

Cloud Consolidation Drives 35% Capex Reduction

Challenge

Faced with the challenge of managing multiple vendor-specific private clouds, a North American Tier 1 communications service provider (CSP) identified an opportunity to achieve significant cost savings and service improvements by consolidating these environments into a single, unified horizontal cloud platform. This ambitious multi-year initiative aimed to reduce annual Capex by 35 percent, increase operational management efficiency, and improve service delivery by eliminating redundancies, optimizing tools, and streamlining operations. Keysight solutions were instrumental in this transformation, enabling the CSP to validate and optimize private cloud infrastructure performance, ensure a smooth rollout, and provide ongoing insight through the seamless correlation of network function and application performance metrics.

Highlights

- **Streamlined operations:** Eliminated operational redundancies and established common operational model in consolidating disparate cloud environments into a single, horizontally integrated private cloud
- **Optimized costs:** Achieved significant Capex and Opex savings by optimizing their 5G core network via a unified cloud platform, reducing redundant equipment and overprovisioning
- **Improved agility:** Expanded capacity to manage network functions, reduce troubleshooting times, and accelerate the deployment of new 5G use cases with a unified CI/CD/CT pipeline and enhanced observability tools
- **Strategic positioning for 5G:** Well positioned for future growth with a centralized cloud hosting all core elements (SMF, AMF, and user planes) on a common platform increasing network scalability and efficiency to support new technologies

Siloed-Cloud Complexities

In the race to take market share, the CSP committed significant resources to building out its North American 5G network and services over the past five years. The company made substantial investments in spectrum and equipment to rapidly build out its cutting-edge 5G network. They partnered with critical large technology vendors, each requiring separate, siloed private clouds to ensure their highly specialized equipment operated without conflicts or performance issues.

Fast-forward to today when 5G technology has matured and industry-wide pressures to cut costs drive business decisions. CSPs are focused on optimizing and monetizing their 5G investments. For this CSP, the charge to fine-tune operations galvanized around addressing Capex challenges, management inefficiencies, and equipment redundancies created by operating these siloed private clouds for the 5G equipment vendors. In fact, engineers estimated the company was spending

between 30–35 percent of its annual Capex budget to support redundant equipment and activities across multiple clouds.

A Single Cloud to Streamline Operations

With its 5G infrastructure due for an upgrade, the CSP saw an opportunity to reevaluate its 5G strategy and address inefficiencies stemming from the fragmented cloud architecture. The company identified significant cost savings and service improvements by consolidating these siloed environments into a single, unified Kubernetes-based cloud platform. This ambitious multi-year initiative streamlined operations, eliminated redundancies, and aimed to reduce annual Capex by 35 percent. It also focused on achieving Opex savings, increasing operational efficiency, and improving service delivery through greater performance visibility.

As the CSP designed, developed, and launched the consolidated private cloud platform, engineers recognized the need to ensure that the new infrastructure met rigorous performance and quality standards for latency-sensitive applications like voice and video. Furthermore, as the platform scaled, engineering and support teams required comprehensive, end-to-end visibility into application and infrastructure performance across the private cloud network. An equally critical factor for success was the ability to assess how network function performance impacted 5G voice and video applications. While the CSP teams had various commercial and open-source tools for monitoring cloud and 5G application performance, these tools primarily focused on post-deployment monitoring, lacked end-to-end observability, and were unable to correlate network function and application performance metrics.

Understanding these challenges, Keysight worked closely with the CSP to develop a service assurance solution to support the initiative's lifecycle, from validating and optimizing the performance of the cloud infrastructure, to ensuring a smooth rollout, and providing ongoing observability and troubleshooting of services in production. At the core of this approach is the solution's ability to seamlessly assess and correlate the performance of private cloud network functions (CNF) metrics and key performance indicators (KPIs) with application performance metrics.

The solution, comprising Landslide with CNF resiliency testing and VisionWorks, allowed the CSP to maximize existing lab equipment investments and engineering experience, while extending visibility and operational insights into production environments.

The Keysight solution seamlessly integrates with the CSP's existing test case data lake, ensuring consistent testing and management across all stages of development and production. Within the lab, Landslide is instrumental in assessing and validating the design and development. Then, as the initiative moves to the staging and production environments, VisionWorks ensures launch, scaling, and performance management of network functions and hosted applications.

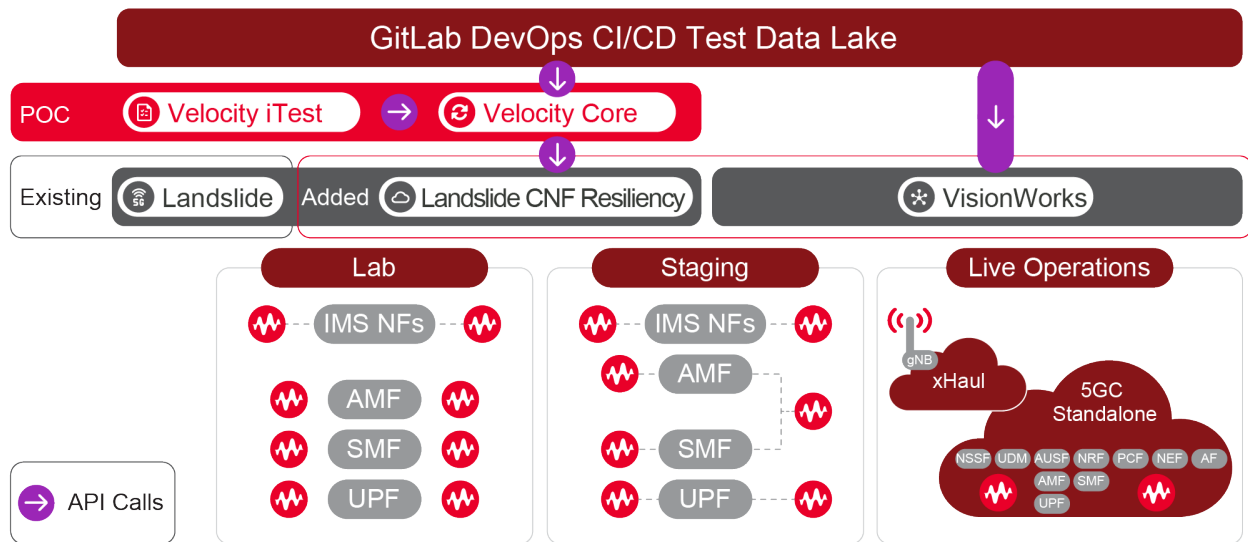


Figure 1. Private cloud testing and assurance architecture

The new consolidated cloud is designed to host the entire core network starting with the IMS. Keysight solutions are used to benchmark cloud infrastructure performance, conduct cloud and IMS core resiliency testing, and validate service performance pre- and post-migration in each market region.

Growing Private Cloud Partnership

Over the next 24–36 months, the CSP anticipates it will streamline, standardize, and consolidate all network functions currently operating in multiple vendor-specific private clouds into the unified platform. As part of this migration, the CSP will automate CI/CD/CT processes to accelerate infrastructure deployment and updates, reduce configuration issues, and implement new 5G use cases quicker without increasing budgets or resources. The Velocity Automation Portfolio is expected to play a central role in automating CI/CD/CT processes across the testing and staging of services in their private cloud.

Conclusion

Keysight solutions have been pivotal to this CSP's consolidated cloud initiative, enabling the validation and optimization of infrastructure performance, seamless rollouts, and continuous observability across the private cloud lifecycle. Keysight provides the capabilities to streamline testing, correlate and assess cloud and service performance, and ensure service quality at every stage. These innovations have empowered the CSP to reduce costs, enhance operational efficiency, and deliver exceptional 5G experiences, positioning the company as a leader in the evolving telecom landscape.



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