Multi-protocol Label Switching

What is MPLS?

Multi-protocol Label Switching (MPLS) is a standardized protocol and comprehensive unifying enterprise class networking architecture. MPLS is a technology that combines the benefits of layer 3 routing and layer 2 switching to enable high performance IP networks. It provides the same degree of privacy and security as a Frame Relay or ATM transport service without having the same scaling problems and with a lower cost structure. To both simplify and increase the efficiency of core transport, the MPLS protocol enables data to be transmitted efficiently across a network infrastructure utilizing a technology known as “label switching.”

Key application: MPLS enables the creation of secure, reliable VPNs which are simple to manage, easy to deploy and which provide Class of Service/Quality of Service support. The result is a single integrated IP network which supports quality of service, which is the key advantage in an application rich environment. This means you can implement VoIP and prioritize your applications ahead of the best-effort non-critical data. You have the reliability & security of legacy technologies like Frame Relay with the routing flexibility of IP.

MPLS Compared with Frame Relay

Frame Relay

- AT&T is by far the largest Frame Relay provider, with an installed base estimated at $6 billion annually. This number is expected to change between 2008 and 2009 when most of these frame relay contracts expire. With these expirations, companies will explore MPLS and other competitive offerings, which in many cases will reduce costs and improve manageability and performance of their wide area networks.

- Frame Relay, until recently, was a networking technology that was the primary service for Wide Area Networks.

- Relies on the underlying assumption by carriers that not all customers will be using the full bandwidth of their circuits at the same time.

- Frame Relay uses an over subscription model.
• Carriers will sell you a CIR or Committed Information Rate on their Frame Relay Network. This rate is the bandwidth you are GUARANTEED by the carrier. For example if you purchase a 256 Kbps CIR from a carrier, all traffic up to that point will be guaranteed to be delivered.

• You may burst above your purchased CIR but in times of heavy network congestion any packets you send above the CIR will be eligible for discard by the carrier.

• Frame Relay has no quality of service (QoS) manageability and is largely being replaced by the more cost effective MPLS VPN Solutions.

• Frame Relay is commonly configured as a hub and spoke network.

• Frame Relay can run over MPLS to obtain the benefits of traffic prioritization and management.

**Why Switch to MPLS?**

MPLS is a protocol that uses packet labels to prioritize network packets to optimize network performance.

• If you have Quality of Service (QoS) sensitive applications such as VoIP, video conferencing, SAP, Oracle, Citrix or other real time applications running across your WAN then you should consider MPLS.

• MPLS is a private networking technology similar to the concept of Frame Relay in that it is delivered in the "cloud".

• The primary difference with MPLS is that you can purchase quality of service for applications across your WAN.
• During the provisioning process the carrier will interview you in order to determine which applications are important to your business, they will then build a QoS template to service these applications on your WAN.

• These applications will be given priority over all other traffic in times of peak load. While MPLS may not be the least cost solution, it is the ONLY technology that will support QoS.

• For applications such as Citrix, SAP, Oracle, Siebel, Peoplesoft, VoIP and Video, performance using the QoS capabilities of MPLS can dramatically improve quality and productivity.

• If an application works well on a Frame Relay, it will work better using MPLS. If an application not performing adequately on your Internet VPN, if the problem is packet loss or latency, MPLS will be the solution.

**Benefits of MPLS**

a) Better performance: Uses Classes of Service (CoS/QoS) and priority queuing so your network knows which traffic is most important and ensures that it takes priority over other traffic.

b) Depending on your current network, you can reduce your on-going WAN operating costs by up to 50%, while maintaining a high level of reliability and service.

c) “Future-proof” the architecture of your network so it can respond rapidly to changing business needs (e.g. New services, latency sensitive traffic, bandwidth intensive traffic, VoIP, video).

d) Lower packet loss means faster response for many applications.

e) Network survivability from its fully meshed nature.
f) Have the option to deliver firewalled internet access from the cloud to specified facilities to eliminate internet local loop costs.

g) Consolidate your network to a single, enterprise-wide view of your sites/group of companies.

h) Reduce the time and cost involved in managing a technologically disparate “system of systems”.

i) Online reporting allows you to truly see what is happening on your network so you subscribe only to the bandwidth that you really need.

j) Simplify the administration and on-going management of your network