WHITE PAPER

BEYOND MPLS: DELIVERING CLOUD-READY NETWORKS

A new business vision for network service providers

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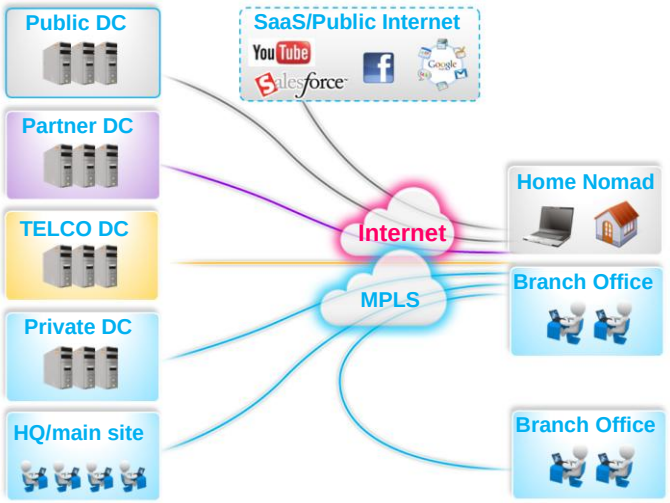
ipanema Technologies

SUMMARY

Get away from MPLS commoditization in delivering cloud-ready networks with embedded application-centric VPN services

Most analysts agree that cloud computing will forever change how enterprises sell, purchase and use business applications and IT infrastructure. Cloud computing - whether implemented as private cloud, public cloud, or both - increases the complexity of enterprise WANs and changes the business landscape for major carriers and other network service providers.



Is your network cloud-ready?

MPLS is a 15-year old technology… and under threat of revenue erosion from enterprise IT transformations and a commoditization of MPLS services, providers must adapt business models beyond MPLS to the evolving IT strategies of enterprise customers. Cloud computing in fact creates tremendous business opportunities for providers through value-added VPN services. Network service providers delivering cloud-ready networks will take pole position in the cloud computing market.

Innovations such as WAN Governance from Ipanema powered by their Autonomic Networking System (ANS™) enables service providers to:

- Transform core business offerings with a new generation of embedded VPN services.
- Deliver cloud-ready, business-aware, application centric, VPN services directly coupled with enterprise customers' business objectives for higher IT value.
- Capture IT budgets by simplifying enterprise IT transformations to cloud architectures.
- Increase VPN profitability by refocusing sales strategies away from MPLS pricing to higher value services.
- Reduce churn and acquire new customers by selling the greater business value of your cloud-ready platform and services.

With Ipanema Technologies, providers increase revenue from:

- Delivering differentiated services relying on cloud-ready network offerings.
- Shifting enterprise customers' IT investments from major integrators and outsourcers to their own revenue streams.
- Growing private cloud data center hosting services.
- Extending VPN offerings to third-party cloud data centers.
- Upgrading market position from connectivity provider to trusted business advisor.

INDUSTRY VIEW

"While cloud computing poses significant WAN challenges, network managers can significantly improve the chances of success by looking at advanced WAN services and thinking strategically about which network operator to use." [1]

Zeus Kerravala, Senior VP and Distinguished Research Fellow, Yankee Group

"Orange [France Telecom] has coined the term 'IT operator' to reflect its new role in IT services by analogy with its traditional role as a network operator." [2]

Peter Hall, Principal Analyst, Ovum

"We are seeing an acceleration of adoption of cloud computing and cloud services among enterprises and an explosion of supply-side activity as technology providers maneuver to exploit the growing commercial opportunity." [3]

Ben Pring, Research Vice President, Gartner

"Telecommunications companies are predicted to be the next major players in the world cloud computing market."

Lisa Banks, CIO.com

[1] Zeus Kerravala, Yankee Group, "Using WAN performance optimization for cloud computing environments," SearchEnterpriseWAN.com

[2] Lisa Banks, "Service providers Set to Dominate Cloud Market Over Next Two Years," CIO.com, August 19, 2010

[3] Press Release, "Gartner Says Worldwide Cloud Services Market to Surpass $68 Billion in 2010," Gartner, Inc., June 22, 2010

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About This Publication

Ipanema has designed and created this publication primarily as an educational resource for major telecom carriers and other network service providers. Contents of this publication are intended to inform and educate senior executives about the impact of enterprise customers' IT transformations on wide area networks, market demand for value-added, application-centric, VPN services, and Ipanema technology for capturing this new market opportunity.

1. Enterprise IT transformations increase WAN value as a strategic asset

Business challenges force enterprises in every industry to adopt technology innovations that reduce costs, streamline processes and improve their business agility. Examples include desktop virtualization, unified communications, web-accessible business applications, video streaming, telepresence, and hybrid networks. Cloud computing is yet another era of transformational IT improvements that will span over a decade. "By 2012, 20% of business will own no IT assets," says Gartner Senior Vice President Peter Sondergaard.[4] All of these technology innovations increase the value of the WAN as a strategic asset for productivity and enterprise performance. They also increase WAN complexity and introduce new performance challenges:

- Cloud computing increases traffic mix, complexity and needs for security, control and governance.
- Desktop virtualization drives new application delivery models that fully rely on the WAN.
- Unified communications and other collaborative applications introduce new time-sensitive and distributed communications over the WAN.
- Data center consolidation moves local branch communications to the WAN, increasing competition among applications.
- Web applications, video streaming and telepresence further expand WAN resource requirements.
- Hybrid networks introduce new issues surrounding IT strategy and application performance consistency.
- Branch offices which were once "spokes" to an enterprise's network hub are now "hubs" to users who work from home, hotel rooms, airport hotspots, etc.

Enterprise WANs under increasing pressure

Within the overall IT value chain, enterprises now have much greater needs for WAN performance that is predictable, optimized and controlled in real time. This represents a tremendous opportunity for service providers to go beyond basic transport services.

2. Your network as a cloud-ready application delivery platform

A "cloud-ready network" means a WAN that is able to understand, control and optimize traffic between branch offices and public and private data centers. Ideally, a cloud-ready network can automatically adapt to new traffic schemes where a same branch talks to several data centers and can guarantee the performance of each cloud computing flow.

Beyond traffic handling, an important characteristic for service providers is the ability to link the cloud datacenter OSS to the cloud-ready network OSS, and achieve a seamless end-to-end orchestration through elastic provisioning. For example, when a customer is ready to pay a premium for a given cloud service for a

[4] Peter Sondergaard, "Navigate the Next Opportunities and Threats: Top Strategic Technologies for 2010", Gartner, Inc.

few hours, the cloud-ready network should be able to take this into account and guarantee a perfect delivery of the application to the end user. Another characteristic of a cloud-ready network is the ability to provide meaningful and easy-to-use information for the service provider to put into place a pay-per-use model.

3. Network service providers can take pole position in the cloud computing market

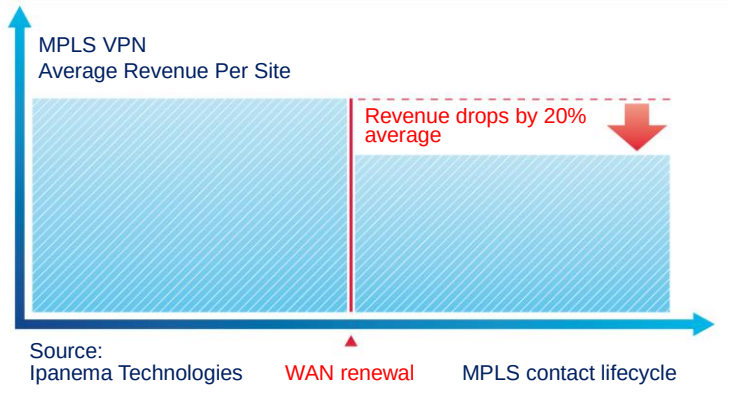
It's the service providers who command the most strategic position within any network-based applications delivery architecture, including MPLS VPN, internal or third-party private cloud, or public cloud. Without a network, there is no applications delivery service. To retain and expand business with existing enterprise customers, and attract new accounts, providers need to adapt business models by transforming VPNs beyond MPLS with cloud services.

In the words of industry veteran Dr. Ray Mota now Managing Partner of ACG Research: "The old business model was about cost-per-bit, but in the new paradigm, service providers realize they have to focus on what makes them stand out. Delivering cloud-based applications with solid service-level agreements (SLAs) will not only allow service providers to differentiate themselves but will maximize the value of the network while promoting a new business model." [5]

According to Peter Hall, principal analyst at Ovum, "We expect to see interest [in cloud computing] pick up quite rapidly over the next two to three years, so the time is right for many service providers to be developing a strategy and roadmap for their entry to the market." [6]

4. Declining MPLS revenue provides incentive for VPN transformation to cloud-ready networks

With a maturing market for MPLS, incumbent providers face price erosion. At WAN contract renewal, they are asked to provide more bandwidth, more accesses and more services while their enterprise customers demand to pay less. On average, incumbent providers in Western Europe have experienced a 20% decrease in MPLS VPN revenue in the face of strong competition and high churn rates as challengers compete on price. Beyond MPLS, competitive advantage and best revenue opportunities will shift to VPN transformation and the higher value of cloud-ready network services.



5. From connectivity provider to trusted advisor

The success of service providers' changing business models will depend on capabilities to help solve an enterprise IT department's broader challenges. Enterprise customers have basic connectivity and IP foundations. What they don't have and desperately need are capabilities to better implement and manage

[5] Ray Mota, Ph. D., Managing Partner, ACG Research, "Five telecom provider benefits of offering cloud computing services," SearchTelecom.com

[6] Lisa Banks, "Service providers Set to Dominate Cloud Market Over Next Two Years," CIO.com, August 19, 2010

applications over networks for optimal business advantage, such as with provisioning, scalability, and dynamically controlling WAN traffic in accordance with IT governance.

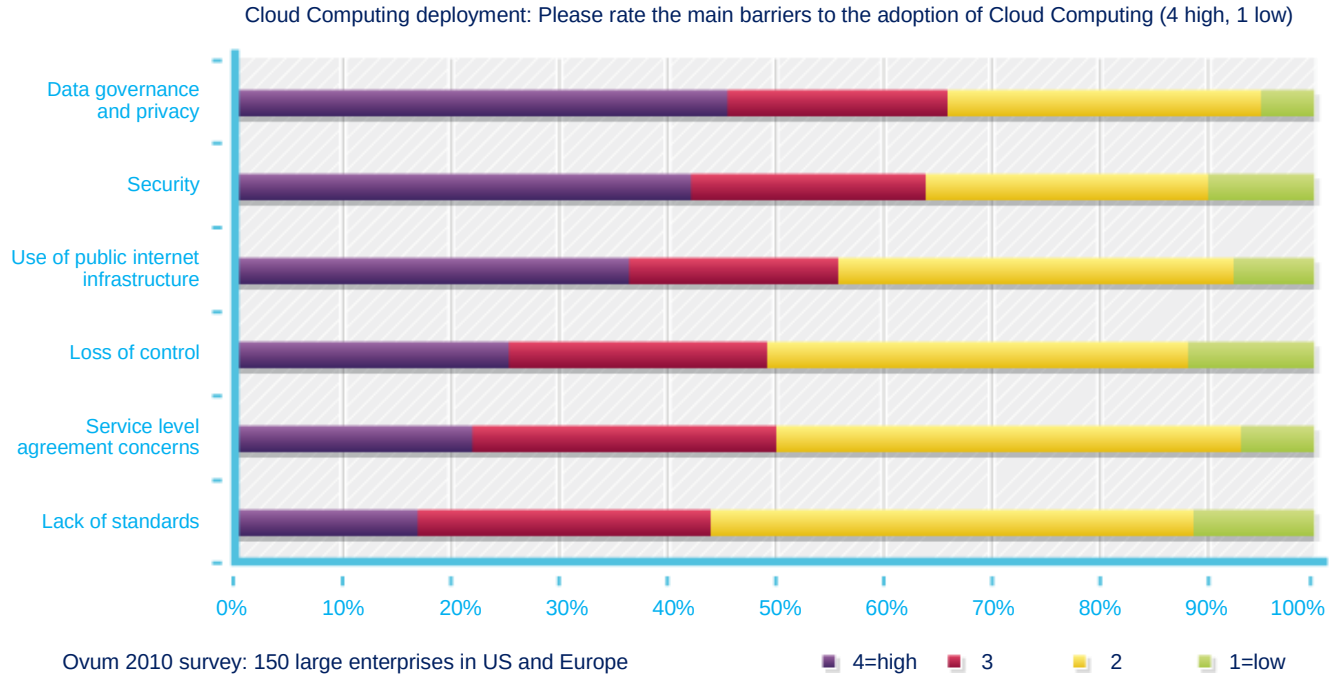
VPN transformation to a cloud-ready network with "business-aware" IT services on top of MPLS expands the relationship between service providers and enterprise IT departments. Cloud-ready network services add business value for enterprises transitioning to cloud computing and transform perceptions of the service provider from costly "connectivity supplier" to true business partner and trusted advisor for achieving customers' productivity and performance goals. With the network as the application delivery platform, providers can create a clear differentiation in the IT services market from traditional integrators and outsourcers, such as IBM Global Services, HP and CSC.

As technology evolves, so must providers' services

6. Enterprise customers' main barriers to adoption of cloud computing

In a 2010 survey conducted by market research firm Ovum, 150 large enterprises in the US and Europe rated the main barriers to enterprise adoption of cloud computing (in order of importance) as data governance, security, use of the public Internet, loss of enterprise control, SLAs and lack of standards.

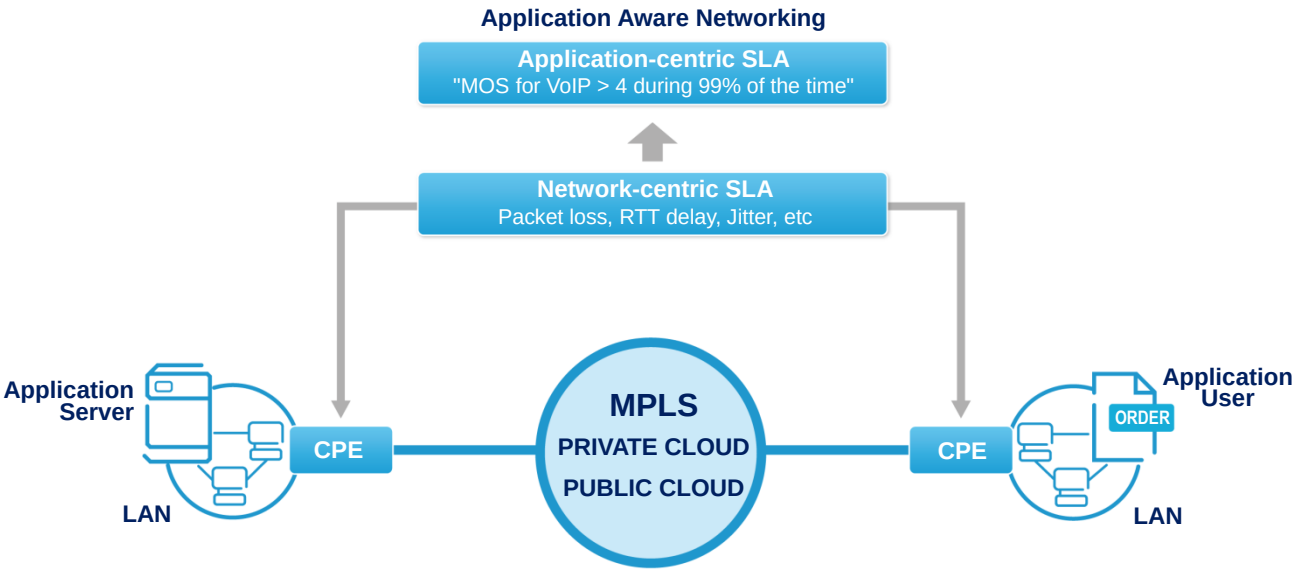
With VPN transformation beyond MPLS to cloud-ready network services, providers can play a major role in enabling customers to overcome these barriers.



7. Must-have features for cloud-ready networks

Looking at the WAN, a cloud-ready network with embedded business-aware VPN services must offer features that help solve an enterprise IT department's broader challenges.
Typical challenges include:

- Unifying VPN technologies (MPLS, Ethernet and Internet) into a single, coherent network with consolidated, centralized, application management and control (hybrid network unification).
- Provisioning network accesses according to business-critical application requirements (accurate network sizing and application prioritization).
- Guaranteeing the availability and performance of business-critical applications regardless of MPLS or cloud delivery (expanding the scope of network CoS SLAs to more granular "application-centric" QoS SLAs).
- Ensuring cloud security, especially for public cloud services.
- Measuring application performance with quality metrics to improve operational visibility and the "WAN Governance" component of IT Governance.
- Automatic provisioning of new applications, network sites and additional end users.
- Ensuring the same levels of service for mobile users requiring anywhere, anytime access.



VPN transformation to cloud-ready networks with embedded business-aware services evolve the scope of network SLAs to application SLAs

8. Increasing your business value to enterprise customers

Ipanema Technologies has pioneered technology for enabling providers to quickly transform VPNs beyond MPLS to cloud-ready networks that address enterprise customers' IT challenges from the critically important WAN perspective. With embedded, business-aware, application-centric VPN services, providers strengthen their value proposition to enterprises in terms of improving IT performance, business continuity and savings compared to in-house WAN management or traditional third-party services.

9. WAN Governance aligns customers' networks with their IT and business priorities

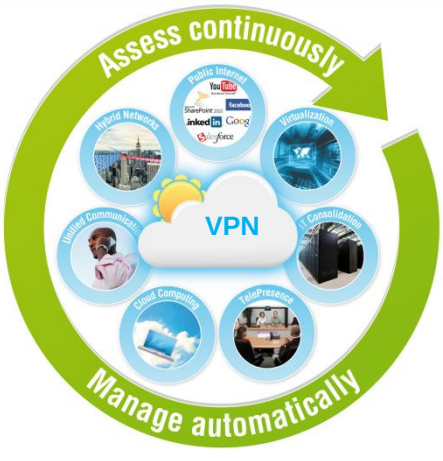
WAN Governance enabled by Ipanema Technologies dynamically aligns customers' networks with their IT and business priorities. Implemented with Ipanema's Autonomic Networking System, WAN Governance provides capabilities to deliver embedded value-added services that:

- Fully control and optimize a customer's network performance, including MPLS, private cloud and public cloud.
- Guarantee critical business applications for application-centric SLAs.
- Unify application availability and performance across cloud networks.
- Dynamically adapt to whatever is happening on the network.

Ipanema's patented Autonomic Networking technology enables WAN Governance for managing networks from a business perspective - first by the definition of application performance objectives, then by real-time collaboration between cooperative devices to continuously assess application needs and available resources. Networks are managed deterministically, automatically adapting to demand changes and aligning application performance with business needs. Provisioning and change management are delivered automatically or with one click from a web portal. The Ipanema Autonomic Networking System features:

- Centralized management based on application performance objectives for operational simplicity and automated control, providing a simple and high-level mean for the IT managers to set-up performance objectives and decide what really matters to the enterprise's IT and business.
- Fully automated "sense-and-respond" architecture that adapts to any traffic situation and network topology and providing automatic, intelligent control and optimization of application sessions.
- Collaborative agents enabling full traffic management control with physical hardware deployment in only 10-20% of a customer's locations.
- Scalability up to 10M's users, 100K's sites and 10K's networks to support any service provider.

Enterprise Applications	
Applications	Criticality
SAP	Top
IP Telephony	Top
Telepresence	High
CRM/Citrix	High
Salesforce	Med.
VDI	Med.
SharePoint	Med.
CIFS, Email	Med.
Skype	Low
YouTube	Low



WAN Governance with Ipanema's Autonomic Networking System enables VPN transformation to "Beyond MPLS" services that automatically align WANs with customers' real-time business needs

10. Beyond MPLS: Autonomic Networking embedded in your VPN enables unique selling opportunities

When embedded in your VPN offering, Ipanema technology enables the marketing of a cloud-ready network with business-aware, application-centric services and unique selling opportunities such as:

Application Visibility: Provide customers with full transparency of application traffic (using true Level-7 deep packet inspection), topology and performance. Unique end-to-end metrics (like one-way-delay) easily differentiate network and IT problems. Integrated reporting provides all needed insights - from C-level KPIs to technical information for helpdesk teams.

Bandwidth **Control and Quality of Service** (QoS): Allocate bandwidth dynamically across a customer's end-user sessions to sustain their application performance objectives according to application-centric SLAs.

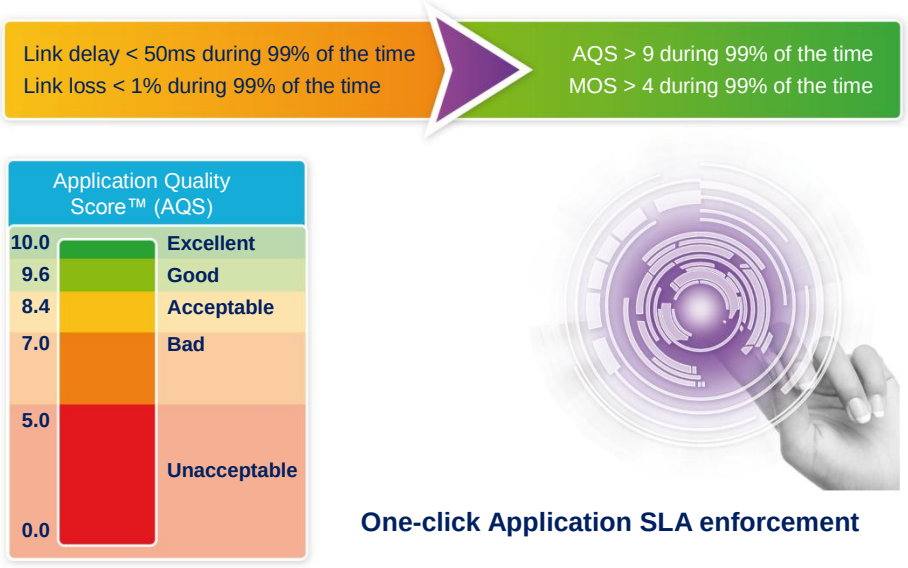
Combine all traffic types fluidly based on user behavior, application requirements and business criticality. Automatically control complex situations like some-to-many and any-to-any traffic mesh, and cloud-based applications delivery from private or hosted datacenters.

WAN Optimization: Accelerate customers' application response times and reduce bandwidth requirements with the latest optimization techniques, such as byte caching, CIFS acceleration, TCP acceleration, etc.

Dynamic WAN Selection: Automatically select the best customer network (MPLS, Internet, Ethernet) for each new communication according to availability, load and performance.

11. Deliver and enforce application-centric SLAs

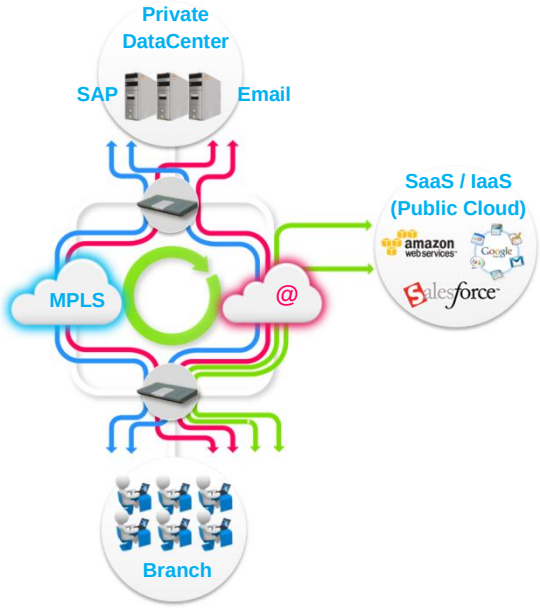
Autonomic Networking enables providers to move from network SLAs to application SLAs. WAN optimization coupled with Control automatically manages prioritization and acceleration of applications, preventing non-critical applications from penalizing business-critical applications and ensuring SLAs are always enforced.



One-click Application SLA enforcement

12. Manage hybrid MPLS, Internet and Ethernet networks as one network

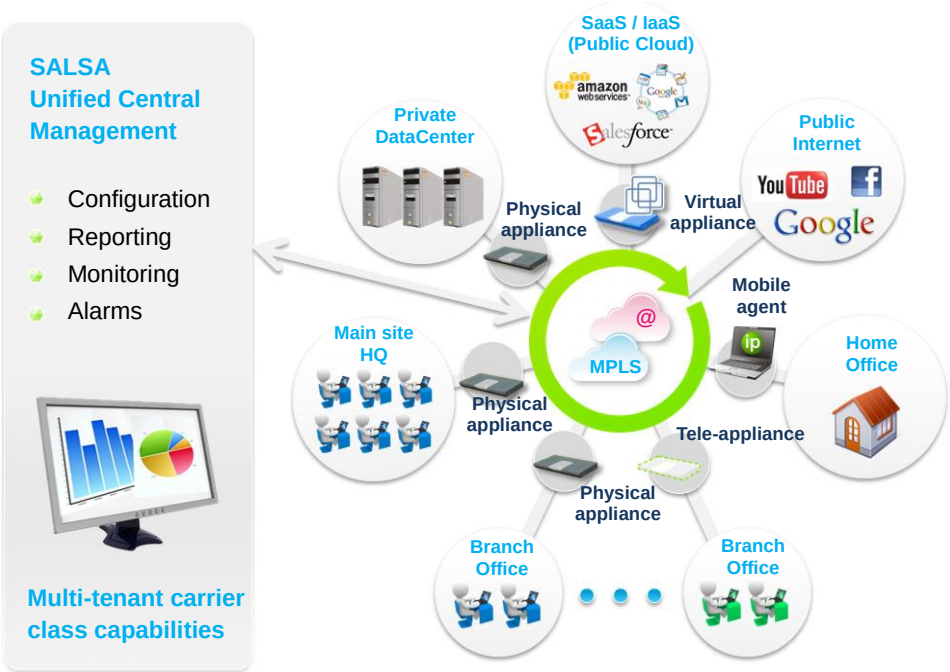
Autonomic Networking enables providers to manage customers' hybrid combinations of MPLS, Internet and Ethernet networks as one seamless network. This "hybrid network unification" provides all capabilities for application prioritization, acceleration, QoS and performance across hybrids from a single platform–the Autonomic Networking System - which dynamically selects WANs based on application SLAs and real-time network loads. It supports enterprise customers' needs to transition to cloud computing at their own pace and saves substantial time and resources that would otherwise be spent on integrating different management tools for each network.



Autonomic Networking selects the best path to route applications based on application SLAs and network loads

13. Scalable Application-Level Architecture manages thousands of enterprise customers

SALSA (Scalable Application-Level Service Architecture) is Ipanema's carrier-class central management software which supports multi-tenant management of embedded, application-centric, VPN services for thousands of enterprise customers - representing hundreds of thousands of end users - from a single, unified operations center. SALSA has been designed by Ipanema to seamlessly integrate within any service provider's existing OSS/BSS environment.



SALSA is deployed by some of the world's largest service providers and managed service providers

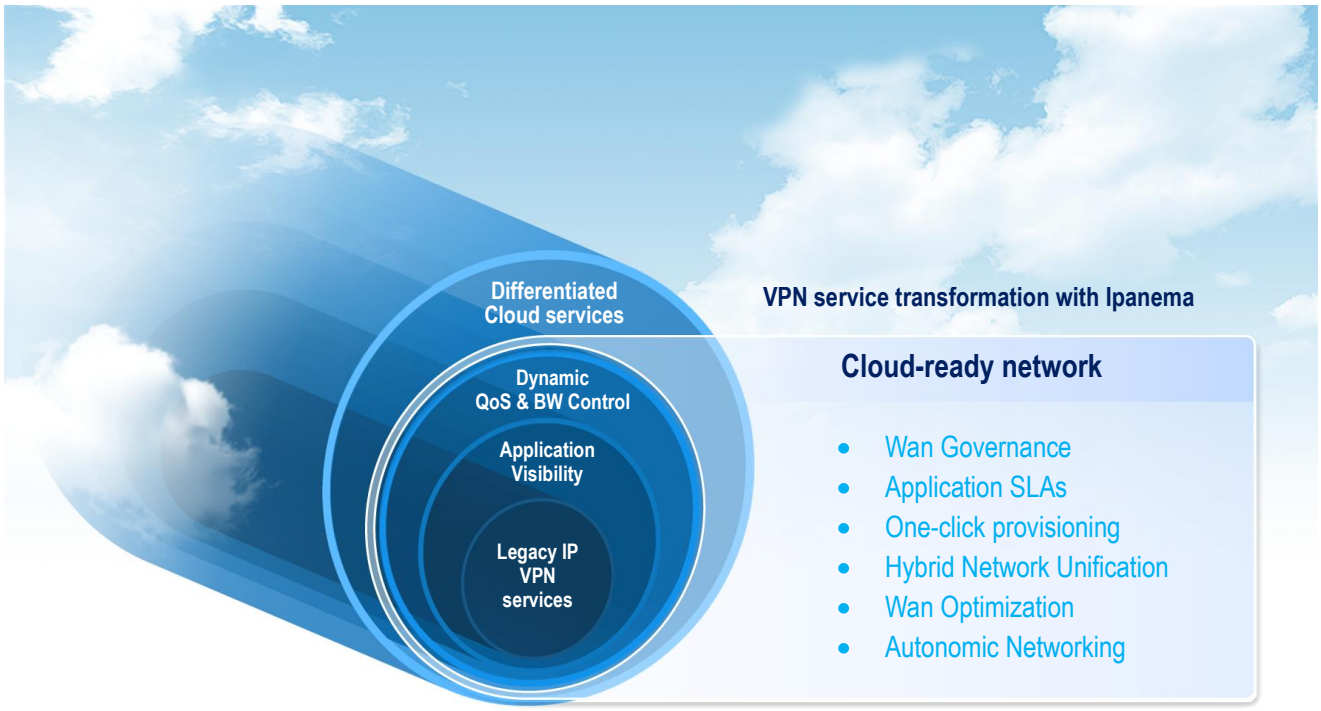
14. Seizing market opportunity

"The buzz around cloud computing now resonates through every segment of the IT and networking industries. What WAN managers should know is that cloud computing will have a profound impact on corporate networks, particularly wide area network (WAN) performance," says Zeus Kerravala, Senior VP at Yankee Group. "While cloud computing poses significant WAN challenges, network managers can significantly improve the chances of success by looking at advanced WAN services and thinking strategically about which network operator to use." [7]

Designed for VPN transformation to embedded application-centric services beyond MPLS, the Ipanema solution for providers, featuring WAN Governance powered by Autonomic Networking and the carrier-class SALSA multi-tenant platform, pushes this new market opportunity to the leading edge. The only "all in one" solution for delivering a complete portfolio of business-aware, application centric, VPN services, Ipanema enables providers with an efficient, scalable, fully controlled and optimized, cloud-ready network highly marketable to an entire customer base.

Advises Ovum's Peter Hall, "We expect to see interest [in cloud computing] pick up quite rapidly over the next two to three years, so the time is right for many service providers to be developing a strategy and roadmap for their entry to the market."

Ipanema shortens the time to market for providers with technology ready to be deployed.



[7] Zeus Kerravala, Yankee Group, "Using WAN performance optimization for cloud computing environments," SearchEnterpriseWAN.com

15. Related reading

Ipanema white paper “Beyond MPLS: Solving the issues of embedded cloud-ready VPN services” November 2010.

Ipanema white paper “Cloud-ready networks: WAN Governance for cloud computing” November 2010.

ABOUT IPANEMA TECHNOLOGIES

The Ipanema System enables any large enterprise to have full control and optimization of their global networks; private cloud, public cloud or both. It unifies performance across disparate networks. It dynamically adapts to whatever is happening in these networks and guarantees constant control of critical applications. It is the only system with a central management and reporting platform that scales to the levels required by service providers and large enterprises.

For more information www.ipanematech.com