, for example, to customer service, product development or problem resolution. The amount of work that relies on group input is increasing significantly. Nortel estimates that in the U.S. over 51 percent of the work force will be knowledge and information workers by 2014 (the percentage of service workers is decreasing). There is no reason to believe that these trends aren’t common across enterprises in many developed countries. One of the reasons for this shift is the trend to move work to where it can be done most effectively.

And we are in for more change over the next decade! Thomas W. Malone, the founding director of the MIT Center for Collective Intelligence, has observed that the most important innovation in the next decade will be new ways of organizing work (ref: *The Future of Work*, Harvard Business School Press,

2004). Malone argues that “convergence of technological and economic factors — particularly the rapidly falling cost of communication — is enabling a change in business organizations as profound as the shift to democracy in governments. For the first time in history, it will be possible to have the best of both worlds — the economic and scale efficiencies of large organizations, and the human benefits of small ones: freedom, motivation and flexibility.” None of this would be possible without rich and cost-effective multimodal unified communications.

In the transformed enterprise, rich collaboration capabilities are provided to allow distributed knowledge workers to work together effectively across a highly distributed environment.

### Business process acceleration

Leveraging Service Oriented Architecture (SOA) and Web Services frameworks, business applications and processes become communications-enabled. Why is this happening? Gartner has estimated that 85 percent of business processes are slowed down through human latency. Business Optimized Communications address this challenge by enabling timely closure with key stakeholders, to shorten the ‘time to X’ where X can be problem resolution, service, product, revenue and so on. In many enterprises, the early adopters of Business Optimized Communications have been contact center environments, tying customer service applications with back-office systems.

The following table identifies a number of vertical industry examples, but you are in the best position to assess which business processes can most benefit your company from being communications-enabled.

## Examples of Business Optimized Communications

- A patient is discharged more quickly because the patient care application can reach out to authorizing medical personnel, wherever they are.
- A policy is approved more quickly because the insurance application allows the agent to initiate real-time communications with people who have reviewed the policy or are required to approve it.
- Faster and more effective emergency response is provided because the first responder application recognized the availability and location of key resources.
- A brokerage team is better able to respond to the stock market dynamics through a communications-enabled brokerage application that orchestrated real-time collaboration triggered by a market event.
- An industrial customer problem is resolved more quickly because the project management application scheduled the earliest possible conference call with all key available stakeholders and delivered all relevant information to them.

### Real-time everything

With enterprise transformation, everything that can benefit from being connected to the network *will* be connected. This is enabled by low-cost sensors and actuators that can detect over 100 different physical parameters, including temperature, radiation levels, door closures, visual and audio signals, and location — and that can cost-effectively transmit this information.

Take, for example, an enterprise with 1,000 employees. Its IP network will eventually have to support 10,000 to 100,000 network-connected devices that are integrated into various business processes. The heating, ventilation and air conditioning (HVAC) system of one particular hospital has 30,000 IP addressable points. Research conducted at the University of California, Berkeley estimated that 30 percent of North American energy consumption is in HVAC systems. A 25 percent reduction in energy use through sensor-controlled

HVAC could have significant bottom-line implications. These savings can be complemented by passive and active radio frequency identification (RFID) in a broad range of form factors that can be used for people and asset tracking and management.

More generally, business applications can become environmentally aware by incorporating sensor and RFID inputs, thus improving business effectiveness across a broad range of environments: improved energy efficiencies through building management systems; better utilization through asset tracking systems (e.g., a fleet of trucks, medical carets); improved risk management through enhanced security and hazard monitoring; and improved effectiveness over a full spectrum of location-based services integrated into communications-enabled applications (e.g., better response to emergency situations).

## Nortel's strategy for enterprise transformation

Nortel's business strategy for enterprise transformation has three elements to allow enterprises to meet the challenges and capitalize on the opportunities created by Hyperconnectivity:

- Business Optimized Communications
- Business Optimized Networking
- Integration Services

These are tightly related.

The foundations of Business Optimized Communications are presence-enabled communications tightly integrated with Microsoft and IBM desktop environments, and the extension of communications to business applications to accelerate business processes through SOA frameworks. These rely on Business Optimized Networks, which seamlessly sustain and enhance the communications tools and applications that are the foundation of today's businesses. Finally, Nortel Integration Services provide the resources, expertise, best-in-class practices and processes required for the intelligent design, professional implementation and evolution of enterprises as they realize enterprise transformation.

### Business Optimized Communications

The challenges of Hyperconnectivity are being addressed by what the industry refers to as unified communications. Unified communications combines presence; real-time communication modes such as IM, telephony, video and application sharing; and near-real-time communications modes like email and voicemail into a single experience — anytime, anywhere and over any device. Unified communications creates an environment that decouples communications from the location of the user and which device he or she is using, and

blends communication services with personal productivity tools like calendaring and directories.

The opportunities of unified communications go beyond personal productivity enhancements through simplified user access. Group productivity is also enhanced by allowing rich multi-party multimedia collaboration and by providing seamless transitions between different modes of communications. For example, a user can easily escalate from an IM exchange to an application sharing session with voice and video — no new session to initiate.

The transformational benefits of unified communications are further realized when it is integrated with business applications and processes. There are two forms of Business Optimized Communications: those allowing user-initiated unified communications sessions and those that can initiate unified communications sessions directly. In the first case, users can initiate unified communications sessions directly from the business applications they use. In the second case, business processes can be accelerated by initiating unified communications sessions (e.g., IM notifications)

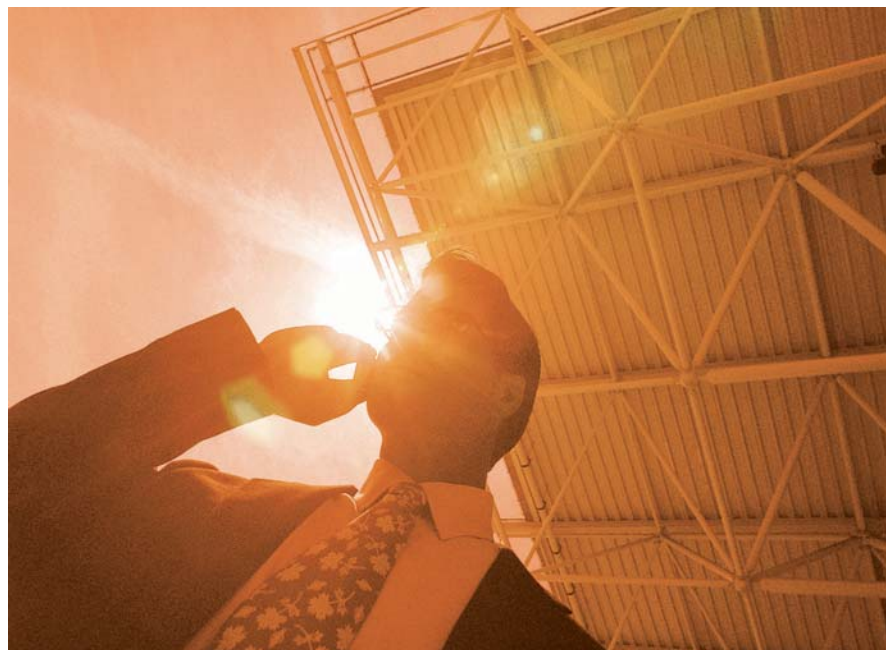
directly from the applications, triggered by some event.

Nortel's approach to Business Optimized Communications leverages the SOA framework to make communications more intuitive and applications communications aware.

### Business Optimized Networking

The implications of Hyperconnectivity go beyond unified communications to an explosion in network-connected devices — for example, in the realms of energy and property management, asset and location tracking, telemetry and enhanced security systems. Fast forward now 15 years, to a time in which, according to a professor at MIT, there will be a trillion devices connected to the network, and most of them will be wireless. Hyperconnectivity will drive massive increases in network scalability and make the enterprise more dependent on its network than ever before.

The sheer number of devices on the network, the growth in multimedia traffic and more real-time application demands will complicate life for network IT professionals in a number of ways. For example, meeting real-time



reliability, endpoint security, scalable bandwidth and application latency requirements will be critical challenges going forward. Scaling the network by a factor of 10 to 100 can't be achieved without fundamentally streamlining current networking environments.

### **Nortel as a partner for enterprise transformation**

Nortel understands the challenges faced by enterprises in the hyperconnected world, and is committed to delivering solutions for enterprise transformation through:

- Business Optimized Communications incorporating unified communications, more engaging customer service applications and communications-enabled applications, working with strategic partners such as Microsoft and IBM
- Ultra-reliable autonomic Business Optimized Networks that span data centers, campus sites, and remote and branch offices and provide secure on-site and off-site mobility through "true broadband" wireless networking
- Professional Integration Services built on years of experience in converged networking and communications

As for external validation, Nortel has been positioned by Gartner in the 'Leaders' quadrant in the '2007 Unified Communications Magic Quadrant' report. According to the Gartner report, "The Leaders quadrant contains vendors selling comprehensive and integrated unified communications solutions that directly, or with well-defined partnerships, address the full range of market needs. These vendors have defined migration

### **The Nortel and Microsoft alliance**

- Unique branded Innovative Communications Alliance, driving joint account planning, common marketing and channel development
- Technology collaboration resulting in tight integration of unified communications enterprise and carrier-hosted solutions, evolving to transformed solutions based on a common software platform
- Nortel as the preferred services integration partner for joint ICA solutions

### **The Nortel and IBM alliance**

- Software communications and business solutions for SMBs
- Integrated unified communications solutions with Lotus Notes and Sametime
- SOA framework for communications-enabled applications to accelerate business processes and customer service
- Business Optimized Networking for highest QoE for unified communications and Websphere applications.
- End-to-end services combining Nortel and IBM competencies

and evolution plans for their products in core unified communications areas and are using their solution sets to enter new clients into their client roster, and to expand their footprint in their existing client base in new function areas."

But the ultimate proof point is customers who have committed their communications future to Nortel. For example:

- Nortel will supply network communications equipment directly to both the Vancouver Organizing Committee for the 2010 Olympic and Paralympic Winter Games (VANOC) and to Bell Canada, the Telecommunications Provider for the games, as they build the first all-IP converged network at an Olympic Games.

- The Mumbai International Airport has selected Nortel to help consolidate the majority of Mumbai's Chhatrapati Shivaji International Airport's (CSIA) data, telephony and video systems onto a converged wired and wireless IP-based network.
- A Florida healthcare institution is working with Nortel to communications-enable a clinical application to accelerate the patient discharge process with a savings of \$2 million dollar per year per hour advanced.

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