

Unified Management

Managing Enterprise Network Convergence

NORTEL
NETWORKS™

How the world shares ideas.

Convergence Strategies for Integrating Campus, WAN, and Telephony Networks

Until now, management of disparate campus, WAN, and telephony networks has been a challenging task in enterprise environments. Administrators were faced with the task of managing various devices with several different applications, without an effective tool set to provide visibility across the network.

Nortel Networks is currently introducing Unified Management, a breakthrough approach designed to integrate the management of diverse network components into an integrated whole. By delivering system-level visibility into network performance, the modular, cost-effective Optivity* tool set meets the needs of constantly evolving enterprise systems.

“In 1999, Nortel Networks* will have a management opportunity that most other network equipment vendors would kill for.”

Stephen Elliot,

The Gartner Group,

Dataquest

March 1, 1999

Unifying Management to Manage Unification

The emerging global digital economy is driving the trend toward network convergence — telephony and data, application and infrastructure, LANs and WANs. Nortel Networks understands the forces driving convergence, and in response has created the Unified Networks* solutions, designed to support diverse networking technologies within a single, integrated infrastructure.

Drawing on its industry leadership in campus, WAN and telephony management, Nortel Networks introduces Unified Management, an integrated, Web-based solution designed to provide a system-level perspective on the enterprise network. Convergence puts enormous demands on network management personnel, who until now have been faced with the daunting task of managing a far-flung global enterprise with device-oriented applications. The Unified Management approach answers these demands by providing visibility across the enterprise network, delivering the power to find new ways of leveraging intranets, extranets, and the Internet to increase organizational efficiency.

Unified Management solutions are available at every level, with

component Optivity applications designed to meet the needs of campus, WAN, telephony networks, or converged networks uniting multiple technologies. Unified Management diminishes the gaps between applications, the network infrastructure, and the users, creating an integrated, cohesive architecture. This process reduces costs by eliminating system redundancies, and delivers a powerful synergy that translates into increased effectiveness in the marketplace.

Extending the Enterprise

The Nortel Networks Unified Management approach optimizes the performance of enterprise networks, creating an intelligent, policy-enabled strategy capable of adapting to different organizational requirements. In the Unified Networks environment, network managers can develop and deliver new services, increase operational efficiencies, and reduce costs across the enterprise. Organizations can

leverage the benefits delivered by a converged network to develop a leadership position within their existing market, reach new markets, and gain a competitive advantage over their competition.

Unique in the industry, Unified Management introduces a system-level approach that delivers network management, policy, and service level capabilities for all telephony and data network devices enterprise-wide. By consolidating the management of disparate technologies into a cohesive, integrated whole, the following key benefits are realized:

- Network efficiency is enhanced, as administrators are enabled to focus on fine-tuning system performance, instead of managing individual devices.
- Costs are contained by eliminating redundant systems — simplifying the infrastructure, streamlining training, and dramatically reducing network downtime.

Unified Management for Converged Enterprise Networks

Uniquely positioned in the industry, only Nortel Networks has the experience in both telephony and data networking to deliver converged Unified Networks solutions. Through Unified Management, a single administrative team can now manage campus, WAN, and telephony networks, maximizing performance across the enterprise. As the only vendor with the vision, skills and resources needed to offer Unified Management solutions, Nortel Networks delivers the path to tomorrow's converged networks — today!

Legacy Architecture

Existing architectures rely on three groups to manage their campus, WAN, and telephony networks.

Result: Lacks unification.

Unified Management Architecture

The Nortel Networks solution integrates the management of campus, WAN, and telephony systems into a cohesive whole, enabling one group to manage, set policies, and monitor service levels across the enterprise.

Benefit: Integrated approach maximizes effectiveness of management personnel and overall network performance, eliminates the possibility of system-wide errors.

Unified Networks

In the future, Nortel Networks will deliver its vision of a fully unified environment, where a single campus/WAN/telephony network is managed by a single group, using

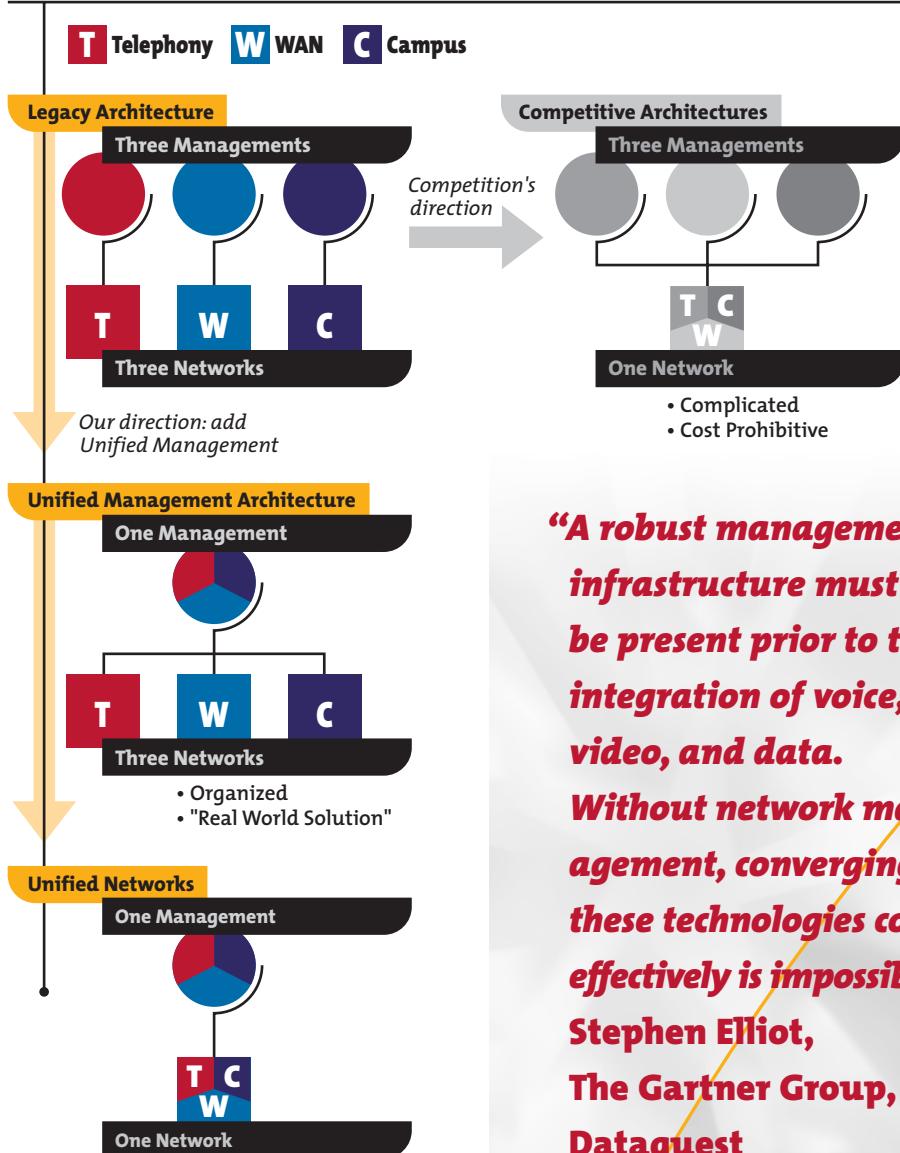
integrated Optivity software solutions to deliver the seamless Unified Networks of the 21st century.
Benefit: Fully integrated network delivers fine-tuned performance, maximizes effectiveness of management personnel.

Competitive Architectures

Third-party solutions implement a flawed approach where three groups (campus, WAN, and telephony) attempt to manage network capabilities separately.

Result: Lacks unification, increases complexity and possibility of system-wide errors.

Unifying Management to Manage Unification



"A robust management infrastructure must be present prior to the integration of voice, video, and data. Without network management, converging these technologies cost-effectively is impossible."
Stephen Elliot,
The Gartner Group,
Dataquest
March 1, 1999

Unified Management Solutions

The new enterprise model demands advanced capabilities to meet the challenges of the emerging digital economy. Network managers need the tools to prioritize mission-critical e-commerce applications, ensure low-latency service for telephony and video, and maintain fast flow rates for data traffic and e-mail. Only Nortel Networks can provide this level of integrated enterprise networking — by leveraging its industry leadership in telephony, video, and data networking. Unified Management creates an environment where enterprise clients can develop a leadership position within their existing markets, reach new markets, and gain a strategic advantage over their competition.

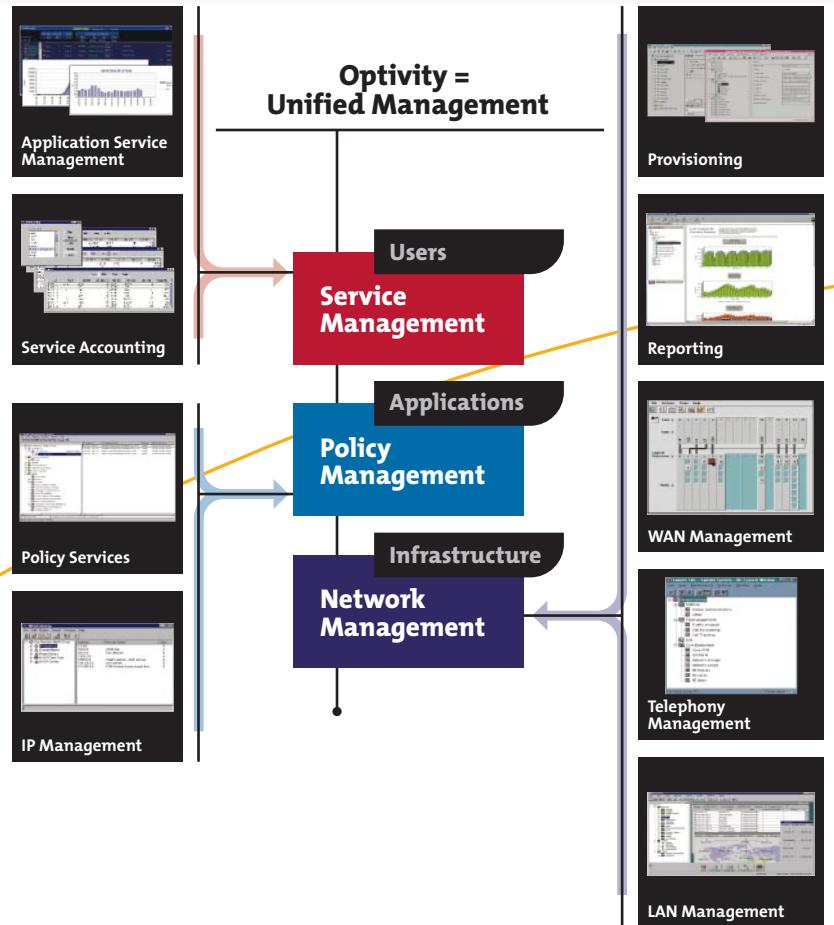
As shown in the diagram, Unified Management consists of three key components:

- Unified Network Management
- Unified Policy Management
- Unified Service Management

Unified Network Management

Effective network management starts at the system level, and the Unified Network Management solution includes three core Optivity modules that combine to manage all network devices as an integrated system, creating a unified infrastructure:

- Network Management System (NMS) for LAN requirements.
- Open Management System (OMS) for WAN requirements.



- Meridian* Administration Tools (MAT) and Switch Manager for enterprise telephony requirements.

Along with the integration of enterprise LAN, WAN, and telephony management, additional Optivity modules can be added to perform advanced management services. Optivity Network Configuration System* can be easily added for multivendor, multiservice device configuration, and system-level management of virtual private networks is provided by Optivity VPN Manager.* Key performance management tools are also available, and all management

applications are integrated into the Optivity suite to provide a system-wide management solution.

Unified Policy Management

A standards-compliant, multivendor solution, Unified Policy Management enables network managers to easily provision, enforce, and verify network policies across the enterprise. Intuitive and easy to use, the Optivity Policy Services* application creates powerful policies that differentiate and prioritize applications and departments, enabling critical

network activities such as e-commerce to receive maximized service levels.

Unified Policy Management extends Quality of Service levels across the enterprise, including campus, WAN, and telephony systems. As business-critical applications such as e-commerce are deployed over IP networks, reliable performance is essential. Costly errors in IP addressing and DNS and DHCP management are easily avoided by using the NetID application, which simplifies address management and provides a system-level view of the IP address architecture.

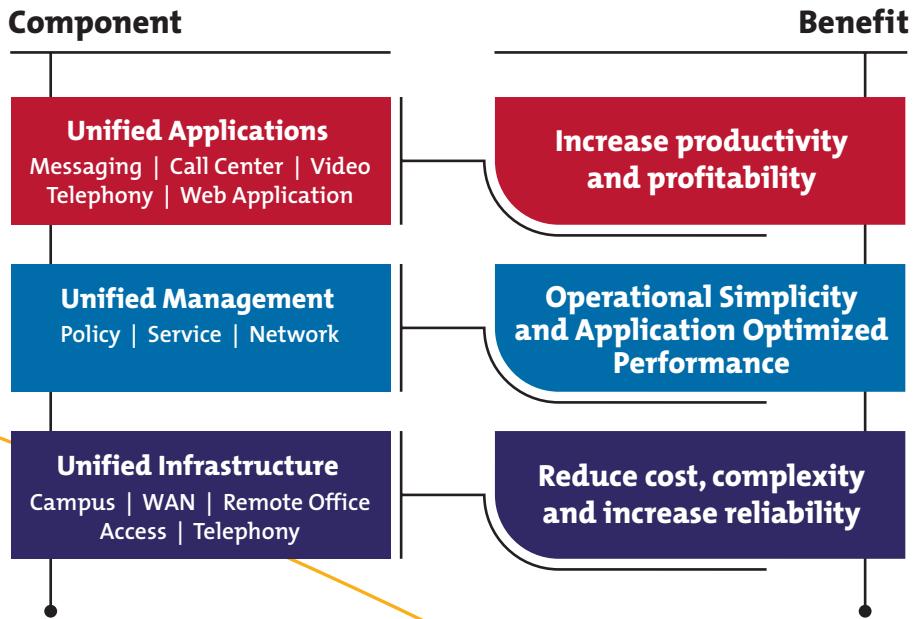
Unified Service Management

A predictable, guaranteed approach to delivering and monitoring prioritized service levels for enterprise clients is the payoff of the Unified Management solution. The measurement of end-to-end application performance, validation of Quality of Service demanded by key systems and departments, and the implementation of usage-based

accounting are the three key challenges that are met by Unified Service Management. The Nortel Networks solution uses powerful network probes and embedded firmware agents to measure response time, bandwidth utilization, and network resiliency, providing industry-leading visibility into the operation of the enterprise network.

Unified Service Management is delivered by two components of

the Optivity management suite: Optivity Service Level Management* and Optivity Service Accounting.* These tools are used to ensure that network policies are enforced, and to measure the level of service that users are receiving from prioritized applications and the overall network infrastructure. Network usage patterns are easily measured and tracked, providing a fair, accurate method for generating departmental chargebacks.



Prioritizing Business-Critical Web-Based Applications

An industry first, the Unified Management solution maximizes the performance of converged enterprise networks, delivering a key competitive advantage in the rapidly expanding Web-based global economy. As businesses become increasingly reliant on Internet-based applications, including e-commerce, demands on the network and management personnel continue to escalate.

Unified Management from Nortel Networks meets these ever-increasing demands, delivering an integrated solution that provides end-to-end management of telephony, video, and data systems from a single, Web-enabled console. This system-level focus frees the manager to focus on provisioning network clients at the highest levels possible, instead of focusing on managing the network at the device level.

In a business climate where Internet, extranet, and e-commerce traffic is exploding exponentially, the performance expectations from the enterprise network and its managers is constantly increasing. Low-latency telephony and video traffic, e-commerce, and high-speed data systems each have their unique requirements, demanding a comprehensive, integrated solution: Unified Management.

Professional Services – The Extended Product

Cogent* Global Services is the professional services business of Nortel Networks, providing end-to-end communication solutions to enterprises. Dedicated to maximizing operational efficiencies, Cogent Global Services provides the expertise needed to ensure smooth, trouble-free implementations of Unified Management.

Service Portfolio

- 7 day x 24 hour coverage

- Network planning, analysis, and design
- Program management
- Coordinating third-party maintenance services
- Help Desk Support — Single number for all technical issues and general inquiries
- Network management and operation services delivered 365 days a year
- Problem management
- Configuration management
- Web-based service reporting

- Performance monitoring and reporting

Resources

- Highly skilled network managers
- Sophisticated network management tools
- Certified personnel
- Efficient processes

Global

- 250 locations in 100 countries
- Multi-lingual and multi-cultural

Meeting the Convergence Challenge with Unified Management

By implementing Unified Management, enterprises are now creating new profitability models leading to increased productivity and reduced operating costs. Only Nortel Networks delivers the integrated telephony, video, and data solutions required to meet the demands of today's worldwide digital economy, and to gain the competitive edge your company is looking for.

For more information on bringing the synergy of Unified Management to your enterprise network, please visit our Web site at:

<http://www.nortelnetworks.com/unifiedmanagement>



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