

Turkcell creates Unified Telco Cloud with NFV solution from Red Hat



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To stay competitive, telecommunications service provider Turkcell sought to transform its mobile and fixed network in Turkey by moving it to a cloud-based network function virtualization (NFV) platform. Turkcell created its Unified Telco Cloud using Red Hat OpenStack Platform, supported by Red Hat Ceph Storage. Using this new, centralized environment, Turkcell has cut launch time for new services by 66%, achieved return on investment (ROI) 3 times faster, and completed virtualization of its IMS capabilities for integrated communications.



Telecommunications

16,000 employees

46.7 million subscribers

Benefits

- Cut new service launch time by 66%, from 6 months to 2 months
- Lowered costs by avoiding vendor lock-in and increasing competition among suppliers
- Minimized service outages with stable, supported OpenStack technology and an in-service upgrade approach

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Elif Yenihan Kaya

Director, Network Capabilities,
 Turkcell



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Supporting strategic transformation with responsive, cloud-based virtualization

Founded in 1994, Turkcell is a digital telecommunications operator headquartered in Turkey. The company offers a portfolio of digital services, as well as voice, messaging, data and IPTV services on its mobile and fixed networks, including fiber internet. Since launching the country’s first GSM mobile network, Turkcell has continuously innovated to provide new voice and data services to its customers through its parent and international subsidiary brands. It was one of the first global telecommunications operators that adopted LTE-Advanced and 3GPP carrier aggregation technology to enhance the bandwidth and rate of its services. Turkcell is the first operator in the region to offer live TV broadcasting over 5G and was the first to reach the fastest 5G connectivity rate using commercial terminals.

To continue growing its customer base of 46.7 million subscribers and expand globally, Turkcell sought to transform itself into a digital service provider. This evolution would help the company increase revenue by offering its services – such as BiP, the lifestyle and communication platform, and LifeBox, a personal cloud storage solution – through new digital channels. Additionally, Turkcell sought to prepare for the introduction of 5G wireless technology to the market.

To stay competitive, Turkcell decided to migrate its network from a hardware-based system to a new, software- and cloud-based network functions virtualization infrastructure (NFVI).

“Further investment in our legacy hardware platform would be restrictive and limited to that platform, while investment in cloud platforms would mean that resources could be redeployed for other workloads,” said Elif Yenihan Kaya, Director of Network Capabilities at Turkcell.

NFV helps telecommunications service providers achieve greater efficiency and agility at lower cost by combining advanced virtualization with automation capabilities. Turkcell’s NFVI supports virtualization of its core services – deployed for mobile and fixed broadband networks and IP communications services – and the solution can host virtualized network functions (VNFs) from both current and future vendors.

Building an OpenStack-based, vendor-agnostic cloud

To build its Unified Telco Cloud, Turkcell sought a solution that would provide reliable performance at massive scale, support VNFs from different vendors without lock-in, and include expert support to ensure availability of its critical services.

“We examined industry adoption rates of possible solutions by looking at customer references, as well as evaluating collaboration opportunities,” said Kaya. “We found that Red Hat is one of the leaders in that market. We’ve also used Red Hat Enterprise Linux for more than a decade.”

Turkcell decided to expand its existing relationship with Red Hat by using Red Hat OpenStack Platform as the foundation of its new, central NFVI platform. This software-based solution balances open source community innovation with enterprise stability, reliability, and support to efficiently virtualize resources, organize them into clouds, and manage them.

In its Unified Telco Cloud, Turkcell uses Red Hat OpenStack Platform to provide services to its customers in Turkey and manage core network functions. Red Hat Ceph Storage provides open, software-defined object storage and cloud infrastructure to support the group’s Red Hat OpenStack Platform deployment.

Turkcell worked with Red Hat Consulting for design and implementation support, as well as local Red Hat partners Affirmed Networks and Odine Solutions for system integration and management assistance.

“Creating the right ecosystem was the key factor in our success,” said Kaya. “We selected one global and one local partner to support us through the process. While we are developing our internal skills to reshape our organization for NFV, we worked closely with our partners and relied on their resources to start our transformation without delay. We now have dedicated teams focused on continuing our work on Unified Telco Cloud.”

After a successful start, Turkcell has deployed 9 new VNFs to production, with 2 more deployments in progress. These functions have helped improve data processing, mobile voice services, and more for the service provider’s customers.

Creating faster, more reliable telecommunications services

Cut deployment time for new services and functions by 66%

With its new NFV platform, Turkcell can now create and launch new services 66% faster, helping it stay competitive in the fast-paced global telecommunications market. New application development can be prioritized based on product group requests.

“With our legacy platform, it used to take at least 6 weeks to get physical network functions delivered to our lab, plus additional installation time before it could be tested. After switching to VNFs, that upfront time is eliminated,” said Kaya. “Using Unified Telco Cloud built on Red Hat OpenStack Platform, we’ve cut the total time to put a new service into production from 6 months to 2 months. If we see an opportunity to offer a new service or improve our core network, we can do so much more quickly.”

Using a software-based solution means Turkcell can scale its Unified Telco Cloud to handle shifts in traffic and host millions of subservices. The platform currently supports traffic at up to 2.8 Tbps, providing the scalability to respond to future growth.

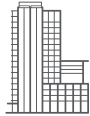
Reduced TCO with faster ROI and greater vendor flexibility

Turkcell’s open source-based NFV platform offers a lower barrier to entry for software vendors by eliminating lock-in to a single provider. Red Hat OpenStack Platform is updated to stay close to the latest community versions of OpenStack. If a software provider tests its VNFs on open source OpenStack, Turkcell is highly confident that they will work reliably with Red Hat OpenStack Platform.

“Vendors can easily test their VNFs with OpenStack, then simply host and integrate them on our platform so we can roll them out for our customers,” said Kaya.

The NFV platform runs on industry-standard x86-based servers, helping Turkcell minimize its hardware costs. “Since vendors do not need to provide a hardware platform, just software, there is more competition that leads to reduced costs,” said Kaya. “We can use almost any x86 hardware, as long as it meets our server standards. This change makes working with smaller or new vendors who are focused on software development, not hardware-based platforms, much easier. It’s less expensive to switch.”

By decreasing its total cost of ownership (TCO) with these improvements, Turkcell achieved full return on investment (ROI) for the new platform in just 1 year.



About Red Hat

Red Hat is the world's leading provider of enterprise open source software solutions, using a community-powered approach to deliver reliable and high-performing Linux, hybrid cloud, container, and Kubernetes technologies. Red Hat helps customers integrate new and existing IT applications, develop cloud-native applications, standardize on our industry-leading operating system, and automate, secure, and manage complex environments. Award-winning support, training, and consulting services make Red Hat a trusted adviser to the Fortune 500. As a strategic partner to cloud providers, system integrators, application vendors, customers, and open source communities, Red Hat can help organizations prepare for the digital future.

North America
1 888 REDHAT1
www.redhat.com

**Europe, Middle East,
and Africa**
00800 7334 2835
europe@redhat.com

Asia Pacific
+65 6490 4200
apac@redhat.com

Latin America
+54 11 4329 7300
info-latam@redhat.com



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"For the last 3 years, we've seen that virtualizing a network service is more financially viable than continuing to invest in legacy infrastructures," said Kaya. "Because of the financial results we've seen, we are now virtualizing all our new network functions and making them compatible with our Unified Telco Cloud and NFV orchestration."

Minimized service outages with enterprise support

Turkcell works with Red Hat Consulting and a Red Hat Technical Account Manager, as well as Affirmed Networks and Odine Solutions, to manage its new platform, reducing risk of downtime or other issues.

"Red Hat worked with us on risk-minimizing design approaches. We had a few challenges but we've minimized service outages with this stable, supported OpenStack technology," said Kaya. "With enterprise services from Red Hat, we can quickly upgrade thousands of production servers to the latest version of OpenStack with a **fast forward upgrade** and specific support exceptions. Achieving upgrades to in-production systems without major downtime was one of the biggest goals we've achieved in our adoption of virtualization."

Red Hat also provided OpenStack training, including on-site workshops, for Turkcell's engineers. Hands-on learning has helped the engineers increase their knowledge of OpenStack, including best practices for migrating from hardware-based networking and effective management.

"We saw a significant evolution in the talents of our network operation and engineering teams. We now have engineers with the best expertise in the region. Our teams are independently creating main NFV designs and capacity planning. We're also seeing more and more self-coded automation solutions, like Python scripts or Ansible® playbooks, used in daily operations," said Kaya.

Scaling NFV platform to differentiate

Turkcell plans to continue migrating services to its OpenStack-based virtualized platform. The service provider is also working with Red Hat to adopt more management and orchestration tools to simplify adding services and troubleshooting any problems.

"As a leading telecom operator, we have achieved a lot of transformative change in a short time. We have virtualized more than 40% of our overall fixed and mobile core capacity, including 60% of our mobile core capacity," said Kaya. "Red Hat was a key partner in helping us achieve the high capacity to host millions of subservices on our platform. The number of services we successfully virtualized in just the first year has set Turkcell as an example for the rest of the industry."

About Turkcell

Turkcell is a digital operator headquartered in Turkey, serving customers with its unique portfolio of digital services along with voice, messaging, data, and multi-screen TV services on its mobile and fixed networks. Turkcell Group companies operate in eight countries: Turkey, Ukraine, Belarus, Northern Cyprus, Germany, Azerbaijan, Kazakhstan, and Moldova. Turkcell Group reported €25.1 billion revenue in 2019, with total assets of €45.7 billion as of December 31, 2019.

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