

MPLS and Internet Leased Lines – A Comparison

Businesses today have multiple options when they need to establish connectivity between different offices. MPLS and Internet leased lines are two major alternatives evaluated against each other for such WAN connectivity in this article. While MPLS is deployed as a full mesh and is a unified data carrying solution, a leased line links two sites and is an end-user connection with predetermined bandwidth.

Wide Area Network (WAN) is an important component of corporate infrastructure for most businesses today. There are several technologies to connect multiple, geographically distant sites using WAN technologies. These include Ethernet, asynchronous transfer mode (ATM), frame relay and fibre broadband.

All of these have their own strengths and weaknesses, which primarily depended on the kind of traffic transmitted through them and the needs for latency, security and reliability.

Leased line, another common way to establish symmetric telecommunication link between two sites, can be used for voice, data and Internet services. It offers a guaranteed and predetermined bandwidth between physically distant sites. The connectivity provided by a leased line is not shared with any other subscriber and the speed is therefore symmetric for both downloads and uploads.

While most of the older technologies including legacy leased lines had similar objectives, Multi-Protocol Label Switching (MPLS) emerged as a sound alternative to bring all of them into one cluster. It played to the strengths and negated the limitations of each of these technologies.

MPLS is essentially a packet switched data transmitting network technology that can transport numerous variations of traffic such as IP packets, as also native ATM and Ethernet frames. It is a better substitute for many other protocols and has a solution that calls for fewer overheads while delivering connection-oriented services for variable-length frames.

Replacing older connectivity methods at a fast pace, MPLS dispenses the signalling protocol and cell-switching gear of ATM. It also emphasises that we do not need ATM cells anymore in the hub of modern networks. This is because the networks used today are so quick that even full-length packets (measuring up to 1500 bytes) do not lead to real-time queuing impediments.

The principal differences between leased lines and MPLS may be summarised as:

Factors	MPLS	Leased Line
Traffic Segregation	Logical	Physical
Connectivity	Multipoint/Point-to-Point (P2P)	Point-to-Point
CAPEX and OPEX	Generally less than P2P leased links	Higher than MPLS links
Physical Medium	Shared between several subscribers	Dedicated to a client
Routing Decision	Service provider manages Layer 3 routing of subscribers' traffic	Service provider is not involved in routing decisions of subscribers' traffic
Traffic Engineering	Feasible to set the path that the traffic would need to take through the traffic	Cannot set a path for traffic in legacy leased lines
Scalability	Easily scalable	Cannot be scaled
Ideal for	Organisations that <ul style="list-style-type: none"> - need a secure and private network - have multiple offices spread across a large area - are growing fast and have an inorganic growth pattern 	Organisations that <ul style="list-style-type: none"> - need a guaranteed bandwidth - have to transfer large amounts of data quickly and reliably between sites

Can MPLS deliver virtual leased lines?

A strong attribute of MPLS networks is that they can also be used to create virtual leased lines and offer connectivity irrespective of the physical connections available at each location. An MPLS subscriber can potentially link to the network with frame relay at one location and Ethernet at another.

MPLS is largely like an Internet leased line and serves businesses that need a private, reliable and secure network over which bandwidth-hungry applications can be deployed. It is good for mission-critical VPNs, VoIP and the enterprise applications that need huge bandwidth and high connection speeds.

It is dynamic as regards the granularity of the bandwidth provided and this is not the case with legacy leased lines. When a subscriber has an MPLS leased line, they can get an incremental increase in their bandwidth according to the changing requirements simply by calling the subscriber provider.

Just like other managed services, MPLS VPNs and MPLS-based leased lines come with a range of benefits known as value-added services. These include on-site services by specialist personnel, round-the-clock support and guaranteed deliverables through a service-level agreement (SLA).

MPLS is becoming a preferred and standard technology to deploy large-scale IP networks across WAN. And this is because of the multiple advantages it brings – simplifying packet forwarding, regulating traffic and enabling network scalability. Businesses can also have more cost savings and ensure enterprise-grade security when they opt for MPLS over legacy connectivity technologies.