Scale Data Volumes & Variety

Problem

Analytic processing that requires cross-regional coordination for real-time analysis (e.g., credit card fraud detection) suffers delays due to traffic choke points caused by competition with other traffic such as transactions, degrading insight quality.

Solution

Strategically add capacity and redundancy to improve global systems of engagement performance as traffic volumes increase exponentially across geographically dispersed user population centers. Achieve this by distributing scaling of data and workloads to an interconnected mesh of digital edge nodes. This ensures timely decision-making that triggers necessary actions within and across regions. Directly interconnect edge nodes to provide secure, dynamically routed, resilient paths that adjust to spikes in demand and congestion in supply. Localize data requirements in each node, balancing protection and scale with accessibility. Extend the established single namespace data service to all nodes, optimizing for high availability and data protection. Each node is tailored for local services at that location, allowing for performance control that scales on demand. Data services are optimized for integration, supporting multiple interfaces (web, APIs, file system, etc.). Add collaborative analytic services (analytic modeling workbench, dashboard) to extend the power of insight and engagement. Ensure key insight summaries are replicated across edge nodes as required.

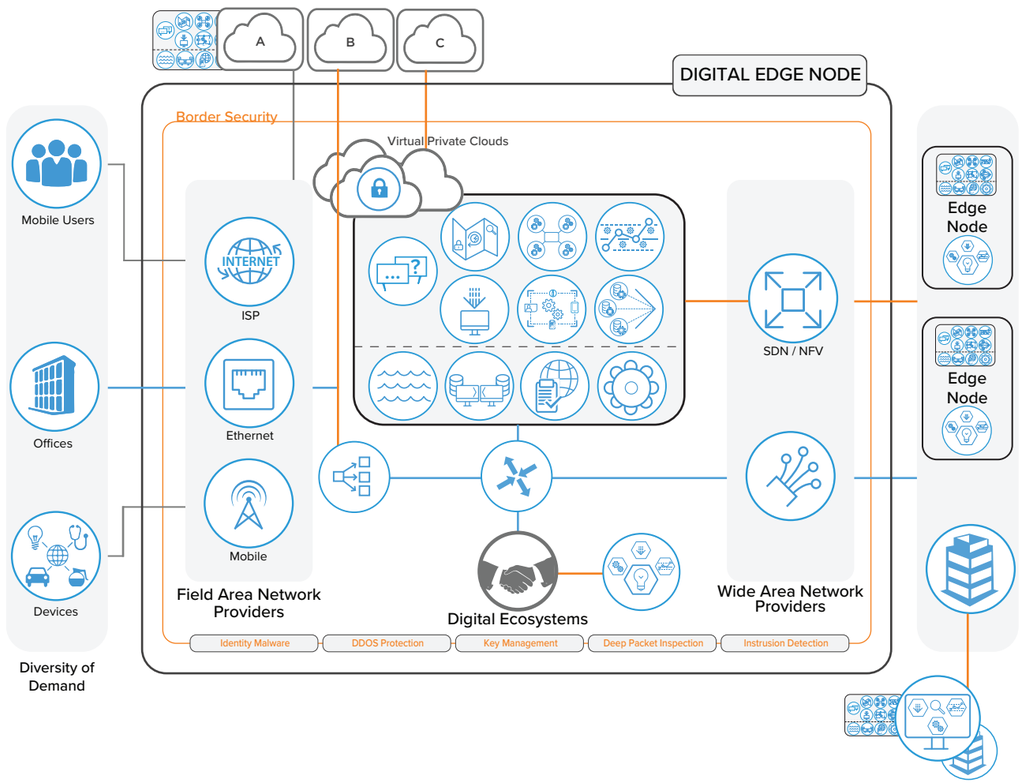
Constraints

1. The proliferation of devices and their expanding capabilities per user in a growing consumer base severely constrains timely data collection for systems of insight and engagement when using traditional network architectures within and across metros.
2. Planned capacity management cannot meet demand, especially as spikes in data collection are hard to predict.
3. Regional insight and trend data replication competes with other important content delivery, delaying the delivery of global insights to regional systems of engagement.
4. Collaborative efforts within dispersed complex modeling engines have degraded user experience due to lag times in model and data set replication and synchronization.

Steps

1. Deploy more digital edge nodes in new population centers as needed, adding more cloud interconnections and increasing points of presence.
2. Mesh these 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 more clouds and new ecosystems leveraging service chains (e.g., replication) and SDN/NFV to manage volume distribution across the mesh.
4. Extend the single namespace to each edge node so that caching repositories and data lakes can optimize data transfer.
5. Add new SaaS analytic platforms in these regions, leveraging analytic services as needed.
6. Expand complex modeling collaboration by integrating analytic services to create an analytic modeling workbench and dashboard employing SaaS services.
7. Install insight replication across the mesh so that regional trends can feed global trend modeling.

Reference View



Forces

- By 2020, there will be 4.1 billion internet users and 26 billion networked devices generating data needed for systems of insight and engagement with cross-regional trends that must be analyzed.
- More users with multiple devices at more locations create exponential growth in generated data collection and actionable response needed within and across regions.
- Data is becoming more valuable to business, customers, competitors and threats. Businesses that were product-driven are now data-driven.
- Greater demand in more regions stresses conventional network cost models, since the data collection (e.g., steaming text analytics) is often derivative to the digital product (e.g., video event) that generates the collection.
- Regional insight trends must be propagated globally in a timely manner to capture business value.

Results

Technical

- Regional insight and engagement are managed at the local level, alleviating global network congestion while delivering timely value.
- Dynamic routing enables self-healing for replication in case of local bottlenecks.
- SaaS-based complex modeling can be executed based on platform choice.

Business

- Local insights fed through the interconnected mesh reduce communication costs and improve user experience for global trends as volume grows.
- Global collaborative orchestration of complex models becomes feasible with less data movement.

Potential New Challenges

- Regionalized regulatory compliance must be applied to data collection from personal devices.