ALCATEL-LUCENT ENTERPRISE DATA CENTER SWITCHING SOLUTION

Automation 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 and 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 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 innovations that enable extremely scalable, high-performance and resilient data center fabric.
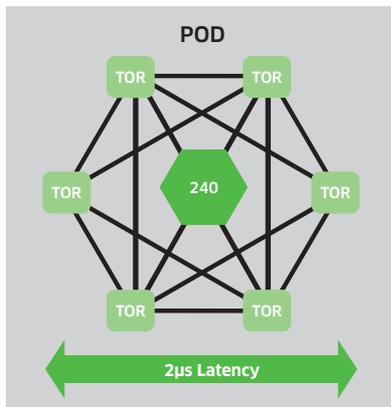
"The ever-expanding IT environment found in today's increasingly virtualized data centers is truly in need of forward-thinking concepts like Alcatel-Lucent's new Data Center Switching Solution."

**STEVEN HILL, LEAD JUDGE
BEST OF INTEROP 2011**

Figure 1: Virtual Network Profile

VIRTUAL NETWORK PROFILE (vNP)

THE ALCATEL-LUCENT VIRTUAL NETWORK PROFILE

The Virtual Network Profile (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.

The Alcatel-Lucent vNP provides the following features:

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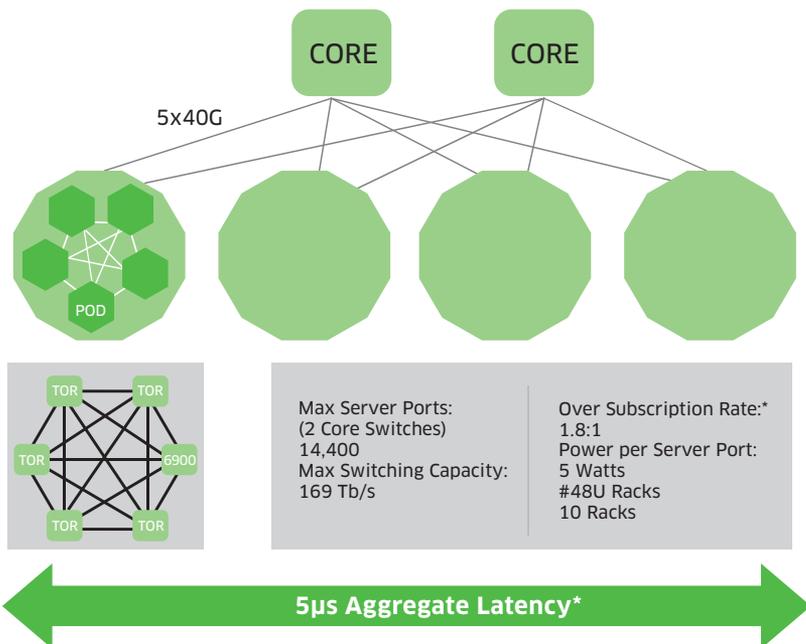- Automatically adapts the network to optimize performance

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 Pod is a complete fabric for small-scale data centers.

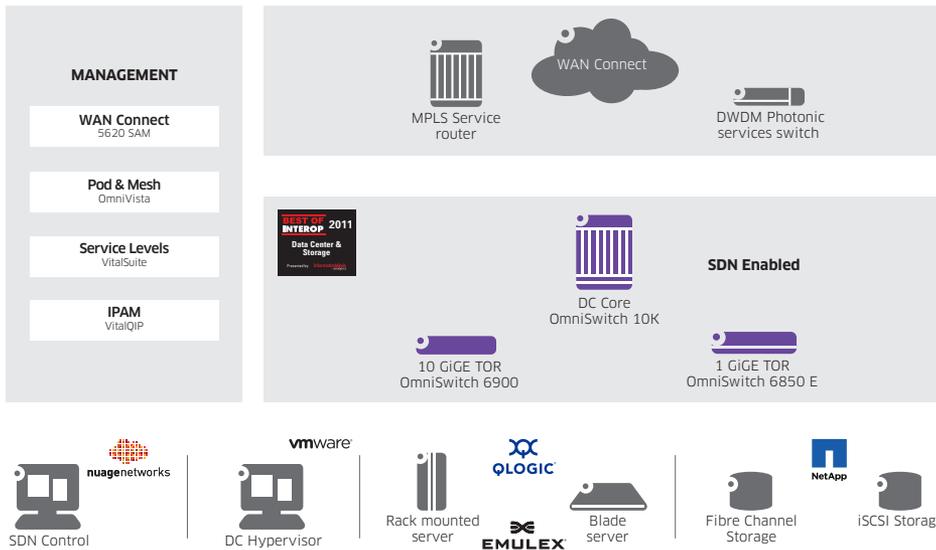## THE ALCATEL-LUCENT ENTERPRISE MESH

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 5 microseconds. This direct-connect architecture gives end users across the enterprise a high-performance experience.

Figure 2: Alcatel-Lucent Pod

Figure 3: The Alcatel-Lucent Enterprise Mesh

Max Server Ports:
(2 Core Switches)
14,400
Max Switching Capacity:
169 Tb/s

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

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
- Native Fibre Channel Connectivity
- OpenFlow support and OpenStack integration

A Complete Solution for the Data Center Network

Alcatel-Lucent's complete solution for data center networking includes the Mesh, WAN Connect and management 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 Stackable LAN Switch and the OmniSwitch 6850E Stackable LAN Switch. 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 and 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 troubleshooting capabilities

- Enabled for software defined networking (SDN) with a strong vision, enabled by standards-based RESTful APIs for participation in open SDN ecosystems
- Storage convergence: enables storage model of choice for customer: Internet Small Computer System Interface (iSCSI), Fibre Channel over Ethernet (FCoE).

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

The Alcatel-Lucent solution also provides both IP and optical interconnect of data center sites. The Service Routers provide MPLS 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.

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 low latency, low power consumption and the overall switching capacity needed to deliver optimal performance for real-time, mission-critical applications. Plus, with the Pod and Mesh, automation is built-in to dynamically adjust treatment of application traffic flows.

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. Automation across your entire data center is possible with this solution because it is able participate in data centers that are designed with SDN architecture. 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.
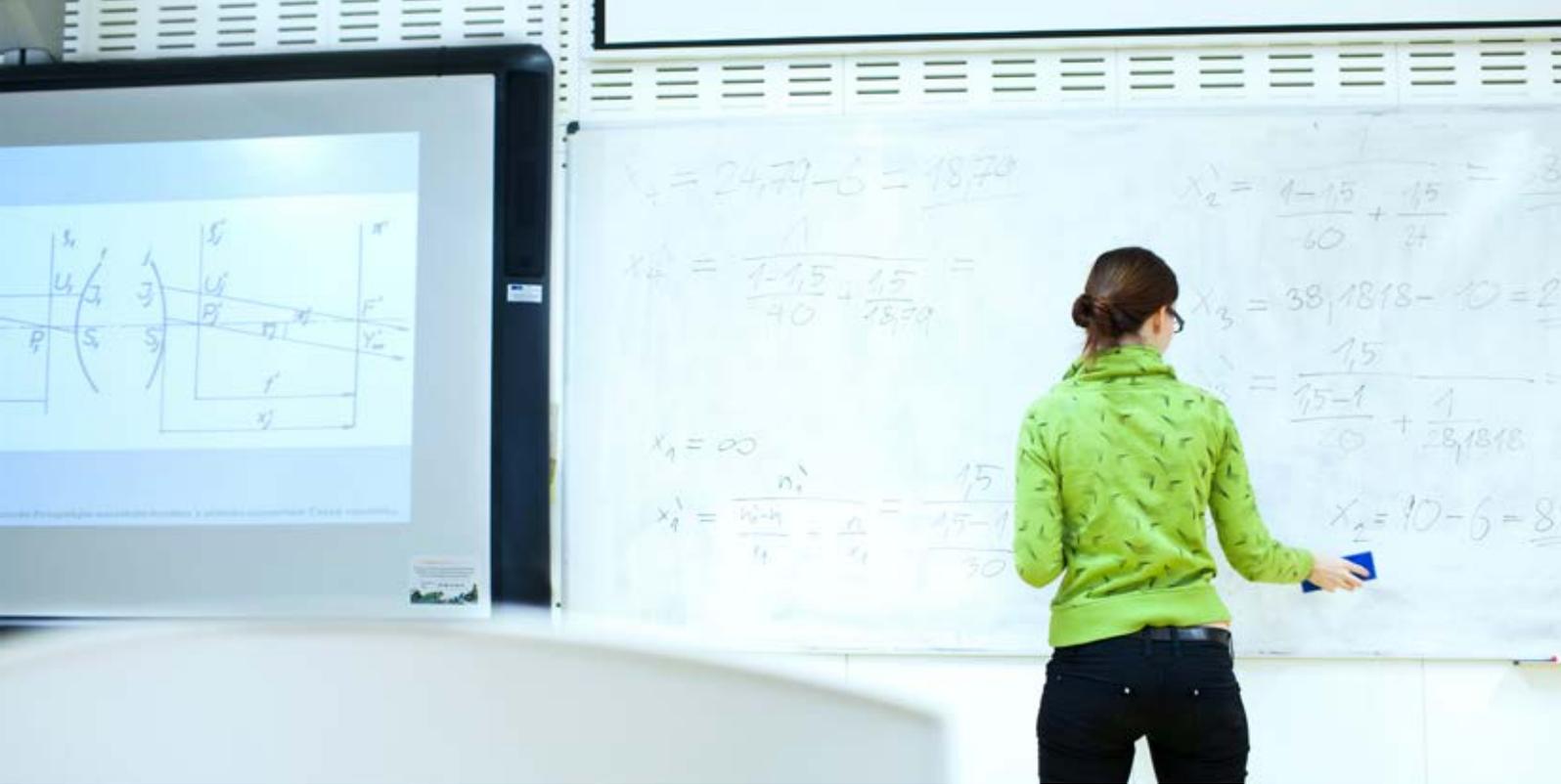
Choose Alcatel-Lucent Enterprise for Your Next-Generation Network

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. The Alcatel-Lucent Enterprise Data Center Network Solution lets your enterprise:

• Leverage built-in automation to dynamically adjust treatment of application traffic flow and to follow virtual machine movement within or between data center sites

• Prepare for SDN, leveraging strong vision and a standards-based approach for participation in open SDN ecosystems

• Prepare for the future with Alcatel-Lucent's innovative data center fabric. The Pod and Mesh direct-connect architecture delivers automation, high performance 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 of Alcatel-Lucent Enterprise 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 SDN. 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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