

# Turkcell build foundation for AI-powered innovation on Red Hat OpenShift



Turkcell, a digital telecommunications and technology service provider, sought to adapt to the growing importance of artificial intelligence (AI) for telecommunications by creating an AI service platform. Using Red Hat OpenShift and NVIDIA GPUs to create this infrastructure, Turkcell has established a responsive, cost-effective foundation for developing and delivering innovative AI-powered services faster. As a result, the company can remain an industry pioneer and take advantage of new revenue opportunities.

## Software and services

Red Hat® OpenShift®

Red Hat Consulting

## Partner

NVIDIA



## Telecommunications

**22,000** employees

## Benefits

- Created responsive infrastructure to deliver innovative AI applications faster
- Cut provisioning times from months to seconds
- Reduced AI development and operations costs by 70%
- Created inclusive data science platform

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**Ozan Orcunus**  
Senior Cloud Expert,  
Turkcell



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## About Red Hat Innovators in the Open

Innovation is the core of open source. Red Hat customers use open source technologies to change not only their own organizations, but also entire industries and markets. Red Hat Innovators in the Open proudly showcases how our customers use enterprise open source solutions to solve their toughest business challenges. Want to share your story? [Learn more.](#)

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**Orhan Biyiklioglu**  
Cloud Engineering Manager,  
Turkcell

## **Simplifying development and deployment of AI workloads**

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.

In 2018, Turkcell created strategic initiatives to embrace data science, the Internet of Things (IoT), blockchain, and artificial intelligence (AI). “With AI becoming fundamental to many digital applications, we decided to focus on creating AI-powered services to enhance our products and take advantage of new market opportunities,” said Osman Kiraz, Artificial Intelligence Industrial Solutions Manager, Turkcell.

To support this work with faster, more efficient development and deployment processes, Turkcell decided to replace its monolithic IT architecture with a microservices- and container-based environment.

## **Adopting a robust, scalable container platform**

Turkcell decided to deploy Red Hat OpenShift, used for several other projects at the company, as the foundation for its AI-powered application workloads. The platform runs in a private cloud environment on NVIDIA A100 Tensor Core GPUs. These GPUs help speed AI data analytics, modeling, and inferencing tasks. The Red Hat OpenShift NVIDIA GPU operator provides scheduling for these accelerated workloads.

“We’ve worked with containers for about four years. We wanted the benefits of a comprehensive Kubernetes platform – agility, resiliency, consistency, and portability – with the innovation and security of open source, coming from many people reviewing and enhancing the code,” said Ozan Orcunus, Senior Cloud Expert, Turkcell. “As one of the first companies to invest in the Kubernetes container ecosystem, Red Hat was the best vendor to help us develop, deploy, and run our AI workloads in containers.”

Turkcell’s team spent around eight months working closely with Red Hat Consulting and NVIDIA to plan, design, and implement the new architecture.

## **Building on familiar processes and resources to deliver AI innovation faster**

### **Improved time to market for specialized AI workloads**

With Red Hat OpenShift, Turkcell’s developers can use the same continuous integration and continuous delivery (CI/CD) processes used for Java™ applications to develop new AI applications. Self-service capabilities let developers and data scientists create new environments as needed. Any specialized infrastructure – such as drivers that connect applications with GPU processors – is provisioned and managed by the container platform, isolated by an abstraction layer to help Turkcell’s teams focus on innovation.

“Red Hat OpenShift allows us to easily deploy identical environments for development, testing, and production,” said Erkan Haspulat, Principal Artificial Intelligence Portfolio Architect, Turkcell.

Turkcell can now deliver its AI services to market faster, such as:

- Advanced Turkish-speaking speech-to-text chatbots.
- A text-to-speech translation service to help autistic children communicate.
- An image-to-speech service reads magazines out loud.
- The [Life Box](#) image processing service that recommends images for social media.
- The Fizy application that analyzes a selfie to suggest music based on detected mood.

One key project, the [Spread the Smile campaign](#), uses facial-recognition technology to analyze selfies in Turkcell’s Digital Operator app to determine the size of food donations made to Yedikule animal shelter. This creative and innovative use of AI for social good earned Turkcell recognition as a finalist in the 2021 Shorty Awards for Artificial Intelligence, Creative Use of Technology.

### **Cut provisioning and scaling times from months to seconds**

By adopting an automated, container-based infrastructure approach, Turkcell can provision its resources and environment dramatically faster than before. As a result, the company can not only deliver new services faster but also scale automatically to adapt to demand.

“A microservices approach with Kubernetes containers helps eliminate the challenges we saw with our monolithic architecture. We can divide our infrastructure into consumable resources to support new projects as needed,” said Orcunus. “And scaling doesn’t require any human intervention, because the platform already handles that work.”

### **Reduced AI development and operations costs by 70%**

Running Red Hat OpenShift containers and highly efficient NVIDIA GPUs have helped Turkcell significantly reduce the number of physical servers needed to support AI workloads.

“We no longer need to procure physical servers for new projects,” said Orhan Biyiklioglu, Cloud Engineering Manager, Turkcell. “In operations, we’ve seen a 50-70% reduction in the cost of hardware servers from using Red Hat OpenShift to consolidate our AI workloads.”

### **Created new business opportunities**

Turkcell has also used its new AI-optimized infrastructure to create a platform for data science. Any employee can start a server with a GPU-enabled data science notebook within seconds.

“By selecting Red Hat OpenShift for our data science platform, we’ve been able to make data science available to anyone in Turkcell,” said Haspulat. “Anyone can build a model or come up with an idea, and those ideas might have a positive business impact.”

### About NVIDIA

NVIDIA's (NASDAQ: NVDA) invention of the GPU in 1999 sparked the growth of the PC gaming market and has redefined modern computer graphics, high performance computing and artificial intelligence. The company's pioneering work in accelerated computing and AI is reshaping trillion-dollar industries, such as transportation, healthcare and manufacturing, and fueling the growth of many others.

More information at <https://nvidianews.nvidia.com/>.

### Leading the way in telecommunications

After its initial success running Red Hat OpenShift on NVIDIA hardware to accelerate AI workflows and application delivery, Turkcell plans to expand its specialist architecture to continue to adapt to important technology trends.

"Our developers can now bring new AI applications to life at the speed of business, and our infrastructure teams can support AI workloads in a single step," said Biyiklioglu. "We're proud that we can build our own AI services in our own datacenters, all thanks to Red Hat OpenShift."

### 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 multiscreen TV services on its mobile and fixed networks. Turkcell Group companies operate in four countries: Turkey, Ukraine, Belarus, Northern Cyprus. Turkcell Group reported ₺25.2 billion revenue in 2020, with total assets of ₺51.5 billion as of December 31, 2020. [www.turkcell.com.tr](http://www.turkcell.com.tr)

### 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 develop cloud-native applications, integrate existing and new IT applications, and automate and manage complex environments. [A trusted adviser to the Fortune 500](#), Red Hat provides [award-winning](#) support, training, and consulting services that bring the benefits of open innovation to any industry. Red Hat is a connective hub in a global network of enterprises, partners, and communities, helping organizations grow, transform, and prepare for the digital future.



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