Why You Should Adopt MPLS Data Connectivity as IT Head of a Manufacturing Company

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Introduction

Like most other industries, the manufacturing sector is undergoing a digital transformation. Data has become crucial to how products are designed, manufactured and supplied. Plants, warehouses and supply chains leverage connected devices that generate valuable information for standard processes. IoT solutions and data analytics are becoming parts of their regular operations.

These companies also seek reliable channels for faster communication with their clients, suppliers and stakeholders. They need to be available round-the-clock to answer customer queries, take orders and respond to concerns.

For the IT teams that take care of company-wide technology services, it is critical to ensure the peak performance and security of the network. With the right infrastructure for an online network, they can manage their key responsibilities for system updates, upgrades, migrations and outage management more effectively.

Although multiple technologies exist to connect wired and wireless devices, manufacturers require solutions that enable prioritised and secure transmission of data packets. Data connectivity must allow them to create a network between their remote locations while also ensuring a high quality of service (QoS) for all users. Multiprotocol label switching (MPLS) has proven to be a suitable technology to fulfil such expectations.

What Is MPLS, and How Does It Work?

Cisco describes MPLS as a data connectivity option that allows businesses and service providers to set up next-generation networks for delivering a variety of value-added services via a single infrastructure. This solution can be integrated into any existing data technology, including IP, Frame Relay, ATM or Ethernet. Users with various access links can be aggregated on an MPLS edge without modifying their current environments because MPLS does not depend on access technologies.

Essentially, MPLS is a mechanism to route traffic within a telecommunication network as data moves from one network node to the next. It helps to create a virtual private network (VPN) with traffic engineering and QoS.
How Differently Does MPLS Work When Compared to Other Networks?

In an MPLS network, data packets travel as per assigned labels. A label is linked to a predetermined path through the network – this enables a better level of control than packet-switched networks. Businesses can use MPLS routing to assign differing QoS characteristics and priorities to particular data types, and operators can predetermine fallback paths when the traffic needs to be re-routed.

In packet-switched networks with pure IP routing, each data packet can determine its way through the network. While this is a dynamic and cost-effective flow, it is not predictable.

With circuit-switched telecommunication networks, physical cables and T1 lines carry voice and data traffic. In essence, this offers predictable routes, but they make for expensive operations and are complex to scale due to extensive infrastructure.

MPLS, on the other hand, simplifies the management of network routing by building paths that become point-to-point connections in a network. Also, the network is virtual, flexible and easy to scale.

The strength of MPLS is that it is not bound to any core technology. It was devised using multiple protocols as an overlay technique.

It simplifies and enhances network performance.

Use Cases for MPLS

As a connectivity technology, MPLS helps data packets to reach their destination through the most optimal routes. The movement of packets is prioritised as per their significance for the sender and receiver.

MPLS is a useful technology to connect branch offices, campus networks, metro Ethernet services and organisations that seek a QoS for real-time applications.

It is particularly suitable for situations wherein:
The prime revenue-generating operations in a manufacturing company concern the production and supply of goods for different domains – from FMCG to industrial equipment. The stability of such processes and the time-to-market for products depends on their communication with their suppliers and the technology service providers who support them in their production methodologies.

Manufacturers and the OEMs and suppliers that support this sector are also major users of ERP, CRM, purchase management and stock monitoring software that require seamless connectivity and high Internet speed for smooth functioning. If their plants, head office and other branches are located across geographies, manufacturing companies need to keep them on an integrated network for efficient collaboration.

Manufacturing companies must, therefore, build a secure network to exchange mission-critical data with such vendors, business partners, distributors, suppliers and clients. Within the organisation, their network must also allow them to prioritise the movement of traffic for use cases such as IoT applications, data analytics and AR/VR tools.

MPLS can serve all such objectives successfully.

**Benefits of MPLS for the Manufacturing Sector**

- A variety of traffic – in forms of voice calls, instant messaging, AR-VR applications, emails, multimedia files – go through the same data connection, and some of the traffic constituents are more important than others.

- Network uptime is critical, and major work locations have multiple connections so that traffic can pass through alternative paths.

- There are occasional possibilities of network congestion on some paths.

- Some sites need to connect multiple locations while being completely invisible to other sites on the network.
MPLS creates an integrated and privatised network for seamless links between multiple offices and factories of a manufacturing company. It is capable of building any-to-any connectivity, regardless of the data connectivity technology a site may be locally using.

Furthermore, since MPLS enables traffic to be routed through multiple paths, it helps organisations to maintain their business continuity even if one location is impacted by Internet outage or a physical disaster. As a self-healing and highly redundant technology, MPLS supports multiple backup systems.

**Optimal Bandwidth Utilisation with Quality of Service**

The back-office teams at a manufacturing company may be using the Internet to send regular emails to suppliers or to share data via messaging apps. Technicians and factory workers may be relying on information posted by engineers via AR/AR apps.

With its adequate bandwidth, MPLS serves all such purposes efficiently. It also prioritises the traffic flow as per predefined norms, and there is no need for rigid partitioning of bandwidth between various applications.

Traffic prioritisation by MPLS is a concept under QoS. It implies that manufacturing organisations using this solution can set minimum thresholds for jitter, latency and packet loss while subscribing to the connection. QoS applies for all kinds of traffic including voice, video, email services, the transmission of multimedia files, and other software applications.

Once the high-priority traffic is defined, it can borrow capacity from other (low) traffic stream, if required, for quick transmission of data packets.

Organisations can also set low latency paths for the movement of prioritised data. Conversely, when the low-priority traffic does not have adequate bandwidth, it can borrow the idle capacity that is not being used by higher priority applications.

### Any-to-Any Connectivity and Business Continuity

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### Network Security and Private Cloud

Managing the continual security of network for multiple offices of a manufacturing company – which may be using different Internet services – can pose a challenge for IT personnel.

MPLS allows organisations to build their own private network (VPN), keeping their online interactions safe from the threats of the public Internet. This feature makes MPLS more valuable for a manufacturing company that frequently shares mission-critical data with its business partners and cannot afford the vulnerability of unsafe Internet connections.
With better standards of network security as compared to Internet Protocol Security (IPSec) VPNs, MPLS ensures that data being transmitted is never ‘out in the wild’. The data packets pass through a private virtual network built by a single service provider.

The combination of cloud computing with MPLS VPNs also makes the cloud an extension of the offices’ on-premise network and services – this gives users a privatised virtual platform, enabling more secure use of cloud applications.

**Simplified Bandwidth Management and Scalability**

MPLS makes it simpler to add new sites in the network and manage the bandwidth assigned to it. The bandwidth defined for different applications can also be changed on an as-required basis. This attribute supports manufacturing companies that use cloud computing because increasing the capacity of cloud platforms may not be helpful unless the users also expand the capacity of the business network connected to the cloud.

**Ability to Monitor Network**

When their network is built with MPLS, a manufacturing company’s IT personnel can track the performance of all data packets passing through the network. Their advanced monitoring tools help them to display, decode and aggregate performance reports as per MPLS labels.

With MPLS labels visible to local network engineers, they can quickly identify and address any problem in the mesh.

The issues that can be resolved include misconfigured MPLS routers or unexpected behaviour from the labelling scheme.

**High Uptime**

Ensuring high uptime for different processes is a key responsibility of IT teams. A manufacturing organisation that uses several real-time applications over its IT infrastructure must ensure at least 99.9% availability. MPLS helps to build a redundant architecture for such efficiency in the network. It comes with components such as carrier/loop redundancy, workplace premises redundancy, and multiple routing protocols to support the continuity of processes that depend on network availability.

Lastly, MPLS monitoring tools also make it simpler for IT executives to enhance the performance of the custom applications used in their company.
To help businesses use a private online network with the prioritised movement of data packets, Tata Tele Business Services has devised the Smart VPN – a comprehensive MPLS WAN networking solution. It is based on the pillars of MPLS technology and a secure connection to the cloud that enables reach to the remotest of locations on wireless and wired last mile. Smart VPN builds a robust network with security, scalable connectivity options, and performance monitoring system, all of which come at an optimum cost.

Smart VPN improves workflow for manufacturing companies by seamlessly integrating with their existing data connectivity technologies. It also allows them to provide VPN access to their remote employees on the move.

Businesses can get a dedicated connection with 1:1 contention along with symmetric speeds for uploads and downloads.

Organisations leveraging Smart VPN can ensure efficient functioning for all their applications with proactive monitoring and real-time performance reports.

Like other solutions offered by TTBS, the Smart VPN is also backed by a comprehensive service level agreement (SLA) that assures clients of a reliable network, high uptime and on-site services within promised timelines.

Smart VPN comprises four customised solutions that work together to provide 360-degree services to end-users:

1. **MPLS VPN**

It enables businesses to connect their networks from anywhere, including remote locations. MPLS is an easy-to-scale and low-cost connectivity solution. It is also an enterprise-grade solution that includes reporting and service support. The MPLS network is not affected by security threats that are typically associated with wireless services.
The high-speed and last-mile connectivity service offered by MPLS helps to simplify the tracking of raw material, finished goods, inventory, fleets and workforce through IoT solutions.

### Business Impact Created

The MPLS technology integrated with Smart VPN has brought real-world results for our clients in the manufacturing sector. Some of these use cases include:

**Managed MPLS Solution for a Speciality Chemicals Manufacturer**

A fertiliser producing company that has now structured itself as a leading speciality chemicals producer needed a managed MPLS service for three of its work locations. The sites had to be interconnected, and the employees across offices were using SAP applications in their daily operations.
The company wanted to ensure more efficient functioning of these enterprise tools with MPLS connectivity.

**Business Challenge**

The client sought a cost-effective and flexible solution that could provide uninterrupted service while ensuring the security of the network. They also wanted to keep their network scalable and responsive to changing business needs. Additionally, they expected a service that could securely connect even the employees working from remote locations to the company’s network. Provision of voice communication solutions on the network was another requirement.

**TTBS Solution**

When TTBS was approached for a network solution, we deployed the Smart VPN for the organisation. The any-to-any topology of MPLS helped to connect geographically dispersed locations cost-effectively. Roha, a small city in Maharashtra, hosted the SAP server, and all locations of the organisation were able to access it to work on the associated applications. We also established voice communication links between them.

The solution was deployed, ensuring hybrid last-mile connectivity. Since it was based on MPLS, the accessibility to enterprise applications was fully secure. With Smart VPN, the client also achieved the ease of scaling the network as per requirements.

**MPLS Service for Oil Technologies Firm**

Our client is a home-grown speciality petroleum products company established in the early 1960s. It develops a range of products including transformer oils, liquid paraffin, white oils, automotive and industrial lubricants, coolants and greases, among others, in India. As an innovation-driven organisation, the company also invests in R&D to improve the quality of petroleum products and lubricants.

The client needed a reliable partner who could help them to connect their five branches with DC and DR.

**Business Challenge**

With its locations spread across different regions of India, the company needed a private network that could securely connect the offices. It also wanted to integrate the MPLS service with a backup service provider and allow centralised distribution of Internet connectivity. Cost-efficacy of the solution was a fundamental expectation.

**TTBS Solution**

We provided the client L3 MPLS VPN solution to connect their five branches with the DC located in Mumbai, Maharashtra, and the DR in Bengaluru, Karnataka.
It is a future-ready, end-to-end managed service and is scalable to cater to the changing requirements of the company. There is no need to change infrastructure at the hub ends to scale the network.

TTBS also ensured the cost-effectiveness of this MPLS solution by providing the client with routers without any CapEx or annual maintenance charges.

Furthermore, the solution is cloud-ready, allowing the organisation to use services such as Microsoft Azure and Amazon Web Services at any time over a privatised and secure Internet connection.

With their new MPLS network, the company now gets higher uptime and has OSP links in a load-sharing mode.

**Conclusion**

Despite being an old technology, MPLS continues to play a significant role in connecting specific point-to-point locations, including the regional offices and production facilities of manufacturing companies. It also helps in improving the performance of real-time applications.

No matter how remote the offices and production centres of a manufacturing company are, TTBS Smart VPN can connect them on a fast, reliable, robust and secure network.

By utilising the shortest path labels instead of long network addresses, this MPLS-based virtual network helps IT teams to avoid complex routing table look-ups.

The high-speed and last-mile connectivity service offered by MPLS helps to simplify the tracking of raw material, finished goods, inventory, fleets and workforce through IoT solutions.

They get quickest network path routes between nodes, limiting network latency. The CoS with VPN gives their company the ability to prioritise and route the time-sensitive data based on application. They can always maintain low latency for their cloud, voice, and video apps for efficient revenue-generating operations in the enterprise.

To know more about Smart VPN, click


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