



Problem

The accelerating demands for higher bandwidth and the increasing and ubiquitous nature of mobile high-quality content consumption (anywhere, anytime) will continue to create congestion and inject latency into content distribution across traditional centralized network topologies.



Solution

Content delivery must change from a centralized distribution model to one that places content closer to the population centers that consume and create it to improve user experience. Control and enhance user experience by shortening the distance to a secure digital edge where users are. Push content to the edge while rerouting local traffic within dense user clusters to speed access. Install repositories at the edge to vastly improve the user experience of content consumption and contribution, while ensuring secure, authorized access. Install policy-based, tiered storage to manage the cost and performance of expanding content volumes and demand. Deploy distributed denial of service (DDoS) protection and encryption to ensure data access is protected against attacks and theft. This movement of data and services to the edge is the first step to re-architecting to an IOA.



Constraints

1. Content volumes are growing, exhausting network capacity and making user experience requirements harder to achieve.
2. Investing in centralized network resources does not meet the needs of the changing content delivery environment.
3. Long-haul streaming to multiple sites does not scale in a hierarchal network, causing delays in delivery and poor user experience (i.e., latency and jitter).
4. More content is being created non-centrally, which requires backhauling to a central site for distribution in traditional network architectures.
5. Metro traffic continues to grow faster than long-haul traffic, which traditional centralized network infrastructures are not designed for.



Steps

1. Simplify the network topology by deploying a digital edge near large population centers, reducing latency by shortening the distance to users.
2. Consolidate endpoint management for all traffic sources and types, including the internet.
3. Segment and control regional traffic at the edge, minimizing latency and response time.
4. Introduce security services (including encryption) at the edge to optimize regional access and keep data safe from attacks and theft.
5. Leverage network provider choices for optimal delivery.
6. Install caching at the edge, enabling fast access to consume or contribute content.
7. Introduce policy-based, tiered storage management to effectively retain the rapid growth of content types and usage.
8. Introduce event-based micro-caching to generate update alerts for mostly static content.



Forces

- Traffic from wireless and mobile devices will account for 66% of total IP traffic by 2020, most carried by content delivery networks (CDNs) as video.
- The global CDN market is projected to grow to \$23.22 billion by 2021, at a CAGR of 30.9%.
- Globally, metro traffic will grow nearly twice as fast as long-haul traffic through 2019.
- Global OTT devices and services market growth is at a CAGR of 20.6% (2016-2020).
- User experience expectations are more demanding, stressing available bandwidth and driving up network costs.
- Production and post-production workflows are moving to ecosystem-based hybrid cloud and multicloud-based technologies for compute, storage, archive, encoding, distribution.
- Digital media businesses require greater interconnection to drive global IP traffic growth.



Results

- Technical**
- Localizing traffic in the hub shifts latency from ~20 ms/~20 hops to <1 ms/hop (or wire speed) with unlimited local bandwidth.
 - Communication end points are aggregated and interconnected in a secure digital edge, reducing attack surfaces.
 - Visibility into potential attacks and threats at the edge is achieved, making it easier to craft access tunnels and policies.
- Business**
- Consistent and optimal user experience that minimizes jitter and reduces content contribution and distribution delays.
 - More WAN and metro Ethernet choices reduce costs.
- Potential New Challenges**
- Managing content delivery and contribution growth globally across multiple cloud environments.

Reference View

