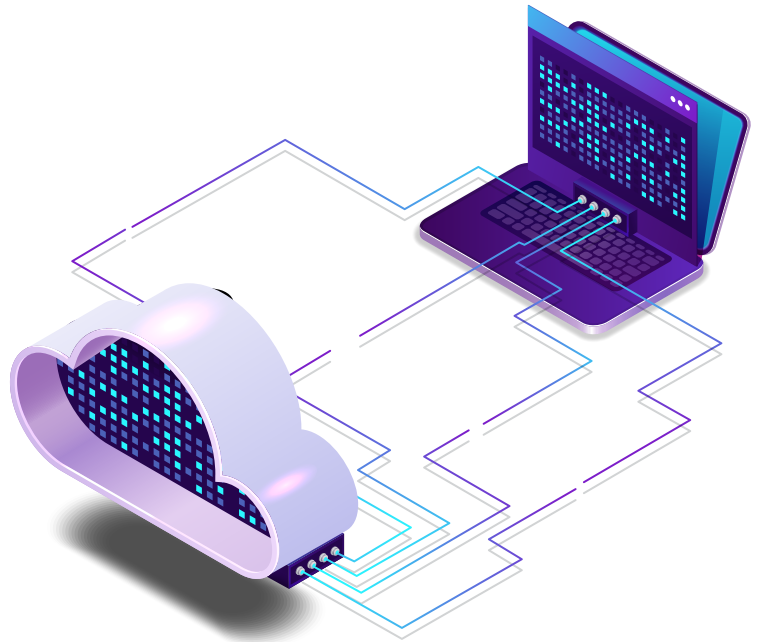


Charting the future of software defined **networking**





Challenges



Silos of network visibility, different tools adding to inefficient network management, DevOps complications and increased time to market.



Evaluate data center facilities and related assets with an eye for additional consolidation of sites, while significantly increasing the overall reliability and resiliency of the data center architecture.



Adopt a more mature and robust network architecture, manage complex application environment, ensure network optimization and focus on outcomes versus processes.



Improve ability, flexibility and agility to respond to changes in network infrastructure as the direct result of changes in the business.



Reduce costs associated with delivering the services immediately as well as going forward.



Build a single, homogenous global service delivery model that greatly simplifies and streamlines the management of IT infrastructure and leverages the significant ongoing investments in IT transformation.



Solutions

SDN solution engineered around HCL’s Sensus framework covered end-to-end transformation of data center network. Greenfield DC Setup and migration to Leaf and Spine architecture supported both Cisco ACI and VMWare NSX-based DC LAN. Sensus ensured use of robust assessment of customer landscape, network programmability, policy-based automation, centralized management, and monitoring. It made the network more efficient, automated, agile and ready to take on dynamic DevOps and workload needs.



Leaf and Spine architecture provides application-aware fabric intelligence to virtual server workload management and provisioning.



SDN with Cisco ACI (Application Controller Infrastructure) mode using Cisco APIC Controller.



Benefits



Cost leadership – Decrease in network IT costs including ops, asset, and connectivity.



Network agility, scalability, and future proofing

- Faster go to market
- Adoption of cloud



SDN future-proofed network, standardized and streamlined for lean NetOps.

Implemented a sparing strategy to reduce CAPEX of hardware refresh and support (15% spares for access points, only 40 % refresh of switching inventory at remote locations, 15% spares against remaining 60%).



Software Defined Data Center Modernization for a US based insurance company



About the customer

The customer is the 5th largest health insurer in the US and employs more than 23,000 people, serving nearly 16 million members. It has major operations in Illinois, Montana, New Mexico, Oklahoma, and Texas.



Challenges



Limited security control and siloed visibility.



DevOps complications, error prone manual operations and application unavailability.



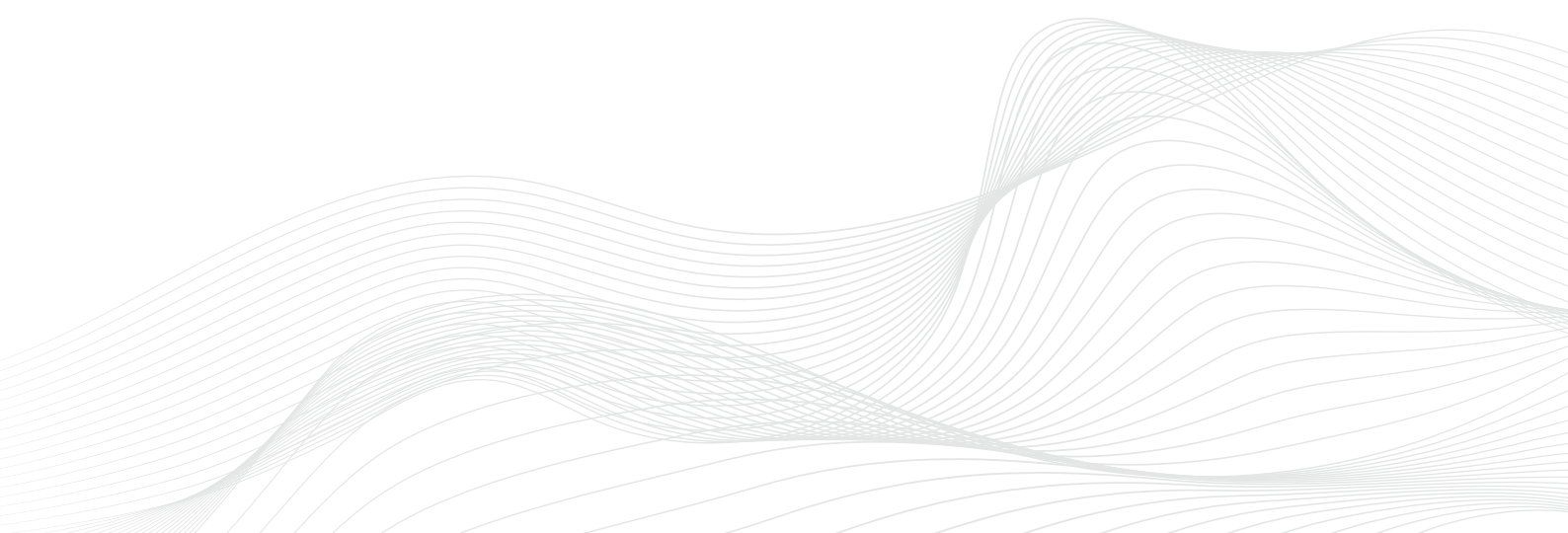
Fragmented physical infrastructure with outmoded legacy systems restraining business scalability and agility.



Issues with multi-zoning traffic and firewalls.



Vendor lock-ins prevented in-time deployment of new applications.





Solutions



Introduced Network Function Virtualization (NFV) which allowed to add/delete application and service capacity on demand.



Enabled micro-segmentation by dynamically assigning security policies to the individual workloads across all zones.



SDN solution engineered around HCL's Sensus framework covered end-to-end transformation of the data center network infrastructure.



Offered various features such as automated provisioning, network virtualization, pervasive visibility and analytics, multitenancy, centralized network management and control.



Benefits



- Revamped security
Isolated workloads with its own security policy through micro segmentation



- Application uptime
Seamlessly moved live workloads across regions with zero downtime



- Capital cost saving
Reduced dependency on physical hardware, eliminated vendor lock-in



- Faster time to market
Accelerated the application delivery using network virtualization and automated provisioning



Data center network transformation for a UAE based nuclear power generation company

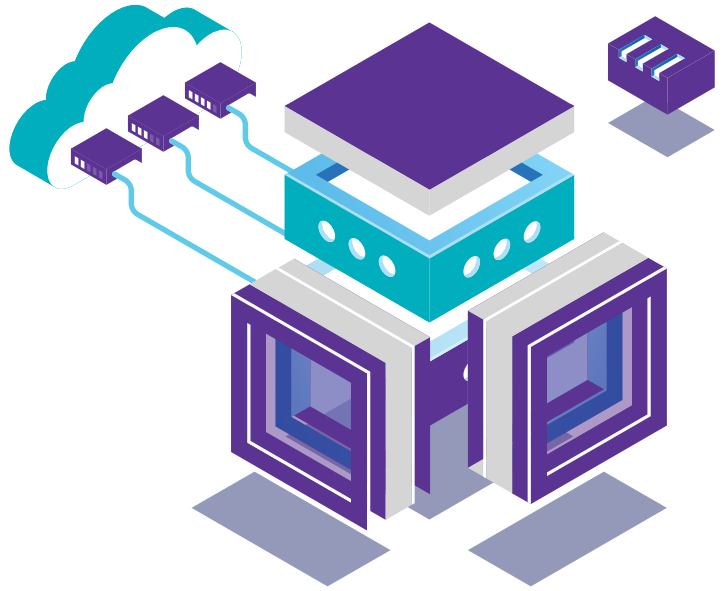


About the customer

A wholly-owned government corporation, the customer is responsible for the deployment and ownership of nuclear energy plants in the United Arab Emirates (UAE).



Challenges



Extend main data center network to introduce a secondary site which could also act as disaster recovery site.



Redesign the existing network using different network solutions in Site 1 and extend it to secondary site with a secure, scalable, and highly available network.



Enable layer 7 inspection for the east to west server-server traffic, and north to south user-server traffic.



Faster deployment of network resources by adapting SDN technologies for underlay and overlay network.



Provide compute resources to address the increased demand with faster deployment. Reduce OPEX and TCO through automation. Leverage existing hardware infrastructure wherever possible.



Enterprise storage solution to meet required availability SLAs i.e. 99.9999%.



Ensure that proper security controls are implemented to secure information assets, comply with NESA standards and regulatory requirements. Focus on network infrastructure protection, applications protection, and ISO 27001 compliance.



Solutions



VMware NSX for software defined overlay network



Cisco ACI for highly available and redundant underlay network fabric



Leaf/Spine architecture provides high availability and flexibility



VMware vCenter management platform for the VMware ESXi Hypervisor



Dell EMC (Vmax 950F, SRDF, ViPR SRM) storage environment for both sites (A-Sync replication b/w sites for DR)



VMware HCX for virtual servers and network migration from legacy to new environment with zero downtime



PowerNSX for automation during implementation and migration



SRM Tool for enabling disaster recovery



Virtual F5 load balancers for user traffic load balancing and application firewall



Palo Alto FW integration with NSX



Benefits



Next-generation firewall with single pass architecture, L4 filtering, IPS inspection, anti-malware checks and vulnerability protection.



SDN technologies VMware NSX and Cisco ACI to provide automatic fabric, configuration deployment with a single point of management, integration with compute and security environment to reduce complexity and improve performance.



NSX integration with Palo Alto for granular security control via micro segmentation and to also provide high visibility up to layer 7 for both East/West and North/South traffic.



Virtual F5 with ASM will provide advanced traffic management, acceleration, and protection of critical web applications.



vROPS, vRLI & vRNI for monitoring management, log managements and traffic analytics.



SRM tool to provide automated and orchestrated failover of PROD workloads to the DR secondary site for quick recovery from failures to meet the agreed RTO & RPO SLAs.

Data Center Network Transformation for a large US based technology company



About the customer

The customer is an American multinational technology company with headquarters in Redmond, Washington. It enables digital transformation for the era of intelligent cloud and intelligent edge. Its mission is to empower every person and every organization on the planet to achieve more. It develops, manufactures, licenses, supports, and sells computer software, consumer electronics, personal computers, and related services.

The organization does business in 170 countries and has a workforce of 144,000 passionate employees dedicated to fulfilling their mission of helping the organization achieve even more.

233 DCs globally,
400k+ network devices

500+ properties

Azure cloud support for **32** regions

Tools support across Azure cloud



Challenges



Enhance service assurance and reduce overall cycle time across all network processes.



Business continuity plan to ensure continuous delivery levels and willingness to adhere to Microsoft's proposed contracting framework.



Applicability, creativity, and innovativeness (i.e. better process, lower cost, and synergies) of supplier's proposed solutions.



Global reach and the ability to scale network operations up or down as required.



Dynamic network environment sustainability - Azure adoption has been growing nearly 100% in the market and that is driving significant growth in network devices to support 1000+ properties and external customers. This also leads to quick organizational changes and services to keep competitive edge.



Solutions

HCL's end state solution for Azure Networking was based on One Microsoft Philosophy i.e. having an integrated team across FPN, PhyNET, WAN and Express Route. We proposed a staggered integration plan introducing synergy across network ecosystem. Following figure sums up the key solution highlights:



Network Operations Center



Phynet and FPN Service Engineering



SDN



DNS



RAS Proxy and SSL VPN



Fhederal

Investment

People, Infrastructure and Governance

Digital Transformation

Automation to help scale

Broad Set of KPIs

Quality engagement



Optimization

Democratize Information using Cross Functional teams

- Eliminating Multiple Silos while preserving the nuances required across processes
- Ability to absorb additional volumes expected because of device growth
- Process standardization and comparison to drive efficiency



Investment

5% of contract value

- Investment is PMO and Governance in Redmond and India
- Investment in Reporting and dashboard creation
- Dedicated teams of Network Engineers driving operational automation



Automation

Automating scenarios based on HCL and MS experience

- Identified over 30 scenarios with potential for significant effort and time reduction
- Dedicated Engineering organization for governance and outcome based model
- Skills include all experienced Engineers with network awareness



Benefits



Simplified network design, deployment, and management through network virtualization and other practical network solutions



Centralized and automated policy-based data center management and network optimization



Accelerated application and service delivery through network programmability and virtualization



Enabling End to End Data Center Network Transformation for a large European Automobile manufacturer

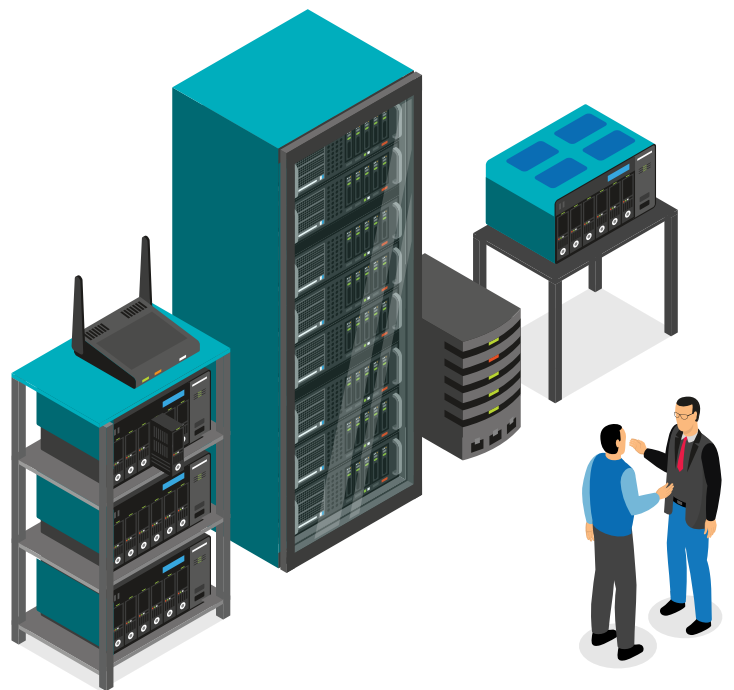


About the customer

The customer is a leading European manufacturing company with around a century of experience in production, distribution and sale of automobiles and construction equipments. The customer employs about 100,000 people, has production facilities in 18 countries and sells its products in more than 190 countries.



Challenges



Obsolete legacy network infrastructure running on Cat 6500 series architecture restrained business scalability and agility.



Further, there were challenges with physical infrastructure, having more than 16,000 heterogeneous network assets from multiple vendors across data centers and sites.



Prevented deployment of new applications and services in time due to vendor lock-ins.



Limited visibility of the entire application and network infrastructure made problems harder to troubleshoot, diagnose and manage.



Error prone manual configuration and change management activities reduced overall productivity and operational efficiency.



Multiple fragmented solutions were needed to support workloads from different hypervisors which added the complexity and the cost to manage it.



Manual setup of network devices to isolate multiple customer traffic, took significant amount of time and effort.



Absence of a single plane of glass that can seamlessly orchestrate network and security policies across Data Centers and sites.



Solutions



The solution was built or developed on HCL's SDN framework Sensus. It covered end to end transformation of the data center network infrastructure.



Sensus involved a robust end-to-end assessment of customer landscape on various parameters such as physical and virtual infrastructure, state of network devices, traffic flow, application ecosystem and behavior, and data center operational processes. These parameters helped in identifying the optimum vendor ecosystem to stitch the right solution forming a seamless fit for the overall multi tower strategy.



Successfully deployed the right SDN solution in a fraction of the committed time using workflow based automation based on Ansible templates and provided seamless integration with multiple security and network solutions such as F5 and Citrix load balancers, Palo Alto firewalls and HCL's network automation tool 'NetBot' for different data center use cases. The final architecture supported network programmability, multitenancy, multi-hypervisor environment, automated provisioning, and centralized management and control, independent of underlying hardware.



Benefits



Cost Optimization: Reduced CAPEX and OPEX by 30% by eliminating dependencies on proprietary hardware and enabling network programmability, simplified network administration.



Scalable Multitenancy: Created a shared service multitenant platform that automatically isolates multiple customer traffic and support workloads from different hypervisors such as VMware ESXi, Microsoft Hyper-V, and KVM.



Greater Network Agility: Dynamically adjust the network-wide traffic flow based on workload demands through network programmability and virtualization.



Improved operational efficiency: Single plane of glass for all change management and policy needs across data centers and sites including automated provisioning, configuration, and control.



Graceful Migration: Successful migration of multiple customers on multi-tenant software defined data center environment with zero downtime.



Seamless Integration: REST API based integration with 'Netbot' for driving end to end automation use cases. Reduced incident tickets for LAN & DCLAN by at least 30%.



For more details, please reach out to us at - Contact.NGN@hcl.com



HCL Technologies (HCL) empowers global enterprises with technology for the next decade today. Mode 1-2-3 strategy, through its deep-domain industry expertise, customer-centricity culture of ideapreneurship™ enables businesses to transform into next-gen.

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