Next Generation Networks

The triple play of Voice, Data and Video requires an intelligent end-to-end network.

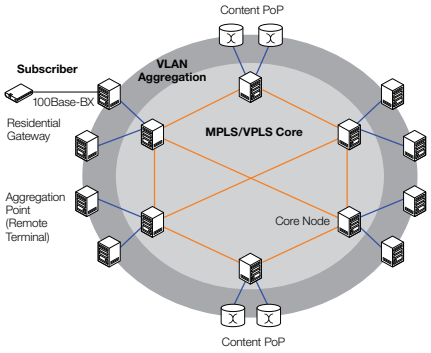
The public internet is generally regarded as a best endeavours network. It's built around the concept of one way data traffic without prioritisation of data packets. If data packets are lost in a transmission they're typically retransmitted without any noticeable effect to the end user. When using the public internet for voice traffic network congestion can lead to lost or delayed packets that result in reduced call quality. Significant bandwidth headroom reduces the likelihood of internet congestion affecting call quality. However this isn't an efficient solution for an enterprise with large data requirements.

Mytel's VoIP network equipment is co-located within MCI data centres. As a result of this partnership Mytel can provide your enterprise with direct access to our servers over a high performance Multi Protocol Label Switching (MPLS) network from any major Australian capital city. If your enterprise has multiple locations which exchange voice, video and data between applications and users you'll also obtain the benefit of high speed data exchange without internet bandwidth charges.

The ACIF have concluded that our current public Internet is unlikely to be the basis for high quality VoIP, higher-speed data access, IP television and interactive video services due to increasing congestion and reliability issues. A separate Next Generation Network (NGN) layer is regarded as the likely solution for these time critical applications.

MPLS improves the speed at which data traverses across the network. In an IP network constant streams of traffic between two points in the network are divided into many IP packets that are required to carry the information. Each packet has its own header, containing the source and destination IP address information. Every IP router in between the source and destination must interrogate every IP packet header in order to route each individual packet according to its destination address. When there is a large amount of traffic all destined for the same destination from the same source, it's a waste of resources to study every single IP packet header.

MPLS recognise such packets and adds a special label identifying them as a unified flow of information. Intermediate routers then quickly see the labels without having to delve into the IP header, and forward them rapidly towards their destination. Through this improved performance of the network, it is then possible to offer quality of service (QOS) guarantees for time critical data traffic.



Key Attributes

MPLS performs "flow aggregation" to speed up the transfer of lots of data travelling between two specific points

Removes the need for IP header interrogation of every packet at every intermediate node improving network performance.

Label edge routers (LERs) control traffic entering and exiting the MPLS network.

Data traffic flows are identified and classified according to QOS requirements.

LER assigns a label to each packet of the flow in the Layer 2 header for quick access by intermediate Label Switch Routers (LSRs).

LSRs quickly switch the flow, based upon the label, through a label switched path (LSP).

At the destination is another LER which strips off the labels to leave the data.

Play MCI MPLS video (4:35 min)