**EBOOK FOR SOLUTION BUILDERS** 

# Dell NativeEdge – Accelerate Al innovation at the edge

Dell NativeEdge is a new edge operations software platform.

Read this eBook to explore more about NativeEdge and how you can help your customers across various industries simplify their edge operations at scale to power any use case, optimize for AI at the edge and protect edge estate.

## Welcome to your Dell NativeEdge guide

With the rise of AI, edge computing has been gaining more importance for you and your customers to drive innovation and business outcomes. Existing approaches to edge have led to technology silos, unscalable operations, poor infrastructure utilization and inflexible legacy ecosystems. The massive growth of diverse edge devices has also increased the exposure risk your customers face from cyberattacks.

Overcoming these hurdles requires a new approach.

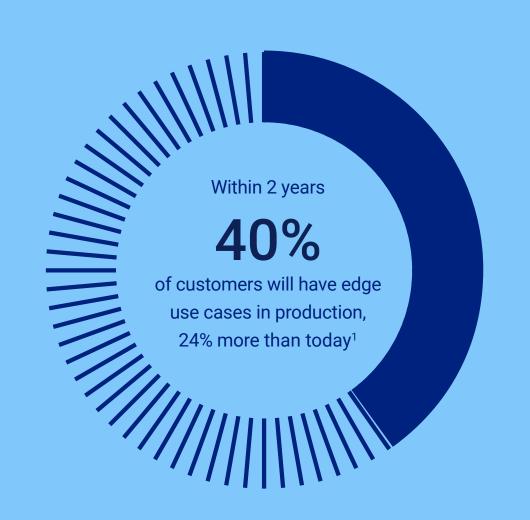
This eBook covers the complete Dell NativeEdge story, from the edge challenges your customers are facing to how Dell NativeEdge addresses them, and the additional benefits Dell Technologies can deliver to you and your customers.

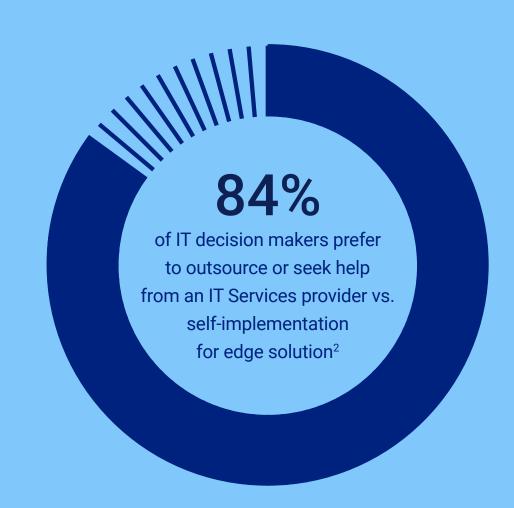
## The Landscape



# A perfect storm is occuring at the edge

Your customers are experiencing a fundamental design shift, driven by a perfect storm happening at the edge. As these drivers of change collide, they generate new sets of challenges, implications and constraints for customers to overcome – and new opportunities for you to capitalize on as you help your customers navigate their edge journey.













<sup>&</sup>lt;sup>2</sup> A commissioned study conducted by Forrester Consulting on behalf of Dell, Sep 2022



Huge amounts of data are being created at the edge by data sources, most of which have never existed before, from sensors, robotics, video sources, and a host of other devices, systems and "things" that have exploded onto the scene in recent years.



Matured multicloud now means that companies have the ability to use any cloud platform of choice for monitoring, reporting and model training.



A new generation of technologies has matured that can drive value from data in near real-time. Advances in AI modeling paired with small formfactor computing and low latency 5G networking enable organizations to capture, curate, analyze and act faster than ever before.

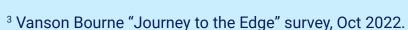


Due to the distributed nature of the edge, business concerns around security, governance and staffing are amplified, and the technical and geographic proximity to customers means that their experience is critical to business success. In addition, organizations see the edge as a critical area where they can drive productivity gains and achieve competitive differentiation in their markets.

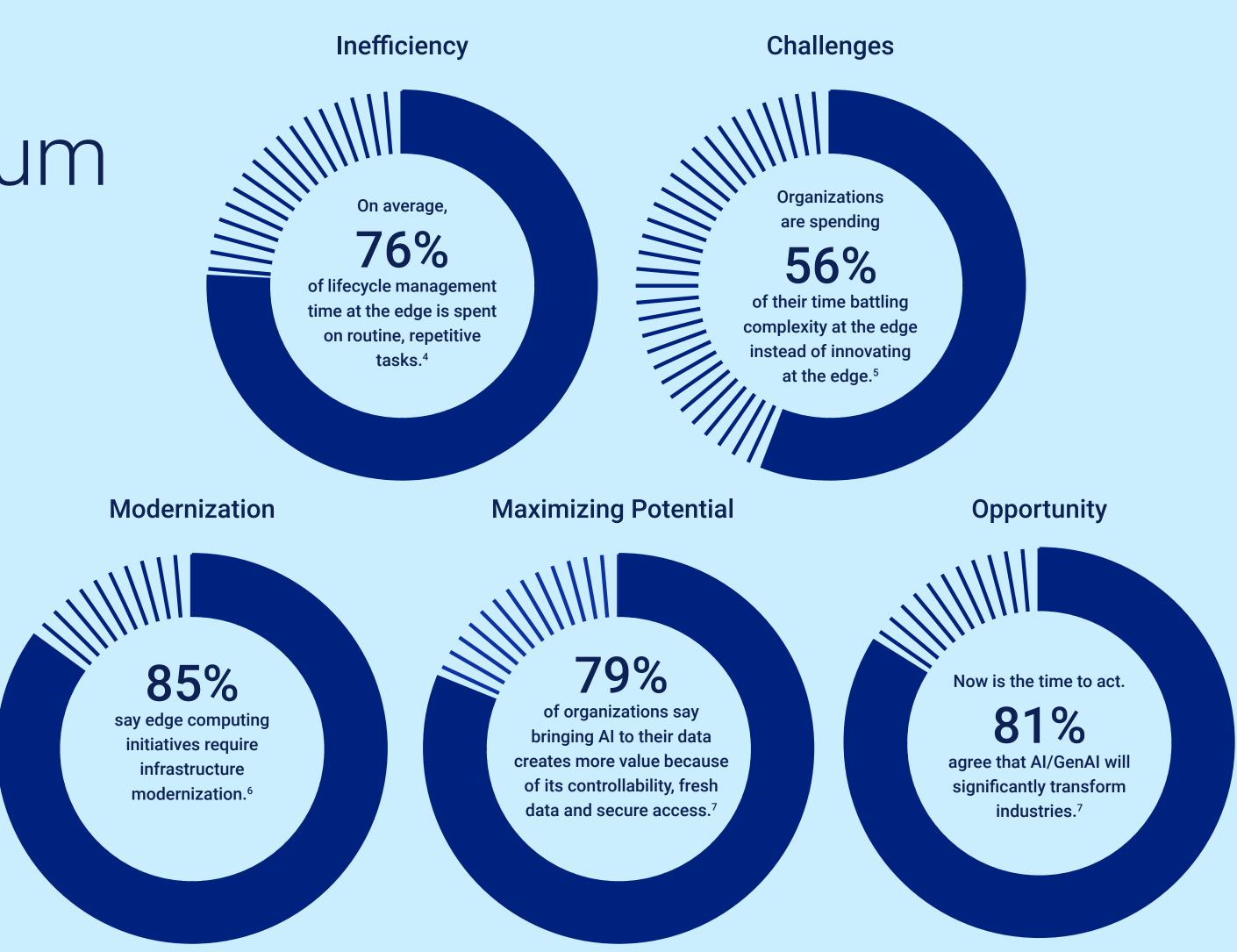
## Al innovation momentum is building at the edge

More innovation is happening at the edge today, and it's accelerating everywhere – retail stores, factory floors, healthcare facilities, and even in farms and fields. It's opening the door to an exciting future where we can solve problems in ways that were never previously possible.

Edge is fast gaining importance in IT strategy. However, a gap exists between edge investment and edge success, 94% of organizations saying that they are investing in edge applications yet only 10% reporting that they are receiving benefits from those investments.<sup>3</sup>



<sup>&</sup>lt;sup>4</sup>2023 study of edge operations by GLG Research on behalf of Dell Technologies.



<sup>&</sup>lt;sup>5</sup> The Innovation Index, Dell Technologies, February 2023.

<sup>&</sup>lt;sup>6</sup> A commissioned study conducted by Forrester Consulting on behalf of Dell, Sep 2022.

<sup>&</sup>lt;sup>7</sup> Innovation Catalysts study, Dell Technologies, February 2024, Dell.com/InnovationCatalyst.

NativeEdge

Once compute is taken outside of data center environments and moved closer to where the data is being created and processed – out into the distributed edge environments a unique set of challenges is introduced that require a new way of architecting to solve them.

New edge applications are accelerating across manufacturing, energy, retail, telecommunications, healthcare, and other industries.



Operational technology workloads



Minimal IT support



Distributed edge estate



Security



**Environmental constraints** 



Siloed solutions

The implications of these challenges are becoming increasingly clear and consistent across industries. Solving these challenges requires solutions that simplify complexity and optimize investments to support existing technologies while rolling new solutions at scale.

And most critically for your customers, any solution must answer key security, compliance and regulatory challenges.



### Distributed edge estate

NativeEdge

The edge is everywhere, from a factory floor to a cell tower. Managing diverse hardware and software across various environments becomes vital. Complexities in form factors, network connections and levels of ruggedization must be tackled for large-scale edge deployments. This is particularly important in distributed setups like retail outlets and distribution centers where additional security, support and efficient systems operations concerns also need to be addressed. Careful planning is essential to help customers achieve their outcomes, so explore our range of Consulting Services that can elevate edge transformation efforts.



## Minimal IT support

Edge locations are often close to the operations floors, so there is little-to-no IT expertise available onsite at edge locations. However, edge technologies still need to run smoothly without disrupting operations. They need to be simple to deploy, simple to manage, simple to scale, simple to repair and simple to retire.



## Operational technology workloads

Operational technology workloads at the edge need to support both legacy and next-gen workloads deployed in various forms, such as virtual machines, containers and serverless designs. The underpinning technology must be stable, secure and highly available to meet the needs of these "edge-native" apps.



### Security

As the number of sites increases, the attack surface of an organization massively expands, and the ability to ensure physical and logical security becomes overwhelming. Physical location passkeys, firewalls and account-based security become obsolete. To combat adversaries today, Zero Trust security concepts need to be applied from the point of the supplier network to the point of production on a factory floor.



#### **Environmental constraints**

Conditions at edge locations are not like the controlled environment in a data center. Devices at the edge are subjected to tiny spaces, large temperature gradients, dust, moisture and physical shock. Edge devices need to run reliably in harsh environmental conditions.



#### Siloed solutions

Attempts to solve edge challenges with isolated use cases have resulted in technology silos that fail to scale much beyond the initial deployments. As use cases and workloads increase over time, this approach results in suboptimal use of IT resources and difficulty managing these silos with consistency and agility.

## The Approach



## At Dell Technologies, we're accelerating Al innovation at the edge

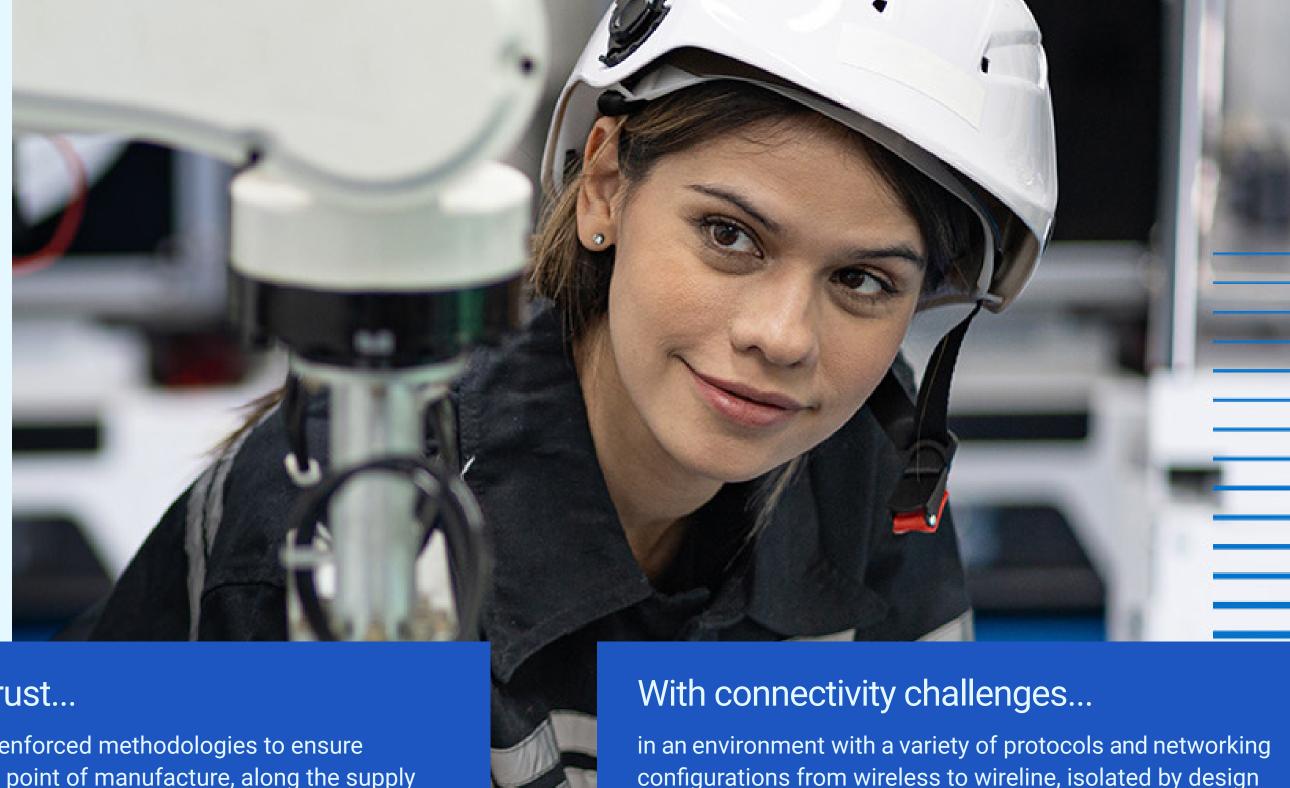
As a solution builder, by leveraging the NativeEdge platform and integrating it into your edge solutions, you will be in a prime position to help your customers solve their toughest challenges at the edge.

#### Without skilled local resources...

by only requiring the skills needed to plug in a device, power on and everything else is automated.

#### With a lower barrier to entry...

by being able to start as small as a single gateway or client.



#### With Zero Trust...

for continuously enforced methodologies to ensure security from the point of manufacture, along the supply chain, to the point of production.

#### With the ability to handle massive scale...

massively in any direction, within the same site or across thousands of locations.

configurations from wireless to wireline, isolated by design or due to unpredictable network services.

## With multicloud by design...

to deploy tooling into any cloud of your choice.

DELLTechnologies NativeEdge THE APPROACH THE SOLUTION THE OPPORTUNITY



NativeEdge

## Approaching modern edge challenges

When designing NativeEdge for today's edge environments, we focused on three key principles: Simplify, Optimize and Protect.



## **Simplify** edge operations at scale

Enable your customers to simplify their operations with centralized management and orchestration, zero-touch deployment and onboarding, and automated operations, from edge to multicloud. Deliver effortless deployment and operations with efficiency, agility and reliability.

Empower your customers to simplify orchestration of applications and infrastructure-as-code with REST APIs and DevOps tools (e.g. SDK for custom Blueprints).



## Optimize for AI at the edge

Harness the platform's open design that works with any AI solution, software application, IoT framework, OT vendor solution and multicloud environment.

Optimize orchestration and management of AI/ML applications with NativeEdge integration for Intel's OpenVINO toolkit, ensuring flexibility and choice.

Develop and deploy AI solutions faster and easier using NVIDIA deployment blueprints, tools and frameworks.



## Protect edge estate

Deliver Zero Trust principles to enable technologies across data, application and infrastructure layers to ensure integrity and safety of your customers' enterprise.

Leverage tamper-proof edge hardware that ensures the integrity from design to deployment and along the supply chain to protect your customers' applications and data running on this hardware.

Enable secure operating environment and ensure your customers' applications are run in secure VMs or containers where the information stays protected.

## Dell NativeEdge redefines edge management

22X faster lifecycle management<sup>8</sup>

42% PowerEdge T160 smaller in size9





## Unlocking value created at the edge

NativeEdge centralizes edge management across locations, automates operations, offers flexibility with its open design, enables Zero Trust security and provides multicloud connectivity. With NativeEdge, your customers, across various industries, can now securely power any edge application, anywhere, to achieve their desired business goals.

An open and secure
platform to modernize edge
to support current and
future business outcomes.

An edge-first approach with tight IT system integration to ensure compatibility and easy integration with current enterprise IT setup.

Operational technology
vendor agnostic to support
diverse new and brownfield
technologies on operations
floors across geographies.

The flexibility of edge infrastructure to ensure agility to adapt to evolving business needs.

Simplified deployment,
orchestration and
management of Al
applications at the edge.

## The Solution



any use case

At its core, NativeEdge enables your customers to securely deploy and manage infrastructure at the edge. It supports a wide variety of secure edge endpoints including gateways, PCs, servers and containers deployed on bare-metal severs.

Leveraging Zero Trust principles, factory integration, application blueprints and highly automated secure onboarding for both infrastructure and applications, NativeEdge stands up and lifecycle manages an end-to-end secure edge environment. Customers can start as small as a single device, scale out as required and centrally deploy these edge secure environments globally, anywhere they want regardless of network connectivity, technology staffing or facility environmental.

And to reduce the costs associated with maintaining these environments, we offer NativeEdge in either subscription or a Software as-a-Service model.

NativeEdge is built with our partners in mind.
We leverage and continue to develop our large ecosystem of ISV, SI, OEM and channel partners to ensure that your customers continue to get the best solutions to their needs delivered through the technology providers of their choice.



## Accelerate AI at the edge with NVIDIA

NativeEdge automates the delivery of NVIDIA frameworks to edge devices



Video analytics: NVIDIA Metropolis **Faster, easier development** of AI inferencing solutions using NVIDIA AI software and frameworks with NativeEdge integration.



Speech and translation: NVIDIA Riva Zero Trust security, zero-touch deployment of edge AI apps to Endpoints.



Optimized inferencing: NVIDIA NIMs Ease of edge AI solution **lifecycle management** with NVIDIA GPU Cloud (NGC) for NVIDIA AI Enterprise solutions on NativeEdge.





- NVIDIA GPU Cloud (NGC)
- NVIDIA AI Enterprise (NVAIE)
- NVIDIA GPU-accelerated Endpoints

Zero-touch

deployment

Zero Trust

security built-in

## Accelerate AI at the edge

New features added in May-June 2024 updates

## Updates

#### NativeEdge software

- Better performance, scalability and security for applications with **bare-metal containers**
- New DevOps tools and REST APIs for DevOps integration and application orchestration
- Optimized orchestration and management of AI/ML applications with NativeEdge integration for that Intel® OpenVINO™ toolkit

#### Hardware

#### Expansion of NativeEdge **Endpoint portfolio**

- PowerEdge T160: 42% smaller in size<sup>10</sup> – ideal for small spaces
- Precision workstations (Tower and Rack)
- Additional PowerEdge rugged and near-edge servers

## Services

#### Expert guidance and design for the edge

#### **Two new Edge services:**

- ProConsult Advisory Services for Edge
- Infrastructure and Application Design Services for Edge

## Partnerships

#### Edge ecosystem:

50+ partners and growing

- ServiceNow integration for seamless, automated edge management
- Azure Arc enablement with NativeEdge automation
- 5 new NativeEdge integrations for ISVs, new Validated Design for **Digital Cities**

Now available as a subscription with Dell APEX<sup>11</sup>

Start a NativeEdge PoC same day



**Zero-touch onboarding** 



**Zero Trust security** 



**Multicloud orchestration** 

## Bring AI to the edge, faster and simpler with NativeEdge

**New updates in November 2024** 



## Product Innovation

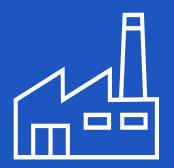
NativeEdge Updates

- NativeEdge Endpoints can now be deployed in high-availability (HA) clusters to minimize downtime and improve reliability / scalability to support demanding AI and Edge workloads
- NativeEdge Endpoints are complete with compute, hypervisor, baremetal containers, networking and storage – optimized for the edge
- Execution Graph provides a comprehensive visual view of deployment steps
- 4G and 5G connectivity for NativeEdge Endpoint Gateways expanding network connectivity options
- **Dell-hosted global catalog** to view our growing list of blueprints from one place
- **Dell Services** for NativeEdge blueprints



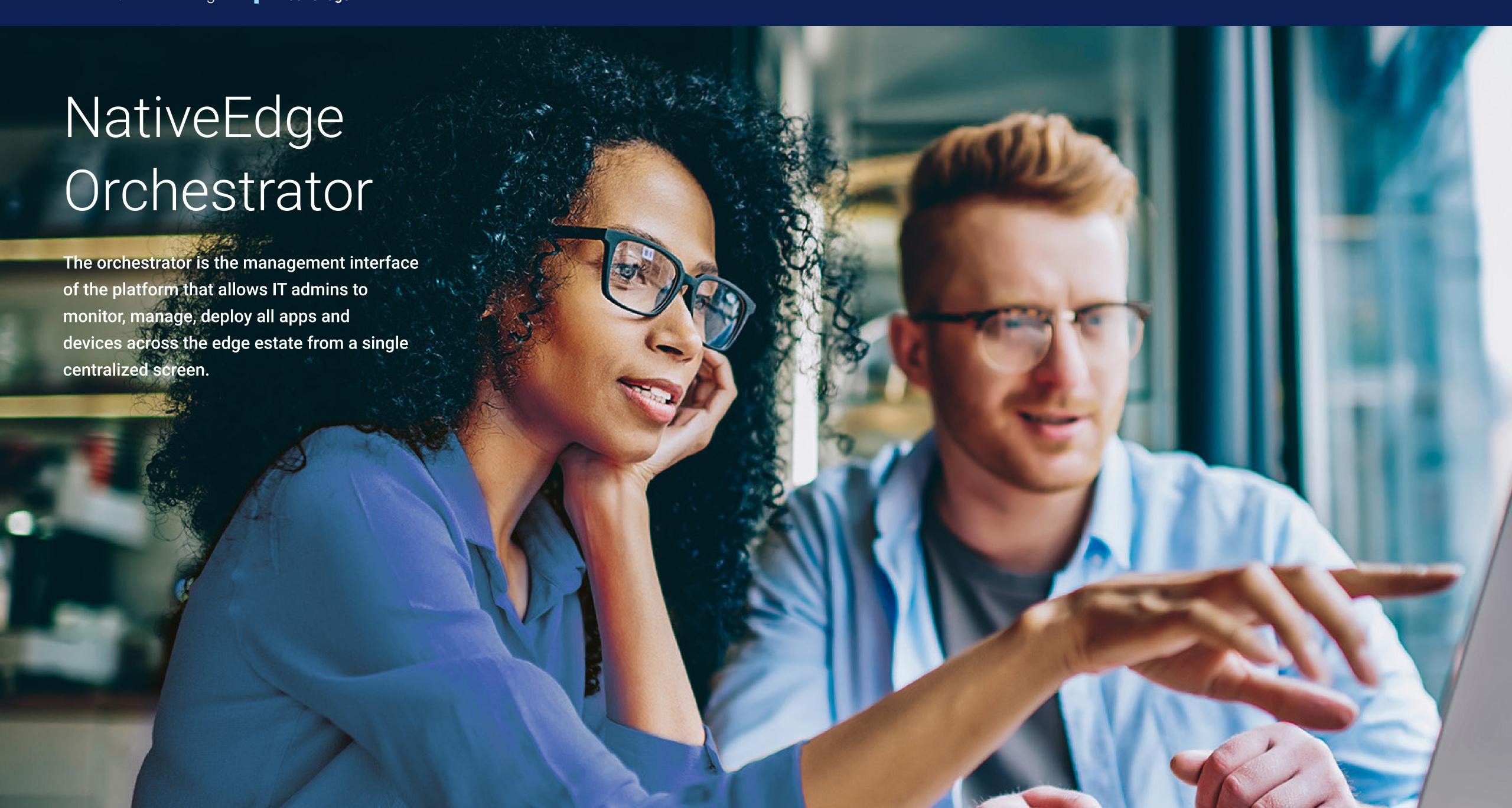
## Al Innovation

- Automated deployment of open-source tools for data acquisition, analytics, model development and visualization supporting continuous MLOps workflows for edge use cases
- Complementary, versatile Data Collector software streamlines MLOps workflow automation
- "Easy button" Al solution deployment with NVIDIA NIM enhancements and simplified Al integration with costeffective **NVAIE licensing** for NVIDIA GPUs
- Integration of Intel® Geti<sup>™</sup> for computer vision models
- New turnkey Al automation components for 3rd party **ISV blueprints**



## Industry Momentum NativeEdge Blueprints

- New manufacturing blueprints enable distant data ingest into AI and analytics applications
- New retail blueprints supporting computer vision, data fusion, queue management and endpoint management
- · New energy blueprints focused on fault detection, maintenance, monitoring and automation
- New digital cities blueprint to streamline building systems, civil engineering, mobility systems and critical connectivity



# The reimagined experience with NativeEdge

Our ecosystem of partners plays an important role in working together to make sure applications and services are available to customers.

If you are an ISV having your software deployed through the NativeEdge catalog, it means hyper simplification and exposure to all NativeEdge customers.

If you are an OEM customer or SI choosing to use NativeEdge as part of your value chain, this means a predictable consistent deployment process delivered to you and users.



## Customer applications in a catalog

A customer that has NativeEdge deployed, regardless of the industry they work in, will have access to applications in a catalog, including AI optimized solutions. These can be off-the-shelf ISV applications, self-developed ones connected to customers' CI/CD pipeline, or cloud-native runtimes.

## Automatically delivered to 1000s of devices

The catalog of applications can be deployed to thousands of edge devices including Dell Edge gateways, OptiPlex PCs, PowerEdge servers and Precision workstations or to non-NativeEdge endpoints running containers and vSphere.

## Remotely managed over time

When compute is drop-shipped from Dell to an end-user, the devices are securely onboarded with zero-touch and are automatically configured to the operating environment and applications that they need to run. This entire estate is then managed over time by monitoring, securing and continuously updating the firmware, drivers and applications.

## Powering diverse use cases to meet unique industry needs

NativeEdge

NativeEdge is capable of meeting demanding and diverse industry needs. Every industry is using AI, and edge technologies create new opportunities to gain insights from data at the edge and deliver business value. Across industries, customers with multiple locations and distributed edge systems will highly benefit from Dell NativeEdge, for example:



## Manufacturing companies

THE APPROACH

Deploying new applications to drive asset optimization and management across multiple operation sites.

## Grocery retailers

Implementing a new cold chain solution across thousands of store locations to ensure food safety, reduce food loss, enhance compliance and boost customer satisfaction.

## Large fast-food chains

Rolling out edge solutions across tens of thousands of restaurants to automate order fulfilment.

## Oil change service companies

Opting for an edge solution to improve service efficiency by supporting a multitude of edge devices and locations.

And many more...

NativeEdge

## See how our customers and partners are unlocking benefits with Dell NativeEdge

#### Watch the videos below:



A multinational engineering and technology leader drives innovation for success



Power management company optimizes edge investments for success



A global system integrator simplifies opertions across the edge environment

#### Hear from early adopters:

"Dell Technologies and Schneider Electric's decades-long relationship has provided customers with innovative solutions to solve their greatest IT challenges in a smart and secure, always-on, and managed fashion. With the introduction of Dell NativeEdge, we see new opportunities to integrate and better meet our customers' mission-critical needs at the edge."

Vandana Singh, Senior Vice President of Secure Power North America, Schneider Electric.

"Fastly is thrilled to see Dell take such industry leadership in uniting edge hardware and software platforms with the release of Dell NativeEdge. The timing couldn't be better, as every day we hear from customers and prospects seeking new ways of deploying Fastly services like Next-Gen WAF, or our Web Assembly powered Edge Computing and Delivery platform, in environments beyond the traditional data center or cloud."

Artur Bergman, Chief Architect and Founder, Fastly.

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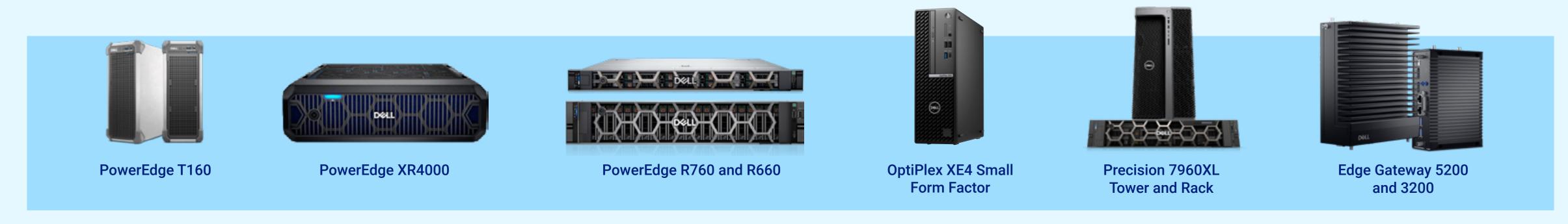
## NativeEdge Endpoints

Deliver Dell edge hardware with pre-loaded platform software

NativeEdge Endpoints play a crucial role in NativeEdge's zero-touch onboarding and Zero Trust security capabilities. These devices are pre-loaded with NativeEdge OS during assembly at a Dell factory to provide secure and scalable operating environment specifically designed to run application workloads at the edge.

These platform-optimized Dell edge hardware contribute to application consolidation by hosting virtual machines (VMs) and containers directly at the edge. To ensure seamless integration, the platform-specific code is pre-installed on this carefully selected Dell edge hardware during assembly at a Dell factory. NativeEdge Endpoints can now be deployed in high-availability (HA) clusters, ensuring enhanced reliability and continuous operation of demanding AI and edge workloads.

NativeEdge Endpoints are supported on several Dell edge-optimized products, including Al optimized products with NVIDIA GPUs, powered by the latest Intel® technologies.



Please see a full list of NativeEdge Endpoints on the following page.

Secure Device Onboarding: Dell NativeEdge Endpoints are FDO-enabled and can be onboarded automatically with zero-touch provisioning. This is part of the platform's Zero Trust security architecture that was made possible by a close collaboration between Dell and Intel®, providing piece of mind to you and your customers.

## NativeEdge Purchase Options



## Subscription-based Software

- 1-year and 3-year plans
- Product and support fees included
- Fixed fee + variable per device fee
- On-prem and now is also available as a subscription with Dell APEX<sup>11</sup>



## NativeEdge Endpoints

#### PowerEdge servers:

T160, XR4000<sup>12</sup>, XR8000, XR7620, XR5610, R760<sup>12</sup>, R760XS, R660<sup>12</sup>, R660XS

#### **Precision workstations:**

7960XL Rack, 7960XL Tower<sup>12</sup>, 5860XL Tower<sup>12</sup>

#### **Desktop PCs:**

OptiPlex XE4 Small Form Factor<sup>12</sup>

#### **Edge gateways:**

3200, 5200

<sup>&</sup>lt;sup>11</sup> Currently the offer is available for Dell enterprise customers (Enterprise Direct) in the US.

## Edge-optimized, secure, high-availability multi-node clusters

Dell NativeEdge is helping scale edge environments like never before by delivering edge-optimized, secure, high-availability, multi-node clustering for NativeEdge Endpoints. These features, previously confined to data centerclass devices, are now available on NativeEdge Endpoints.

With these capabilities, your customers can achieve significant cost reduction, enhanced productivity and operational resilience.

High availability provides an assurance of continuous operation even if individual devices encounter failures, improving the reliability and scalability necessary to support demanding AI and other workloads at the edge.



## The Opportunity



THE LANDSCAPE

THE APPROACH THE SOLUTION

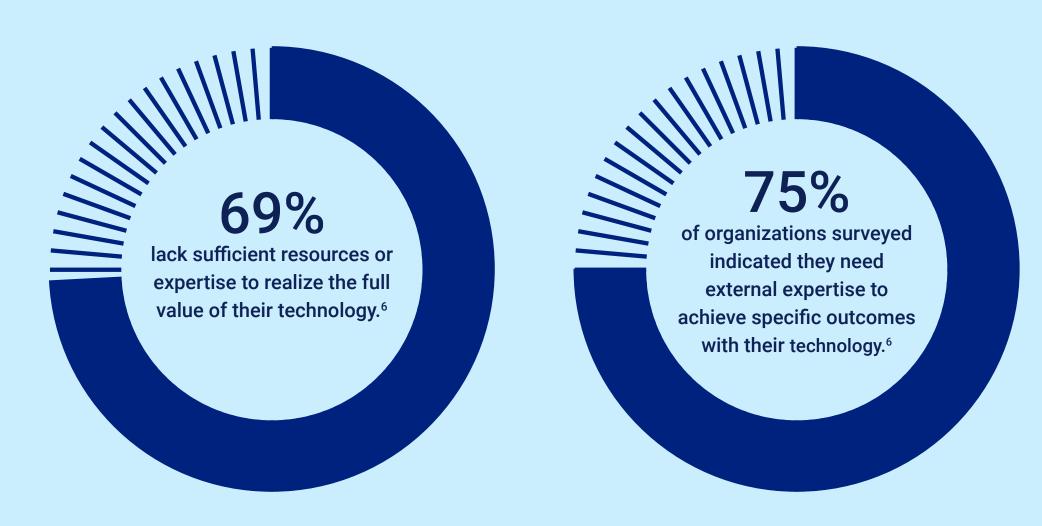
THE OPPORTUNITY

## Why Dell at the edge

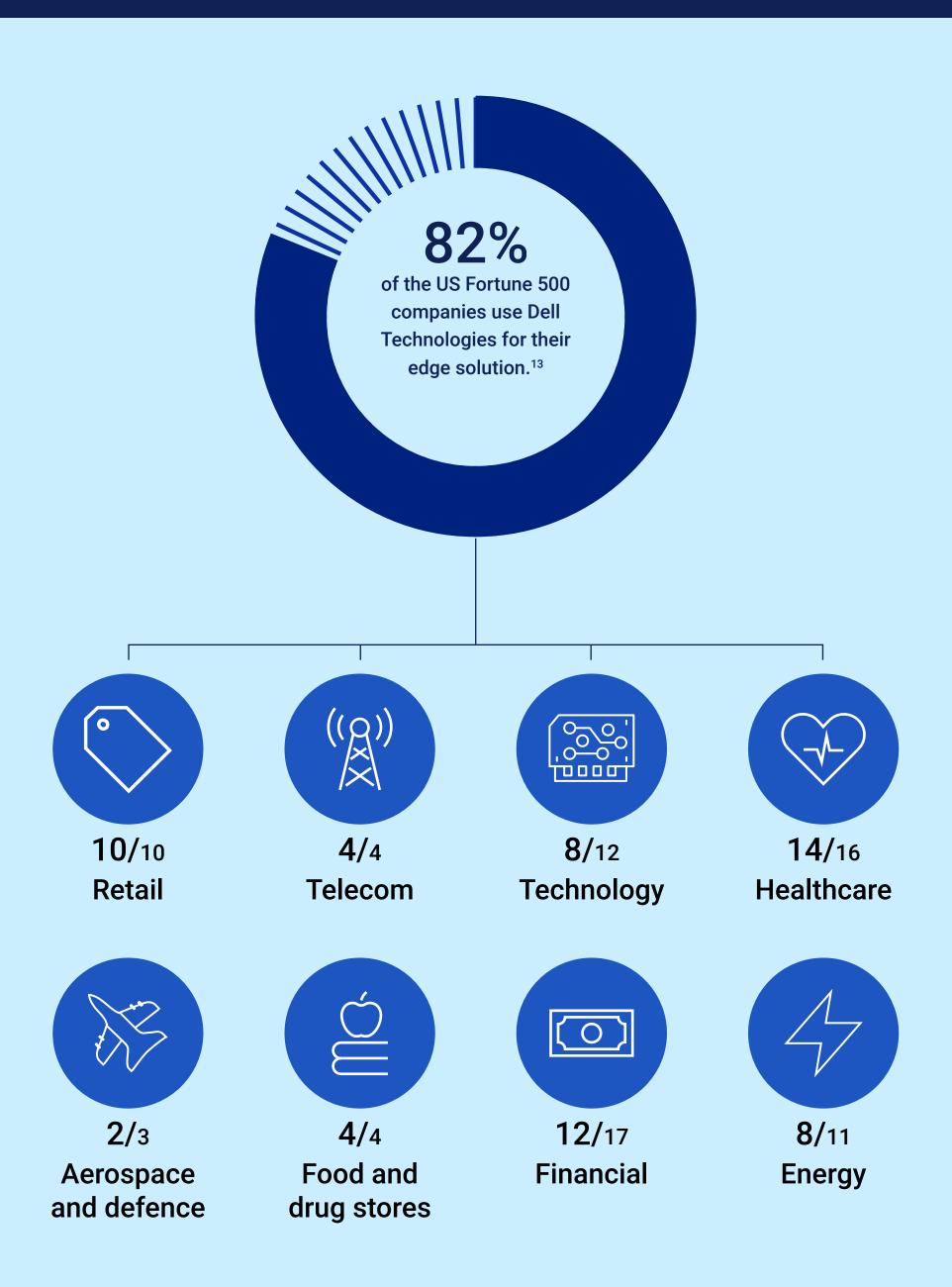
NativeEdge

Dell Technologies has a long history at the edge. For over 24 years of experience through OEM Solutions group and partners, we've been helping customers design, deploy and secure solutions for the edge. A few years ago, Dell formed a dedicated Edge Business to bring more innovations in this space to our customers and partners.

Dell NativeEdge is part of the Dell's broadest portfolio at the edge, supported by Professional Services for the edge that help customers focus on outcomes and not infrastructure. There is a growing need for a partner with the industry-leading expertise to transform edge operations and unlock new potential – creating a great opportunity for you to capitalize on.



<sup>&</sup>lt;sup>6</sup> A commissioned study conducted by Forrester Consulting on behalf of Dell, March 2023. <sup>13</sup> Dell Technologies analysis of US Fortune 500, July 2023



THE LANDSCAPE THE APPROACH THE SOLUTION THE OPPORTUNITY NativeEdge

## Expand your opportunity with Dell NativeEdge



## Immediate Value Generation

With NativeEdge, businesses can act upon and analyze data near the point of creation to improve efficiency, experiences and drive innovation. This is particularly beneficial to solution builders who are looking to deliver real-time insights and analytics to their clients.



## Buy vs Build

Create differentiated edge solutions by buying infrastructure from us, so that you do not have to build it, allowing you to focus on your IP and competitive differentiation.



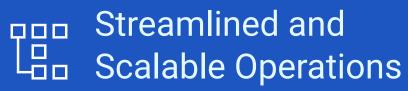
## Simplicity and Security

With NativeEdge, you can simplify and secure your edge solution development, deployment, management and ongoing maintenance.



### Industry-Specific Solutions

NativeEdge is capable of meeting demanding and diverse industry needs, including manufacturing, retail, energy, and many more.



NativeEdge streamlines operations, securing the edge environment from design to deployment, giving you and your customers peace of mind. The platform also ensures scalability and consistency with integrated, endto-end products, services and solutions.



#### 1 Upsell and Cross-sell

Grow your business by leveraging Dell's broadest portfolio at the edge. With NativeEdge, you will benefit not only from helping your customers integrate the platform into their solutions, but also from providing them NativeEdge Endpoints and services for the edge.



## Edge Services

Your services combined with Dell Technologies expertise will give your customers confidence that their edge solutions are optimally and securely deployed and supported.

# Start engaging your customers on Dell NativeEdge

NativeEdge

The ideal prospects to engage will be customers with distributed operations across multiple locations, such as a fast-food chain or a gas station company. Reach out to your Dell OEM representative to learn more about the solution, get access to available resources or to engage a Dell NativeEdge SME.

Schedule a visit to your nearest Dell Customer Solution Center Innovation Lab to set up a customized briefing or personalized solution engagement, so you can conceptualize and collaborate on edge technologies and applications.

These collaboration hubs help you and your customers test existing edge technologies to design custom proof-of-concept solutions that can best manage the unique workload demands of organizations in retail, manufacturing, healthcare and other verticals.

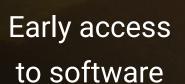


# Dell Edge Design Program - an exclusive feedback program for Dell NativeEdge

#### **Opportunity:**

Engage with Product Managers to build Dell NativeEdge. Share your edge experience, give feedback on new features and get hands-on with the software platform.







Gain first-hand knowledge of upcoming edge products and features



Influence roadmap and design decision

## Securely scale your edge management

Orchestrate workloads from edge to multicloud

Simplify edge operations at scale

Secure with Zero Trust

Optimize your edge investment

Sign up here: NativeEdge@dell.com

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## Key Resources and Links

Read Solution Spotlight

Visit OEM Edge Webpage →

Contact Us →

#### **Key Assets**

- NativeEdge Interactive Guide
- Platform Overview Video
- <u>Podcast</u>
- <u>Infographic</u>
- Simplify Operations Video
- Optimize Investment Video
- Secure Edge Video

#### **Customer Stories**

- NativeEdge and Atos Video
- NativeEdge and Bosch Video
- NativeEdge and Eaton Video
- Atos Customer Story
- Bosch Customer Story
- Eaton Customer Story

#### **Demo and Whitepapers**

- <u>Interactive Demo</u>
- Whitepaper: Introduction to the Dell NativeEdge
- Whitepaper: Edge Security
- Discover Edge Ecosystem for ISVs and System Integrators
- Brochure: Dell Services for Edge

## It's time to redefine your edge management

Discover more about Dell NativeEdge and OEM Edge Solutions at **Dell.com/OEM/Edge**.



OEM Solutions