**DELL**Technologies

NVIDIA

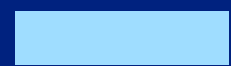# AI from the core to the edge

How communications service providers are building smarter networks and processes

# Contents

# Executive summary

---

Artificial intelligence (AI) is creating vast new opportunities for communications service providers (CSPs), from faster, self-optimizing networks to intelligent chatbots that transform their customers' experience. With the number of AI workloads expected to substantially increase over the coming years, CSPs who can efficiently implement them stand to expand their market opportunities and generate significant competitive advantage.

**65%** of CSPs agreed that AI is important to their company's success.[1]

**60%** expect AI to help them optimize operations.[1]

**44%** anticipate AI will help them reduce costs.[1]

The emergence of AI offers an intelligent solution to today's siloed and increasingly complex networks. CSPs currently face a "beyond human scale" challenge, where staff lack the resources to monitor, optimize and fix network and business functions in real time, 24/7. AI can automate these tasks, leading to improved network performance, stronger customer retention, operational efficiency gains and more.

This eGuide will show how CSPs can take advantage of the hardware and software needed to simplify and accelerate their path to AI innovation.

The global **AI in Telecom** market size is projected to be valued at US$ 1,180.9 million in 2023 and is anticipated to reach US$ 14,496 million by 2033, with a notable Compound Annual Growth Rate (CAGR) of 28.5% from 2023 to 2033.[2]

# Take the lead with Telecom-optimized AI solutions

The challenge for CSPs is to develop infrastructure that can handle these AI workloads, whether in their data centers or at the edge. But producing this kind of optimized architecture requires an ecosystem of partners, hardware and solutions that can turn ideas into reality – and ROI – faster.
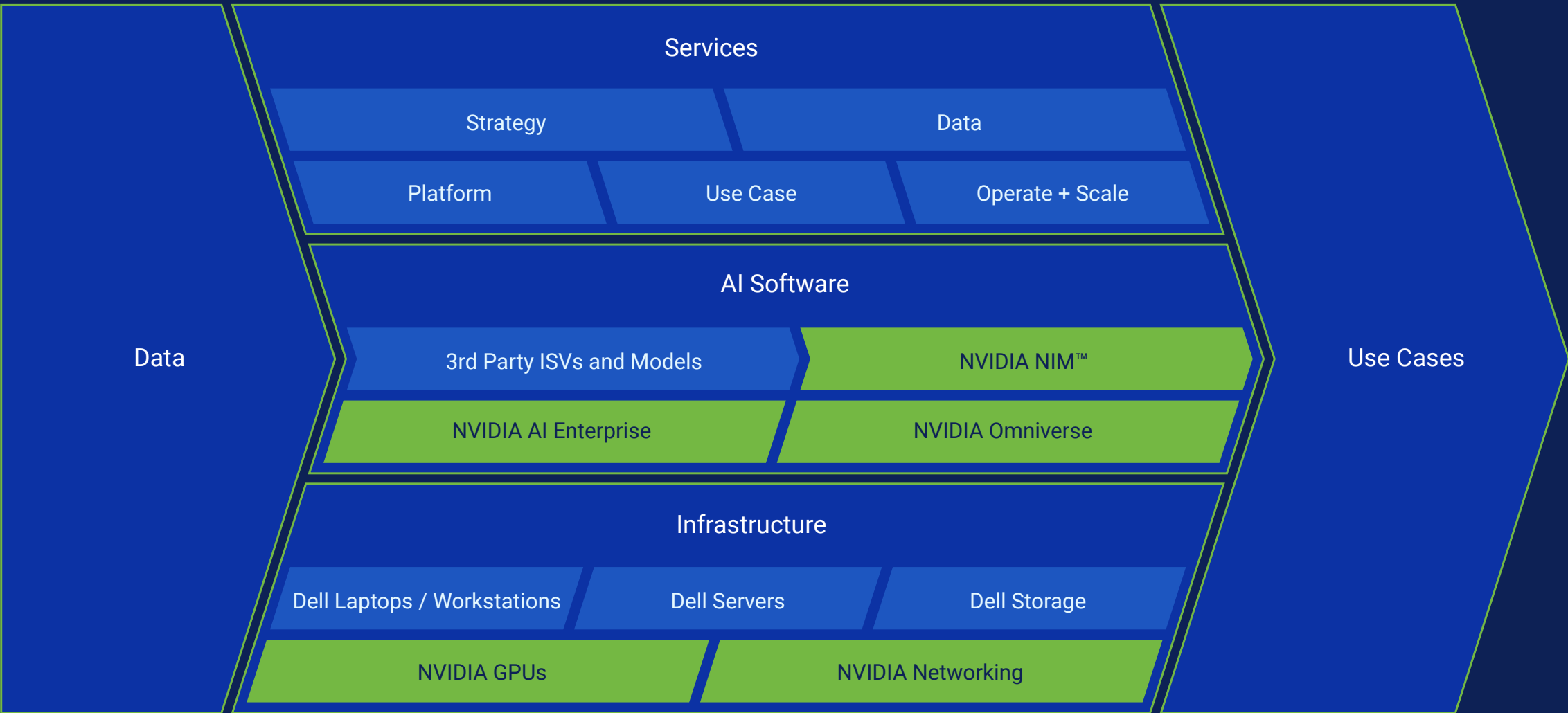
## Dell AI Factory with NVIDIA

Dell AI Factory with NVIDIA gives CSPs the necessary building blocks to run any AI workload, anywhere. It combines Dell's broadest portfolio of solutions with expertise from NVIDIA and other industry-leading partners:

### Dell Technologies
Servers, storage, networking, and data management technologies.

### NVIDIA
Accelerated computing, networking, NVIDIA AI Enterprise, NVIDIA Omniverse.

### Partner AI Software
Third party ISVs and models.



The Dell AI Factory with NVIDIA framework allows organizations greater control over their proprietary data and scales efficiently, providing a more affordable alternative to many public cloud solutions. It delivers a complete solution tailored to meet specific customer use cases or outcomes, including in the Telecom industry.

# Innovating with AI from the data center to the edge

AI enables CSPs to maximize network performance at the lowest possible cost from data center to edge, improve customer service and loyalty, and deliver greater value at the enterprise edge.

## Core data centers

- Capable of hosting more intensive AI workloads that can collect and model data to enhance network performance, energy efficiency, etc.

- Operating out of data centers can reduce costs associated with the training and inferencing of large language models (LLMs).

- Monetization of data center investment via the creation of compute services such as GPU-as-a-Service (GPUaaS).

## Edge

- Ruggedized hardware enables CSPs to move AI workloads closer to where their data is created, including space-limited environments.

- Low latency environments are ideal for AI applications that require real-time processing.

- With AI at the edge, real-time decision-making can come to life, fuelling cost optimization and streamlining processes across all industries.

AI addresses challenges from the data center to the edge, where Dell Telecom-optimized hardware with NVIDIA accelerated computing can enable innovative, revenue-generating services.

# Data center use cases

# 1. Enhancing CSP operations and customer engagement



## Telecom use case

CSPs seeking to upgrade their operations and customer engagement need a GenAI tool that can automate complex tasks, optimize network performance and deliver personalized customer experiences. Amdocs provides a telecom-grade platform that leverages real-time data and industry-specific insights to create innovative GenAI copilots.

## Hardware/software stack



**DELL POWEREDGE XE9680 SERVERS**



**POWER SCALE STORAGE PLATFORM**



**NVIDIA H100 TENSOR CORE GPUS**



**DELL PRODEPLOY, PROSUPPORT**



**AMAIZ™ GENAI SUITE**

## The solution

Amdocs amAIz Copilots™ is the only industry-specific AI assistants that seamlessly integrate with Telecom systems. Capable of providing highly contextual, human-like interactions, they leverage a verticalized Telecoms taxonomy for accuracy, while advanced governance features ensure their answers remain compliant and trusted. These AI-driven copilots can automate tasks and provide real-time insights, enhancing service delivery and operational efficiency.

## Partnership benefits

- Copilots offer a powerful, carrier-grade AI solution.
- Combining cutting-edge technology with deep Telecom expertise drives innovation and efficiency.

## Customer benefits

- **Improve Customer Service:** Rapid resolution of customer inquiries and issues with AI-driven Copilots.
- **Enhance Efficiency:** Increases productivity through automated decision-making and task management.
- **Time and Cost Savings:** Enhances service offerings with AI copilots that streamline operations and reduce operational costs.

"Amdocs amAIz Copilots have transformed our network operations, enabling faster decision-making and improved customer service, leading to increased satisfaction and loyalty."

**– TIER 1, NA OPERATOR**

# 2. Network troubleshooting and analysis



## Telecom use case

CSP staff need optimized data analysis and management across 5G and OpenRAN applications, but a lack of SQL experience can prevent them from running complex queries on their large datasets. Natural language tool SQL-GPT helps engineers, support staff, management, finance, and marketing teams to design, test, debug, and troubleshoot network components such as CU, DU, RU, 5G Core, RIC and O-RAN interfaces.

## Hardware/software stack



**DELL POWEREDGE XE9680 SERVERS**



**DELL POWERSCALE STORAGE PLATFORM**



**NVIDIA H100 TENSOR CORE GPUS**



**DELL PRODEPLOY, PROSUPPORT**



**KINETICA SQL-GPT**

## The solution

An advanced conversational AI powered by Kinetica, SQL-GPT allows everyday language, rather than SQL commands, to be used for complex data queries. It offers unmatched speed, accuracy and scalability across 5G and OpenRAN environments, providing real-time data analysis that accelerates decision-making.

## Partnership benefits

- **Enhance Integration:** SQL-GPT integrates seamlessly with various data platforms and tools, enhancing the capabilities of existing systems.

- **Collaborative Innovation:** Partners can use SQL-GPT's advanced features to develop new solutions and services, driving innovation in the Telecom sector.

- **Market Differentiation:** Offering SQL-GPT as part of a partner's portfolio can differentiate them in the market, providing a competitive advantage with cutting-edge AI-driven data management solutions.

- **Shared Success:** Partners benefit from joint marketing and sales efforts, expanding reach and driving mutual growth.

A major telco company reported a 40% reduction in troubleshooting time and a 30% increase in operational efficiency after implementing SQL-GPT.

## Customer benefits

- **Enhance Efficiency:** Automates and accelerates data querying and analysis, reducing the time and effort required for network management, and freeing up time for engineers.

- **Improve Accuracy:** Provides precise and reliable answers, minimizing errors in data interpretation.

- **User-Friendly**: Natural language processing allows users to interact with the system using everyday language, reducing the need for specialized SQL knowledge.

- **Scalability:** Capable of handling data from gigabytes to zettabytes, making it suitable for both small and large-scale deployments.

- **Security:** Ensures data security by processing queries within the customer's premises or cloud perimeter.

- **Better Customer Experience:** Faster time to customer resolution and improved NPS scores.

# 3. Accelerating digital transformation



ITERNAL®        DELL Technologies        NVIDIA.

## Telecom use case

As telcos undergo their own digital transformation, those tasked with content creation need access to high-quality, up-to-date and on-brand information. They require a tool that can curate and automate this content, ensure consistency and compliance across various media formats, and translate it into multiple languages. This can help businesses accelerate their content creation while reducing time and costs.

## Hardware/software stack



**DELL POWEREDGE XE9680 SERVERS**



**DELL POWERSCALE STORAGE PLATFORM**



**NVIDIA H100 TENSOR CORE GPUS**



**DELL PRODEPLOY, PROSUPPORT**

**ITERNAL TURNKEY AI**

## The solution

Iternal's AI solution leverages patented technology to transform the content creation process. Its modular, scalable solution automates content production that's consistent, up to date and can be translated into multiple languages at a click of a button, enhancing user productivity.

### Partnership benefits

- **Access the Best:** Including industry-leading AI frameworks and hardware.

- **Peace of Mind:** Enterprise-grade security and compliance.

- **Launch Sooner:** Fast deployment and go-live times, ensuring quick ROI.

- **Equal Access:** Support for 508 accessibility compliance communications, enhancing accessibility and inclusivity.

### Customer benefits

- **Enhance Efficiency:** Accelerates content creation, allowing employees to focus on other critical tasks.

- **Streamline Operations:** Enables one person to perform the work of many.

- **Improve Accuracy:** Ensures consistent, up-to-date and brand-compliant information.

- **Multilingual:** Translates content instantly into multiple languages.

- **Savings:** Reduces content creation time and costs significantly.

A team of four people at an IT giant generated over $650 million in new opportunities, while reducing their content creation timelines from three to six weeks to just two days by using Iternal.

# 4. Network stress testing and predictive maintenance

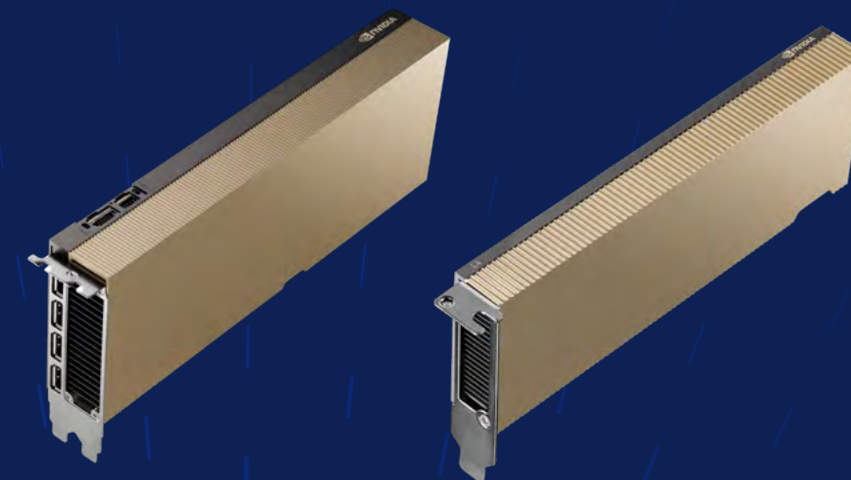**Synthefy**    **DELL**Technologies    **NVIDIA.**

## Telecom use case

CSPs need to be able to analyze how their networks are used, evaluate the fidelity of their synthetic data, and generate insights from that data. Synthefy's pioneering joint architecture enables time series synthesis, forecasting and anomaly detection using GenAI.

## Hardware/software stack

**DELL POWEREDGE R760XA SERVERS**

**NVIDIA L40 GPUS/L4 TENSOR CORE GPUS**

**DELL**Technologies
**ProDeploy**

**DELL**Technologies
**ProSupport**
24x7 Support
Predictive & Proactive
NBD Onsite

**Synthefy**

**OPTIONAL DELL POWEREDGE XR8000 FOR CPU-BASED EDGE-FOCUSED INFERENCING**

**DELL PRODEPLOY, PROSUPPORT**

**SYNTHEFY SOFTWARE**

## The solution

Synthefy uses GenAI to unlock insights from rich time series data, enabling a network operator to request predicted outcomes and demand forecasts based upon specific prompts. This can be used to stress test systems, plan for capacity and detect anomalies.

## Partnership benefits

- Trusted Dell Infrastructure.
- Turnkey SW Solution.
- Turnkey Purchase-to-Deployment.
- Dell ProDeploy and ProSupport.
- Synthefy deployment, support & training.

## Customer benefits

- **Turnkey Functionality:** Provides out-of-the-box evaluation metrics to test the fidelity and utility of synthetic data.
- **Unlock Insights:** Time domain evaluation metrics.
- **Look Ahead:** Accurately models frequency spectra.
- **Secure Data:** Develop models that simulate different behaviors and test outcomes before implementing changes, whilst maintaining data sovereignty.

Winner of the T-Mobile and Deutsche Telekom Reveal 2024 T Challenge. "The sheer amount of innovation on display throughout the competition makes me excited for what's to come as AI continues to transform our industry."

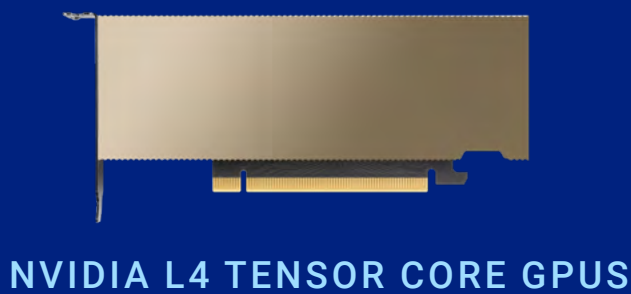**- ULF EWALDSSON, PRESIDENT OF TECHNOLOGY, T-MOBILE.**

# Edge use cases

# 1. Computer vision and GenAI at the edge

**DELL**Technologies          **NVIDIA.**

## Telecom use case

CSPs need flexible and rugged compute at their AI platform edge locations. This enables their customers to implement computer vision and GenAI applications such as object detection, image classification and 3D mapping.
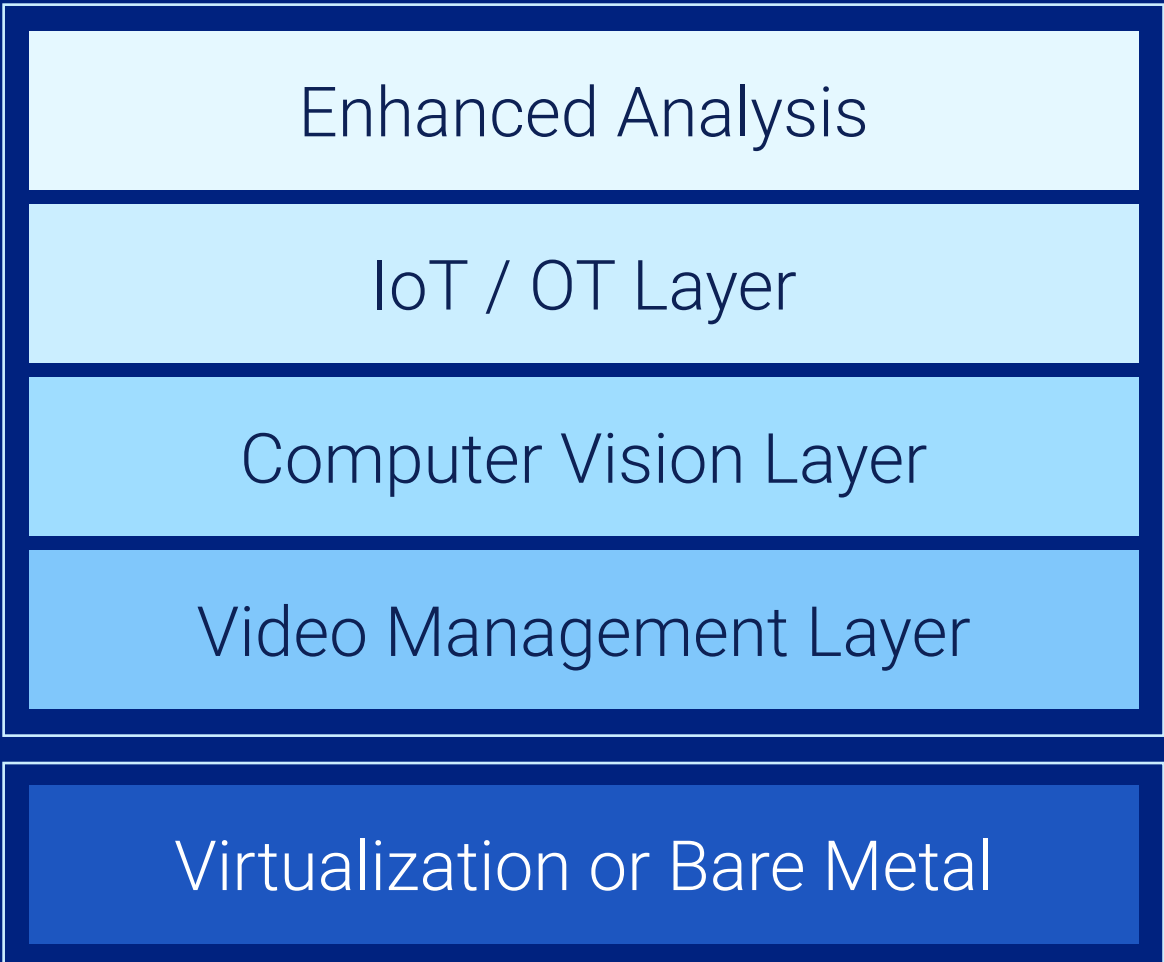
## Hardware/software stack

**NVIDIA L4 TENSOR CORE GPUS**

**DELL**Technologies
**ProDeploy**

**DELL**Technologies
**ProSupport**
24x7 Support
Predictive & Proactive
NBD Onsite

**DELL PRODEPLOY, PROSUPPORT**

**NVIDIA.**

**NVIDIA MORPHEUS**

Enhanced Analysis

IoT / OT Layer

Computer Vision Layer

Video Management Layer

Virtualization or Bare Metal

**DELL POWEREDGE XR8000 SERVER**

## The solution

The PowerEdge XR8000's 2U SLED based, multi-node, flexible and rugged compute platform is ideal for demanding computer vision, AI/ML and GenAI edge applications. Edge AI cybersecurity with the NVIDIA Morpheus framework supports real-time data monitoring with AI and threat detection.

### Partnership benefits

- XR8000 is a carrier-grade flexible configuration server platform.

- Turnkey Purchase-to-Deploy.

- Dell ProDeploy and ProSupport.

### Customer benefits

- **Flexible:** 2U chassis architecture supports a mix of 1U and 2U compute SLEDs.

- **Designed for Limited-Space Environments:** Short depth (430 mm) Class 1 server.

- **Charging Options:** Both AC and DC power supply options.

- **Rugged and Resilient:** NEBS Level 3 certification.

- **Temperature Ready:** Operates in environments between -20°C to 65°C.

# 2. AI-powered production
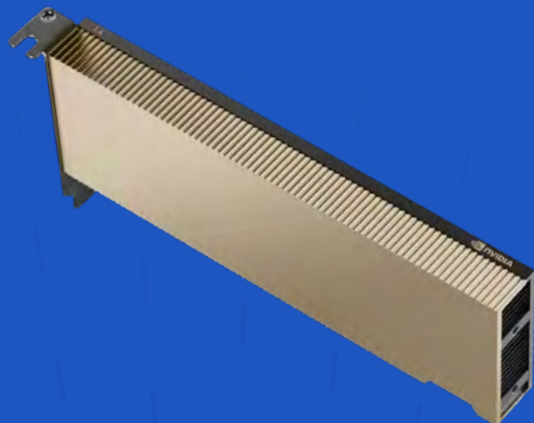
**DELL**Technologies      **NVIDIA.**
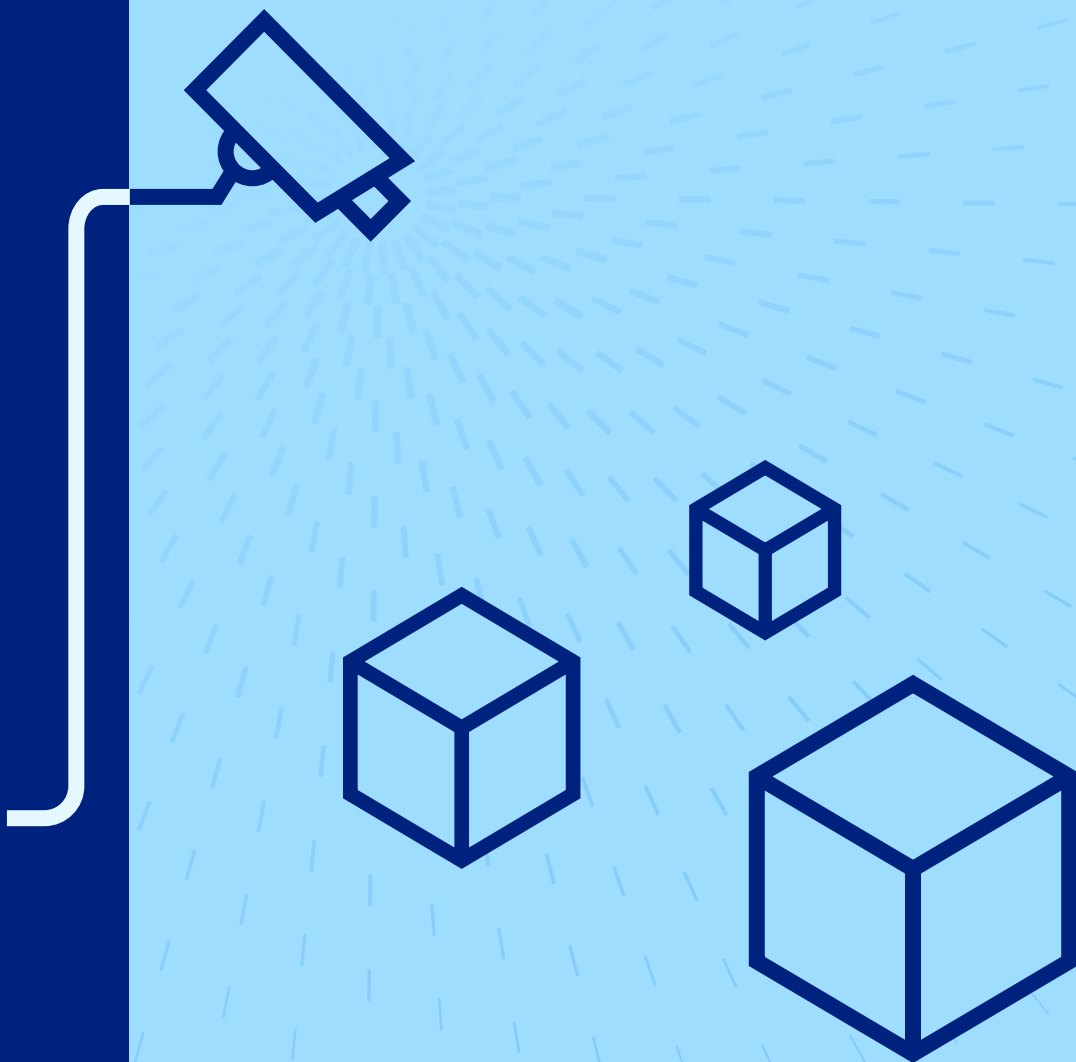
## Telecom use case

With AI-powered production, CSPs can combine innovative edge and AI solutions that run on private wireless networks to its enterprise customers. By incorporating AI workloads into the manufacturing floor, data can be acted upon closer to its creation, resulting in enhanced efficiency, worker safety and cost-savings. Within manufacturing chains, AI can detect, locate and address hazards faster, and enable predictive maintenance without losing production momentum.
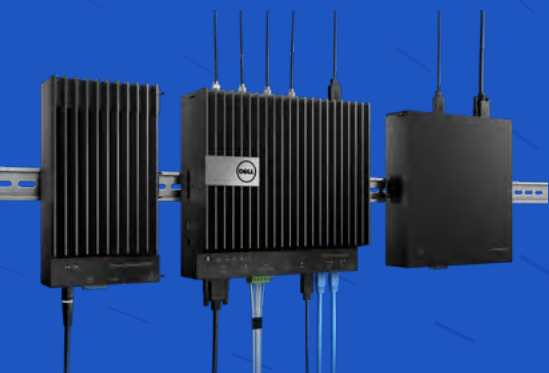
## Hardware/software stack

**DELL POWEREDGE XR8000 SERVER**

**NVIDIA L4 TENSOR CORE GPUS**

**DELL**Technologies
**ProDeploy**

**DELL**Technologies
**ProSupport**
24x7 Support
Predictive & Proactive
NBD Onsite

**NVIDIA.**

**DELL EDGE GATEWAY**

**DELL PRODEPLOY, PROSUPPORT**

**NVIDIA DEEPSTREAM SDK**

## The solution

NVIDIA DeepStream SDK is a complete streaming analytics toolkit that enables a faster, simpler way of developing AI vision-based imaging applications that can be deployed at the edge. IoT sensors capture, decode and process data on the manufacturing floor and transfer to AI inferencing models to produce real-time analytics and actions.

### Partnership benefits

- PowerEdge XR8000 enables NVIDIA L4 Tensor Core GPUs to be deployed in edge environments for real-time AI video image processing.

- The XR8000 and NVIDIA L4 Tensor Core GPU combination can be applied to perform error detection, object detection and image classification in any manufacturing process.

### Customer benefits

- **5G and AI Monitoring:** Enables immediate data exchange between different equipment, machinery and vehicles facilitating quick response time for alert remediation.

- **Real-Time Feedback and Actions:** Results enable near real-time adjustments where needed to get production back on track, fast.

- **Streamlines Operations:** Frees up time and energy for innovation.

A manufacturing plant reduced its operating costs by **3%** and labor costs by **25%** using AI and computer vision.[3]

# Deliver innovative, revenue-generating services with Dell AI for Telecom

As CSPs seek to optimize their networks and maximize their ROI, they need compute infrastructure ready for AI workloads, from the data center to the edge.

Dell AI with NVIDIA helps CSPs to develop outcome-focused solutions for Telecom-specific needs, such as:

🕐 Network performance and optimization

👤🔒 Customer retention

💲 Monetizing the enterprise edge

Working with NVIDIA and Telecom partners, Dell combines industry-leading technology, expertise, experience, and partnerships for CSPs to simplify and accelerate their AI adoption sustainably.

Learn how CSPs can realize the full potential of AI with our purpose-built Telecom and AI solutions – visit **Dell.com/Telecom-AI** today

[1]    https://www.rcrwireless.com/20231016/deep-dive/telco-ai/telco-ai-deep-dive-nvidia-on-bringing-ai-into-5g-ran

[2]    https://www.futuremarketinsights.com/reports/ai-in-telecommunication-market

[3]    https://infohub.delltechnologies.com/en-us/l/telecom-co-innovation/innovative-edge-ai-and-5g-solutions-to-simplify-manufacturing/

**D∅LL**Technologies