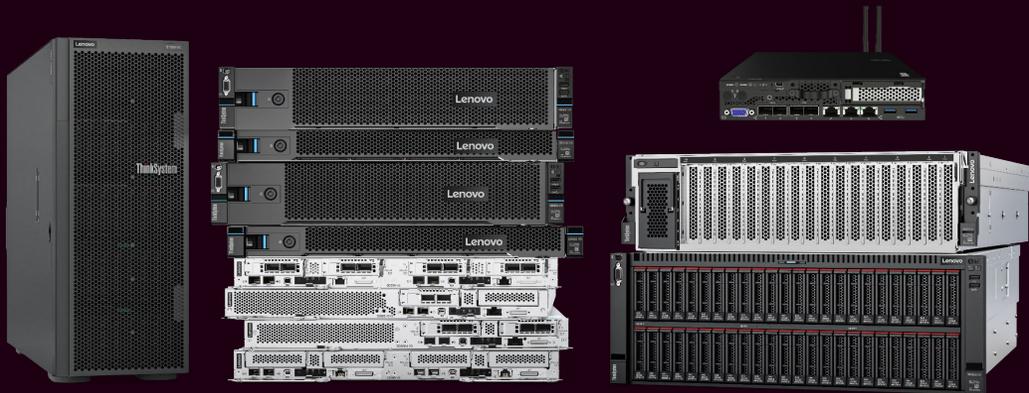# ThinkSystem Servers

Lenovo Server Strategy

Empowering customers to transform their infrastructure to drive growth, efficiency & innovation with next generation technology from edge to cloud

Solutions Focused: Optimized performance for complex workloads

Reliable & Secure: Top priority from design to decommission

Enabling Edge to Cloud: Open cloud architecture, automation, and workload management

Innovation that Matters: Novel designs and sustainable solutions for the next era of IT

Addressing the Needs of Customers

Neptune™

General Purpose Servers

- Designed for a variety of customers with a diverse set of applications
- Multiple form factors – rack, tower & dense
- Targeted for general purpose workloads like database, analytics, etc.

HPC & AI Servers

- Solutions tailored for AI and scientific workloads
- Advanced cooling solutions, including liquid cooling for enhanced efficiency
- Scalable architectures to support growing AI and HPC demands

CSP Servers

- Fully customized solutions for the Tier1 CSPs
- Semi customized solutions for the Tier2/3 CSPs
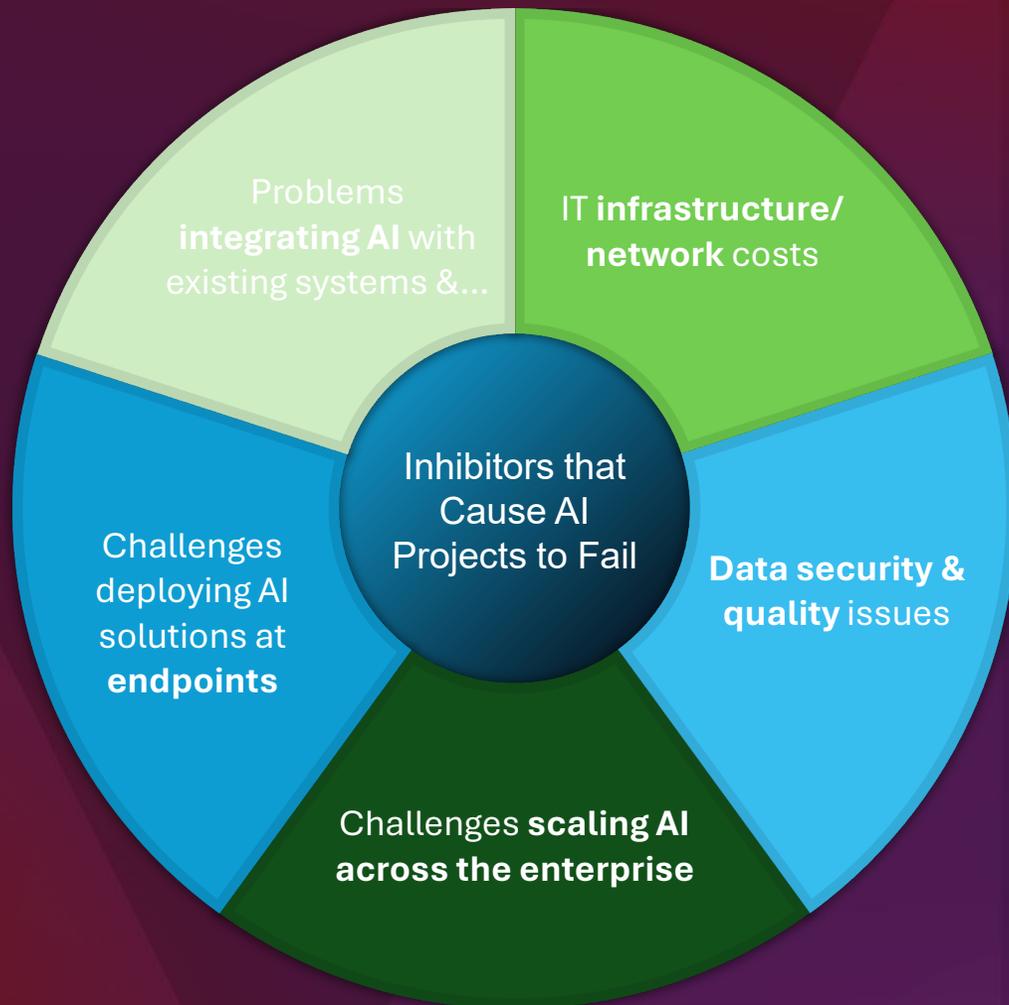- Partnering with CSPs to rollout cutting-edge technologies

Edge

- Purpose-built edge computing solutions for real-time processing
- Designed for industries like retail, manufacturing and telecom
- AI-driven insights at the edge reduce cloud dependency

OEM / Embedded Servers

- White-labeled to fully-customized for OEMs
- Bezel, BIOS, ID, packaging customization
- Joint development model

Lenovo 2025 Lenovo

AI has Arrived & Lenovo ThinkSystem Delivers

Problems **integrating AI** with existing systems &...

IT **infrastructure/ network** costs

Inhibitors that Cause AI Projects to Fail

Challenges deploying AI solutions at **endpoints**

Data security & quality issues

Challenges **scaling AI across the enterprise**

Lenovo ThinkSystem V4:

① Seamless AI Integration
Hybrid-cloud & AI-ready infrastructure for smooth deployment

② Optimized Infrastructure Costs
Scalable compute, PCIe Gen5 & high-speed networking reduce expenses

③ Enhanced Data Security & Quality
AI-driven analytics, high-speed memory & intelligent storage & built-in security to protect sensitive data

④ AI Deployment at Scale
AI-ready compute with high density processing & advanced thermal management

⑤ Enterprise AI Growth
Flexible CPU/GPU config & AI workload management for future scalability

4

ThinkSystem is Designed for Sustainable Computing

Sustainable Packaging

1 **65% Recycled Foam**
Cushioning made from pre-consumer polyethylene for reduced waste

2 **30% Ocean-Bound Plastics**
Recycled materials repurposed not packaging to minimize pollution

3 **50% Recycled Fiber**
Corrugated boxed from FSC-certified recycled content

Efficient Cooling & Power

1 **Zero-Water Loss System**
Neptune Core cooling reduces water waste with a closed-loop design

2 **Lower Power Consumption**
Fanless cooling design improves efficiency and data center PUE

3 **Safer Cooling Fluids**
Uses de-ionized water instead of harmful chemical-based alternatives

Energy Optimization

1 **Water Operates at 45°C**
Eliminates the need for energy-intensive chilled water cooling

2 **Optimized Thermal Control**
Maximizes CPU performance while reducing power draw

3 **Lower Cooling Demand**
Runs efficiently at higher ambient temperatures with reduced fan power

Lenovo ThinkSystem Server Portfolio
Comprehensive compute capabilities from the edge to the enterprise

ThinkSystem
ST series

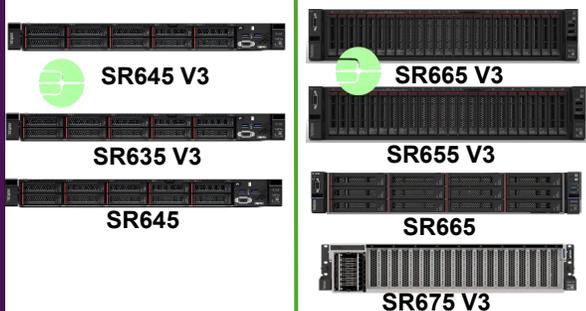**Powered by Intel®**

ST650 V3

ST250 V3   ST50 V3

Powered by AMD

ST45 V3

ThinkSystem
SR series

1U	2U

Powered by AMD

SR645 V3   SR665 V3

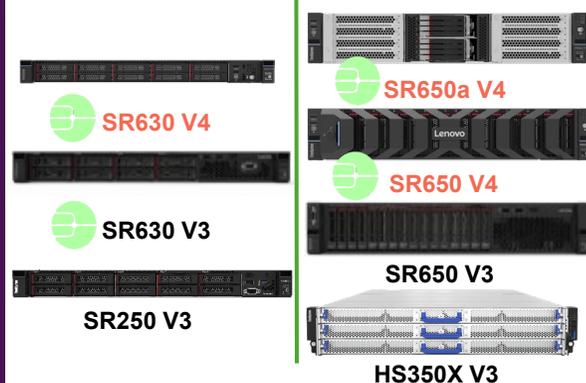SR635 V3   SR655 V3

SR645   SR665

SR675 V3

Powered by Intel®

SR630 V4   SR650a V4

SR630 V3   SR650 V4

SR250 V3   SR650 V3

HS350X V3

ThinkSystem
Modular

SD series (Multi-Node)

Powered by Intel®

SD550 V3
2S2U

SD530 V3
2S1U

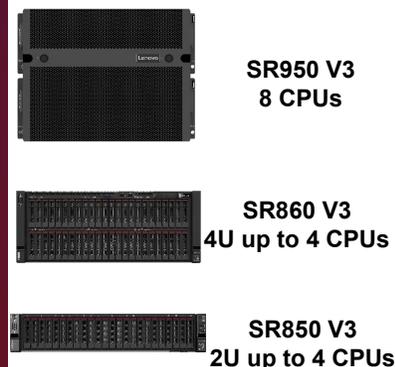**Powered by AMD**

SD535 V3
1S1U

ThinkEdge

SE10

SE350 V2

SE450

SE30

SE360 V2

SE455 V3

SE50

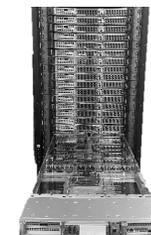## ThinkSystem
Mission Critical

Powered by Intel®

SR950 V3
8 CPUs

SR860 V3
4U up to 4 CPUs

SR850 V3
2U up to 4 CPUs

HR & MGX Systems

HR650
HR630
HG630N
HG650N
HG660X V3
HR650N

ThinkSystem
Segment Optimized

8GPU AI Servers   AMD & Intel®

SR680a V3   SR685a V3

SR780a V3
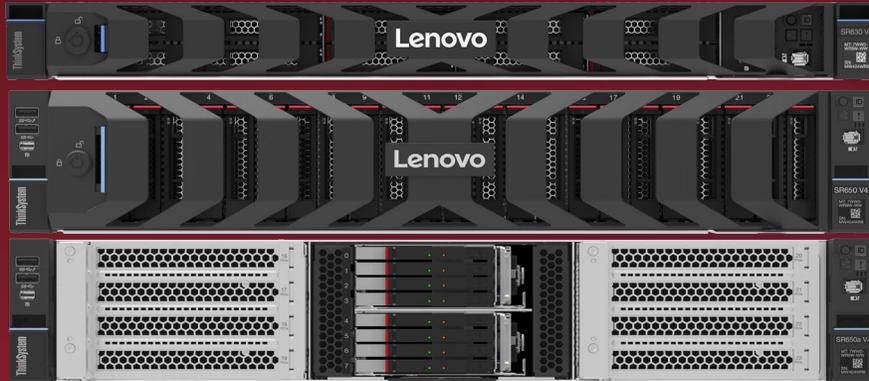
HPC/AI Optimized   AMD & Intel®

SR670 V2 (GPU Rich),
SR675 V3 (GPU Rich,
Closed loop liquid option)

SD650 V3, SD650-I V3,
SD665 V3,
Liquid Cooled:
SD650-N V3 SD665-N V3
SC777 V4
SC750 V4

New

Neptune liquid
cooling models
available

Lenovo Rack Servers

Versatility Meets Performance: AI-Ready, Scalable, and Sustainable

AI-Driven Intelligence –
Smarter AI everywhere

- XClarity one enables infrastructure management
- Enterprise remote control
- AI-powered insights
- SSD Predictive Failure Analysis (PFA)
- Federated Directory

Enabled Versatility –
Systems for every workload

- Handle any workload – from AI inference to enterprise applications
- Deploy on-prem, co-locate or hybrid cloud
- Enhanced physical and system security

Engineered for Sustainability –
From design to disposal

- Energy-efficient cooling boosts thermal and performance efficiency
- Sustainable packaging reduces environmental impact
- Waste recycling and reuse through asset recovery services

1S/2S Tower Servers

Flexible

- Open architecture servers
- Highly versatile storage
- Flexible support with PCIe Gen4 and Gen5 adapters
- As-a service options

Secure

- #1 Ranking for security**
- First Tier 1 manufacturer to offer Intel Transparent Supply Chain (TSC)***

Reliable

- Industry's most-reliable x86 server for 8 years in a row*
- Easy to deploy, update and service

Mission Critical Servers

Performance

- Ultra-fast DDR5 memory
- Direct NVMe connectivity speeds database response times
- Pre-validated solutions for system stability and reliability

Agility

- Next-gen workload ready – AI/ML, 3D modeling, and GPU intensive
- Versatile storage and I/O configuration options
- Flexibility to manage multiple workloads on one server

Scalable

- Highly scalable, reliable and secure servers that can be configured with two, four or eight processors
- Versatile storage and I/O configuration options

High-Performance Computing

High-Performance Computing (HPC)

HPC is…

the deployment of IT to solve particularly computationally-intensive applications in Science, Engineering, and Business through computer modeling, simulation, and analysis.

Organizations are challenged to…

- **Leverage public clouds -** extend computing beyond on-premises data centers
- **Adopt AI -** being more widely used in businesses and needs HPC
- **Balance speed with efficiency** - Access high-performance computing that is sustainable and efficient

Lenovo HPC provides…

- **Proven Expertise** - leveraging Industry-leading technology and global HPC architects and experts
- **Innovative Cooling Solutions** - leading the industry in alternative cooling solutions with Neptune™
- **Exascale technologies and solutions -** to solve humanity's greatest challenges on a global scale

High-Performance Computing

Proven Expertise

- Industry-leading technology and global HPC architects and experts
- Customer-centric approach - provides HPC solutions that meet customer's business needs

Customer Centric

- No one-size-fits-all approach
- HPC solutions are tailored to customers' workload and workflow
- Can be delivered as a custom rack-level solution with Lenovo Scalable Infrastructure

Partner Ecosystem

- As the global leader in HPC, Lenovo works closely with key industry-leading partners
- Develop, integrate, and deploy the technologies of exascale-level computing to organizations of all sizes.

Sustainable Solutions

- Holistic approach to energy efficiency encompasses hardware, software, and infrastructure.
- Up to 40% energy compared to a traditional air-cooled data center

Lenovo Liquid Cooling Technologies

A leader in innovative technology pioneering liquid cooling for the enterprise

Neptune™

Direct Water Cooling

- Warm water cooling inside the server
- Higher performance than air-cooled servers
- Up to 40% reduction in power costs

Smart Control Software

- Minimizes power consumption for each workload using software

Rear Door Heat Exchanger

- Rack option takes heat out of data center in chilled water
- 3.5X more efficient than air only
- Saves enough power to run 4,000 LED bulbs

Liquid Assisted Cooling

- Special heat sinks to transfer heat quickly
- Liquid to Air (L2A) Heat Exchangers
- Enabling higher performing processors and GPUs
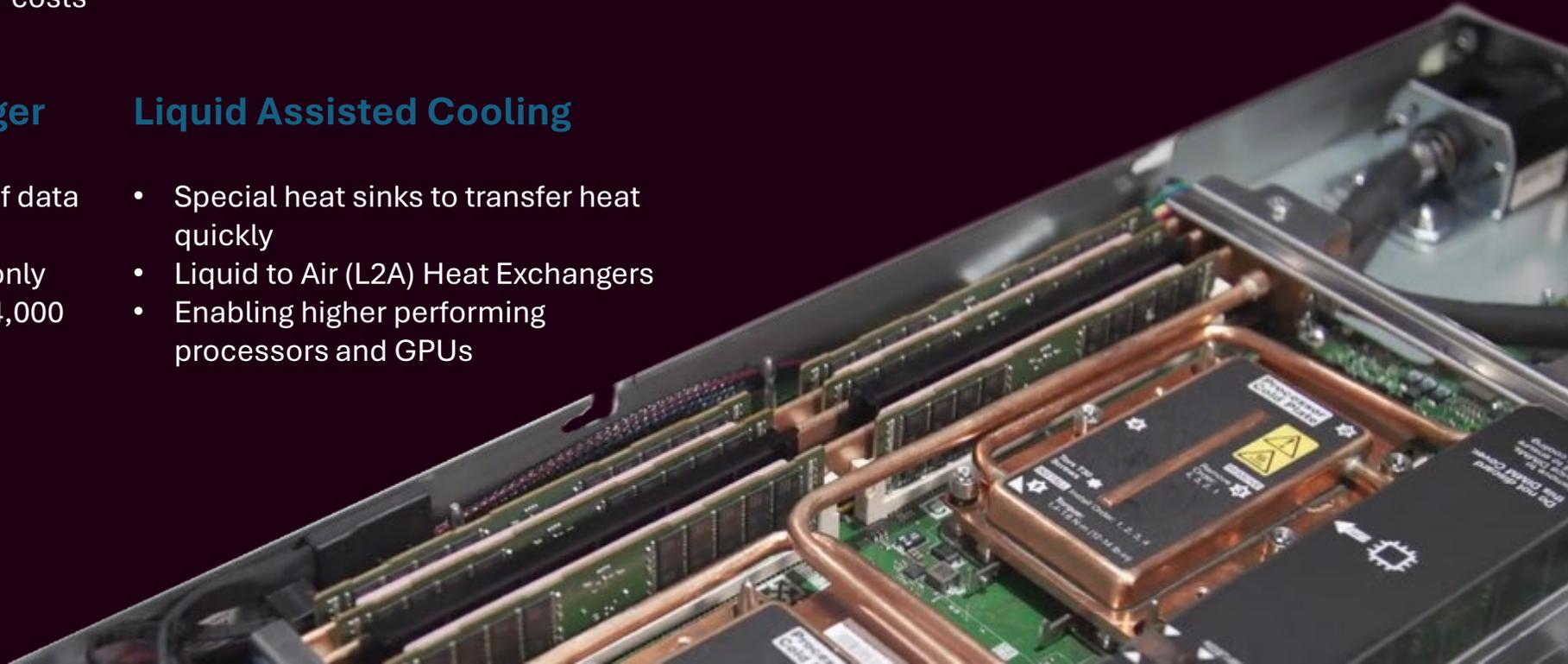
Building a Car without Compromise

Solution Components

Hardware

Lenovo ThinkSystem SR650 V2 powered by 3rd Gen Intel Xeon Scalable processors

Lenovo ThinkSystem SR630 V2 powered by 3rd Gen Intel Xeon Scalable processors

Lenovo ThinkSystem DE Series
Lenovo Distributed Storage Solution for IBM Spectrum Scale (DSS-G)

Software

IBM Spectrum Scale

"We are always looking to make our cars faster and safer. Lenovo technology gives us the dependable, high-performing platform we need to deliver on this vision."
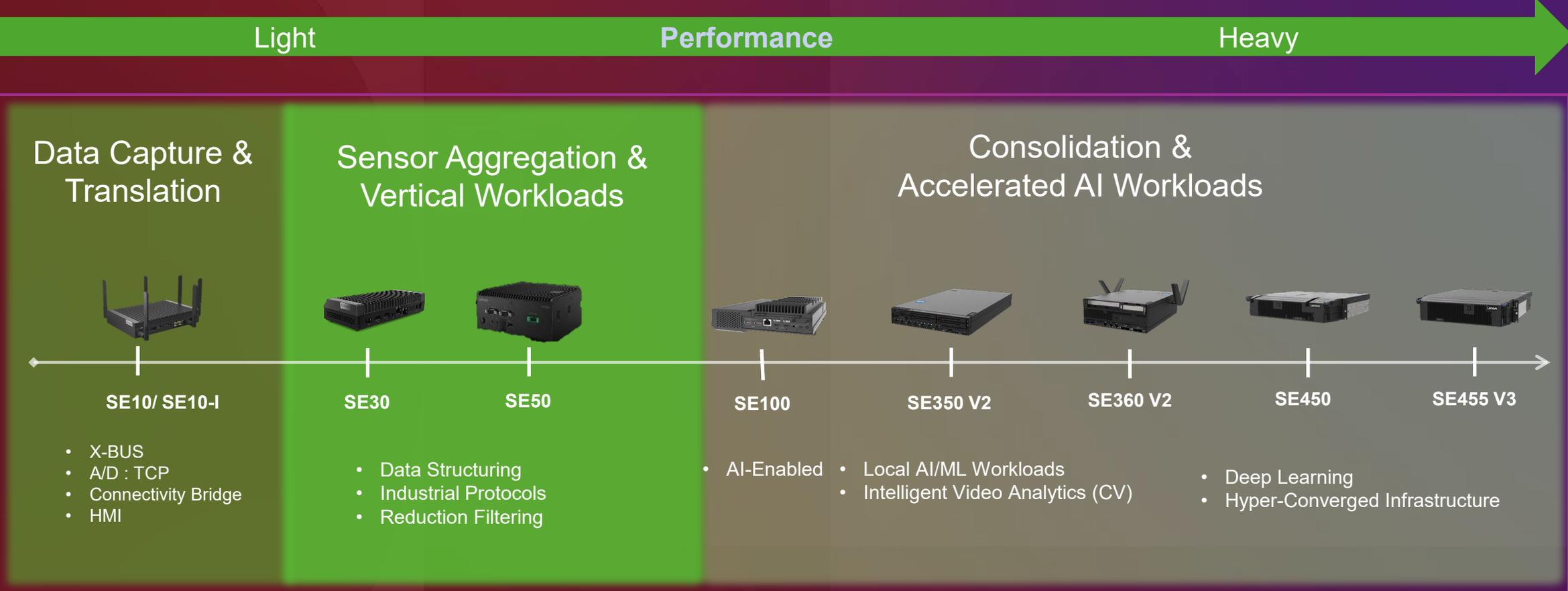
dallara

Elisa Serioli
Senior Aerodynamic
CFD Engineer
Dallara

LEARN MORE >

ThinkEdge

Portfolio Overview - From Far Edge to Core

Light → Performance → Heavy

Data Capture & Translation

SE10/ SE10-I

- X-BUS
- A/D : TCP
- Connectivity Bridge
- HMI

Sensor Aggregation & Vertical Workloads

SE30

SE50

- Data Structuring
- Industrial Protocols
- Reduction Filtering

Consolidation & Accelerated AI Workloads

SE100

SE350 V2

SE360 V2

SE450

SE455 V3

- AI-Enabled
- Local AI/ML Workloads
- Intelligent Video Analytics (CV)
- Deep Learning
- Hyper-Converged Infrastructure

OpenVINO™ intel nVIDIA AMD Qualcomm

Edge Computing

Edge computing is…

computing capacity outside of the traditional data center. It brings the compute power closer to where the data is being generated and when it can be acted upon more quickly and is characterized as being part of a highly distributed computing framework.

Businesses are challenged to…

- Operate in difficult physical environments
- Process data where it is generated to resolve latency and data traffic jams between devices and clouds
- Deploy and mange compute solutions at scale
- Maintain security on distributed networks, sometimes located in very remote or aggressive locations
- Innovate across the heterogenous needs for computing and intelligence, and edge-cloud content collaboration

Lenovo's Edge Computing solutions are…

- Purposely built computing platforms designed to operate outside of a traditional datacenter
- Smaller, quieter, more ruggedized, and more secure with diverse networking functionalities using Lenovo ThinkEdge servers and clients

Edge Computing

One of the biggest challenges for today's IT decision-makers is deciding how to harness their data from edge-to-cloud.
With a market that was at $4.68 billion in 2020 and is slated to grow to $61.4 billion by 2027,
the edge computing segment has a CAGR of 38.4%.

- **Data is Exploding at the Edge** - by 2025, 75% of enterprise data will be created and processed at the edge, up from just 10% in 2018.

- **IoT is a Big Driver** - Gartner forecasts that the number of Internet of Things (IoT) devices will triple by 2030 (growing at a compound annual growth rate (CAGR) of 11%.

- **Bandwidth vs. Latency** - Moving the compute function physically closer to the source of the data can significantly reduce the time it takes to make critical decisions. Bandwidth cost will be the primary driver for new edge computing deployments by 2025, versus latency in 2021.

- **AI will Dominate the Edge** - Machine learning (ML) in the form of deep learning (DL) will be included in over 65% of edge use cases by 2027.

- **Real-time Data Collection and Analysis is becoming Mandatory for Today's Enterprises**. In a recent Lenovo survey, 82% of respondents said real-time data collection and analysis were making the most impact on their business.

- **Security** - Edge computing also allows organizations to process sensitive information locally rather than sending it out to the cloud.

Edge Computing

Peace of Mind

Lenovo have been ranked #1 in Edge security for 5 straight years.[1]

World Leaders

In portfolio, power, performance, noise, efficiency, and size.

Simplified Edge Deployment

With Lenovo Open Cloud Automation (LOC-A), a scalable, near-zero-touch provisioning solution

Streamlined Edge Management

Lenovo XClarity can manage all ThinkEdge clients and servers on a single screen.

A Path to Success

Custom Edge workshops tailor solutions for every business need.

We're Always On

For 10 years, Lenovo has been ranked #1 in x86 server reliability. [2]

Lenovo Edge Computing Streamlines Edge-to-Cloud for our Customers

Grupo Pinsa

"The Lenovo edge servers are easy to deploy and work with, and rugged enough to withstand conditions on the ocean. We can now get a new boat set up with everything—servers, operating system, and virtualization layer—in less than a day."

Sergio Alcaraz Perez
IT Infrastructure Manager
Pesca Azteca

Telefónica

"The question we're always asking ourselves is, 'How can we make a difference with this technology and where can this technology be the most impactful?' Madrid has several fires every year. By leveraging computer vision at the Telco Edge, response times can be reduced by a significant amount."

Felipe Jose Vincens Gonzalez
HW and Virtualization Infrastructure
Telefónica Global IT

Sensormatic Solutions
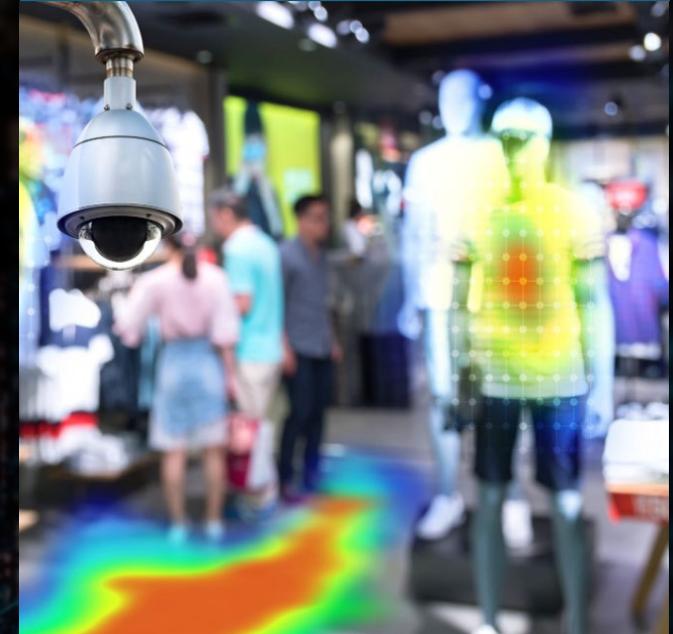
"We are only at the start of how computer vision in retail will help to enhance the shopper experience, cut costs, and improve store profitability and sales…by partnering with Lenovo…we can bring game-changing computer vision technology to retailers around the globe."

Dustin Ares
Director & GM
Video Analytics, AI & Incubation
Sensormatic Solutions