

Thriving with VMware Telco Cloud

Success stories of
digital transformation
from service providers
around the world.



1. Market Dynamics
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3. Transformation Principles
4. Using Technology as a Business Enabler
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1. Market Dynamics

The digital era provides incredible opportunity for service providers looking to reinvent their customer relationship and establish a new role in the digital ecosystem.

These opportunities, however, are met with significant market and operational challenges.

Moving into 5G with their current architectures and innovation models, service providers simply can't differentiate, or even survive, in the world of highly performant and on-demand services.



RISING NETWORK COSTS

4+%

decline in gross margins 2014 to 2019 - from increasing pressures including CapEx

(Source: Ready Ratios)

RIGID RESOURCES & LACK OF INNOVATION CONTROL



of operators say that their CapEx planning is driven by technology, not business objectives

(Source: PWC)

SHIFTING MARKET DEMANDS

400x

mobile data traffic has grown from 2002 to 2017

(Source: World Economic Forum)

CHALLENGED RESPONSE TO UNFORESEEN NETWORK DEMAND



increase in wireless data traffic the first week of the Covid-19 pandemic, rising to 19.6% within three weeks

(Source: CTIA)

RISING COMPETITION & LOSS REVENUE

50% - 90%

less revenue for CSPs because of over-the-top applications

(Source: World Economic Forum)

2. Digital Era Business Imperatives

Service providers must transform their network architectures in order to overcome their challenges and take advantage of the market opportunities of the digital era.

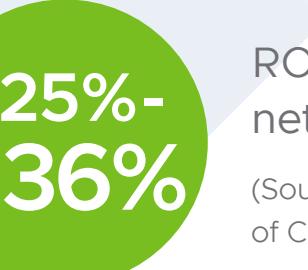
While there are many factors—geographies, network distribution, legacy architectures, and regional trends—that will influence service provider transformation strategies, there are overarching imperatives common to all transformation projects.

PROFITABILITY



in new potential revenue from next generation enterprise services by 2030

(Source: Ericsson 5G Report)



ROI for common network platforms

(Source: Forrester - Total Economic Impact of Common Platform Approach to NFV)



of overall service provider OpEx savings generated from SDN & NFV thanks to significantly reduced provisioning, monitoring and hardware costs

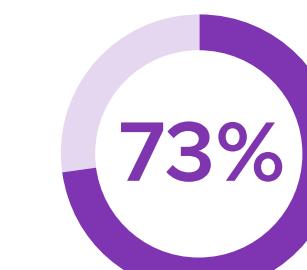
(Source: World Economic Forum)

CUSTOMER EXPERIENCE



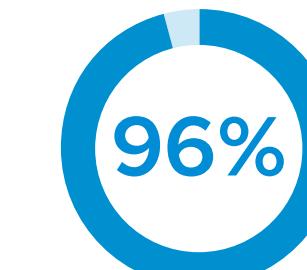
in value for society and consumers created by digital transformation of telecommunications by 2025

(Source: World Economic Forum)



of companies with above-average customer experience perform better financially than their competitors

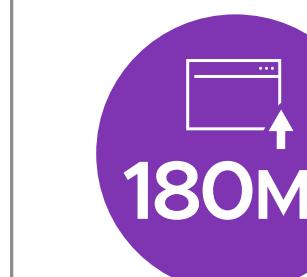
(Source: Forbes – 50 Stats that Prove the Value of Customer Experience)



of customers say customer service is important in their choice of loyalty to a brand

(Source: Forbes – 50 Stats that Prove the Value of Customer Experience)

ENVIRONMENTAL RESPONSIBILITY



tonnes of potential CO₂ emissions can be saved by reducing energy use from software-differentiated service providers

(Source: World Economic Forum)



MT CO₂ waste avoided from efficiencies created by VMware virtual machines

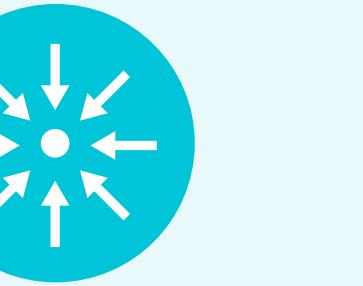
(Source: VMware Green IT: Virtualization Delivers Energy and Carbon Emissions Reductions, Oct 2016 Approach to NFV)

3. Transformation Principles

The distributed nature and sheer volume of monolithic and siloed resources in a service provider network means the transformation required is significant and complex.

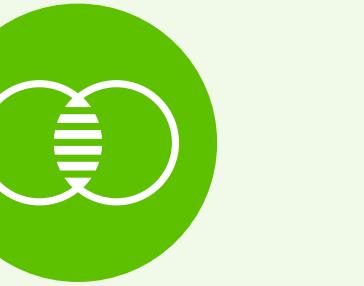
Every transformation starting point is different as is every transformation end point. Similar to the common business imperatives that guide service provider transformation projects however, there are also common principles to support a journey to more agile operations.

With agile operations in place, service providers will be empowered to take control of network innovation to help create new business models, and hence become digital service providers.



Simplification

Automated digital platforms accelerate operations and enable service innovation



Unification

Ubiquitous orchestration enables on-demand delivery and reduces costs



Intelligence

End-to-end observability provides streamlined fixes and improved customer experiences



Openness

Multi-vendor networks engage best-of-breed solutions to build differentiated services



Culture

Shift to innovation-first mindset allows service providers to reinvent their role in the ecosystem

4. Using Technology as a Business Enabler

In order to reach the profitability, customer experience, and environmental goals of the digital transformation, a keystone enabler for most service providers is the telco cloud. The telco cloud delivers the benefits of cloud, to complex service provider networks.

A flexible and scalable platform, telco cloud provides a common abstraction layer for a multi-cloud environment. Automated end-to-end with integrated intelligence and security, the telco cloud enables on-demand, customizable customer experiences with reduced cost.



5. Partnering to Succeed

As service providers transform into digital service providers, they must find partners with philosophies which align to their own. Building software-driven, cloud-empowered, multi-vendor-ready, innovation-enabling environments is much more easily done with partners with roots in those areas.

VMware brings over 20 years of virtualization excellence and software expertise to every customer project. With an intimate understanding of multi-cloud environments, VMware has experience thriving in a software-first economy and understands how to build value-added digital services. Service providers value VMware's proven track record of delivering digital technologies to accelerate IT and network operations.



Software Expertise



Cloud Excellence



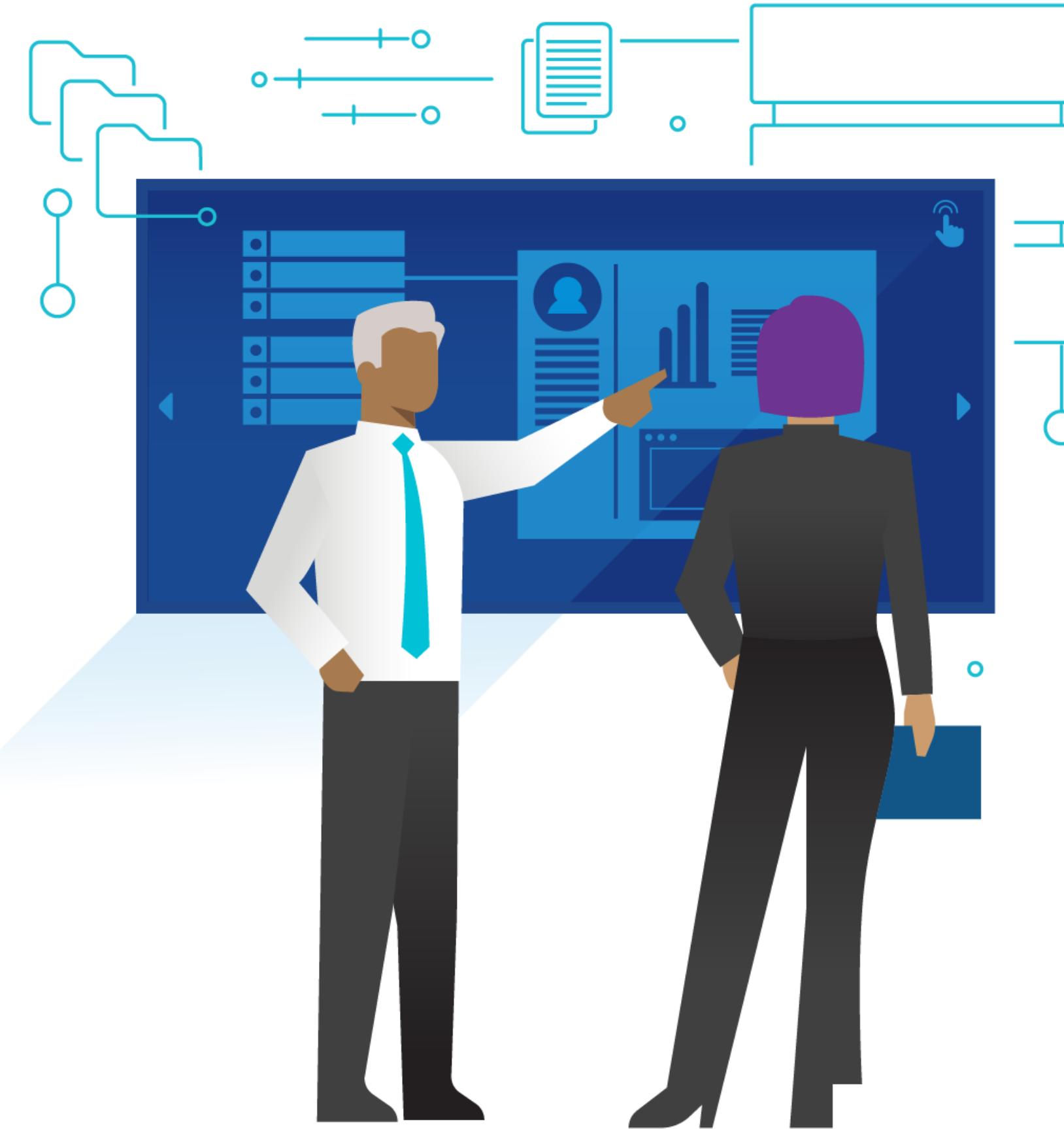
Commitment to Enabling Multi-vendor Networks



Successful Service Innovation Track Record



Security



6. Creating a Nimble Service Innovation and Delivery Platform

Becoming a digital service provider will require transforming away from current legacy architectures.

The rigidity and monolithic nature of these legacy networks are not capable of delivering the on-demand, customizable services of 5G, and cannot enable the new agile innovation methodologies digital service providers will adopt to stay competitive in the digital era.

A transformation to software-centric architectures will provide the agility, resilience, scalability and performance needed to support next generation services.

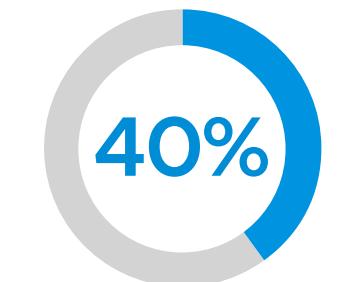
Telco Cloud Infrastructure

VMware Telco Cloud Infrastructure™ is a fully integrated, modular, and multi-tenant platform, bringing the agility inherent to the cloud to legacy networks of transforming service providers. It enables both cloud-native network functions (CNFs) and virtualized network functions (VNFs), providing consistent operations to any applications powering the 5G-ready services.

VMware Telco Cloud Infrastructure customer, Vodafone, operates over **900** virtual network functions at **82** sites, supporting nearly **50%** of their voice and data traffic. Vodafone recently reported benefits of the platform which support their digital transformation goals:



reduction in VNF costs with VMware NFVI



reduction in network function virtualization deployment time with VMware NFVI



6. Creating a Nimble Service Innovation and Delivery Platform

Telco Cloud Automation

With a flexible foundation in place, the next step in enabling a telco cloud is automation. VMware Telco Cloud Automation™ accelerates the time to market of network functions and services while igniting operational agility through simplified automation across any network and any cloud.

As service providers continue to be challenged to meet demands of mission-critical services and enable growth in new markets, they look to VMware Telco Cloud Automation to access multi-VIM, hybrid and multi-cloud NFV orchestration and generic xNF management capabilities.

The solution enables highly efficient lifecycle management, intent-based placement, simplified workload mobility across clouds, and continuous synchronization from infrastructure to network services management.

Customers use the platform to onboard and orchestrate workloads and services seamlessly from VM and container-based infrastructures for a future-proof service-delivery foundation. VMware Telco Cloud Automation also supports the TMF and ETSI standard interfaces for simplified interoperability with other components of the telco network.



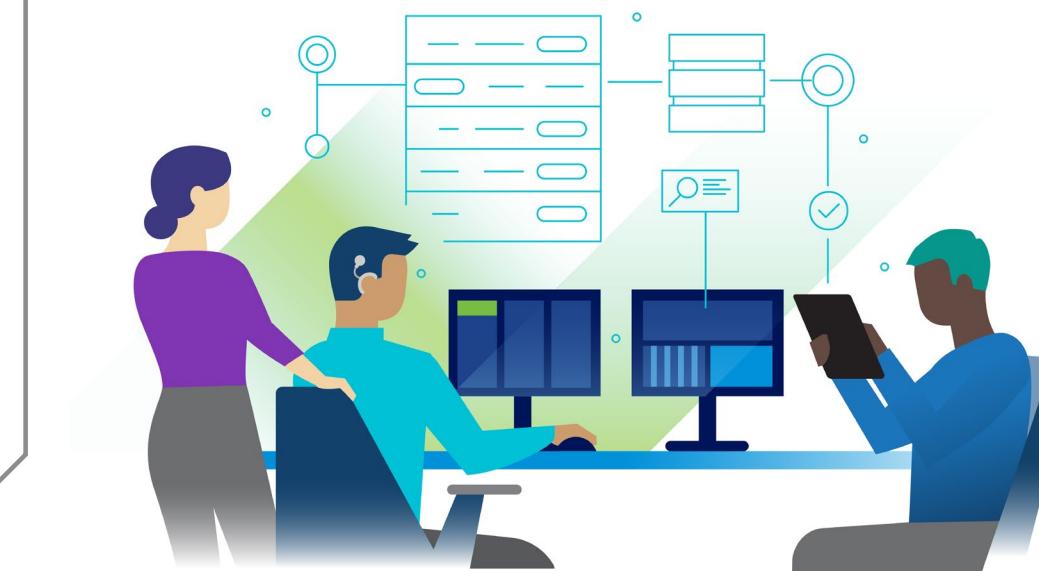
improvement to configuration management with end-to-end provisioning and configuration

(Source: ACG TCA ROI Paper)



ROI from VMware telco cloud automation

(Source: ACG TCA ROI Paper)



6. Creating a Nimble Service Innovation and Delivery Platform

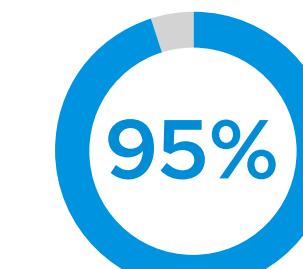
VMware Telco Cloud Operations

In order to empower an agile and automated infrastructure, digital service providers will need end-to-end analytics and intelligence. VMware Telco Cloud Operations™ portfolio includes artificial intelligence-based analytics and assurance.

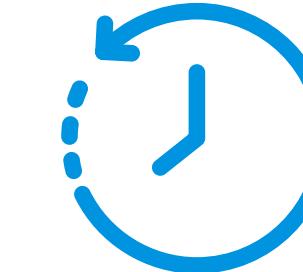
Real-time automated service assurance bridges the gap between the virtual and physical worlds by providing holistic monitoring and network management across all layers of the network for rapid insights, lower costs and improved customer experience. Integrated monitoring of SD-WAN solutions simplifies and automates the mapping of the interdependencies between underlay and overlay networks.

Beyond assurance, the VMware portfolio provides mobile network operators the ability to generate actionable insights from their 4G and 5G radio access network to improve customer experience, reduce operational cost and enable new services. VMware recently supported a transformation project for a premier managed services provider (MSP) with a global presence.

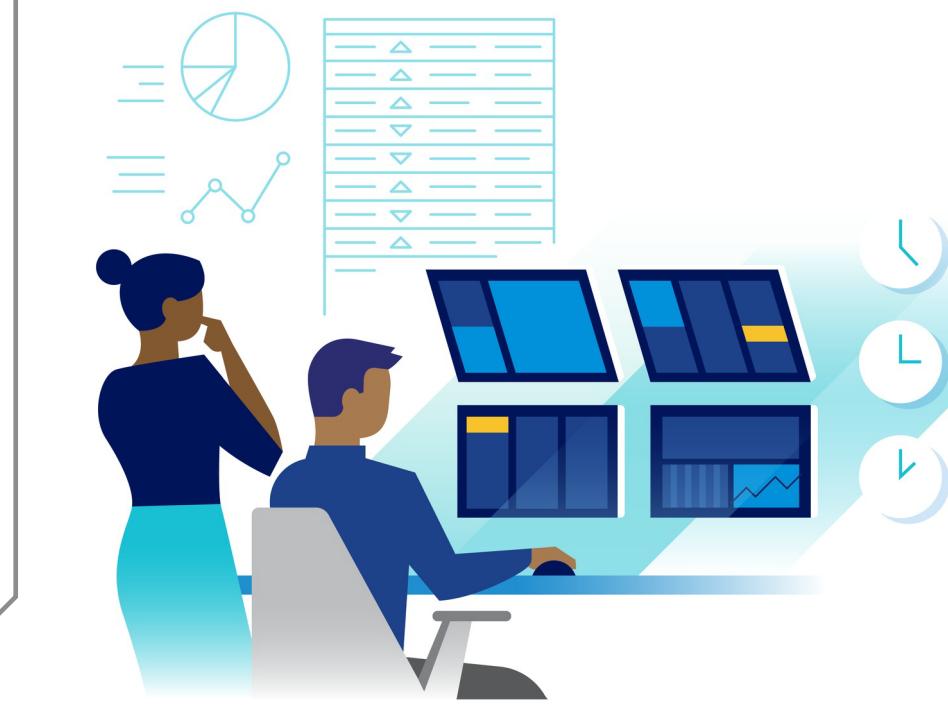
The network team struggled to manage SD-WAN services alongside legacy networks under strict service-level agreements (SLAs) for their enterprise customers. By integrating the VMware Telco Cloud Operations platform with the VMware SD-WAN by VeloCloud® solution, the company can monitor all customer network environments—IP, MPLS and SD-WAN—through a single pane of glass. The benefits of the solution included holistic visibility, automated network discovery, unified management and increased revenues as well as:



time reduced to remediate issues with automated problem identification



Countless hours saved bouncing between network monitoring tools



7. A Flexible IT Foundation for Agile Operations

At its roots, the digital transformation for service providers is about improving the ability to compete by leveraging digital and cloud technologies to mimic web-scale, over-the-top operations. While the VMware Telco Cloud pulls these agile technologies into the core network, it is imperative that a service provider's IT network and service delivery networks work in unison.

By aligning tools and DevOps methodologies, service providers can better improve efficiencies and create holistic service innovation processes. The robust VMware IT portfolio helps close the operational gap.

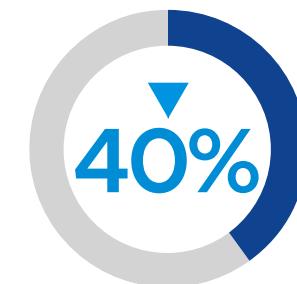
Software-Defined Data Center – Virtualization

Virtualization creates a software-based, or virtual, representation of something, such as virtual applications, servers, storage and networks. It is the single most effective way to reduce IT expenses while boosting efficiency and agility.

A VMware customer, Telkom Indonesia, recently set out to find a solution to the company's high costs and inefficiencies from the lack of synergy in IT investments across subsidiaries with varying standards, development stages, and platform complexities.

With the support of VMware, Telkom Indonesia virtualized its IT infrastructure, including platforms, servers, operating systems, and nearly all core applications. To deliver 24/7 always-on service, Telkom Indonesia also deployed other VMware technologies to establish a software-defined data center (SDDC) environment.

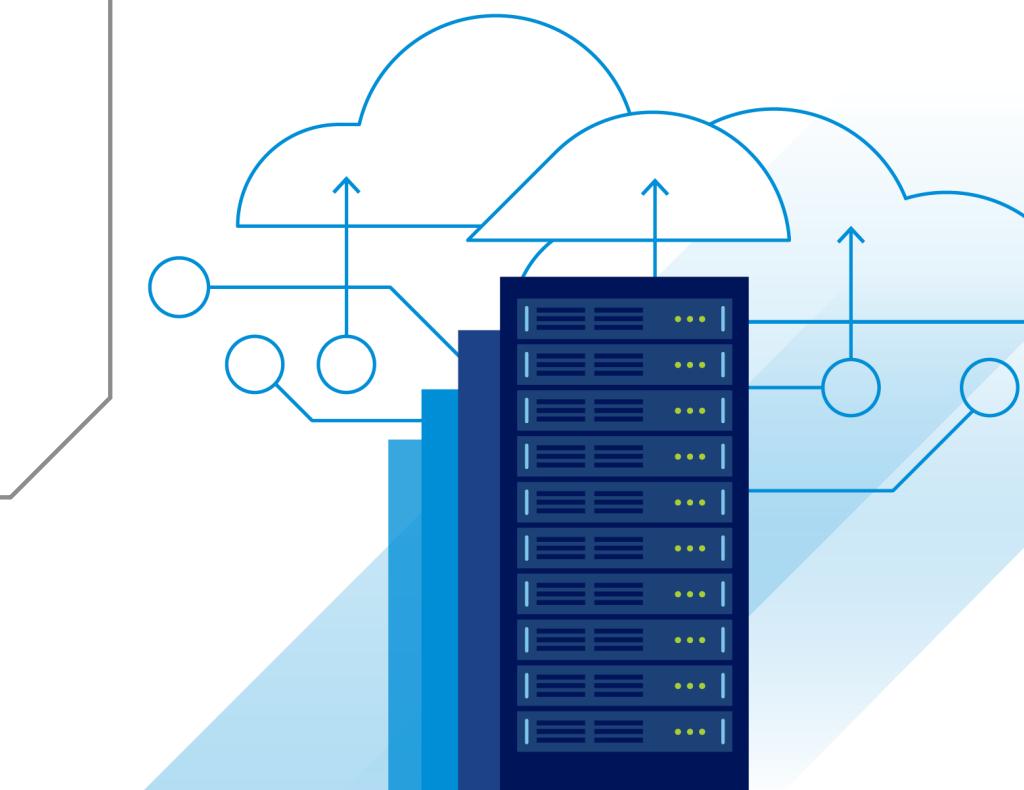
This SDDC let Telkom Indonesia manage applications with high levels of availability, security, and scalability while optimizing and managing the infrastructure on the storage, network, cloud, and compute fronts.



reduction in total cost of ownership through virtualization of the IT infrastructure



time to market, reduced from 8 hours



7. A Flexible IT Foundation for Agile Operations

“The VMware NSX® network virtualization platform seamlessly integrates cloud and on-premise resources. We found it significantly reduced the number of hours needed both to design cloud services for customers and to carry out the actual migration.”

Kahoru Tsuda
NTT Communications Corporation

Hybrid Cloud

Hybrid cloud is the new operating model for IT, but it also creates new challenges. Many new applications will be deployed to a public cloud. Many, but not all, applications will be migrated to a public cloud.

How will you manage a mix of virtual machine and container-based applications, deployed across a mix of data center, public cloud, and edge? You need a hybrid cloud foundation that delivers consistent infrastructure and consistent operations wherever workloads are deployed.



Migrate to cloud



Scale on demand



Extend hybrid cloud ops



Modernize the data center

Virtual Cloud Network – Multi-Cloud Networking

One goal of digital transformation for service providers is the unification of IT and service delivery networks. While this is the goal, many service providers start their virtualization journey with their IT networks. When enabling a multi-cloud environment before incorporating telco cloud components, service providers require seamless connectivity, consistent policy management, and rapid workload mobility across private, public, and hybrid clouds. NTT worked with VMware to increase efficiencies by enabling seamless integration of on-premise and cloud resources into a hybrid cloud environment. This eased network configuration and IP address changes in cloud migration projects.



Reduction in hours needed for cloud environment design and migration



New value-added services were created for a developing market

7. A Flexible IT Foundation for Agile Operations

Multi-Cloud Operations

With the digital transformation of the network comes the ability to improve operations with the continuous support of network intelligence. Moving to multi-cloud environments can make traffic management challenging.

The VMware multi-cloud operations portfolio helps service providers tackle cost optimization and hold their teams accountable across multi-cloud and container environments with simplified budget tracking, detailed spend analysis, and trended resource usage data.

Customer service is the number-one priority for VMware customer Bharti Airtel, so being able to get services to the market faster than the competition is essential. With 100-plus firewalls and 50,000 rules, managing Bharti Airtel environments was complicated and time consuming. VMware tools provided capacity planning and monitoring to enable more agile operations.



ENABLED

immediacy of dev team needs could meet immediacy of customer demand



ENABLED

improved reaction times, faster responses, agile development in place, ability to change applications



7. A Flexible IT Foundation for Agile Operations

“At KPN, we are seeking greater consolidation of our platforms in support of our cloud native app development efforts. Currently, a number of our departments are running Kubernetes for themselves. We aim to achieve greater consolidation of those environments with VMware vSphere® with Kubernetes to deliver all resources through a single platform to our developers and eliminate their need to do all of the operational work.”

Albert W. Alberts
Architect, KPN

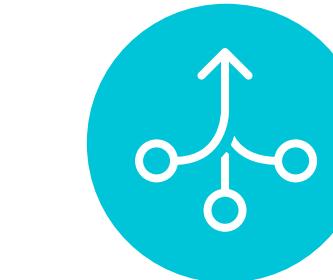
vmware®

Application Modernization – Kubernetes

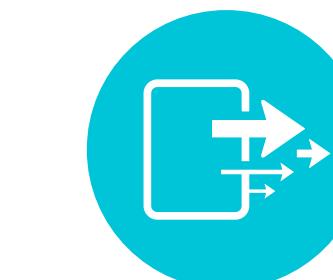
The digital era calls for continuous innovation at an accelerated pace and the kind of modernized data centers and software development technologies that make it possible.

On top of flexible infrastructure, container technology can help transform CSPs into digital service providers focused on delivering innovations at the speed of business. KPN worked with VMware to modernize its applications. KPN was under pressure to deliver applications faster as the competition was moving faster than they could.

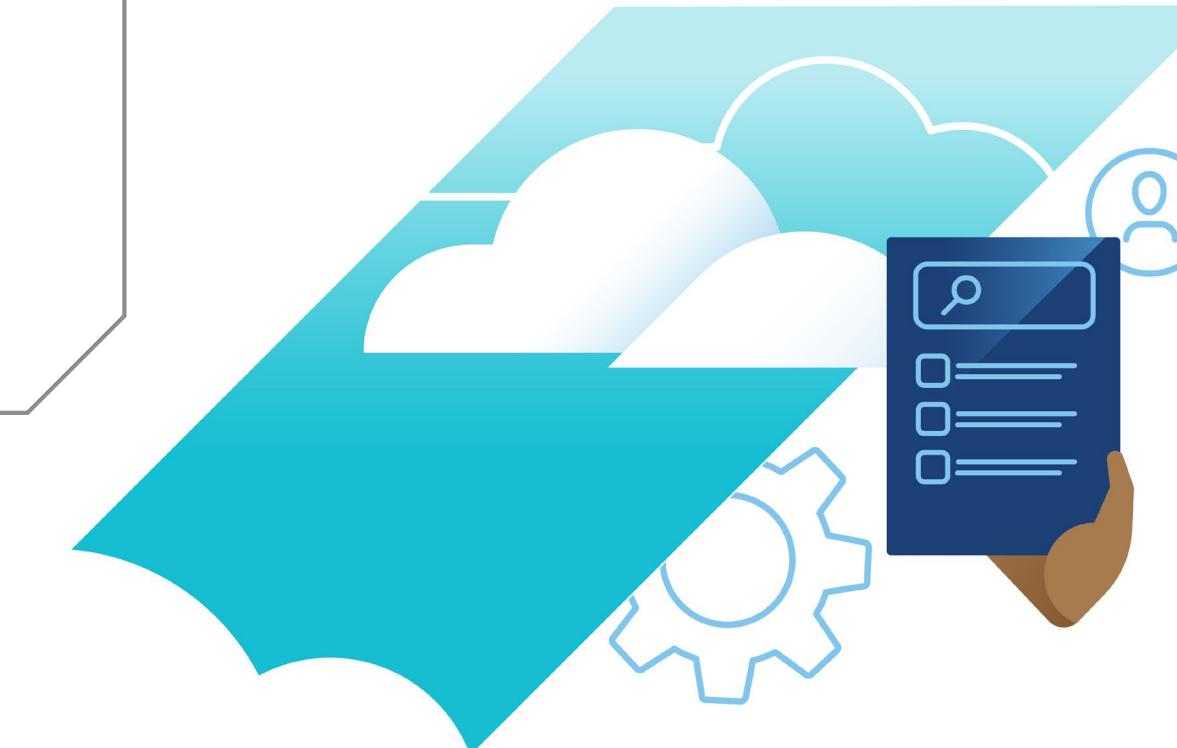
Legacy services and cloud-based services were running in two independent worlds. The goal of the project was to make these two worlds work together, and KPN had to do it at scale.



Consolidation of platforms
– deliver services from one platform



App dev took months and now it's multiples in one day



7. A Flexible IT Foundation for Agile Operations

Intrinsic Security

As networks transform, IoT proliferates, and the amount of data continues to rise, so will the threats on the network. Securing these complex, diverse environments is a challenge, so VMware builds security into its solutions.

With intrinsic security from VMware, CSPs can protect their application infrastructure wherever applications reside while fully embracing connections to the cloud and unifying their branch and edge environments.

“If security is well managed, it can be a positive differentiator for CSPs.”

Patrick Donegan
Principal Analyst at HardenStance

“The potential economic and social benefits of 5G and full-fibre digital connectivity can only be realised if we have confidence in the security and resilience of the underpinning infrastructure.”

The United Kingdom’s National Cyber Security Centre



8. Differentiated and Revenue-Generating Digital Services

With flexible IT and service-delivery networks in place, digital service providers (DSPs) will have the ability to reinvent their role in the ecosystem.

With the agility of OTT competitors, DSPs will be able to leverage their strong customer relationships and uniquely distributed networks to create differentiated services.



SPEED

Swisscom customers are reaping the rewards of the new services they can access faster



INNOVATION

The platform is helping customers to innovate themselves

VMware customer AT&T wanted to build and launch a new cloud service.

It selected VMware to support its goals of creating a sustainable, cost-effective cloud management platform to control its enterprise cloud service offering.

The service is fueling innovation in two ways:

SD-WAN

TM Forum recently estimated that the move to 5G will increase the enterprise customer revenue share from 11% to 71.5%. One way that service providers have already started deploying software-defined services to enterprises is in the wide-area network (WAN).

SD-WAN enables communications service providers (CSPs) to rapidly evolve their networks, increase flexibility, deliver advanced services and drive revenue. With VMware SD-WAN, CSPs can deliver elastic transport, high performance for cloud applications, and integrate advanced services all via a Zero Touch deployment model.

AT&T Wireless Broadband is available in speeds from 8-50Mbps, so when the company looked for an SD-WAN partner, it needed a solution that offered flexibility so the connection can be used as a primary data connection for remote sites or as a secondary or failover connection to support business-critical applications. Because new business applications, visitor connectivity, and connected devices require greater bandwidth, it was more important than ever to make sure business-critical functions didn't get interrupted.

With the solution in place, AT&T customers, “have access to an elegant and streamlined end-to-end networking solution with a tremendous amount of flexibility.”

Josh Goodell,
Vice President
AT&T Edge Solutions



8. Differentiated and Revenue-Generating Digital Services

Digital Workspace

The digital transformation is not only affecting the way enterprises and service providers operate, it's also changing the way people want to live, play and work.

For service providers to attract digitally advanced, software-trained employees, they need to enable more flexible work environments.

VMware customer Deutsche Telekom started using the digital workspace from VMware to do just that. After its internal productivity increased several percentage points, the company decided to turn the platform into a revenue-generating service for its enterprise customers.

The Deutsche Telekom platform, based on VMware Workspace ONE®, provides unified endpoint management to enable the company's customers to work with the devices they prefer, from anywhere, securely and quickly.



1700 grew to 8700 IT development seats due to initial productivity gain of several percentage points



Internal successes motivated the company to use the platform to create a new enterprise service



8. Differentiated and Revenue-Generating Digital Services

Kubernetes as a Service

Many tools brought in-house can also be extended to customers. Swisscom used a Kubernetes-as-a-service solution from VMware to increase the speed and efficiency of application development for not only itself but also its customers.

Evolving its business model to emphasize customer experience, operational excellence, and new growth, Swisscom took advantage of VMware technologies to take a leadership position in the emerging Kubernetes-as-a-service market.

The platform reduces development costs, improves development times, and creates freedom of choice around cloud deployments.

“We get live feedback on how KaaS (Kubernetes-as-a-service) is performing, and better understand the customer’s challenges. In return, the customer sees Swisscom as a responsive, market leader.”

Olivier Fournier,
Senior DevOps Engineer



9. Unifying Operations with a Common Platform

For more information, please visit:

telco.vmware.com

vmware®

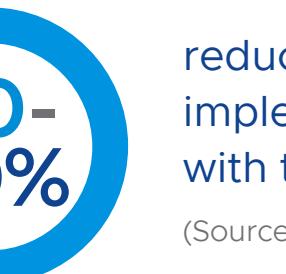
About VMware

VMware software powers the world's complex digital infrastructure. The company's cloud, app modernization, networking, security, and digital workspace offerings help customers deliver any application on any cloud across any device. Headquartered in Palo Alto, California, VMware is committed to being a force for good, from its breakthrough technology innovations to its global impact. For more information, please visit: <https://www.vmware.com/company.html>

The VMware communications service provider portfolio will simplify network operations by unifying network architectures.

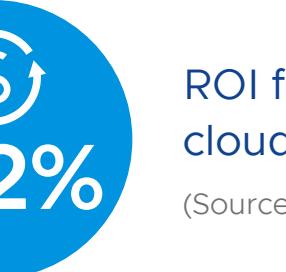
Removing manual processes, vendor-led long innovation cycles and resources silos creates the flexible foundations required to accelerate service innovation and delivery.

Across the data center, core, edge and clouds, VMware solutions deliver the agility, scalability, and resiliency required for digital service providers to thrive in the digital era. With a single, common platform, VMware can enable:



60-70%
reduction in time to design,
implement and test services
with telco cloud platform

(Source: ACG TCA ROI Paper)



312%
ROI for common telco
cloud platform

(Source: ACG TCA ROI Paper)

