



Problem

Content volume continues to grow across new regions with additional devices and richer content types. Network choke points occur when driving content down to key population centers over long-haul lines. This degrades user experience and limits ability to scale the business.



Solution

Control the reliability and efficiency of network capacity as traffic volumes increase exponentially. Strategically add capacity and redundancy by distributing growing content workload volumes across geographically dispersed and secure digital edge nodes near 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 and scale with accessibility. Deploy a single namespace data service that is available in all edge node locations, optimizing for high availability and data protection. Each node is tailored for local services at that location, providing performance that scales on demand. Data services are also optimized for integration, supporting multiple interfaces (web, APIs, file system, etc.).



Constraints

1. With few distribution points, the delivery of content to a dispersed network will cause bandwidth consumption and costs to scale linearly, even if performance does not.
2. It is impossible to tailor the widespread delivery of local content from just a few central points.
3. The proliferation of devices and their expanding capabilities per user in an expanding mobile workforce and consumer base is unsustainable using traditional centralized network architectures.
4. Planned capacity management cannot meet demand.
5. The increase in metro-centric traffic cannot be solved by centralized network architectures.
6. Content delivery traffic is multidirectional, with real-time messaging and localized contribution.



Steps

1. Deploy edge nodes in new population centers as needed, adding more cloud interconnections and increasing points of presence.
2. Mesh nodes together, and install replication services in the nodes, expanding edge-to-edge volume and reducing traffic back to the centralized data center.
3. Expand interconnections to new digital ecosystems leveraging service chains (e.g., utilizing replication) and SDN/NFV to enable scale and manage volume distribution across the edge-to-edge mesh.
4. Implement dispersed, self-healing content replication where every digital node has multiple connections, preventing a single point of failure.
5. Add caching repositories to optimize data transfer based on policies, employing a single namespace.
6. Globally deploy event-based content updates.
7. Reassess tiered storage management strategy along with cloud storage policies to meet unpredictable demand.



Forces

- By 2020, there will be 4.1 billion internet users, 26 billion networked devices and IP video that comprises 82% of all internet traffic.
- By 2020, the projected global aggregate household data consumption will be 44 zettabytes.
- More users with multiple devices at more locations create exponential growth in demand which consumes all available and planned-for network bandwidth.
- Greater demand in more regions stresses conventional network cost models.
- Content consumption is accompanied by large interactive social media traffic (e.g., Twitter or Snapchat). This data has very different traffic characteristics that must be handled to support the business model.



Results

- Technical**
- Demand is managed at the local level, alleviating global network congestion.
 - Dynamic routing enables self-healing for DR and replication in case of local bottlenecks.
 - Replication and disaster recovery is more efficiently processed across the dispersed mesh.
- Business**
- Local services driving bandwidth via the interconnected mesh reduce communication costs while improving user experience and meeting growth needs.
 - Replication scalability becomes more feasible.
- Potential New Challenges**
- Local dispersion of volumes will need timely, regionalized regulatory compliance.
 - Localized personalization is critical to superior user experience.

Reference View

