



Scale innovation at the edge

5 Red Hat customer success stories to advance your edge strategy

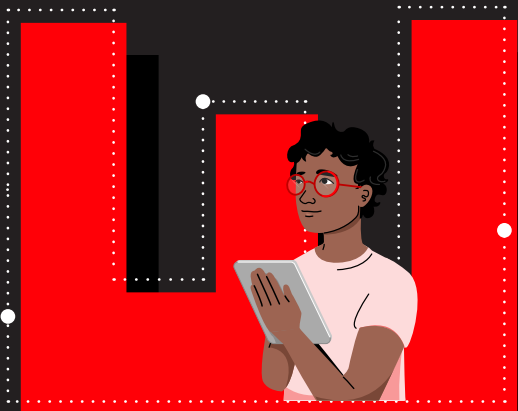
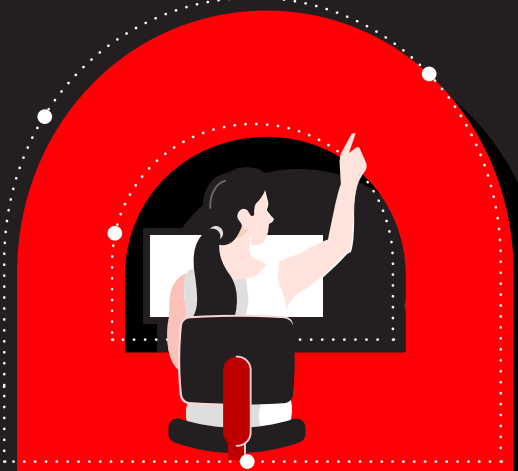


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Introduction

Edge computing makes data more powerful

In today's rapidly evolving digital landscape, network edge technology is introducing groundbreaking innovation with the potential to redefine the way organizations process, analyze, and use data.

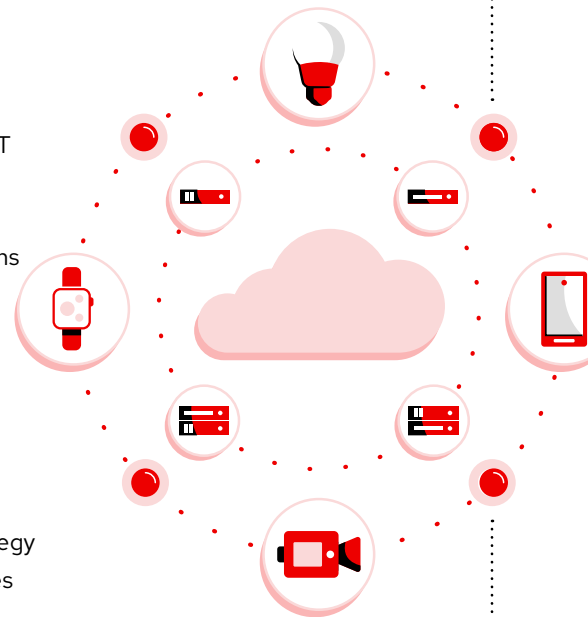
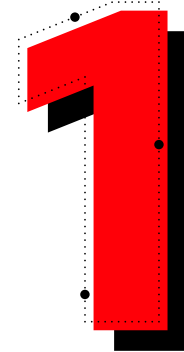
As the lines between physical and digital become even more blurred across enterprises, the potential to discover new business opportunities, enhance existing operations, and solve business challenges has never been more apparent.

By decentralizing data processing and bringing it closer to the source of generation—be it internet of things (IoT) devices, sensors, or user endpoints—edge technology promises unprecedented speed, efficiency, and real-time responsiveness.

Edge solutions allow real-time data analysis from IoT devices, providing the ability to adapt to changing conditions quickly across diverse industries. But these promising opportunities also come with new challenges. The decentralized nature of edge computing demands a robust security framework, as data processed at the edge is more susceptible to breaches and attacks.

Integrating edge technology can also require a significant overhaul of existing IT infrastructure, demanding both financial investment and expertise. Achieving interoperability between traditional systems and new edge devices is paramount for maintaining efficient operations.

Organizations also face the challenge of managing and maintaining multiple edge devices, each potentially running its own set of applications and protocols. This necessitates a unified management strategy and tools that can handle the complexities introduced by such a diverse ecosystem.



IDC forecasts the overall market for edge hardware, software, and services will reach US\$317.4 billion by 2026. IDC research also found that 70% of organizations see edge solutions as a key element of business transformation.¹

¹ IDC Spotlight, sponsored by Red Hat. "Edge Growth Drives Need for Automating the Last Mile." #US50598823, April 2023.

Challenges of edge computing

As organizations design and deploy edge computing architecture, they have new technical challenges to consider, including:



Maintaining remote operations.

With a growing number of connected devices at the edge, organizations must maintain smooth operations of critical and remote tasks across diverse locations even when connectivity and bandwidth issues arise.



Managing applications while reducing errors and scaling faster.

Operating and managing edge deployments consistently across various topologies and infrastructure is challenging. Organizations need to be able to scale and manage applications sufficiently across thousands of devices in locations with limited IT staff and latency issues.



Making informed decisions to utilize resources and edge applications.

Businesses need to automate and accelerate data-driven operations in real time. If data is being sent and received at slow speeds, this can delay the resolution of critical business issues, resulting in slower time to market and increased operational costs.



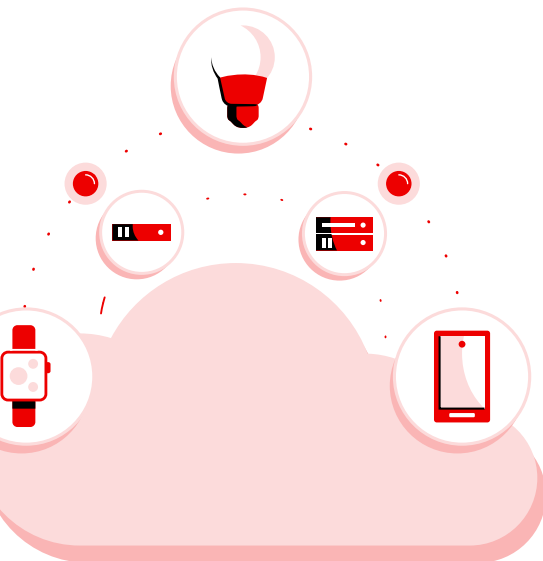
Complying with data sovereignty and regulatory requirements.

In edge instances that may be unable to send security alerts, such as publicly accessible locations or in air-gapped networks, it's important that the device hardware and software is resilient enough to defend itself. In these instances, maintaining an edge device security focus, data sovereignty, and meeting regulatory requirements is a challenge.

Red Hat Edge

Red Hat® Edge supports organizations as they deploy compute, network, and storage capabilities to extend applications outside of their datacenter or cloud environments and locate them closer to the users, customers, and systems that generate data. Red Hat's edge computing approach extends the strength of Red Hat's hybrid cloud capabilities and partner ecosystem to help organizations innovate and differentiate with edge computing.

Red Hat Edge extends our open hybrid cloud approach to the edge and includes platforms, automation and management solutions, and application services, as well as [Red Hat Consulting](#) support. Our portfolio of tools, services, and support helps organizations do more with the technology they have.



Operate and manage deployments consistently from hybrid cloud to the edge to help you:



Gain the flexible and scalable architecture you need to keep pace with rapidly changing market conditions.



Use modern application deployment that extends from core to edge.



Deploy storage capabilities to your edge sites to support performance while protecting against network failure to central sites.



Reliably scale applications consistently across bare-metal, virtual, container, cloud, and edge environments.



Deliver differentiated application experiences to offer new services or revenue streams.

Extend data intelligence to the edge to improve visibility and support rapid decision making to help you:



Build reliable, efficient, and security-focused data pipelines, supporting the use of event-driven automation at edge sites and the ability to restore, process, and transmit that information for improved security capabilities anywhere.



Use AI and ML technology to gather, process, and react to data to provide insights that help accelerate and inform decision making.

Together, Red Hat's vast and growing ecosystem of certified partner solutions and its open source development model make sure that organizations have an edge platform that provides the flexibility they need to respond to rapidly changing market conditions, create differentiated offerings, and improve operational outcomes. Red Hat Edge provides trusted open source software that helps organizations implement a layered security approach for a better focus on security whether on-premise, in a cloud environment, or at edge sites.



Support latency-sensitive or new artificial intelligence (AI) and machine learning (ML) applications at scale.



Allow faster decision making through data-driven insights to offer better products and services.

Learn from Red Hat Edge success stories

This e-book explores 5 Red Hat customer success stories across manufacturing, retail, and telecommunications and highlights how Red Hat customers are using edge technology to maintain critical operations in remote or autonomous operations, manage applications anywhere, and make intelligent decisions more efficiently.



Maintain critical operations at the industrial edge



Success story

ABB and Red Hat: Delivering operational excellence at the industrial edge

Located in more than 100 countries, ABB is a leading global technology company that connects software to its electrification, robotics, automation, and motion portfolio to help industries achieve a more productive, sustainable future.

Building on its existing partnership with Red Hat, which brought industrial process automation solutions backed by open source technologies, ABB's operations data solution, ABB Ability™ Edgenius™, is available on Red Hat OpenShift and Red Hat Device Edge. This partnership helps ABB extend operational consistency for industrial use cases across edge and hybrid cloud environments.



What Red Hat Device Edge and Red Hat OpenShift can provide is that consistent platform, all the way from very small deployment footprints from the edge devices, to very large scale systems, so that ABB R&D can focus on what they do best, which is to produce industrial solutions.²

Francis Chow
Vice President and General Manager, In-Vehicle Operating System and Edge, Red Hat



² Red Hat blog, "ABB and Red Hat: Delivering operational excellence at the industrial edge." 24 May 2023.

Applying open source to industrial edge computing

The power and possibility that edge computing brings to industrial controls can't be ignored. Consider the systems that manage the operations of a power plant, a steel mill, a pharmaceutical company, or a food and beverage producer. All of these were traditionally designed as purpose-built systems. Data could be pulled from each system to allow basic management across the plant, but each system functioned primarily as a separate unit.

Red Hat and ABB's partnership is advancing what's possible for operational technology (OT) use cases, using ABB process automation solutions with Red Hat's open hybrid cloud portfolio to innovate next-generation OT offerings.

ABB Ability™ Edgenius™ supports a variety of scenarios such as compute, connectivity, and high availability. To work, ABB needs a flexible yet consistent platform for a

broad range of use cases, including industrial IoT gateways that can collect and carry data from production assets to the cloud, and condition monitoring to locally track asset health to support plant uptime. More advanced use cases, based on multiple interoperable applications hosted on Edgenius to optimize control settings of a plant, may require high availability to maintain continuous accessibility during production.

To meet these various industrial operational requirements at the edge, ABB will utilize the full spectrum of Red Hat edge platforms. Based on MicroShift, a lightweight version of Red Hat OpenShift, and Red Hat Enterprise Linux®, Red Hat Device Edge supports the smallest footprint of edge devices and will help ABB to more easily connect cloud and control environments, optimizing overall equipment efficiency (OEE) by aggregating and analyzing data on devices at hard-to-reach locations and with limited resources. Additionally, the flexible image builder mechanism allows ABB to create its own edge operating system based on Red Hat Enterprise Linux.



[Read the case study](#)

Manage retail applications anywhere



Success story

Omnichannel retailer goes to the edge with Red Hat

Serving more than 65 million customers across North America, with 1,200 stores nationwide, a renowned omnichannel retailer knows how to keep its customers happy.

Faced with rising operational costs, a need to continuously improve customer in-store experience at checkouts and through loyalty programs, and a constant mandate to effectively and efficiently manage point of sale (POS) systems across stores nationwide, this retailer needed to reassess its technology footprint and security approach. To do so, the company chose to reset its POS infrastructure with a single, enterprise platform approach for edge computing using Red Hat Enterprise Linux, Red Hat OpenShift, and Red Hat Ansible® Automation Platform.



A focus on security

A major component of the POS reset was security. During the customer's security review, hundreds of security flaws were identified. Previously, whenever a security flaw arose, the retailer would rely on a combination of open source and multiple third-party

vendors to fix the systems. Not only was this method inefficient, it created new risk potential that could negatively affect the customer experience and critical information, such as customer credit card data.

Working with Red Hat, the retailer not only developed a plan to address its security issues, but quickly realized the cost savings when compared to solving its security issues in house. The next step was for Red Hat to produce a working proof of concept within an expedited 2-month period.

The technical challenge

The retailer's team worked closely with Red Hat Consulting to identify the best approach for implementing a serverless Linux-based POS system. Red Hat Enterprise Linux was delivered in a timely manner, while addressing all aspects and areas where Ansible Automation Platform was needed, including the datacenter, cloud servers, and store networking.

The partnership addressed 4 key technical challenges, including:



Understanding how to navigate Red Hat Enterprise Linux at the edge to build new POS applications.



Migrating to a serverless point of sale system by containerizing applications that run on the POS system.



Maintaining payment card industry (PCI) protection with a security focus using an immutable OS of Red Hat Enterprise Linux and containerizing applications.



Activating all PCI-compliant, connected peripherals, such as barcode scanners, PIN pads, and receipt printers, to successfully run on redeveloped POS applications.

Bringing consistency to the retail edge

Since its POS reset, the retailer is able to respond to rapidly changing market conditions, create differentiated POS offerings, and improve operational outcomes more efficiently. Operating on a consistent infrastructure, each location is able to maintain PCI compliance standards by focusing on protective and security measures. When maintenance or security updates need to be rolled out,

automation allows them to deploy at scale while retaining a security focus through actions such as application troubleshooting assessments, which can identify potential issues and remediate them immediately.

This results in a more positive customer experience while reducing operational costs and boosting the bottom line.



[Read more about Red Hat's open platform retail point of sale](#)

Retailer rolls out POS modernization at the edge

In the retail industry, the POS is essential for customer service, data gathering, and revenue generation. Understanding this, a family-owned regional retailer, with stores spanning multiple states across the U.S., decided to update its POS technology that had become slow and prone to unplanned downtime.

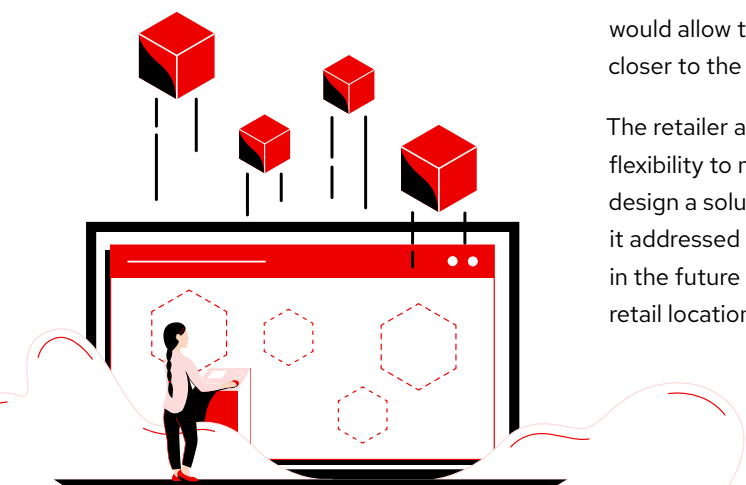
Spearheaded by its in-house IT team, the retailer developed a bespoke application to digitally transform its POS experience, but it lacked a way to run that application cost-effectively across its many retail locations.



From in-house to multiple locations

After assessing many options and vendors, the retailer decided to deploy a containerized POS system using Red Hat OpenShift Container Platform. This would allow them to use modern retail edge technologies and move data closer to the source while minimizing associated hard and soft costs.

The retailer also wanted everything to be hardware-agnostic to gain the flexibility to move into the cloud easily. Working closely with Red Hat to design a solution that worked with the retailer's hybrid cloud deployments, it addressed immediate needs while providing the flexibility to adapt in the future as business needs evolved. The initial rollout involved 6 retail locations with plans to expand to more than 250 retail stores.



Read more about [Red Hat OpenShift Container Platform](#)

Use data to make intelligent decisions more quickly in telecommunications

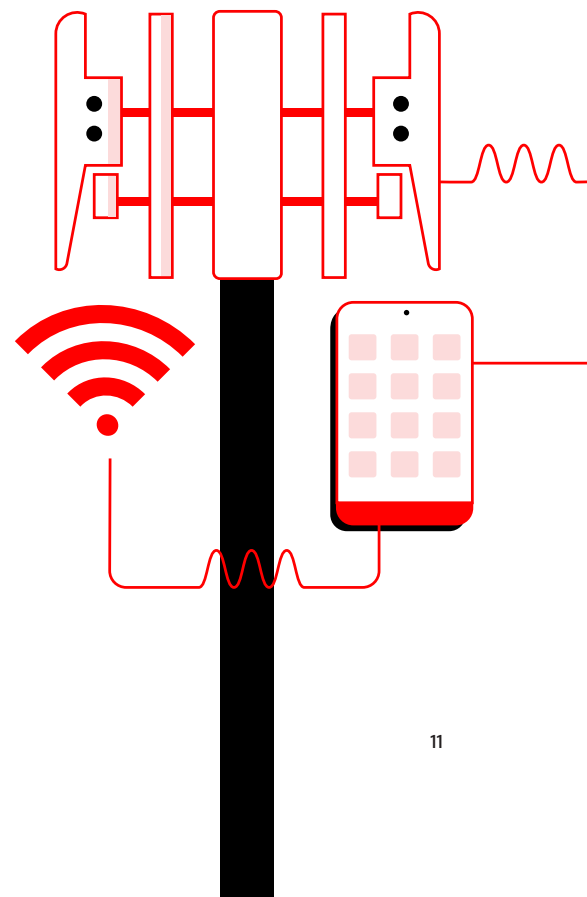


Success story

Verizon gains a 1st-mover advantage by accelerating its 5G transformation

Verizon, the American wireless network operator, understands the power and possibility that data can unlock in the world of connectivity. For use cases such as industrial automation, smart factories and cities, connected healthcare, and AI at the edge, ubiquitous connectivity with low latency and high throughput is required.

Verizon wanted to expand 5G in its network to offer its intelligent Edge Network (iEN) and Network as a Service (NaaS), aiming to make its network the most intelligent, adaptive, and service-aware network available. To do this, Verizon built on its strategic partnership with Red Hat and continued using an open source approach for its 5G transformation.



An open source approach to 5G

To gain visibility and deliver new services and critical offers, Verizon embarked on a 5G transformation journey to build a standalone 5G core network. In addition to network elements, Verizon also needed to modernize applications and hundreds of complex workflows

essential to a timely rollout of 5G. It needed a platform able to handle any disruption that might arise during the rollout (such as reboots, software updates, and disaster recovery events) without losing data, to maintain an uninterrupted, positive customer experience.

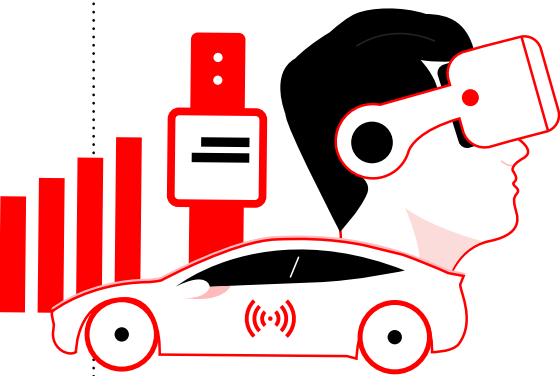
With more than 15 years of successful partnership to build on, Verizon looked to Red Hat as a collaborative technology partner to help in its transformation. Red Hat embedded more than 50 consultants within Verizon's teams to maintain quality assurance across the entire development chain.

Opening new opportunities as a leader in 5G innovation

Verizon incorporated Red Hat OpenShift into its 5G radio access network (RAN), deployed on bare metal across thousands of edge locations. And with Red Hat Advanced Cluster Management, Verizon gained access to improved end-to-end management, visibility, and control.

Red Hat OpenShift allows Verizon to use 5G and edge computing innovation more efficiently by using a cloud-native platform that provides a service-based distributed architecture defined for 5G functions, helping to optimize the performance and latency of its networks for consumer and business customers.

5G transformation provides new edge computing and next-generation solutions for enterprises while offering a robust, reliable customer experience. Verizon anticipates its competitive advantage will open new revenue streams and deliver new customer growth in the coming years.



The container platform from Red Hat is one of the critical components of 5G, the core network. Our entire infrastructure has been built on top of it.³

Anil Guntupalli

Vice President, Technology Strategy, Architecture, and Planning, Verizon



[Read the Verizon case study](#)

³ Red Hat case study. "Verizon gains a first-mover advantage by accelerating its 5G transformation," accessed 6 Oct. 2023.



NTT East creates Video AI Service to deliver community data insights

Nippon Telegraph and Telephone East Corporation (NTT East) focuses on using digital technology to help community businesses and organizations. Whether its customers need to address declining service levels due to labor shortages or stalled sales growth due to lack of marketing capabilities, NTT East prides itself on meeting those needs.

To extend its service level out to the edge of the network, NTT chose Red Hat OpenShift as the foundation for the 1st phase of its project, Video AI Service.

Taking an open approach to service expansion using data

NTT East launched a project called Regional Edge with Interconnected Wide-Area Network (REIWA), an edge computing initiative that builds on the service provider's technology foundation to establish regional edge computing hubs. These hubs intelligently collect and analyze information, such as POS and consumer purchasing history for retail, product growth status updates for agriculture, and information on disaster evacuation sites and food stockpiles for government clients.

By providing container-based self-service tools for Video AI using Red Hat OpenShift, NTT East can develop and operate stable, innovative AI services through collaboration with developers.

Red Hat OpenShift provides automated container orchestration capabilities that simplify deployment, management, and networking at scale. Additionally, NTT East deployed the [NVIDIA GPU OpenShift operator](#), which was jointly developed by Red Hat and NVIDIA. This solution simplifies the use of graphics processing units (GPU) to support resource-intensive workloads including

AI, ML, and deep learning (DL), a subset of machine learning that can analyze unstructured data.

To support deployment of this new container infrastructure, NTT East worked closely with a Red Hat Technical Account Manager (TAM) and Red Hat Consulting teams to establish best practices based on global examples and expertise to help NTT East meet its business needs today and into the future.



AI technology will continue evolving, so the ability to adapt to these changes and refine our infrastructure is essential.⁴

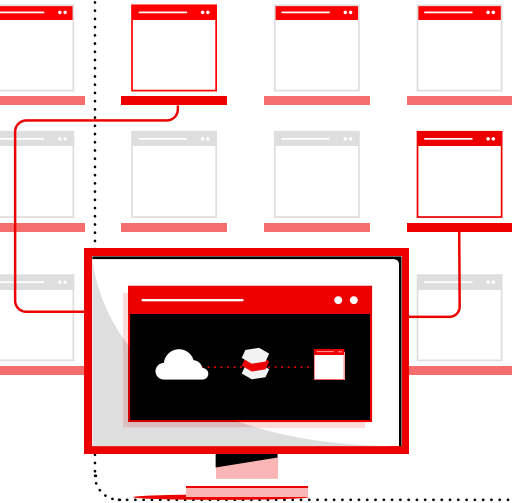
Masashi Toyama

Manager, Server Infrastructure Technology, Cloud Server Technology Department, Advanced Promotion Division, Network Business Headquarters, NTT East



⁴ Red Hat case study. "[NTT East creates Video AI Service for community data insights.](#)" 8 May 2023.

Delivering intelligent business insights to customers across industries



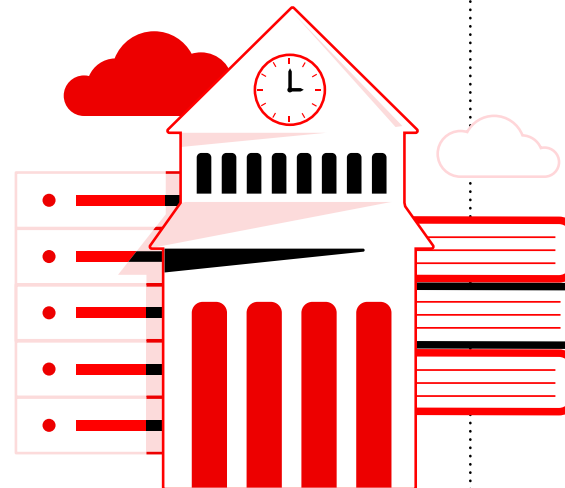
NTT East's Video AI Service now helps local community organizations and businesses take advantage of the latest AI capabilities to gain proactive business insights to help inform and streamline decision making. For example, footfall measurement AI counts traffic volume to physical stores and provides analysis of visitor attributes, such as gender, age, and

duration of stay. Modular, scalable container infrastructure helps accelerate NTT East's data collection and analysis of millions of videos, with the flexibility to add new capabilities as needed to enhance the service. The addition of customer service support AI helps detection and notification of purchasing, and can even provide predictive behavior analysis to help prevent shoplifting.

AI services are just the beginning

Following the successful launch of its Video AI Service, NTT East is planning to expand to new regional data storage locations. This next phase will include collaboration with third-party partners across market sectors (such as local governments) to improve data integrations between industries for cross-sector collaboration. NTT East also plans to use mobile services to take advantage of the massive volumes of data being collected and analyzed.

With support from Red Hat, NTT East will explore and adapt to the latest AI developments and bring the benefits of efficient decision making, cost savings, and heightened security focus to its customers.



There will likely be a need for more complex problem-solving as we tackle various social issues in the future. We are keen to continue collaborating with Red Hat in refining our services in response to customer needs, industry changes, and technology trends.⁵

Daichi Kushima

Manager, DX Development, Business Development Headquarters Division 4, NTT East



[Download the NTT East success story](#)

⁵ Red Hat case study. "NTT East creates Video AI Service for community data insights." 8 May 2023.

Conclusion

Expand your offerings and uncover new opportunities at the edge

Through these stories we aim to highlight how Red Hat's edge computing approach extends our hybrid cloud capabilities to help organizations across manufacturing, retail, and telecommunications innovate with flexible, security-focused edge technology.

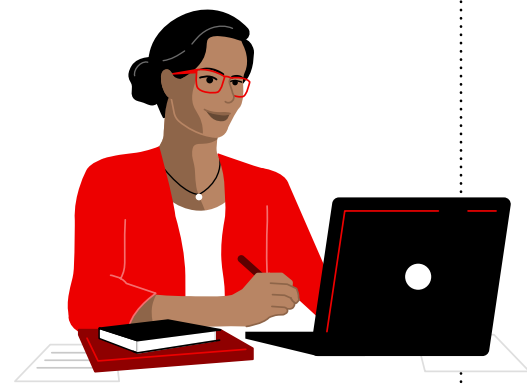
Red Hat Edge extends use cases by deploying and managing modern applications anywhere, supporting innovation with consistency, scalability, and a focus on security—from hybrid cloud to the edge. Using real-time data intelligence, edge solutions help customers make timely decisions and improve operational outcomes.

Edge computing adds power to data in places previously left out of modern architectures. With our extensive certified partner ecosystem

and our open source development model, Red Hat helps to address the diverse needs of the edge from a range of industry-specific solutions.

If there is a customer story in this collection that applies to your use case, or is of particular interest, be sure to download the complete case study for more detail.

Learn how your teams can use Red Hat Edge to create differentiated offerings, and improve operational outcomes more efficiently.



Get started at
redhat.com/edge