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## The VNO and MPLS: When Is it a Good Match for the Enterprise

by Ciaran Roche

Since its development by a group of engineers at Cisco, the ascent of Multi Protocol Label Switching (MPLS) has been rapid. This has been true in spite of the natural inertia of enterprises, which tend to hold on to existing technologies instead of embracing new ones.

MPLS produces a connectionless system, thus imitating a Layer 3 IP solution while maintaining the performance and security guarantees of more standard Layer 2 solutions. This hybrid effect leads to calling MPLS Layer 2.5. With MPLS, traffic is switched and not routed through the core (hence the connectionless aspect) while at the same time establishing Label Switched Paths (LSP) through packet switch tagging to assure high performance level guarantees. Since MPLS is IP-aware and any-to-any connectivity is an intrinsic feature, it's often less complex to deploy. Moves and changes are comparatively straightforward, and the technology is inherently secure.

### Obstacles to MPLS

MPLS has been seen for some time as quite hot and trendy in the industry, the "technology to have". Still, replacing any technology is almost always time-consuming and costly, and not an activity readily undertaken even when the long-term benefits are crystal clear. While it is widely agreed that MPLS offers the multiple service models and traffic management that fits well with global enterprises, conversion from legacy systems is a task enterprises might want to postpone as long as possible.

This reluctance is often supported by the telecoms carrier, which naturally wants the enterprise to stick with the infrastructure the carrier owns. No carrier has infrastructure in every country in the world and instead concentrates on its own strong territories. This becomes increasingly in conflict with enterprises as they look to expand and acquire properties in developing parts of the world such as India, China and Eastern Europe—all attractive due to the lower operational costs available.

However, once an enterprise had decided to use MPLS, the question of creating a network with the right fit can be an enormous hurdle. When it comes to MPLS, it seems that every provider offers a slightly, or even very, different flavor.

In fact, the major question now facing the telecommunications industry regarding MPLS is standardization. Telecom providers deploy incompatible MPLS systems that cannot be easily combined for the benefit of an enterprise. The reasons are often more political than actually technical but, nonetheless, the difficulty is quite real.

Consequently, an enterprise seeking MPLS technology often must choose one provider or another and either choice usually offers only a so-so fit. It's similar to the decision a man might have to make in

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seeking a pair of pants, but finding one store has sizes that are too large while another store wants to sell him a well-fitting kilt. What is the best choice?



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In order for MPLS to be the fully universal technology that enterprises need, it would require full interoperability like the Internet. Unfortunately, the very entities that could push such standardization into reality - the largest, infrastructure-based carriers - are also the players that have the most to lose as their clients would be free to mix and match between suppliers. It's understandable given their investment in their individual networks why they prefer to lock clients into their systems.

MPLS providers rarely agree to work together. In instances where such agreements take place, it usually occurs only because it is pushed by a global carrier working with a far less powerful in-country provider. Even those deals with their relative limited geographic scope can take years to negotiate.

Such a dilemma faced Siemens. Alfons Kuhn, Director, Siemens Communication Network, notes, "The inherent flexibility and cost effectiveness of an MPLS based network is ideally suited to our organization. Yet, restricting ourselves to one infrastructure provider would easily negate these benefits."

Siemens turned to a Virtual Network Operation (VNO), one of a relatively and growing breed of organizations that owns little or no telecoms infrastructure of its own but leases space capacity from carriers. A VNO can use standard products from the providers in order to conduct the technical integration between different MPLS systems. While it is also possible for an enterprise to do this on its own, or even to rely upon an infrastructure-based carrier to conduct integration, the reality is that it can be difficult to make happen. VNOs arguably have a stronger vested interest than the enterprise or the carrier in playing the role of the third party to manage the process.

### **Options Facing the Enterprise**

Enterprises such as Siemens would have to take vital resources from their core business in order to manage a complex network solution in-house. On the plus side, the enterprise retains complete control, but many enterprises might decide as Siemens did that the prize is not be worth the price.

The enterprise would have to sign separate contracts with each supplier, negotiating SLAs and designing

a solution to 'bolt-on' disparate parts of the network. On MPLS-based infrastructure, it would have to identify a way to translate the different CoS marking schemes used by each supplier. The enterprise would also have to figure out how to perform the routing exchanges to allow traffic to flow from one segment of the network to the other. The end result might well be a network with no clear boundaries of responsibility, and the potential for performance issues to arise due to misconfiguration or the overall complexity of the design.

Siemens turned to a VNO to design, implement and continuously manage a number of carriers. Any enterprise choosing this option must review the VNO in order to be certain it can trust it with a vital and mission-critical function.

Siemens' Kuhn speaks of the confidence his company has in the VNO selected by Siemens -Vanco- to optimize Siemens' MPLS network infrastructure: "MPLS Matrix (the brand name of the VNO's MPLS service offering) enables multiple infrastructures to be integrated into a single, seamless solution."

### **Is MPLS the only solution?**

As valuable as MPLS is, it may not always be the best solution. Other technologies might be even most cost-efficient in the right circumstances.

Densely populated European areas have witnessed, during the past 18 months, an increased number of requests by enterprises to evolve their networks to post-MPLS technologies that offer even greater cost efficiency, and similar requests are growing in the United States.

Developed markets offer enterprises the opportunity to treat large sections of their networks like campus environments with LAN speeds between them. It's as efficient as MPLS while less costly. Making a change like this can allow businesses to work in a completely new way given the abundance of bandwidth offered. These post-MPLS technologies include Gigabit Ethernet and VPLS (which allows Layer 2 VPNs to be built between sites). Again, it is the VNO that can play role of third party without a vested interest in infrastructure to tell an enterprise when DSL might make more sense than MPLS and can integrate the best blend of technologies into a customized network that fits like a glove - or a pair of pants in the right size.