



Problem

An exponential increase in users consuming collaboration tools across geographic locations while employing more feature-rich devices creates responsiveness problems in addition to consuming available bandwidth.



Solution

Control the reliability and efficiency of network capacity as traffic volumes increase exponentially. Add capacity and redundancy strategically by distributing growing workload volumes across geographically dispersed, secure digital edge nodes near the growing number of dense user populations. Mesh these nodes so they interconnect directly, providing secure, dynamically routed, resilient paths that adjust to spikes in demand and congestion in supply. Localize data requirements in the digital edge node, balancing protection with accessibility. Each node is tailored for the local services at that location, controlling performance that scales in real time and with demand.



Constraints

1. Increasing numbers of users with multiple devices at more locations create exponential growth in demand that consumes all available and planned-for network bandwidth.
2. Mobile device use creates added expectations for collaboration as user experience becomes even more vital across wireless devices and in remote locations.
3. Greater demand in more regions stresses conventional network cost models.
4. As more dispersed users are connected in different regions, traffic volumes sent back to central data centers consume all bandwidth, affecting user experience.
5. Traffic volumes that cross regions are typically sent through MPLS networks, which cannot guarantee Quality of Service (QoS) for jitter and latency.



Steps

1. Place digital edge nodes in new population centers as needed, adding more cloud interconnections and increasing points of presence.
2. Mesh these nodes together, then localize services to the nodes, which will offload network traffic to the edge mesh, relieving the need to expand bandwidth back to the centralized data center or through MPLS or public internet. This manages network volume efficiently.
3. Expand interconnections to new digital ecosystems leveraging service chains and SDN/NFV to manage volume distribution across the edge-to-edge mesh and provide scalability for repeatable services.
4. Implement a dispersed, self-healing DR strategy where every digital edge node has multiple connections, preventing a single point of failure.
5. Add caching repositories to optimize data transfer based on policies.



Forces

- Exceptional user experience in collaboration workloads is not a luxury; it is critical to successful business execution.
- The proliferation of devices and their expanding capabilities per user in an expanding mobile workforce and consumer base is unsustainable using traditional and centralized network architectures.
- Expansion into new regions with new partners cannot wait months for standard IT deployments; these need real-time interaction and collaboration.
- Cost pressures require that more collaboration services get pushed to the cloud in more locations.
- Planned capacity management cannot meet demand.



Results

- Technical**
- Demand is managed at the local level, alleviating global network congestion.
 - Dynamic routing enables self-healing in the case of local bottlenecks.
 - DR is more efficiently processed across the dispersed mesh.
- Business**
- Local services funneling bandwidth through the interconnected mesh reduce communication costs, while improving user experience and collaboration growth needs. This drives stronger business opportunities and results.
- Potential New Challenges**
- Local dispersion of volumes will need timely, regionalized regulatory compliance.

Reference View

