Smarter technology for all

Bring the power of your cloud to the Edge

Data#3 - Juice IT

Edge Insights and Outcomes – Commercial Fishing

Fishing for Outcomes….

Customer:
Commercial Fishing Customer

Sorting thousands of fish per day, adhering to strict guidelines & requirements.

Violations of harvesting certain sizes and species result in fines in excess of $100k / occurrence.

Challenges:
- No Internet Connectivity
- Harsh Environment
- Lack of any modern computing resources

Technical Solution

 ThinkEdge SE350

 AI model validating size/species

 Maintaining count and tonnage of haul

Insights & Outcomes
- Validation of size and species within 99.8% accuracy
- Savings of on average of **>$100K per vessel / season**

Over $1M in associated fines avoided….

Edge Insights and Outcomes – Quick Service Restaurant

Accuracy, Efficiency, & Happy Customers....

Customers:
Large quick service restaurant chains

65% of revenue is generated at the drive thru, Industry wide Drive thru traffic is up over 26% post-pandemic.

- Labour shortage creating long delays
- Long lines = loss business potential

Challenges:
- Latency
- Lack of space for heavy infrastructure
- Demanding availability and reliability

Technical Solution

ThinkEdge SE450

Voice-to-text for expedited ordering

Vehicle recognition and order queueing

Insights & Outcomes
- **Highly accurate orders**
- Transit times **< 5 minutes**
- **85%** of orders w/out intervention

Labor re-oriented + improved customer retention...

Insights and Outcomes – Industrial Manufacturing

People vs. Process….

Customer:
Industrial Manufacturing

Workplace Health & Safety (WH&S) – People, Vehicles, Forklift, Heavy Machinery, Etc.

US Industrial Mfg. Annual Incident Rates
- Strain/Sprains – 25 cases / 10K employees
- Cuts/Lacerations – 11 cases / 10K employees
- Amputations – 2.5 cases / 10K employees

Challenges:
- Availability and Reliability
- Harsh/Dusty Environment

Technical Solution

ThinkEdge SE70

Existing RTSP camera network. Local IVA Models

Proximity Breaches and Exclusionary Zones

Insights & Outcomes
- 31% reduction of incidents
- Warning & threat detection Alarms
- Real-time safety metrics

Safe and timely safety intervention …

ThinkEdge: Consolidation & Acceleration

Accelerate Workloads

Vision Inference

Natural Language Processing

Object Detection

Text Recognition

Artificial Intelligence Optimized

SE360 V2
2U very short depth, Most GPU & ruggedized

2x the GPU Support in smallest footprint

More than 65% less Space

Shock & Vibration up to 40G

Extended Temp

Twice as Quiet

Most Secure device & data

Tamper & lost Protection

SE350

Consolidate Workloads

Data Backup

Storage

Collaboration

Content Delivery

Hybrid Cloud Optimized

SE350 V2
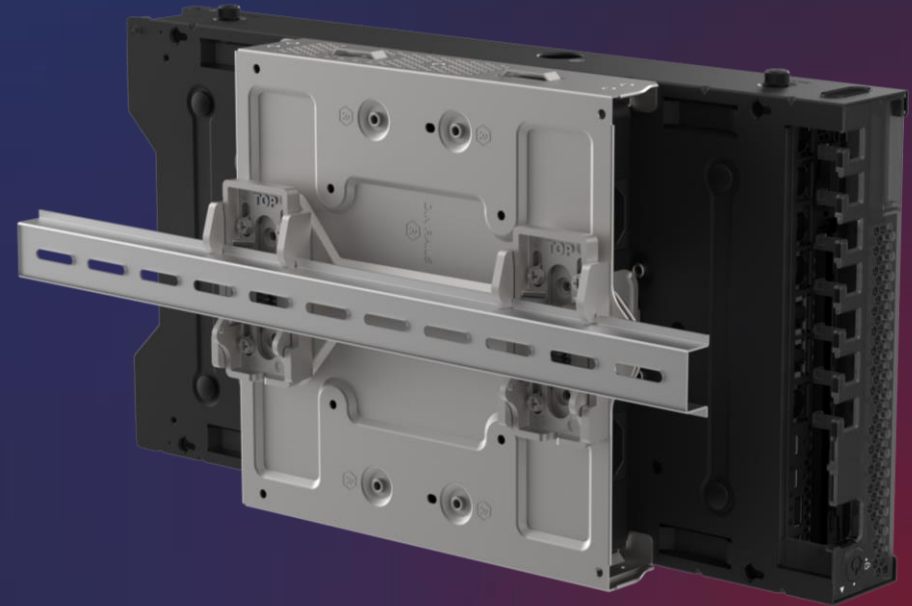Storage dense, same SE350 formfactor

2x **Storage capacity** than comparable edge servers
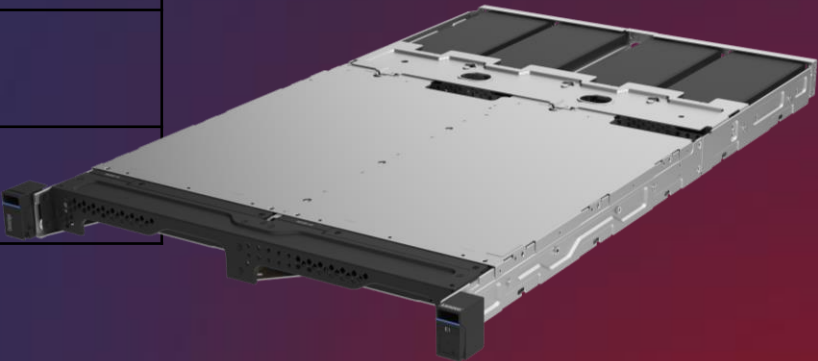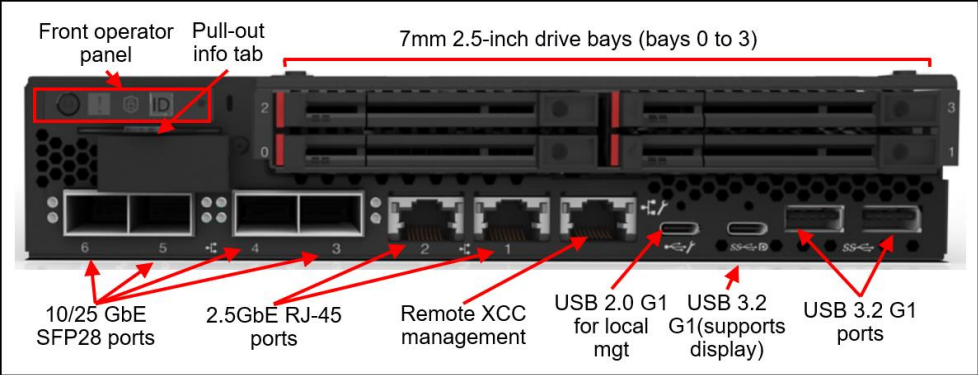
Lenovo ThinkEdge **SE350 V2**

Purpose-built Edge Computing server
- Compact form factor for space-constrained environments
- ThinkShield lifecycle security, physical tamper protection, and key encrypted storage
- Full remote manageability – Cloud-based ThinkShield Key Vault Portal
- Easy connectivity with 1G or 10G/25G wired and 2.5G TSN networking supported
- Suitable for harsh environments with extended temperature range, high shock, and vibration tolerance

Lenovo Solution : ThinkEdge **SE350 V2**

Front operator panel, Pull-out info tab, 7mm 2.5-inch drive bays (bays 0 to 3), 10/25 GbE SFP28 ports, 2.5GbE RJ-45 ports, Remote XCC management, USB 2.0 G1 for local mgt, USB 3.2 G1(supports display), USB 3.2 G1 ports

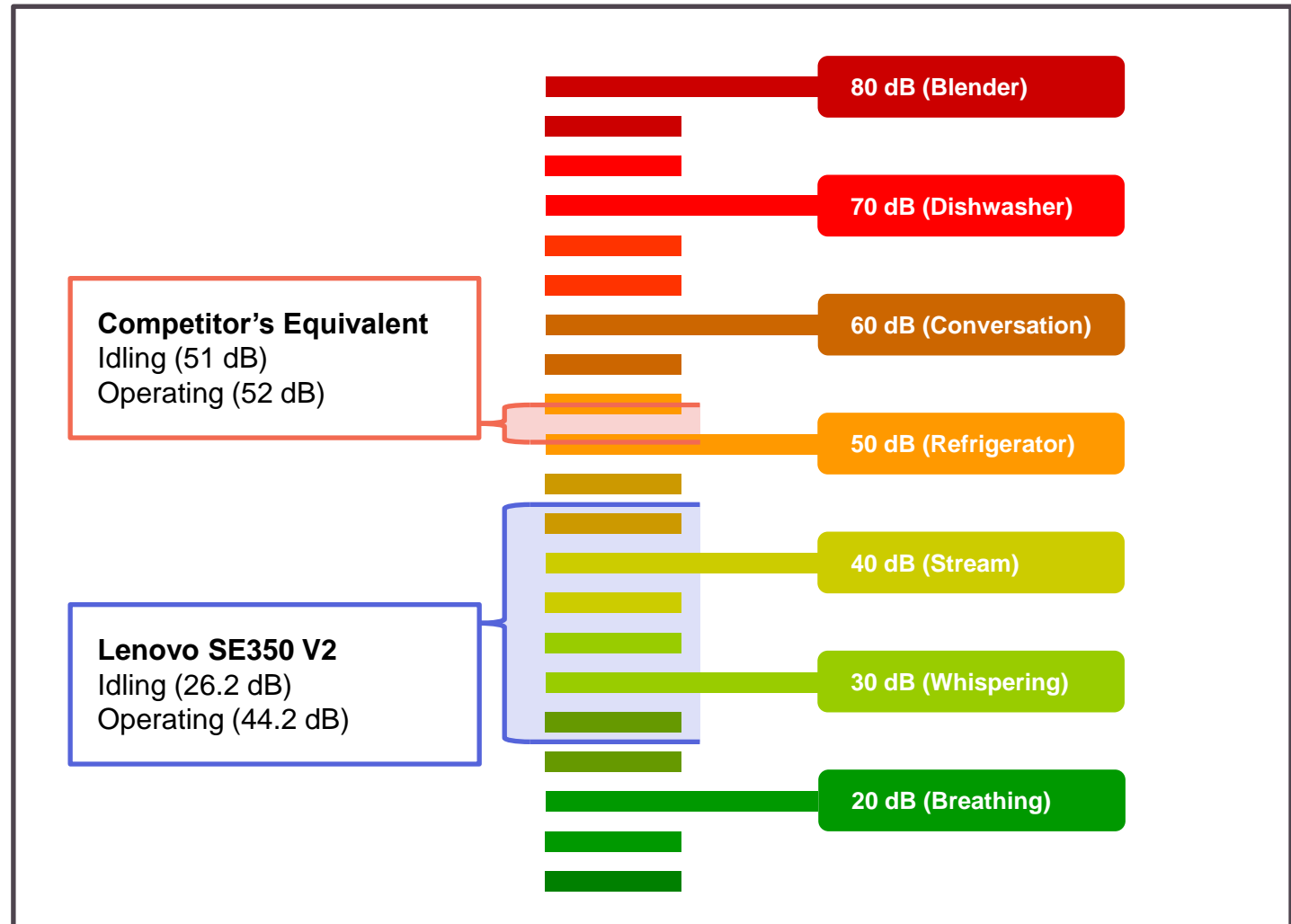| Form Factor	1U height, half width edge server; Height: 41.7mm, Width: 209mm, Depth: 384mm
Processor	1-socket Intel® Xeon® D-2700, up to 16 cores
Memory	Up to 256GB in 4x slots, using 64GB DIMMs; 3200MHz TruDDR4
Storage Options	2x M.2 2280 NVMe boot drives + 4x 2.5" 7mm HS NVMe/SATA data storage drives 2x M.2 2280 NVMe boot drives + 2x 2.5" 15mm HS NVMe/SATA data storage drives SED, high temperature, high capacity, and high endurance drive options Optional encryption key deletion on tamper or theft detection
RAID Support	RAID 0,1 for boot drives RAID 0, 1, 5, 10 for data drives
Systems Management	Lenovo XClarity Controller 2
Operating Systems	Microsoft Windows Server, SLES, Ubuntu, RHEL, VMware ESXi, vSAN.

Measuring Sound Levels

With employees being in constant, close proximity to computer equipment, minimizing noise is an important factor.

An **increase of 10 dB** means the sound is perceived as being **twice as loud**.

Lenovo's published acoustical noise emissions are tested using processes specified under ISO 7779. These tests indicate Lenovo's ThinkEdge servers operate with **significantly smaller** acoustic noise emissions than those of our competitors.

80 dB (Blender)

70 dB (Dishwasher)

60 dB (Conversation)

Competitor's Equivalent
Idling (51 dB)
Operating (52 dB)

50 dB (Refrigerator)

Lenovo SE350 V2
Idling (26.2 dB)
Operating (44.2 dB)

40 dB (Stream)

30 dB (Whispering)

20 dB (Breathing)

Solution overview

Azure portal, ARM and bicep templates, Azure CLI and tools

Azure

Microsoft Entra ID

Azure Site Recovery
Azure Backup
Azure File Sync
Azure Update Manager

Additional Azure services integration via **Azure Arc**

Azure Policy
Azure Monitor
Azure Key Vault
Microsoft Defender for Cloud

Azure Local solution

Traditional, non-containerized applications

Windows and Linux virtual machines as Arc-enabled servers

Azure Virtual Desktop

Kubernetes-based applications

Arc-enabled services

AKS enabled by Azure Arc

Azure Stack HCI operating system

Hyper-V

Storage Spaces Direct

Premier solutions

Validated nodes

Integrated systems

Management

XClarity One
The Next Generation of Intelligent Server, Edge & Storage Unified Management

Vision

Life Cycle Management

Optimization & AIOps

Business Of IT

Scalable & Rapid

Hosted Hybrid Cloud

Accelerated deployment, scalability and speed while eliminating complex infrastructure setup and management overhead
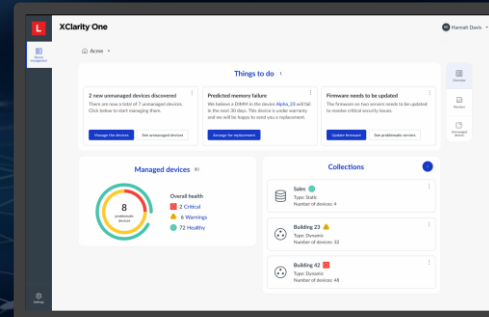
Secure & Flexible

Management Hub 2.0

Work confidently with a secure, single-point cloud connection that combines the benefits of both cloud and local environments

Role Based & Intuitive

Unified Console

Delivers actionable insights based on your role from servers to storage to the edge. Users enjoy the same easy-to-use UX/UI across the entire Lenovo product portfolio

Smart & Predictive

AI-Powered Smarter Support

Harnesses the power of AI and predictive analytics to enhance the performance and reliability of your infrastructure with proactive protection
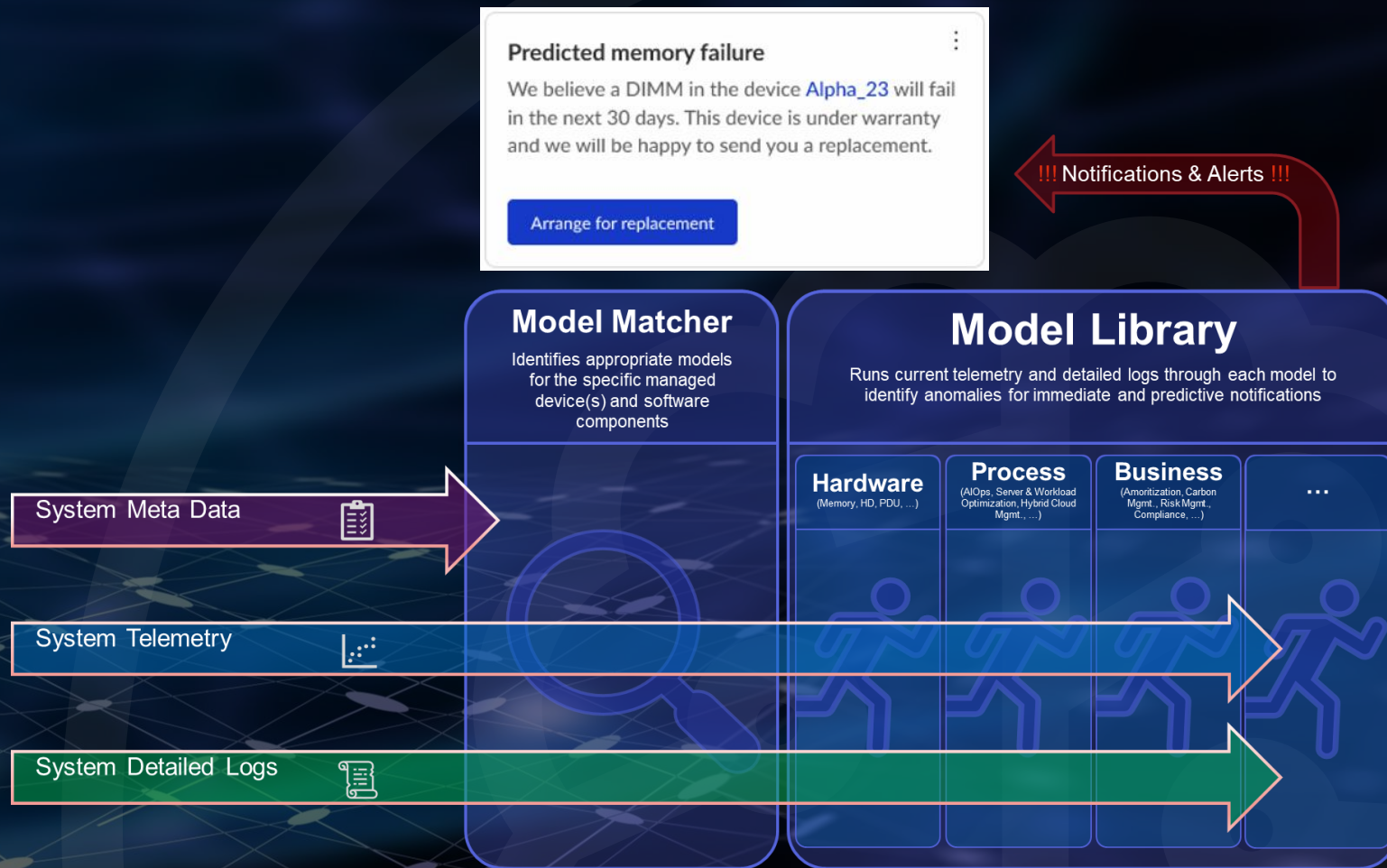
Smarter AI: Know Before You Need It

- **Predictive Failure Analysis**
  - Memory
  - SSD's (coming soon)
- Accurate: Trained on 5 years of support data
- Fast: Automatic Support Tickets
- Minimize Downtime: Automatic Warranty Parts Dispatch

Predicted memory failure

We believe a DIMM in the device Alpha_23 will fail in the next 30 days. This device is under warranty and we will be happy to send you a replacement.

Arrange for replacement

!!! Notifications & Alerts !!!

Model Matcher
Identifies appropriate models for the specific managed device(s) and software components

Model Library
Runs current telemetry and detailed logs through each model to identify anomalies for immediate and predictive notifications

Hardware
(Memory, HD, PDU, …)

Process
(AIOps, Server & Workload Optimization, Hybrid Cloud Mgmt., …)

Business
(Amoritization, Carbon Mgmt., Risk Mgmt., Compliance, …)

…

System Meta Data

System Telemetry

System Detailed Logs

AI Adoption - **SE360 V2**

Form Factor	Form Factor 2U height, half width edge server; Height: 84.5mm, Width: 212mm, Depth: 317.5mm
Processor	1 socket Intel® Xeon® D-2700, up to 16 cores
Memory	Up to 256GB in 4x slots, using 64GB DIMMs; 3200MHz TruDDR4
Storage Options	Up to 2x SATA/NVMe 2.5" 7mm drives HS; Up to 8x M.2 using NVMe data storage drives 2x M.2 2280 boot drives SED, high temperature, high capacity, and high endurance drive options Optional encryption key deletion on tamper or theft detection
RAID Support	RAID 0, 1 for boot drives RAID 0, 1, 5, 10 for data drives
GPU Support	Up to 2x Single Width GPU (Nvidia L4 24GB, A2 16GB, Intel Flex 140 12GB
Power	Dual-redundant external power supplies 300W 115V/230V AC Dual DC supply: 12V-48VDC Single internal AC power supply: 500W
Systems Management	Lenovo XClarity Controller 2
Environmental	Extended operating temperature of 0 to 55°C, support -20 to 65°C with certain configuration, up to 40G shock & 1.91Grms vibration, IEC 60068, optional dust filter, IP3X, Marine certification*

Portfolio Overview - From Far Edge to Core

Edge Client

SE10/SE10-I	**M90n-1**	**SE30**	**SE50**	**SE70**
intel CORE i7	intel CORE i7	intel CORE i7	intel CORE i7	NVIDIA
-20C to +60C Intel ATOM Up to 32 GB RAM	0°C to +50°C Intel Celeron, i3 Up to 8GB RAM	-20°C to +60°C Core™ i3, i5 Up to 16GB RAM	0°C to +50°C Core™ i3, i5, i7 Up to 32GB RAM	-20°C to 60°C NVIDIA Jetson Up to 16GB RAM

Edge Server

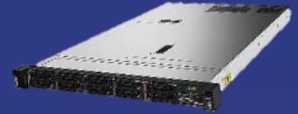|				
SE350*	**SE350V2**	**SE360V2**	**SE450**	**SE455 V3**
intel XEON	intel XEON	intel XEON	intel XEON	AMD EPYC
0°C to 55°C Xeon® D-2100 Up to 256GB RAM	0°C to 55°C Xeon® D-2700 Up to 256GB RAM	-20°C to 65°C Xeon® D-2700 Up to 256GB RAM	-5°C to 55°C Xeon® SP 3rd Gen Up to 1TB RAM	-5°C to 55°C AMD EPYC 8004 Up to 576GB RAM

Datacenter

SR630, SR645
intel XEON / AMD EPYC
0°C to 35°C

Gateways — **Base Station / DC Closet** — **Data Center**

Diverse Portfolio
From ultra compact gateways to data center grade products.

Highest Performance
CPU & GPU rich systems for ultimate performance.

Flexible Deployment
In harsh environments with ruggedized devices & unique cooling capabilities.

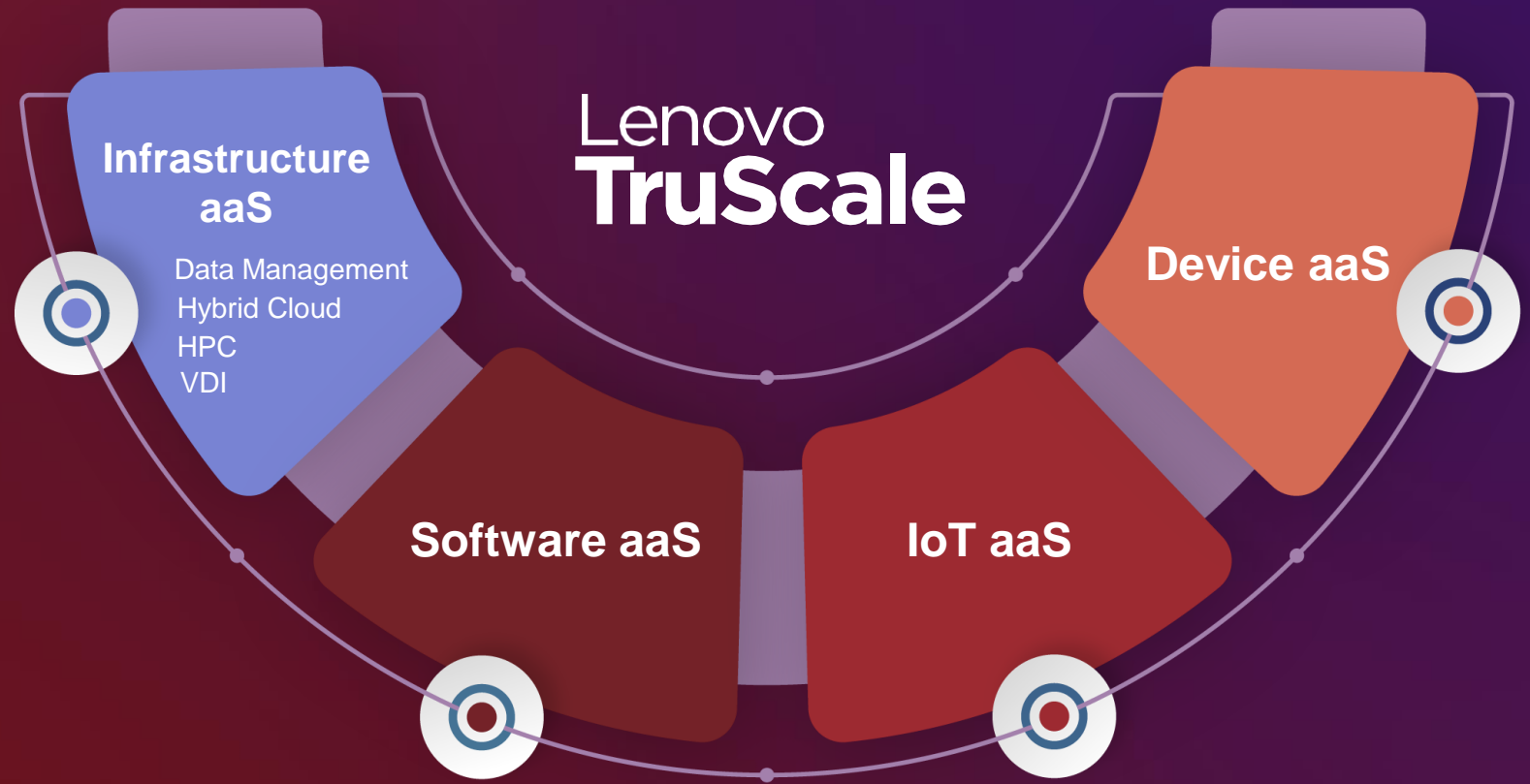# What is Lenovo TruScale Infrastructure as a Service

Lenovo TruScale Infrastructure as a Service (IaaS) delivers the power and strategic advantage of the latest datacenter hardware through a pay-as-you-go business model with solutions for data management, hybrid cloud, HPC, VDI, and AI.

Industry's broadest portfolio
from pocket to cloud delivered as a service.

Single unified framework
to easily manage day-to-day IT operations with full visibility and accountability.

Global scale capability
to rapidly and securely provision global teams – anytime, anywhere.

Flexible consumption models
fixed or metered pay-as-you-go model that frees-up capital with minimal up-front costs.

Lenovo
TruScale

Infrastructure aaS

Data Management
Hybrid Cloud
HPC
VDI

Software aaS

IoT aaS

Device aaS

thanks.