

ENTERPRISE NETWORK TRANSFORMATION

Key challenges in the internet-first era

Global enterprises are re-architecting their networks to support modern business needs—ensuring high uptime, security, flexibility, and cost efficiency beyond traditional MPLS or point-to-point setups. Many turn to the internet for its scalability and affordability, aiming to replicate the performance of dedicated networks.

However, the public internet, which is not designed for enterprise-grade reliability, brings inconsistent and unpredictable performance across locations.

COMMON NETWORK CHALLENGES IN AN INTERNET-FIRST MODEL



Network uptime and latency

With the shift from MPLS to cloud and hybrid architectures, uptime issues and latency spikes have become more visible. Applications are increasingly cloud-hosted, and users are widely distributed—raising reliability concerns when relying on standard internet paths.



Quality of Service (QoS)

MPLS offered predictable, low-latency routing. In contrast, internet routing varies significantly—especially for intra-country and international traffic—causing degraded cloud and SaaS access performance.



Network flexibility

Rigid networks force enterprises to over-provision for peak periods, increasing costs and causing upgrade delays. Limited programmability results in dropped traffic, performance issues, and potential revenue loss during high-demand periods.



Cloud integration complexity

With widespread SaaS adoption and multi-cloud environments, enterprises face complex routing and traffic management (east-west and north-south). Legacy architectures like MPLS and traditional internet are ill-suited for cloud-centric models, leading to higher operational and overhead costs.



Regulated or remote regions

Delivering consistent experiences in regions like China, Central Asia, and the Middle East is challenging. Enterprises face regulatory hurdles, limited infrastructure, and service quality issues including the inability to serve users effectively.



Data centre connectivity

Many businesses retain critical workloads in data centres. Ensuring reliable data centre-to-data centre (DC-DC) connectivity is crucial but often disrupted by subsea cable failures, capacity shortages, and geopolitical instability.

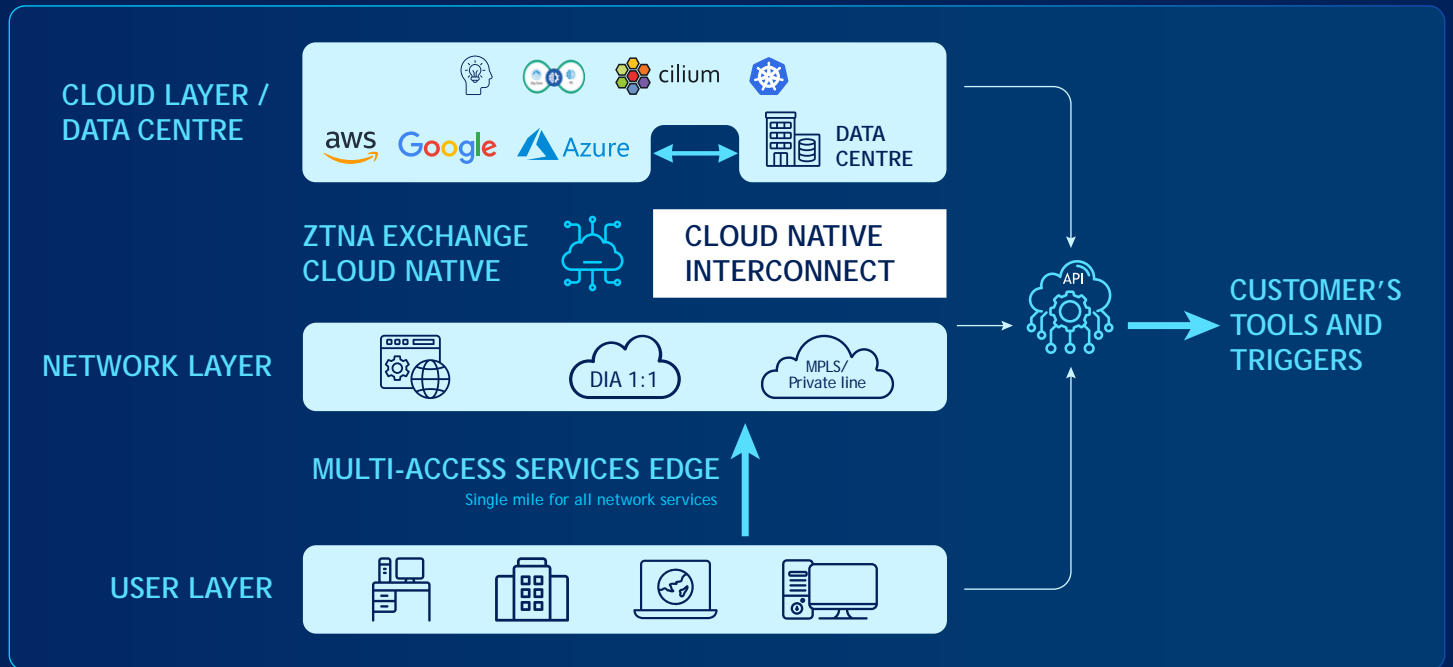


Cost optimisation

Balancing performance and cost remains difficult. Dealing with multiple vendors or consolidating services often leads to higher expenses or reduced quality. MPLS alternatives may not solve the problem—only shifting cost dynamics without improving agility.

TATA COMMUNICATIONS APPROACH

Tata Communications recommends a 'persona-based' approach by building a personified composable network. The diagram below provides the key building blocks of such a network.



We have defined three key layers of WAN architecture. Below is how we help on each of these layers:

User layer - Network layer: We connect the user layer to the Network layer using **MASE (Multi-Access Service Edge) technology**. MASE enables multiple network services (MPLS, Standard Internet, Deterministic Internet) on a single unified last mile, offering cost savings and finer customisation.

Network layer: Our IZO™ Hybrid backbone enables us to provide **MPLS-like SLA and latency with ~25-30% reduced cost** and the option to have a local breakout to the internet. This design allows for a fully business-oriented WAN network connecting branches and data centres, offering comparable SLAs to MPLS.

Data centre and cloud layer: Tata Communications' Private Line backbone supports bandwidth on demand. This feature is beneficial during peak loads, enabling customers to pay for the minimum required bandwidth and upgrade as needed quickly. For cloud connectivity, Tata Communications IZO™ backbone connects to major CSPs globally, providing predictable routing leveraging native interconnects and **reducing data egress costs by up to 20-25%**.



Below is a brief description of how we leverage our capabilities in solving some of the challenges highlighted:



Availability and latency

With IZO™ Hybrid WAN and our ASN6453 and AS4755 backbones, we offer uniform end-to-end MPLS-like SLAs across the globe in 150+ countries, ensuring that we provide QOS equivalent to COS3.



Data centre connectivity

Tata Communications recommends a mesh architecture which is submarine cable-agnostic. This helps enterprises avoid cable cuts, bypass geopolitical hot zones, and provides bandwidth flexibility in multiples of 5Gbps to 100Gbps.



Predictability

Our IZO™ backbone is engineered to provide a predictable path across the globe from source to destination. This eliminated the need for MPLS links. IZO™ backbone is custom-designed to fit the SD-WAN and is compatible with all the SD-WAN OEMs.



Cloud on ramp

Tata Communications' underlay services provide a single-hop connectivity to the cloud. Our backbone and cloud interconnects can pick enterprise traffic from anywhere in the world and drop it at the nearest cloud exchanges with predictable routing, with no upstream providers. This provides customers the benefit of a dedicated multi-cloud connect without having to pay 'the cost'. However, enterprises can create a VNF where needed in one of our three dozen multi-cloud connect edges across the globe.



Programmability

Our other underlay services like MPLS, P2P private lines, Internet link (in roadmap), and multi-cloud connectivity come with Bandwidth-on-Demand, facilitated through our GUI portal. Enterprises can programme their upgrade to occur at a particular time for a specific period within 24-48 hours or even perform permanent upgrades. Gen AI tools help us to streamline the service assurance and Day 2 operations using auto remediation and better screening, leading to 30% fewer proactive tickets.



Regulated and hard-to-reach countries

As a global provider, Tata Communications has solved the complexity of some of the most regulated countries. As a result, we are the preferred global partner for enterprises in regions like MEA and Central Asia, where we have regional-specific backbones with local routes (AS6421, AS273732).



Cost effectiveness

- **WAN**

Our IZO™ Enhanced service, provides MPLS-like SLAs and latency and is 25-30% cheaper than MPLS. These cost savings can be further enhanced by leveraging MASE. Bandwidth-on-Demand allows customers to save costs by not having to account for peak utilisation and failover scenarios.

- **Cloud**

Our native and multi-cloud interconnect provides superior quality of service and cost savings of up to 30-35%.



Future proofing and acquisition

Tata Communications' global coverage (150+ countries) and personified approach to underlay architecture means that we can extend the same standards of services and architecture for the new user base or acquired company, which Tata Communications already provides to the parent company. This helps with the seamless integration of IT without having to spend countless hours.



Cognitive NOC

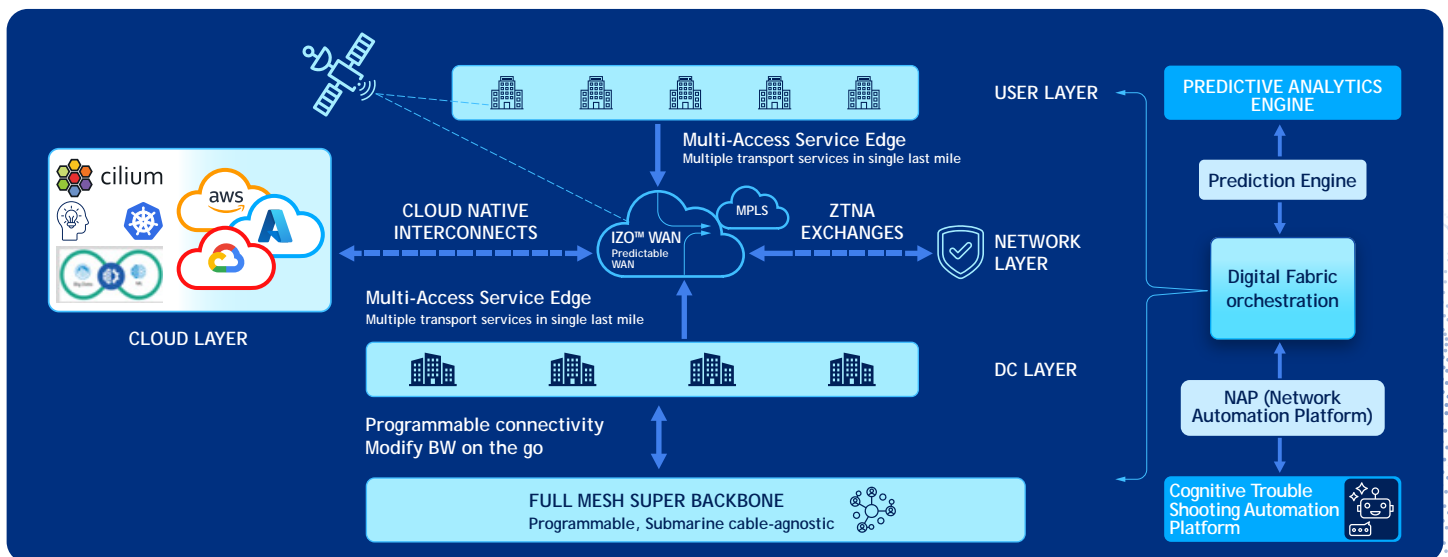
All services are provided with a single-pane-of-glass experience, with 2x faster cycle time for rollout automation and BoQ, providing over 40% operational efficiency and 80% improved MTTR by enabling auto-remediation for L0-L1 tasks, made possible using machine resolution. This also results in 25% fewer field visits. We have achieved over 30% reduction in proactive tickets using AI/ML models and by streamlining the NOC.

SUMMARY

Network architecture is the most immovable part of an organisation’s digital estate. Enterprises are advised to take a holistic view of their network architecture, ensuring it is aligned to their organisation’s vision. Here’s how Tata Communications’ approach enables enterprises to build business-ready networks.

Aspect	Challenges with non-personified WAN	Tata Communications’ persona-based approach
Network uptime	Latency and WAN uptime issues with cloud-hosted services and remote work.	Uniform end-to-end SLAs across 150+ countries, leveraging ASN6453 and AS4755 backbones.
Quality of service	Unpredictable and inconsistent service quality with the internet compared to MPLS.	Predictable path, ensuring COS3 equivalent QoS and cost savings of ~25%.
Programmability	Lack of network flexibility for changing business needs, leading to increased costs and delays.	Bandwidth on demand and programmable upgrades via a GUI portal, reducing costs and improving agility.
Cloud on ramp	Complexity and higher costs with multi-cloud environments and legacy systems.	Single hop connectivity to cloud, dedicated multi-cloud connect, and optimised landing zones.
Regulated and hard-to-reach countries	Difficulty maintaining a uniform user experience in regulated regions like China and the Middle East.	Preferred global partner with solutions for regulated regions, ensuring consistent service.
Data centre connectivity	Issues with subsea failures, lack of capacity, and geopolitical risks affecting DC-DC connectivity.	Mesh architecture, submarine cable-agnostic, bandwidth flexibility, and innovative billing models.
Cost optimisation	High costs with multiple vendors or suboptimal services, and increased costs with MPLS.	Cost-effective IZO™ Enhanced service, AI Ops for bandwidth management, and significant cost savings.
Field service	Non-uniform service quality with local vendor, with little to no SLAs.	Uniform SLA across regions, unified vendor for delivery and lifecycle management of equipment and network.

Below is a representation of the transformed WAN architecture when the above concepts are considered:



For more information, visit us at www.tatacommunications.com