ALCATEL-LUCENT ENTERPRISE DATA CENTER SWITCHING SOLUTION

Creating the foundation for the
next-generation data center

Alcatel·Lucent
Enterprise

A NEW NETWORK PARADIGM

What do the following trends have in common?

- Virtualization
- Real-time applications
- Mobile devices

They all contribute to the tremendous pressure on today's existing network infrastructure – a pressure not alleviated by simply throwing more bandwidth at the problem.

What's needed is a new network paradigm: the application fluent network. An application fluent network understands the unique requirements of each application, user, device and conversational context to automatically adapt the network to ensure optimal performance.

Introducing the Alcatel-Lucent Enterprise Data Center Switching Solution – delivering on Alcatel-Lucent's vision of the Application Fluent Network.

The Alcatel-Lucent Enterprise Data Center Switching Solution

Alcatel-Lucent helps enterprises address the challenges facing today's data center network while delivering a high-quality user experience for new real-time applications, greater agility in deploying new applications, seamless integration of public cloud services, and reduced data center costs.

Alcatel-Lucent's breakthrough solution starts with a unique blueprint for application fluent data center switching. This blueprint brings together three core innovations that together enable extremely scalable, high-performance and resilient data center fabric:

BEST OF INTEROP 2011

The Alcatel-Lucent Enterprise Data Center Switching Solution won the 2011 Best of Interop award in the data center and storage category presented by InformationWeek Analytics.

"The ever-expanding IT environment found in today's increasingly virtualized data centers is truly in need of forward-thinking concepts like Alcatel-Lucent's new Data Center Switching Solution."

STEVEN HILL, LEAD JUDGE BEST OF INTEROP 2011
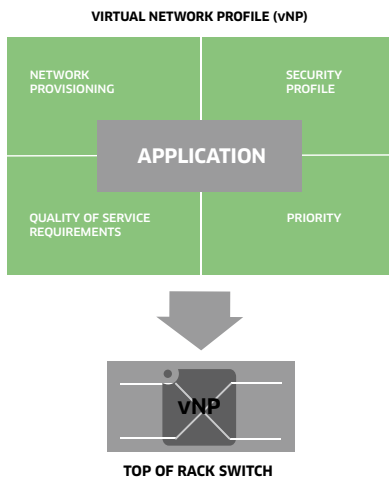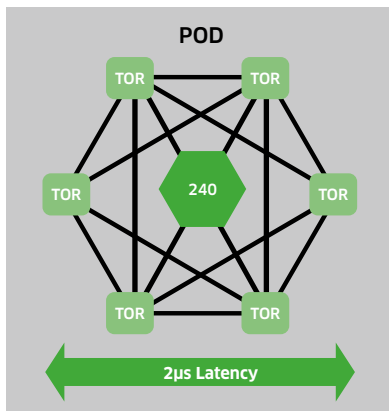
Figure 1: Virtual Network Profile (vNP)

VIRTUAL NETWORK PROFILE (vNP)

NETWORK PROVISIONING	SECURITY PROFILE
APPLICATION	
QUALITY OF SERVICE REQUIREMENTS	PRIORITY

vNP

TOP OF RACK SWITCH

Figure 2: Alcatel-Lucent Pod

POD

240

2μs Latency

THE ALCATEL-LUCENT VIRTUAL NETWORK PROFILE (vNP)

vNP enables applications to be managed as services, letting the network fluently understand and dynamically control what is needed for quality application delivery, including automating virtual machine movement.

vNP:

- Eases the IT effort for server virtualization, letting organizations reap greater virtualization benefits
- Understands the unique requirements of each application (application prioritization, switching provisioning, quality of service [QoS], security)
- Automatically adapts the network to optimize performance

THE ALCATEL-LUCENT POD

The Pod ensures low latency and high performance by providing server-to-server connectivity through a unique direct-connect architecture without relying on a core switch to carry traffic.

THE ALCATEL-LUCENT ENTERPRISE MESH

The Mesh is composed of Pods connected to each other and to core switches to bring together more than 14,000 server-facing ports with aggregate end-to-end latency of less than five microseconds. End users across the enterprise benefit from a high-performance experience thanks to this direct-connect architecture.

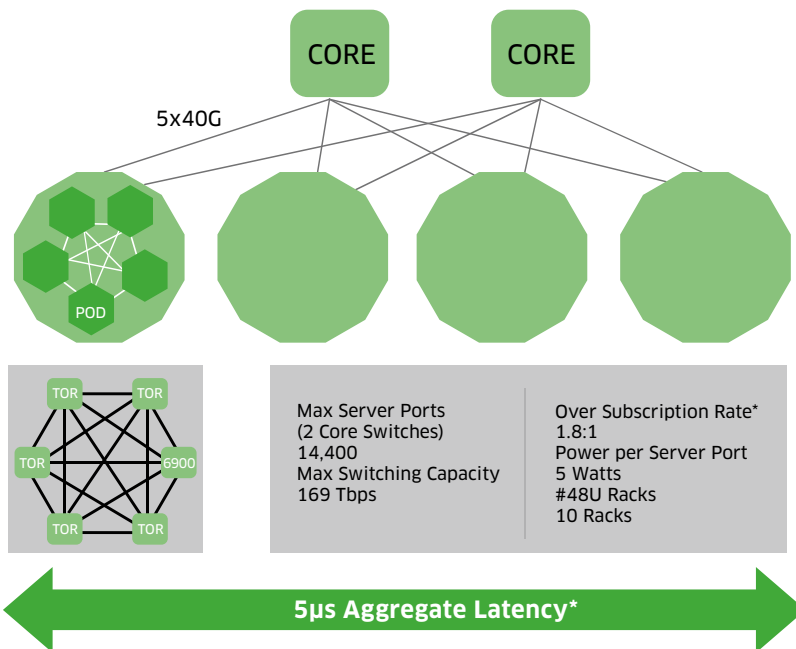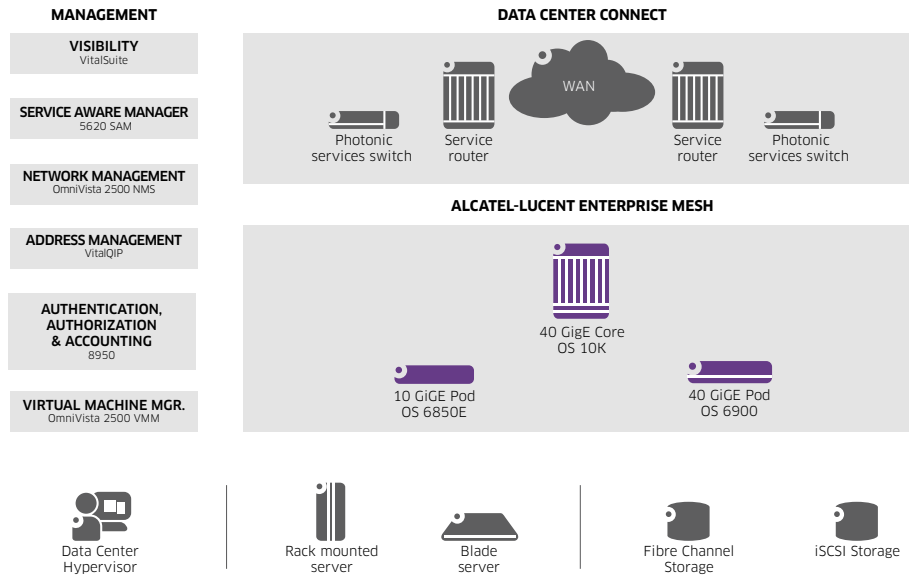**Figure 3:** The Alcatel-Lucent Enterprise Mesh

CORE   CORE

5x40G

POD

TOR	TOR
TOR	6900
TOR	TOR

Max Server Ports (2 Core Switches) 14,400
Max Switching Capacity 169 Tbps

Over Subscription Rate* 1.8:1
Power per Server Port 5 Watts
#48U Racks 10 Racks

5μs Aggregate Latency*

*Assuming server-to-server traffic 70% within a Pod, 20% between Pods and 10% Via Core

Figure 4: Alcatel-Lucent Enterprise Data Center Network Solution

A Complete Solution for the Data Center Network

Alcatel-Lucent's complete solution for data center networking includes the Mesh, Data Center Connect and a Management stack as shown in Figure 4. The Alcatel-Lucent Enterprise Data Center Switching Solution, the Mesh, includes Alcatel-Lucent's market-leading OmniSwitch 10K Modular LAN Chassis, the OmniSwitch 6900 and the OmniSwitch 6850E. The Mesh can scale linearly both in architecture and in pricing model to connect from under 100 to over 10,000 servers. The Mesh delivers on all the new requirements of virtualized workloads:

- Performance: low-latency, 10 & 40 GigE multipath connectivity
- Automation: the network automatically adjusts as a virtual machine is moved within and between data center sites
- Scalability: pay as you grow business model and direct connect architecture enable cost effective small to very large deployments with no rip and replace requirement
- Converged Management: visibility and performance tools linking application level views with network topology for improved trouble shooting capabilities
- Storage Convergence: enables storage model of choice for customer: iSCSI, FCoE.

The management stack includes Alcatel-Lucent's VitalSuite for end-to-end application performance visibility as well as OmniVista 2500 Network Management System and OmniVista 2500 Virtual Machine Manager for fabric management.

Alcatel-Lucent solution also provides both IP and Optical interconnect of data center sites. The Service Routers provide IP connectivity allowing the seamless extension of layer 2 domains between data center sites and the 1830 Photonic Services Switch provides the optical connectivity required to directly interconnect storage area networks present at each data center site.

READY FOR CURRENT AND FUTURE DEMANDS

The Alcatel-Lucent Enterprise Data Center Switching Solution lets enterprises meet current needs while preparing for the future with no costly hardware change-outs. With the Alcatel-Lucent Enterprise solution, your enterprise is ready for:

- 100GigE
- MPLS
- Native Fibre Channel Connectivity

Enjoy the Advantages of an Application Fluent Network in the Data Center

DELIVER A HIGH-QUALITY USER EXPERIENCE

Alcatel-Lucent's application fluent fabric provides any-to-any connectivity with market-leading low latency, density, low power consumption and overall switching capacity needed to deliver optimal performance for real-time, mission-critical applications. Plus, the Pod and Mesh improve application availability by localizing failures with the direct-connect architecture. End-to-end application monitoring gives IT complete application visibility.

GROW YOUR BUSINESS FASTER AND MORE EFFICIENTLY

The Alcatel-Lucent Enterprise Data Center Switching Solution helps you increase agility and speed in deploying new services and applications. A pay as you grow business model and direct connect architecture enable enterprises to start with "right sized" initial deployment and grow as needed. With an application-fluent approach to network virtualization, IT teams enjoy automated virtual machine movement. For larger enterprises, specific corporate departmental data centers can be partitioned to create virtual data centers and reduce complexity. Looking ahead, enterprises of all sizes can achieve seamless co-existence with cloud-based services, helping to simplify cloud service delivery to corporate networks.

REDUCE DATA CENTER COSTS

Alcatel-Lucent's market-leading, low power consumption means lower energy costs for the enterprise. Alcatel-Lucent also helps lower operational costs by treating applications as complete services to simplify data center management. Finally, a virtualized network infrastructure helps reduce equipment and space costs.

Choose Alcatel-Lucent Enterprise for Your Next-Generation Network

With its unique application fluent approach and visionary data center switching blueprint, Alcatel-Lucent Enterprise delivers a complete solution for modernizing the data center network. Alcatel-Lucent Enterprise's Data Center Network Solution lets your enterprise:

• Manage applications as services with the network understanding each application and automatically adapting to follow virtual machine movement within or between data center sites

• Take advantage of a hybrid cloud model with seamless coexistence of service provider-delivered cloud services and applications served from the enterprise data center.

• Prepare for the future with Alcatel-Lucent's innovative data center fabric. The Pod and Mesh direct-connect architecture delivers low latency, high density and a long term sustainable design. Plus our standards-based approach means no lock-in to a specific vendor

No other vendor offers the depth of experience and expertise Alcatel-Lucent Enterprise has in delivering large-scale switching solutions for service-provider and data-center clouds.

Turn to a partner with the vision and innovation to help your organization take its data center network into the future—from network virtualization to a hybrid cloud model. Turn to Alcatel-Lucent Enterprise.

To find out more about how the Alcatel-Lucent Enterprise Data Center Network Solution can help your enterprise transform its data center network, click here or contact your Alcatel-Lucent Enterprise account manager.

http://enterprise.alcatel-lucent.com/

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