## Smarter technology for all

## Lenovo Business Game

Grigory Pryalukhin | Technical Specialist

## **Lenovo's Innovation Framework**

#### **Smarter AI for All**

Bring Al to every household and industry

Make Al accessible, fair and inclusive for everyone

Smart Devices (IDG)



Smart Infrastructure (ISG)



Smart Solutions (SSG)



New IT Architecture of "Client-Edge-Cloud-Network-Intelligence"



## The widest portfolio

One of the world's most comprehensive portfolios of Al-ready devices, Al-enabled solutions, and Al-optimized experiences

Lenovo **ThinkReality**  Lenovo **ThinkSmart** 

Lenovo ThinkBook

Lenovo **ThinkStation** 

Lenovo **ThinkVision** 

Lenovo ThinkPad

Lenovo
ThinkPad X1

Lenovo **ThinkShield** 

ThinkPhone by motorola

Lenovo YOGA



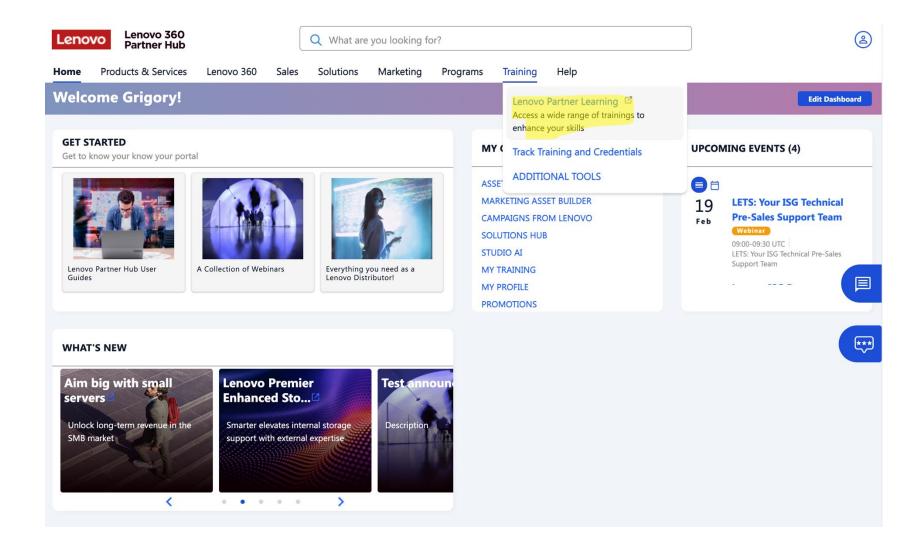
Lenovo LEGION

## Lenovo Partner Hub

Кто знает адрес?

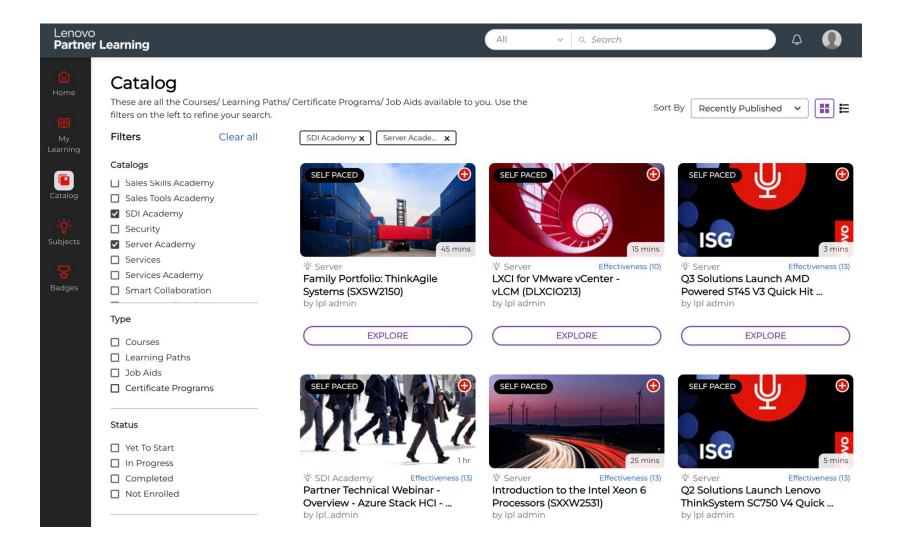


## Access the portal <a href="https://www.lenovopartnerhub.com">https://www.lenovopartnerhub.com</a>



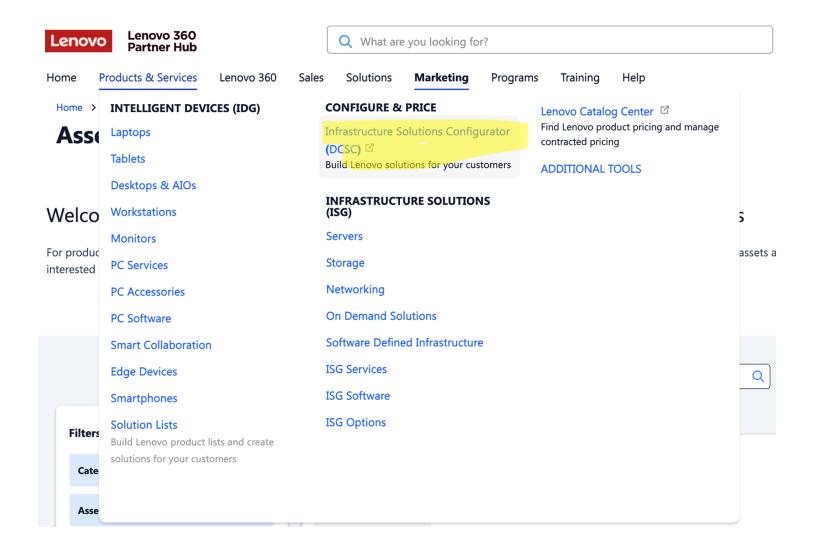


## **Lenovo Partner Learning**



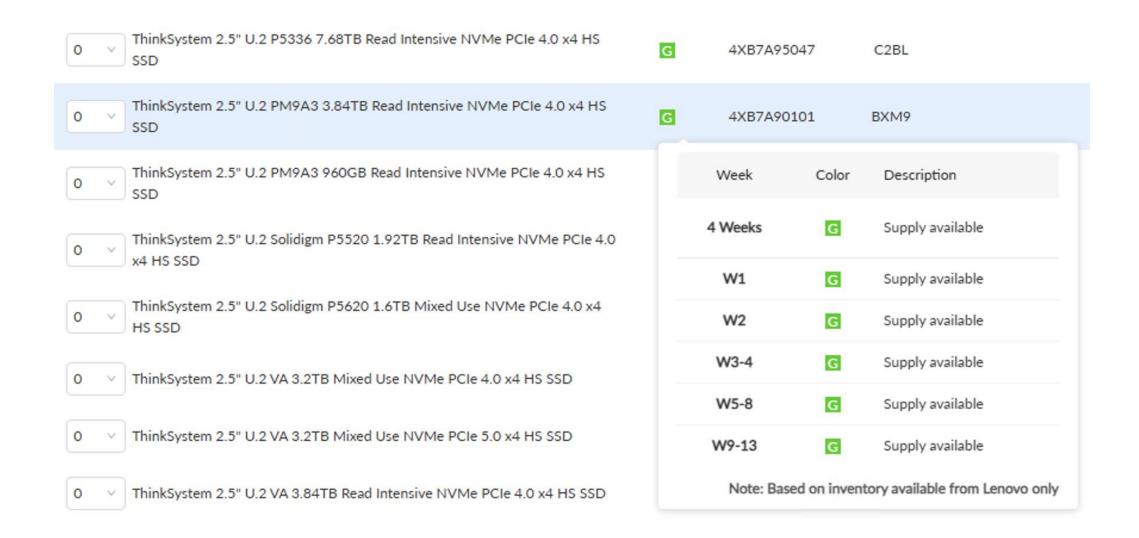


## Infrastructure Solutions Configurator





## Real Time Supply Availability Information





## CTO vs. Top Choice





## CTO vs. Top Choice

#### Information

Lenovo vSAN Ready Nodes and vSAN Max Ready Nodes are ThinkSystem servers that have been certified for VMware vSAN Compliance. DCSC does not automatically provide guidance for building a Ready Node configuration and DCSC user must rely on Broadcom Configuration Guide (BCG) to select the appropriate vSAN compliant components. For a guided approach to vSAN configuration please use ThinkAgile VX Series otherwise refer Looking for other parts, please click Full de for more information.

<u><</u>

Top Choice Mode

Full Mode

Show Columns

Collapse All

Base				Sort by ∨
Qty	Description	Supply Status Part Number	Feature Code	Price ②
1	ThinkSystem V3 2U 24x2.5" Chassis	G	BLKK	
0	ThinkSystem V3 2U 12x3.5" Chassis	G	BLKJ	
<ul><li>1</li></ul>	ThinkSystem V3 2U 24x2.5" Chassis	G	BLKK	SELECTED



## **EMEA Business Partner Enablement Highlights**



TECHNICAL TRAINING

Lenovo / Intel - Edge Computing Ecosystem

February 25<sup>th</sup>, 10:00 AM – 02:00 PM CET Training will explain how Lenovo and Intel help customers with Edge technology.

- Edge Computing ConceptsImportance and drivers for
- Edge Computing
- Introduction to the Lenovo Edge Ecosystem
- Target Customers for Lenovo Edge Computing
- Gaining Insight to the Lenovo Edge Customers

Register here

xClarity Technical Workshop with Demos

Lenovo ISG Presales Academy: AMD SR685a Server with Instinct Accelerator

March 4<sup>th</sup>, 10:00 AM - 02:00 PM CET

Practical Presales Workshop on the competitive advantages of the Lenovo Servers with AMD EPYC CPUs and Accelerators addressing AI business challenges

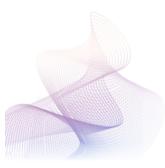
Register here

 Lenovo and Intel - Bringing Al Everywhere  Lenovo ISG Technical Training: DM & DG Implementation Technical Workshop

> March 12<sup>th</sup>, March 13<sup>th</sup> - 10:00 AM - 02:00 PM CET

DM Implementation Storage Workshop Training is designed for pre-sales, technicians or administrators who would like to learn about initial setup of Lenovo DM or DG Series Storage. It is also a great overview of ONTAP and all the features.

Register here



Lenovo ISG Presales Academy
 Storage Sizing Deep Dive

March 18<sup>th</sup> - 10:00 AM - 02:00 PM CET

In this live demonstration,
Students will learn how to use the
Lenovo Storage Sizing. We will
explain all the functions inside the
tool, and when and how to use
them. We will also explain where
to find and how to define
parameters needed for proper
sizing of the DM and DG Series
Storage.

#### Register here

Lenovo ISG Presales Academy
 DataCenter Solution
 Configurator (DCSC) - deep dive

March 20<sup>th</sup> - 10:00 AM - 02:00 PM CET

In this live demonstration. Students will learn how to use the Lenovo Infrastructure Solution Configurator (formerly DCSC) in various product and solutions scenarios. We will explain all the functions inside the tool, and when and how to use them. We will also explain where to find and how/when to use all accompanying tools and resources that help sales and presales create a perfect offering for their clients. This course is intended for sellers and technical sellers.

#### CERTIFICATIONS



February 18<sup>th</sup>, February 19<sup>th</sup> – 10:00 AM – 02:00 PM CET

Lenovo ISG Virtual Certification Preparation: Sales (LENU-122C) and Tech Sales (LENU-322C) Certification - PART 1

#### Register here

February 20<sup>th</sup> – 10:00 AM – 02:00 PM CET

Lenovo ISG Virtual Certification Preparation - Sales Certification (LENU-122C) - PART 2

#### Register here

February 21<sup>st</sup>, 10:00 AM – 02:00 PM

Lenovo ISG Virtual Certification Preparation - Technical Sales Certification (LENU-322C) - PART 2

#### Register here

February 26<sup>th</sup>, February 27<sup>th</sup> – 10:00 AM – 02:00 PM

Lenovo ISG Storage Sales Certification Preparation Workshop (LENU-120C)

**Register here** 

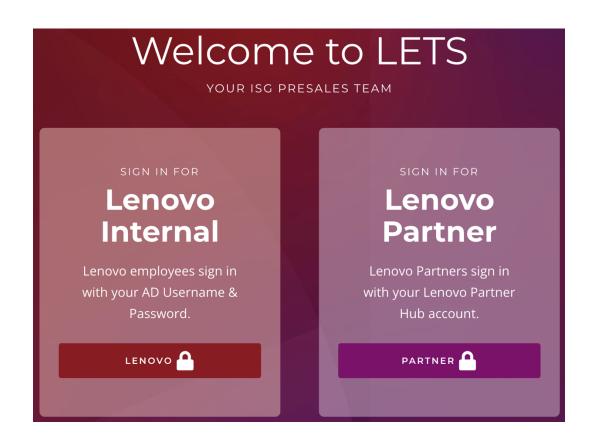


### **LETS EMEA - ISG Presales Team**





### **LETS EMEA - ISG Presales Team**



#### LETS vSAN Calculator

LETS have created a Microsoft Excel-based Calculator to aid vSAN solution sizing.

Available for both Lenovo & Partner audiences, this simple calculator (aka "PoorMan vSAN Calculator") allows its users to quickly perform vSAN Storage sizing calculations.

It is effectively a small toolkit that shows how much usable storage for all fault tolerance levels is provided by a given/known configuration, and also calculates memory overheads.

User Instructions for the vSAN Calculator can be found here.

The latest version is now capable of sizing configurations using vSAN 7.001 onwards.

You can read more about the new features in this blog.

An older version that is valid up to vSAN 7.0 remains available to download, with instructions here.



## Lenovo Data Center Services Stackable Portfolio



### Pre-October 28, 2024 **Warranty Service Upgrades**



Foundation NBD

Foundation NBD + YDYD



ESS

CO2 Offset



Health checks

















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\rem'\_r Pramier Adva. ced 2 Advary ed 2 HR - YD, " HR

Premier Advanced 6 HR CSR

Premier Advanced 6 HR CSR + **YDYD** 

Coverage 1, 3-5 Years Extended Warranty. 1 & 2 years PW

#### Post-October 28, 2024 **Add Ons Warranty Service Upgrades**

Standard NBD Response

Premier NBD Response Premier 4 HR Response ESS

CO2 Offset

Coverage 1, 3-5 Years Extended Warranty. 1 & 2 years PW

**HW Install** 

Health checks

**KYD** 

Must be coterminous

w/ Warranty

6 HR CSR

Only available if customer selects Premier 4 HR



## How does the old map to the new?

#### **IF I HAD**

Foundation NBD

Foundation NBD + YDYD

**Premier Foundation NBD** 

Premier Foundation NBD + YDYD

Premier Essential 4 Hour

Premier Essential 4 Hour + YDYD

Premier Advanced 6 Hour CSR

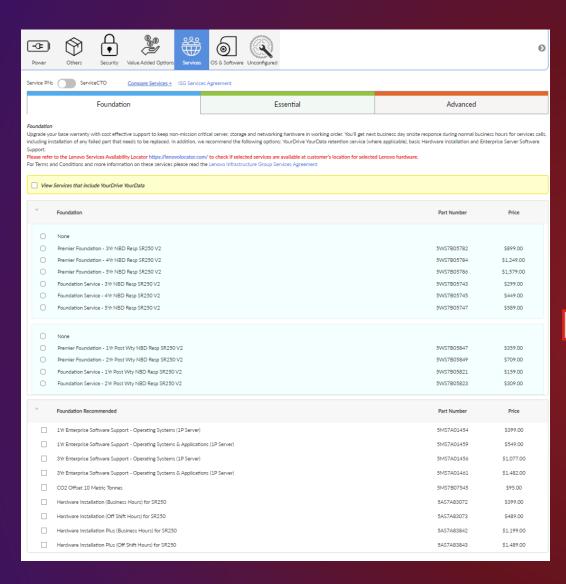
Premier Advanced 6 Hour CSR + YDYD

If I had something not listed above\*

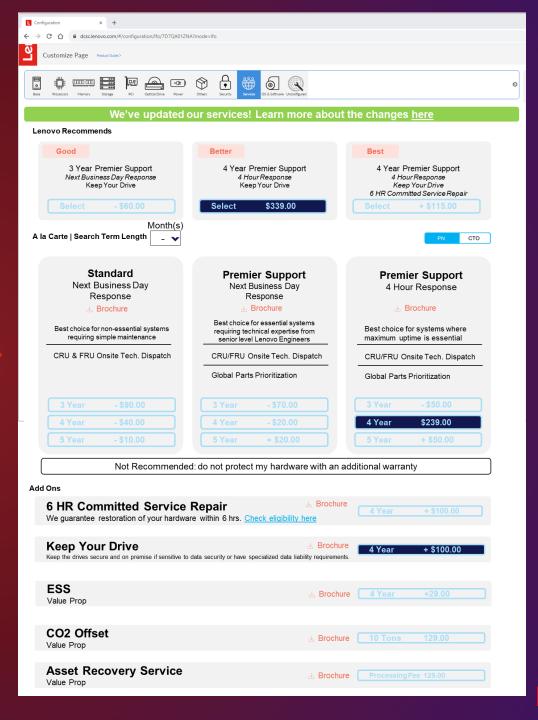
	INEED	
Standard NBD		
Standard NBD	Keep Your Drive Add On	
Premier NBD		
Premier NBD	Keep Your Drive Add On	
Premier 4 Hour		
Premier 4 Hour	Keep Your Drive Add On	
Premier 4 Hour	6 HR CSR Add On	Keep Your Drive Add On
Premier 4 Hour	6 HR CSR Add On	Keep Your Drive Add On
Short Term: PNs will be available Long Term: Custom Part Number request		

<sup>\*</sup> SLAs may vary by country and by product. For questions, contact your Lenovo account representative











## **Key differentiators**

Lenovo Premier Support for Data Centers vs Standard Support

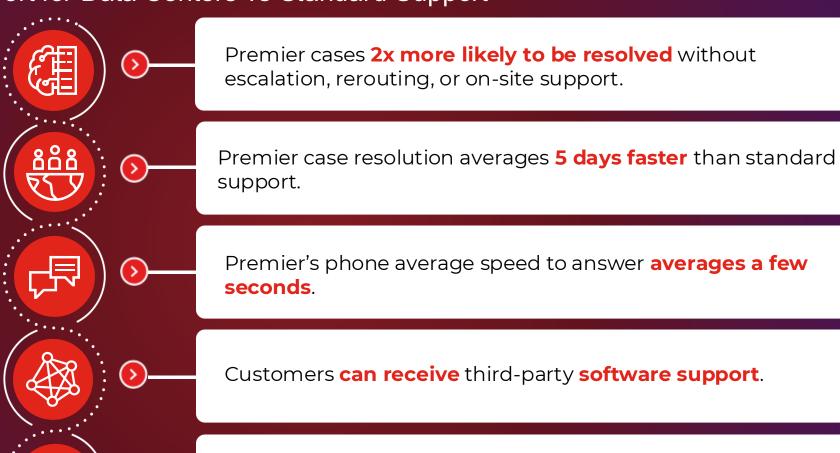
Power of expertise

Quick and reliable

Speed to answer

Software support enabled

**Priority resolution** 



problem resolution.

Premier ensures minimal downtime with prompt critical



## **Types of Warranty Upgrades**

		Warranty Upgrades/Extensions				Add-On
	Base Warranty	Standard Support	Premier NBD	Premier 4-Hour	PESS 4-Hour	6-Hour CSR
Service Level	Next Business Day	Next Business Day	Next Business Day	24x7x4 <sup>1</sup>	24x7x4 <sup>1</sup>	24x7 6 HR CSR <sup>2</sup>
Problem Determination	9x5	9x5	24x7	24x7	24x7	24x7
E2E Case Management	No	No	Yes	Yes	Yes	Yes
Escalation Management	No	No	No	No	Yes	Yes
3 <sup>rd</sup> Party Collaborative Software Support	No	No	Yes	Yes	Yes	Yes
Support Duration	1 or 3 years	3-5 years	3-5 years	3-5 years	3-5 years	3-5 years
Post Warranty Options	N/A	1 or 2 years	1 or 2 years	1 or 2 years	1 or 2 years	1 or 2 years
Delivery Method	CRU parts replaced by customer; FRU parts installed by technician	All parts can be installed by technician	All parts can be installed by technician	All parts can be installed by technician	All parts can be installed by technician	All parts can be installed by technician
Onsite Response	Commercially Reasonable Endeavors Next Business Day	Technician on-site with parts NBD after problem determination	Technician on-site with parts NBD after problem determination	Technician on-site with parts 4 hours after problem determination	Technician on-site with parts 4 hours after problem determination	System restored to conformance within 6 hours after call entry
Committed Service Repair	No	No	No	6 HR CSR available as an add-on	6 HR CSR available as an add-on	Yes

<sup>&</sup>lt;sup>1</sup> 4-hour Response is an onsite response after problem determination has been completed. Onsite response is not available in all locations.

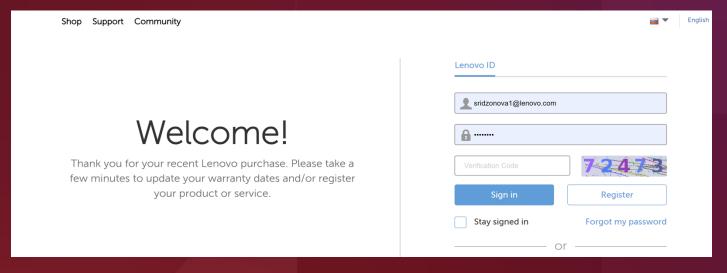
Availability of Service Levels may vary by product and by region refer to Locator Tool for more info.



<sup>&</sup>lt;sup>2</sup> 6hr CSR (Committed Service Repair) – (10 hours in Brazil)

## Registration portal

- Use the link: https://support.lenovo.com/productregistration
- Register for your Lenovo ID if you are using the Registration portal for the 1st time
- Sign in if you have registered your Lenovo ID previously



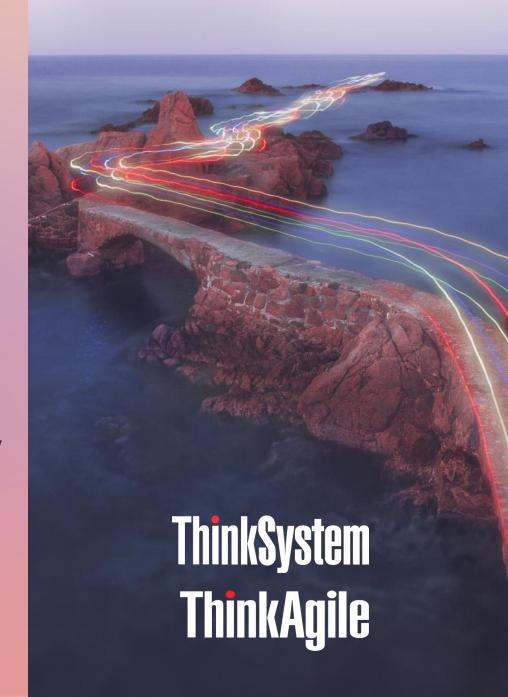




## Storage

Largest Lenovo Storage launch in Lenovo history with new HW platforms + new SW features





### **April 23, 2025**

## Next Generation Storage Portfolio

# ThinkSystem

# ThinkAgile

## Largest storage portfolio refresh

- 21 new ThinkSystem and ThinkAgile Products
- Industry's 1<sup>st</sup> Liquid Cooled HCI appliances
- Lenovo Enterprise Al Infrastructure Starter Kits
- 1<sup>st</sup> ThinkAgile + ThinkSystem Converged Solution for Virtualization

## Lenovo Data Storage Solutions Broad Portfolio

# Think Agile spi

# ThinkSystem

Enterprise Storage

# ThinkSystem

Software Defined Storage

- Maximize simplicity
- Simplify hybrid cloud adoption
- Simplify lifecycle management

- Maximize flexibility
- Industry leading data management features
- Scale storage & compute independently

- Maximize scale
- Unlimited capacity and performance growth
- HPC & Al Model builders

## Lenovo Data Storage Solutions Portfolio



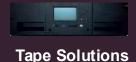












DSS

**ThinkAgile** 

Software-Defined Infrastructure









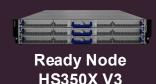
SDS
Software-Defined
Storage













**Solution Partners** 













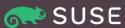






**Red Hat** 









## The New 2025 Lenovo Data Storage Solutions Portfolio

21 New ThinkSystem & ThinkAgile Products

#### Mid-Range Flash

#### **Entry Flash/Hybrid**

#### **Software-Defined**

**SMB FC Switch** 



ThinkSystem DM Series

#### High Performance, Unified AI Data

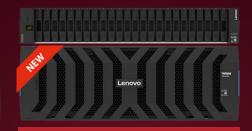
- ThinkSystem DM7200F
- ThinkSystem DM5200F
- ThinkSystem DM5200H
- ThinkSystem DM3200F



ThinkSystem DG Series

## Flash Performance at HDD Economics

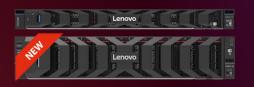
- ThinkSystem DG7200
- ThinkSystem DG5200



ThinkSystem DE Series

## Simple, Channel Friendly Entry-level Storage

- ThinkSystem DE4800F (2U24)
- ThinkSystem DE4800H (2U12)
- ThinkSystem DE4800H (2U24)
- ThinkSystem DE4800H (4U60)
- ThinkSystem DE4200H (2U12)
- ThinkSystem DE4200H (2U24)



ThinkAgile V4 Series

## Accelerated Roll-Out & Simplified Lifecycle

#### ThinkAgile HX Series

- ThinkAgile HX630 V4
- ThinkAgile HX650 V4
- ThinkAgile HX650 V4 Storage

#### ThinkAgile VX Series

- ThinkAgile VX630 V4
- ThinkAgile VX650 V4
- ThinkAgile VX650 V4-SAP

#### ThinkAgile MX Series

- ThinkAgile MX630 V4
- ThinkAgile MX650 V4



ThinkSystem DB Series

## Gen 7 Entry-level Switch for SMB

ThinkSystem DB710S



**ISG Common Bezel** 





## Lenovo ThinkSystem Enterprise Storage

## Simplified & Unified Systems for Block, File, or Object Workloads

Scale Up and Scale Out

Always on Data Efficiency Multitenancy and Data Security

Automated Ransomware Protection

Sync Replication /w Transparent Failover

Application aware Snapshots

# Extreme Performance & Price Performance for Block-only workloads



**DE Series** 



#### **DG** Series

#### **Highlights**

- Consistent flash performance
- Capacity-optimized QLC (61.4 TB)
- Reduce TCO

#### **Use Cases**

- HDD replacement
- Virtualization consolidation
- Backup & Recovery



#### **DM Series**

#### **Highlights**

- High-performance TLC flash
- Sub-millisecond latency
- Flash and Hybrid models

#### **Use Cases**

- Mission-critical workloads
- Enterprise Databases
- Virtualization

#### Highlights

- Up to 2M IOPS
- Easy to configure, manage, and scale
- High Availability (HA) Architecture
- Flash and Hybrid models

#### **Use Cases**

- HPC and Analytics
- Databases and Virtualization
- Video Surveillance and Streaming
- Archiving and Backup



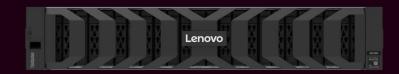
## ThinkSystem Enterprise Storage Array Portfolio

Efficient, secure solutions to maximize performance and value for AI and data intensive workloads



#### **ThinkSystem DE Series**

- Simplified data management
- Entry to High performance block
- Flash and Hybrid models
- Easy to configure, manage, and scale.



#### ThinkSystem DG Series

- Efficient all flash data consolidation
- Unified File/Block/Object
- All-Flash at HDD economics
- Secure hybrid cloud management
- Integrated ransomware protection



#### ThinkSystem DM Series

- Leadership flash performance
- Unified File/Block/Object
- Flash and hybrid models to optimize performance and scale
- Secure hybrid cloud management
- Integrated ransomware protection





## **New DE Series Storage**

Simple, flexible, channel friendly block storage

- Industry Leading price/performance
  - Accelerate data with unmatched value
  - Best optimization for space and cost
- Simplified Data management
  - Deploy new array in minutes
  - Flexible for changing business needs
  - Easy to configure, manage and scale





Budget friendly, high-performance AFA

Up to 3x faster than DE4000F



New DE4800H

Hybrid array with maximum flexibility

Up to 3x faster than DE4000H



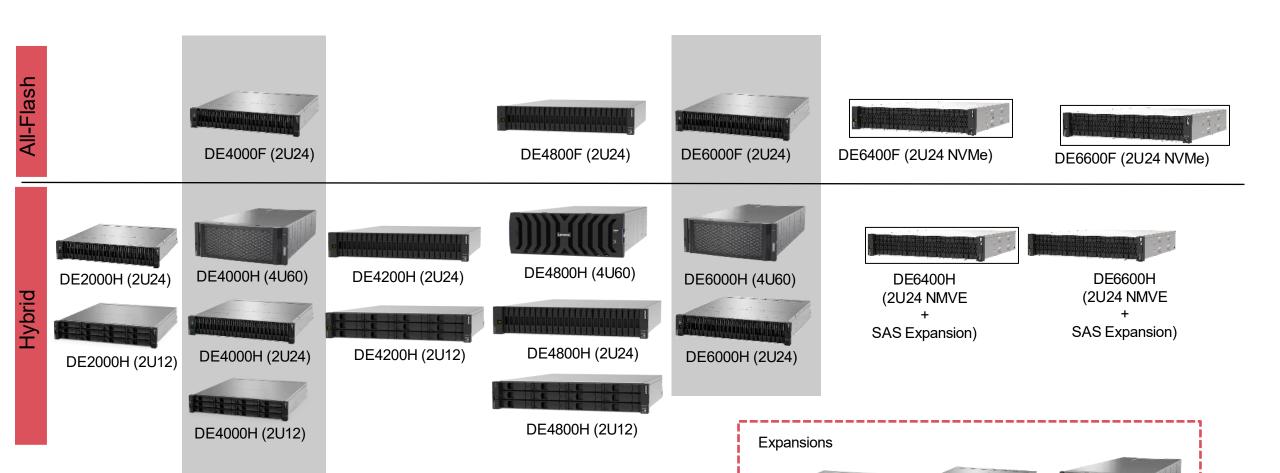
New DE4200H

Entry hybrid ideal for ROBO

Up to 1.2x faster than DE2000H



## ThinkSystem DE Series Storage Array Portfolio



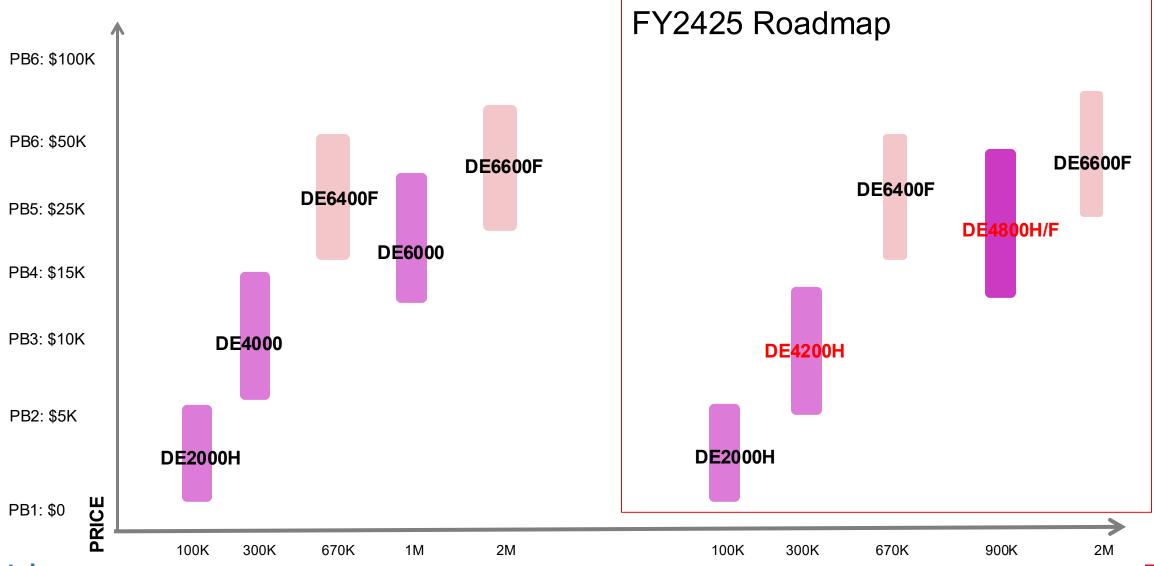
DE120S (2U12)

DE240S (2U24)

DE600 (4U60)



## **DE Series Portfolio Offering**



### **DE Performance**

- Differentiation to support different workload and budget.
  - o DE2000 : Affordable storage for small storage user cases.
  - DE4000 (replace DE4000): Balanced price and performance option
  - DE4800 (replace DE6000): High performance and scalability

Workload	DE2000H	DE4000F	DE4200	DE4800	DE6000F	DE6400F	DE6600F
100% 4KB random read < 250 μs	100K IOPS	300K IOPS	300K IOPS	900K IOPS	1M IOPS	670K IOPS	2M IOPS
100% 4KB random write < 190 μs	45k	45k	45K	135K	180k	100k	340k
100% sequential read (GB/sec)	3 GB/s	10 GB/s	4.8 GB/s	12 GB/s	21 GB/s	20 GB/s	44 GB/s
100% sequential write (GB/sec)	3.7 GB/s	3.7 GB/s	3.9 GB/s	9.4 GB/s	9 GB/s	91 GB/s	12.5 GB/s
Full Stripe Write Acceleration (FSWA)	6 GB/s	6 GB/s	4.3 GB/s	10.8 GB/s	14 GB/s	12 GB/s	24 GB/s



## DE Solution with muitple workload

Workloads that require fast, reliable, and affordable storage building blocks

#### **HPC/AI & Modern Analytics**



- Easily scalable DE-Series based building blocks for parallel filesystems such as BeeGFS and Spectrum Scale. Serving different workloads without sacrificing key business value (consistent speed of access and response time).
- Block storage for the performance you need for analytics solutions

#### **Enterprise Databases and VMware**



- High-performance and low latency to increase transactions per minute
- Simple block storage for ease of setup and configuration
- Value in an enterprise database
- Seamless integration with new or existing VMware environments

#### **Backup & Recovery**



- Cost-effective + high density
- High-performance array
- Multiple connectivity options

#### **Media & Entertainment**



- Error-free delivery of high-res video with a small footprint
- Consistent high-throughput and ultra-low response times with zero dropped frames & extreme uptime
- Proven install base with M&Efocused file systems

#### Video Analytics & Surveillance



- No dropped frames
- No lost video segments
- No failed video recalls
- No emergency repairs



## Обновленная DE серия

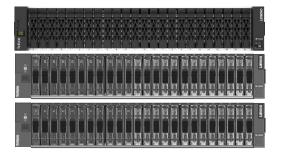


#### DE4800H / DE4800F

- 7.2PB maximum raw capacity
- Up to 300 HDDs/120 SSDs
- Up to 128GB memory
- Up to 900K IOPS
- 12GBps throughput
- SAS, iSCSI, FC

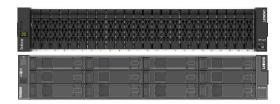


- Up to 120/444 drives
- Up to 2M IOPS
- 32Gb FC or NVMe/FC
- 25Gb iSCSI optical
- 100Gb NVMe/IB, NVMe/RoCE
   100Gb iSER/IB, SRP/IB
- 200Gb NVMe/IB, NVMe/RoCE, 200Gb iSER/IB \*\*



#### DE6400F / DE6400H

- Up to 120/264 drives
- Up to 670K IOPS
- 32Gb FC or NVMe/FC
- 25Gb iSCSI optical
- 100Gb NVMe/IB, NVMe/RoCE
- 100Gb iSER/IB, SRP/IB





#### DE2000H

- Up to 96 drives SFF
- 32Gb FC
- 10Gb/25Gb iSCSI optical
- 12Gb SAS

#### DE4200H

- 1.47PB maximum raw capacity
- Up to 64GB memory
- Up to 96 SFF drives
- Up to 300K IOPS
- SAS, iSCSI, FC





## ThinkSystem DE4800H Rear View – Additional Images



w/ Fibre Channel Ports



w/SAS Ports



w/RJ45 Ports



w/ Fibre Channel Ports

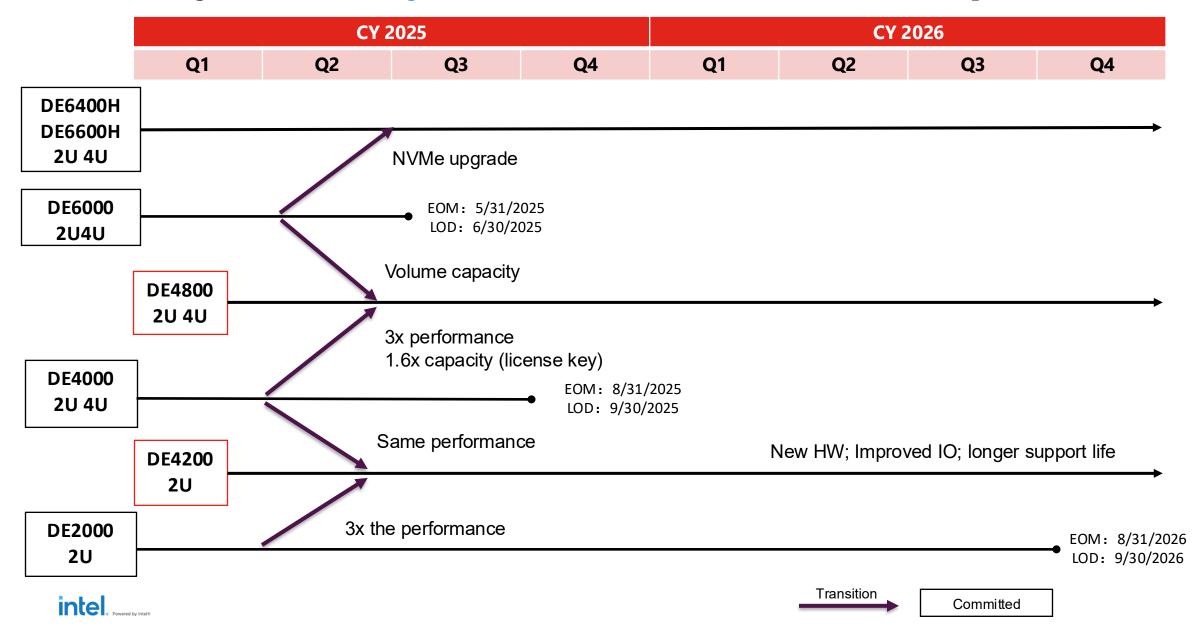


w/SAS Ports



w/RJ45 Ports

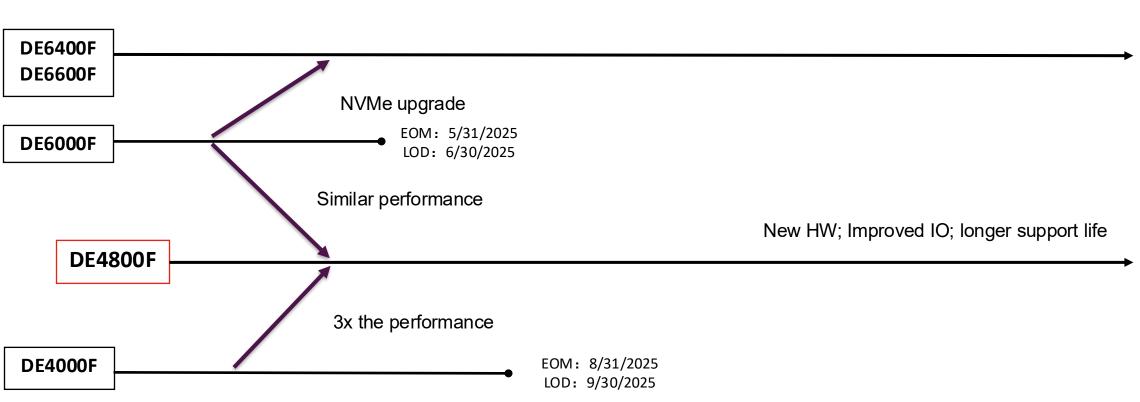
## ThinkSystem DE Hybrid Series Transition Roadmap



Lenovo

## ThinkSystem DE AFA Transition Roadmap









## **DE Positioning Strategy Summary**

#### Hybrid

#### DE2000H: Extended

- Lowest starting cost
- LOD 1 yr extension, EOS 2031 (outlook WIP)
- SMBs, general storage, entry-level workloads

#### DE4200H: New

- Same performance as DE4000
- Increased IO flexibility
- New platform with 7 years of support
- Growing businesses, virtualization, databases

#### DE4800H: New

- 4U60 form factor
- Performance and scalability
- Increased max drive count (300x).
- Synch replication

#### Flash

#### **DE4800F (SAS)**

- 3x performance vs DE4000F
- · Asynch mirroring & snapshot upgrades included
- Flash simplicity

#### DE6400F/DE6600F (NVMe)

- Upto perf: 2M IOPS, 44 Gbps throughput
- NVMe as differentiator



3x Performance

Performance

3X

## ThinkSystem DE Series SAN OS

Performance-optimized OS, all features bundled with ThinkSystem DE Series SAN OS software



#### **Dynamic Disk Pools**

8x faster rebuild (minutes, not days) and continuous high performance during drive rebuild



#### **Snapshot Remote Mirroring (Optional)**

Protect, clone and replicate your data for cost-effective disaster recovery and business continuance.



#### **High Availability (HA) Architecture**

- Dual active-active controllers with automatic failover.
- Redundant paths, fans, and power supplies for non-stop operation.



#### **Data Assurance**

Verifies data using T10PI Data Integrity Field standard to protect against silent data corruption. Fast offline Volume Group initialization.



#### **Enterprise Security & Administration**

Includes role-based access control, multi-factor authentication support, secure CLI and support for Active Directory.



#### **Encrypted Drives\***

FIPS and FDE encrypted media for data-at-rest security. Sanitization options for drives. Support for TLS 1.3

### **Certified for SAP HANA**



Please note that only listed storage models are certified for SAP HANA. Vendors' storage solutions may include some additional models which are NOT certified for this type of usage. The maximum number of SAP HANA nodes served by a particular storage model is defined by its Vendor. For additional questions/sizing guidance please contact the storage Vendor directly. For further information see TDI overview, TDI FAQ and section Read more. **Enterprise Storage** Lenovo Lenovo DE4800F/H certified Certification status +1-855-253-6686 Certification released 2025-04-23 Certification expires 2027-04-22 Storage Solution DE4800F Storage Family DE4800F DE4800H Storage Connector SAN - Fibre Channel Certification Scenario HANA-HWC-ES 1.1 Serves up to 14 HANA nodes per **Restriction & Comments** storage controller enclosure (pair)

\* https://www.sap.com/dmc/exp/2014-09-02-hana-hardware/enEN/#/solutions



## ThinkSystem Enterprise Storage Array Portfolio

Efficient, secure solutions to maximize performance and value for AI and data intensive workloads



#### **ThinkSystem DE Series**

- Simplified data management
- Entry to High performance block
- Flash and Hybrid models
- Easy to configure, manage, and scale.



#### **ThinkSystem DG Series**

- Efficient all flash data consolidation
- Unified File/Block/Object
- All-Flash at HDD economics
- Secure hybrid cloud management
- Integrated ransomware protection



#### ThinkSystem DM Series

- Leadership flash performance
- Unified File/Block/Object
- Flash and hybrid models to optimize performance and scale
- Secure hybrid cloud management
- Integrated ransomware protection





### **New DM Performance Storage**

High-performance systems designed for next generation all-flash workloads.

- No trade-offs between improved storage efficiency and performance.
- Architect forward:
  - Always-on storage efficiency with full performance
  - Security hardware offload
  - Designed for sustainability
  - Improvement in Price/Performance
  - Increased I/O flexibility
  - End-to-end NVMe

### **Key Customer Benefits**



#### New DM7200F

Optimized for price/performance

Up to 139% faster then the DM7100F



#### New DM5200F

Designed for emerging workloads

Up to 91% faster then the DM5100F



#### New DM3200F

Affordable storage for small and medium businesses and ROBO

Up to 23% faster then the DM5000F



## New DM Series All-flash Arrays







HA	System

- 2U base / 24 drives
- 15.4TB 737.3TB
- 48 NVMe SED SSD

- 2U base / 24 drives
- 15.4TB 1.1PB
- 72 NVMe SED SSD

- 2U base / 24 drives
- 68TB 1.8PB
- 120 NVMe SED SSD

### Cluster

- NAS: 3
- SAN: 3

- NAS: 4
- SAN: 4

- NAS: 12
- SAN: 6

### Cores

16

32

48

### **RAM**

128GB

128GB

256GB

1.92TB, 3.84TB, 7.68TB, 15.36TB

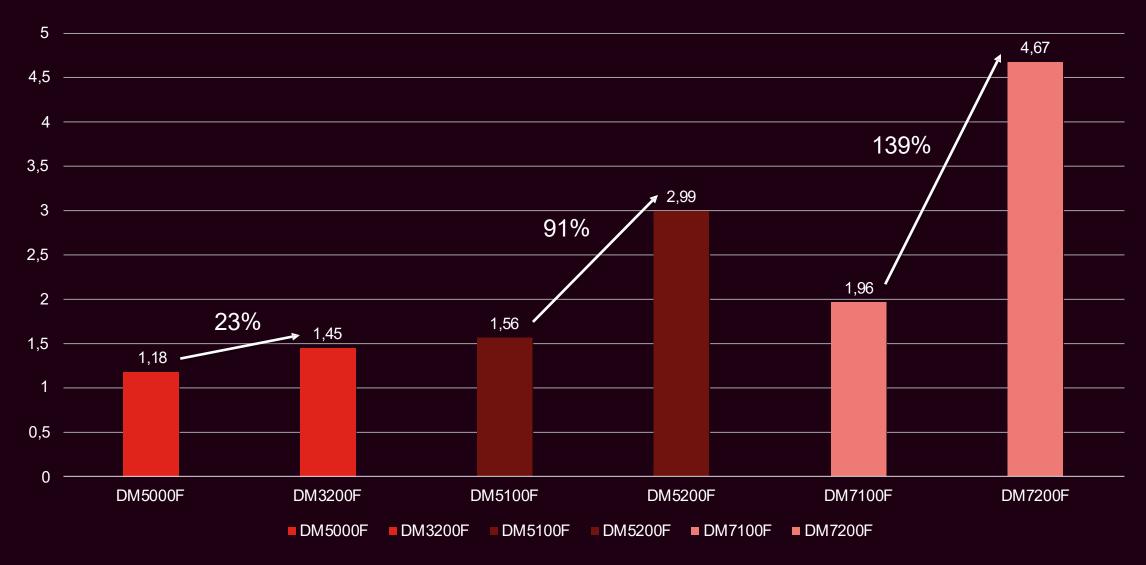
### **Hardware Upgrades**

- Integrated compression offload engine with Intel® QAT®
  - Next generation CPU architecture provides increased performance for resource-intensive tasks and processing
  - Always-on enhanced storage efficiency without impacting performance
  - Up to 160GB/s data compression
- PCle Gen 5
  - Offering 4x the throughput<sup>1</sup>

- DDR5 Memory
  - 2x the clock speed for faster memory access
  - 50% more throughput for large data transfers
  - Improved reliability
- Ready for IPsec/TLS offload<sup>2</sup>
- Titanium power supplies
  - 95% efficiency rating
  - Maximizing energy efficiency



### **New DM-Series Performance Overview**



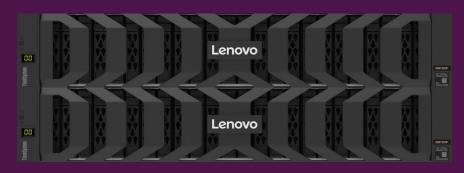




### **DM5200H**

Completes the refresh of the hybrid flash family

- Optimize data tiering, backup, and cyber vault with economical hybrid flash storage
- Achieve lowest lifecycle cost of data
- Simplify at scale by tiering, backup, and creating an air-gapped cyber vault on the same ONTAP as the rest of your hybrid cloud environment
- Rely on the safest storage on the planet to securely store your critical backup datasets



**DM5200H** 

Economical Simple Secure

Up to 50% faster than

DM7100H

Performance will vary by workload

Up to

33%
less rackspace than

DM7100H





## New DM5200H Hybrid-flash Array

HA System	<ul><li>100TB - 11.5PB</li><li>2U base + Enclosure</li><li>480 SAS SSDs/HDDs</li></ul>
Cluster	<ul><li>NAS: 4</li><li>SAN: 4</li></ul>
Cores	32
RAM	128GB
Supports	<ul><li>4TB, 10TB, 24TB NLSAS</li><li>3.84TB, 7.68TB, 15.36TB SAS SSD</li></ul>



- 2 drive bays for 2TB SSDs FlashCache
- 144 TiB FlashPool

## ThinkSystem DM Series Storage Array Portfolio

**AII-Flash** 











Hybrid











DM7100H

Expansions



DM120S (2U12) DM240S (2U24)





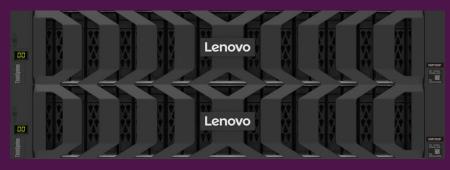




### **New DM Hybrid Storage**

Completes the refresh of the hybrid flash family

- Optimize data tiering, backup, and cyber vault with economical hybrid flash storage
- Achieve lowest lifecycle cost of data
- Simplify at scale by tiering, backup, and creating an air-gapped cyber vault on the same ONTAP as the rest of your hybrid cloud environment
- Rely on the safest storage on the planet to securely store your critical backup datasets



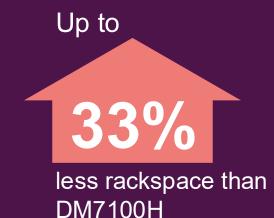
**DM5200H** 

### Economical Simple Secure

Up to

50%
faster than
DM7100H

Performance will vary by workload





### Обновленная DM серия



#### DM3200F

- 737TB maximum raw capacity
- Supports up to 48 NVMe SSDs
- FC, iSCSI, NVMe/FC, NVMe/TCP, NFS, NFSv4/RDMA, SMB, S3



#### DM5200F

- 1.1PB maximum raw capacity
- Supports up to 72 NVMe SSDs
- FC, iSCSI, NVMe/FC, NVMe/TCP, NFS, NFSv4/RDMA, SMB, S3



#### DM7200F

- 1.8PB maximum raw capacity
- Supports up to 120 NVMe SSDs
- Up to 1,380K IOPS
- FC, iSCSI, NVMe/FC, NVMe/TCP, NFS, NFSv4/RDMA, SMB, S3



#### DM3010H

- 2.3PB maximum raw capacity
- Supports up to 144 drives
- Up to 240K IOPS
- NFS, CIFS/SMB, iSCSI, FC, S3



#### DM5200H

- 10.95PB maximum raw capacity
- Supports up to 120 SAS SSDs
- Up to 880K IOPS
- Up to 20x 2U12 SFF, 5x 2U24 LFF
- Up to 8x 4U60 LFF
- FC, iSCSI, NVMe/FC, NVMe/TCP, NFS, NFSv4/RDMA, SMB, S3



#### DM7100H

- 10.95PB maximum raw capacity
- Supports up to 720 drives
- Up to 470K IOPS
- Up to 12x 4U60 LFF
- Up to 30x 2U24 SFF
- NFS, CIFS/SMB, iSCSI, FC, S3

## ThinkSystem Enterprise Storage Array Portfolio

Efficient, secure solutions to maximize performance and value for AI and data intensive workloads



#### **ThinkSystem DE Series**

- Simplified data management
- Entry to High performance block
- Flash and Hybrid models
- Easy to configure, manage, and scale.



#### **ThinkSystem DG Series**

- Efficient all flash data consolidation
- Unified File/Block/Object
- All-Flash at HDD economics
- Secure hybrid cloud management
- Integrated ransomware protection



#### ThinkSystem DM Series

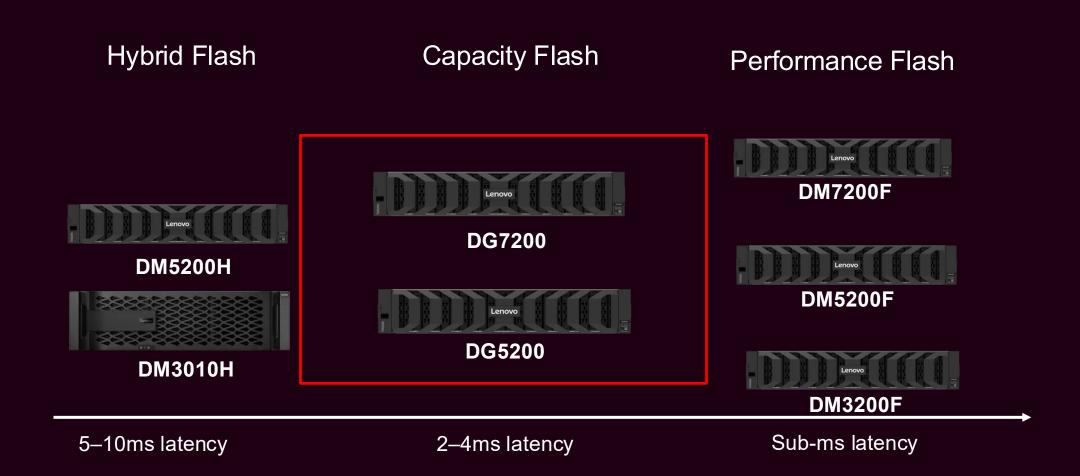
- Leadership flash performance
- Unified File/Block/Object
- Flash and hybrid models to optimize performance and scale
- Secure hybrid cloud management
- Integrated ransomware protection





## ThinkSystem DG Series: Accelerate All-Flash Transformation

Transform from a hybrid to all-flash datacenter





## **New DG Series All-flash Arrays**

Capacity all-flash systems designed for efficiency and capacity

- No trade-offs between improved storage efficiency and capacity
- Architect forward:
  - Increase capacity & efficiency reducing footprint & cost
  - End-to-end capacity flash NVMe 61.4TB drives
  - Save up to 70% on storage costs through automated data tiering to the cloud
  - Designed for sustainability
  - Scalability while maintaining data availability active-active controller



DG5200/DG7200

### **Key Customer Benefits**

### **Increased Density**

6x current DG7000 minimum config

### Improved Scalability

- 61.4TB QLC SSD support
- 25% to 50% more SSDs
- 2.5x DG7000 raw max

### **Cost Savings**

- Reduced footprint
- Increased efficiency

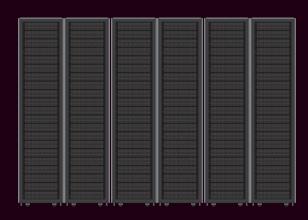
#### **Increased Performance**

70% to 80% performance enhancements



## ThinkSystem DG Series: Data Modernization & Consolidation

Benefits of upgrading legacy data storage solutions



## 5 yr old Technology

ThinkSystem DM7100H

Racks: 6

Power: 32kW

**Drives**: (2,820) 1.8TB 10K HDD



### **Previous Gen**

ThinkSystem DG7000

Racks: 8U

**Power: 2,194W** 

Drives: (48) 30TB QLC



ThinkSystem DG7200

4.8 PB effective capacity in 2U Lower Support Costs

vs 5 yr vs Previous tech Gen

Power

Density

97% less	61% less				
99% less	75% less				





## New DG Series All-flash Arrays



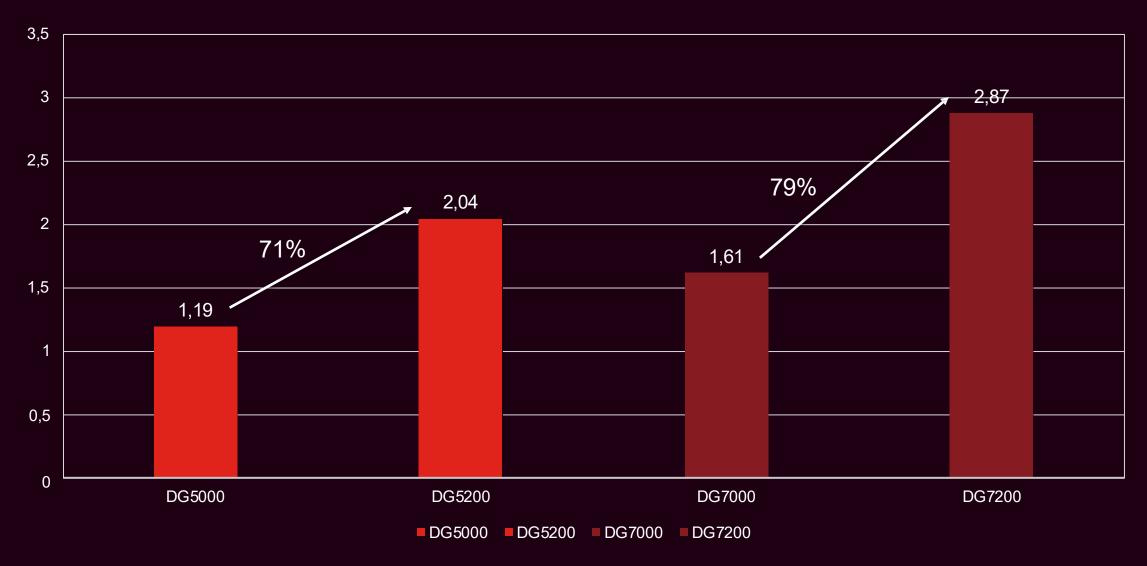


	- 40	

HA System	<ul> <li>122TB - 2.2PB</li> <li>Up to 9.7PB effective</li> <li>2U base / 24 drives</li> <li>72 NVMe QLC SSDs</li> </ul>	<ul> <li>245TB - 7.3PB</li> <li>Up to 32.4PB effective</li> <li>2U base / 24 drives</li> <li>120 NVMe QLC SSDs</li> </ul>
Cluster	<ul><li>NAS: 4</li><li>SAN: 4</li></ul>	<ul><li>NAS: 4</li><li>SAN: 4</li></ul>
Cores	20*	32
RAM	128GB	128GB
Supports	<ul> <li>15.36TB and 30.72TB QLC SSDs</li> <li>8-SSD min. with no Capacity min.</li> </ul>	<ul> <li>15.36TB, 30.72TB, 61.4TB QLC SSDs</li> <li>8-SSD min. with 245TB capacity min.</li> </ul>

Lenovo

### **New DG-Series Performance Overview**







### **DM/DG Series is born Feature Rich**

Protocols	Efficiency	Anti-ransomware	Data protection	Tenancy and scale
<ul> <li>NAS / File</li> <li>NFS</li> <li>SMB</li> <li>SAN / Block</li> <li>FC</li> <li>iSCSI</li> <li>NVMe/FC</li> <li>NVMe/TCP</li> <li>Object (S3)</li> </ul>	<ul> <li>Leading raw-to-usable</li> <li>Deduplication, compression, compaction</li> <li>Thin provisioning</li> <li>Data tiering to hybrid, object, or cloud</li> </ul>	<ul> <li>Near-real-time detection</li> <li>Tamper-proof Snapshot recovery</li> <li>Multi-admin verification</li> <li>Blocking of known malicious files</li> </ul>	<ul> <li>App-integrated backup</li> <li>Business continuity</li> <li>Sync/async disaster recovery</li> <li>Snapshot</li> <li>Clones</li> <li>Immutable</li> </ul>	<ul> <li>Multitenancy</li> <li>QoS</li> <li>Clusterwide scaling</li> </ul>

### **ONTAP** Data management software

Delivering automation, efficiency, data protection, and security capabilities for file, block, and object















## Built-in business continuity for critical SAN applications

ONTAP 9.16.1 SnapMirror active sync enhancements

### Support for 4 node per site (2 HA pairs)

- Greater workload support
- More flexibility for load balancing
- More options for tech refresh

#### **Protect**

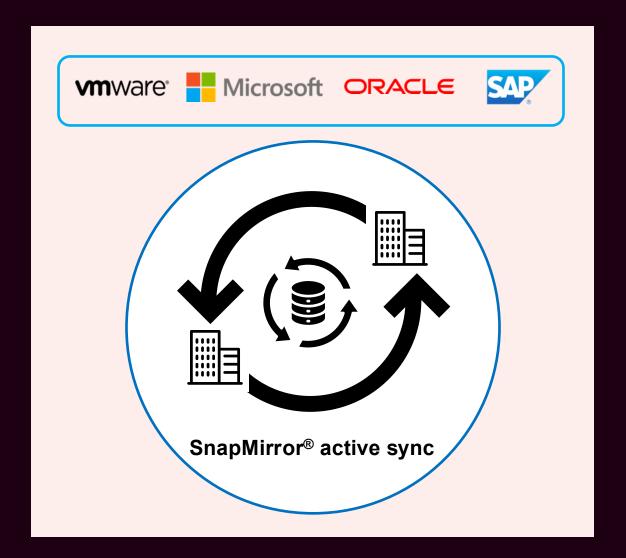
critical apps with continuous availability

### **Simplify**

operations with seamless integration

#### **Optimize**

cost with application granularity

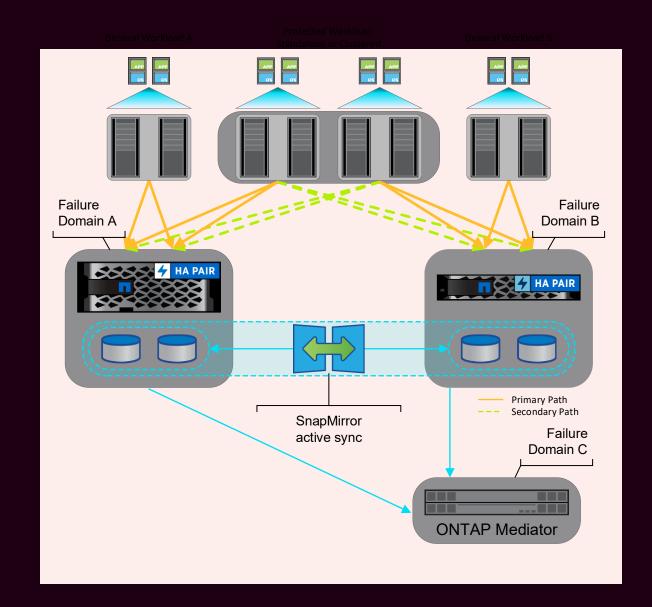




## SnapMirror active sync

Solution for the active-active data center

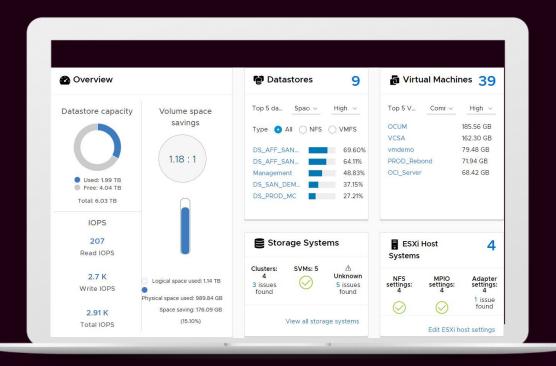
- High Availability
- Scalability & Load Balancing
- Synchronous Replication
- Failover & Failback
- Simplified Management & Monitoring
- Business Continuity





### VMware integration across the entire ecosystem

- OTV 10.3 (May 2025)
- Supports vSphere 7.x and 8.x releases
- Supports 9.16.0 and forward
- Site Recovery Manager (SRM) support
- High availability, scalability and performance VASA provider for large-scale deployments
- SnapMirror active sync vSphere Metro Storage Cluster
  - Native vSphere Plug-in
- VMFS
  - ISCSI, FCP and NVMe (FC/TCP)
- vVols (Tech Preview)
  - o ISCSI, FCP







## **ONTAP 9.16.1 Enhancements**

NVMe Enhancements	<ul> <li>Enhanced VMware storage efficiency with NVMe deallocate</li> <li>NVMe/TCP support with TLS 1.3</li> </ul>
MetroCluster Enhancements	<ul><li>BGP MD5 support</li><li>SVM Migration support</li></ul>
Improved Upgrade Experience	<ul><li>Enhanced pre-upgrade checking</li><li>Reduced reboot times</li></ul>
Simplified Capacity Management	<ul><li>FlexGroup Advanced Capacity Balance</li><li>Multi-part Uploads for File/Object Duality</li></ul>



## Lenovo ThinkSystem Storage Array Portfolio

Efficient, secure solutions to maximize performance and value for AI and data intensive workloads

#### ThinkSystem DM



High-performance flash and hybrid systems designed for Al and mission-critical workloads

- ThinkSystem DM7200F
- ThinkSystem DM5200F
- ThinkSystem DM5200H
- ThinkSystem DM3200F

### ThinkSystem DG



Capacity-optimized QLC flash systems for general-purpose block, file, or object workloads

- ThinkSystem DG7200
- ThinkSystem DG5200

#### **ThinkSystem DE**



High-performance, scalable flash and hybrid systems for modern workloads

- ThinkSystem DE4800F
- ThinkSystem DE4800H (2U12)
- ThinkSystem DE4800H (2U24)
- ThinkSystem DE4800H (4U60)
- ThinkSystem DE4200H (2U12)
- ThinkSystem DE4200H (2U24)

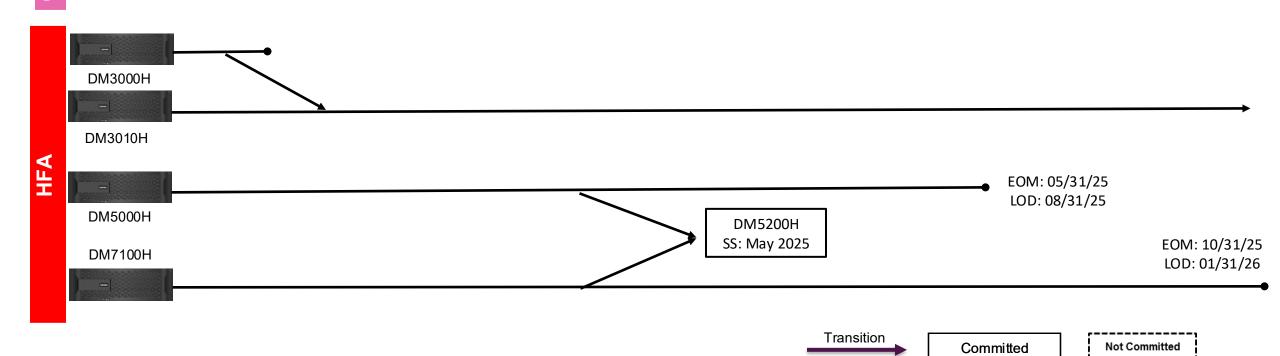


# **New DM/DG Capacity Minimum Rules**

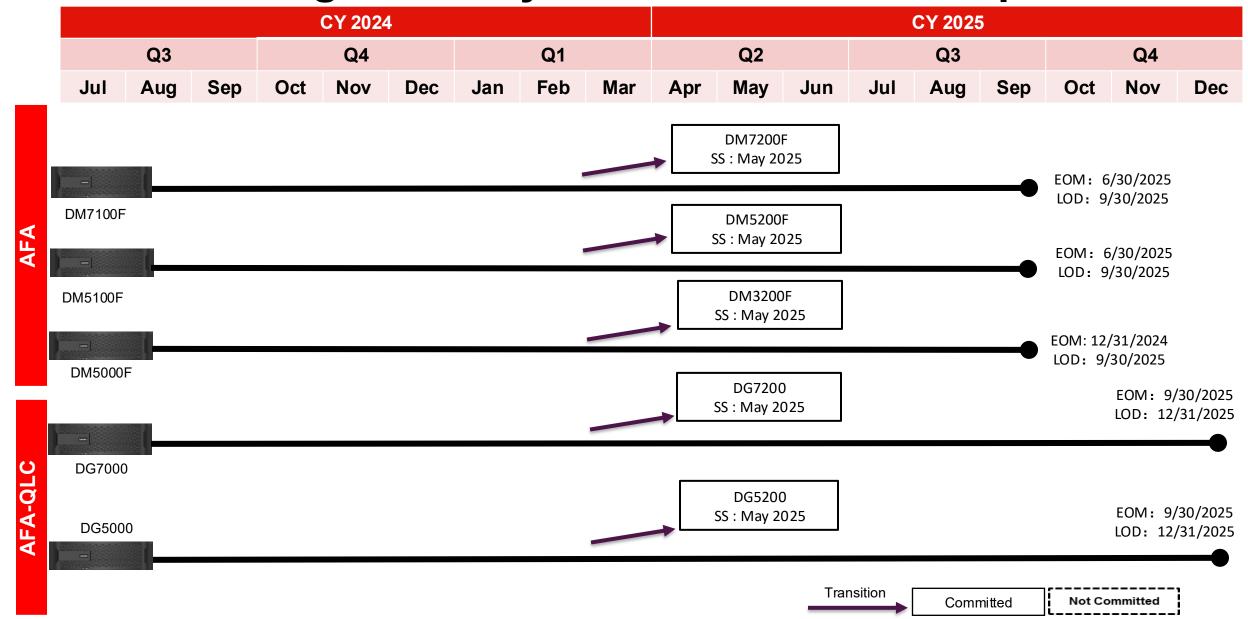
System	Min Drives	Min Capacity	Min Drives per Capacity
DM7200F	8	68 TB	8x 15.3TB or 10x 7.68TB or 18x 3.84TB or 36x 1.92TB
DM5200F	8	NA	8
DM3200F	8	NA	8
DG7200	8	244.8 TB	16x 15.3TB or 8x 30.7TB
DG5200	8	122.4 TB	8x 15.3TB
DM5200H	12	100 TB NLSAS/50TB SSD	

## Lenovo Storage - ThinkSystem DM Series Roadmap

	CY 2024						CY 2025											
		Q3			Q4		Q1		Q2		Q3			Q4				
J	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		ONTAP 9.	.14.1		10	NTAP 9.15	C			ONTAP 9.16				ONTA	AP			



## Lenovo Storage - ThinkSystem DM Series Roadmap



## **New ThinkSystem DB Series**

Unlock enterprise-class capabilities with an affordable SAN solution





### **Performance Gen to Gen**

#### **Use cases:**

- Database
- SAN Solution
- End-to-end 64G FC solution







Improved performance





## Lenovo SAN Solutions







**ThinkSystem DE Series** 

**ThinkSystem DG Series** 

**ThinkSystem DM Series** 

#### ThinkSystem Fibre Channel HBA and SAN support 64 Gb/s and NVMe











Directors

DB710S



### Lenovo ThinkSystem DB710S Switch

Unlock enterprise-class capabilities with an affordable SAN solution

Perfect for Flash and NVMe storage

Built for Small to mid-size enterprise environments

**Designed for** Simple deployment





DB710S Switch 24 × 64G SFP+ ports

Affordable Start small, grow on demand from 8 to 24 ports and power up from 32 to 64G

Secure Cyber-resilient architecture ensures high-level security

Reliable Worry-free reliable network that keeps running, no matter what

Lifetime Warranty\* Enjoy peace of mind knowing you are protected with the industry's only lifetime warranty

### **Entry Switch Portfolio Comparison**

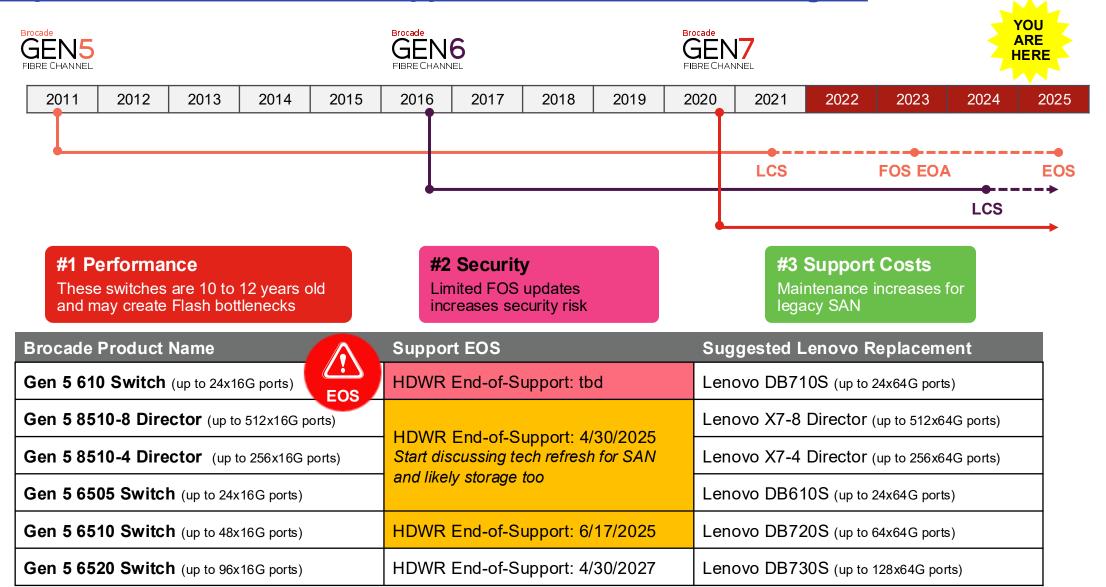




Feature	ThinkSystem DB610S	ThinkSystem DB710S
Maximum supported speed	32Gb/s	64Gb/s
Total Bandwidth	768 Gbps	1536 Gbps
Total Line-Rate Ports	8 to 24 ports at 4/8/16/32 Gbps	8 to 24 ports at 8/16/32/64 Gbps
Latency (local switching)	780 ns	460 ns
Port count	24 optical ports	24 optical ports
Power	0.10 watts/Gbps	Less than 0.07 watts/Gbps
Brocade SAN Automation	Available	Standard
Advanced analytics	N/A	Standard
Fabric Vision monitoring and diagnostics	Available	Standard
IO Insight latency monitoring	Available	Standard
VM Insight	Requires host and target support	Only requires host support
Product lifecycle status	Currently available	Currently available – Longer Life expectancy
Traffic optimizer	N/A	Standard
Congestion management	N/A	Standard
Enterprise Software: Trunking, Fabric Vision, Ext. Fabrics	Optional	Standard
Warranty Standard	Lifetime Warranty	Lifetime Warranty

## End-of-Life Timeline & Reasons to Refresh Legacy SAN's

https://www.broadcom.com/support/fibre-channel-networking/eol



### Move to Generation 7 now!



Approaching EOS

Sales Doc

6505: 4/30/25

6510: 6/17/25

6520: 9/21/27

8510: 4/30/25

FC5022: 10/31/25

Sell New Switch



**DB610S:** Sell Lifetime warranty models. Sell upgrades to older models.

**DB620S**: EOS 1/31/30

**DB630S:** Sell these for low cost, high-density switch (128 ports in 2U)

X6 Directors: EOS 7/15/29

Sell Warranty Upgrade or new hardware



Best investment protection, most advanced features, greatest ROI.

**DB710S**: 24 ports **DB720S**: 24-64 ports **DB730S**: 48-128 ports **X7 Directors**: 96-256 ports

Sell Warranty Upgrades

## Lenovo Software Defined Storage Portfolio

Optimized building blocks for efficient and high-performance scale-out workloads







## Lenovo High Performance File Solutions

## Lenovo Object Storage Solutions

Lenovo Ceph Storage Solutions

- Built for data-intensive applications, such as AI, ML, and HPC workloads.
- Single, easy-to-use data storage solution that eliminates silos across on-premises and the cloud.
- Scale compute and storage independently and linearly onpremises or in the cloud to handle billions of files of all data types and sizes.

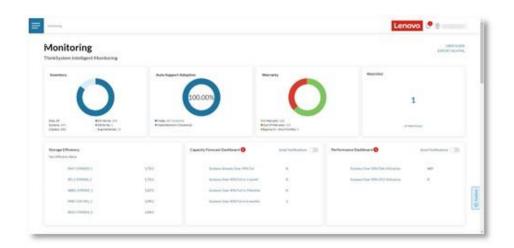
- On-premises, scale-out object storage for capacity-intensive workloads.
- Only object storage with fully native S3 API
- Multi-petabyte scalable storage in a single pool. Add nodes for more capacity. Nodes form a global data fabric that you manage within a single framework.

- Ideal for AI & large data environments, such as data lakehouses, backup & archive, cloud applications, containers, and media repositories.
- Unified storage for file, block, and object.
- Eliminate complexity and compromises with a tested, validated design.



## ThinkSystem Intelligent Monitoring (TIM)

- В рамках Lenovo Service Connect <a href="https://serviceconnect.lenovo.com">https://serviceconnect.lenovo.com</a> появился инструмент мониторинга состояния СХД DM/DG-серии и DE-серии. В этом инструменте, помимо аппаратного мониторинга СХД, доступен и мониторинг ОС ОNTAP (AutoSupport).
- Service Connect работает в тестовом режиме и доступен заказчикам Premier Support.
- Информация по ThinkSystem Intelligent Monitoring (TIM) <a href="https://lenovopress.lenovo.com/datasheet/ds0132-thinksystem-intelligent-monitoring">https://lenovopress.lenovo.com/datasheet/ds0132-thinksystem-intelligent-monitoring</a>.

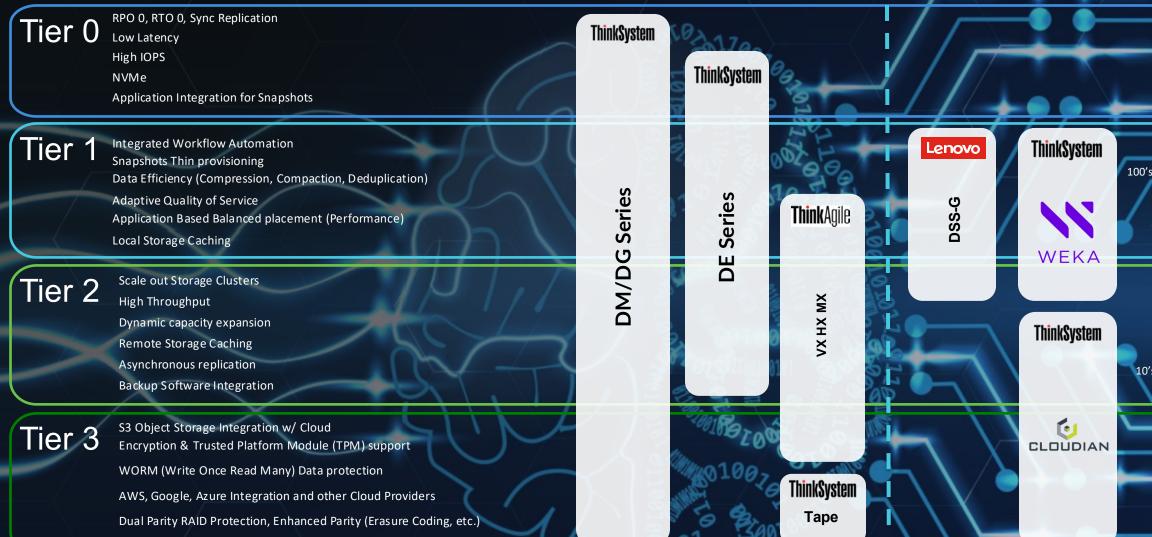






# Lenovo Data Management

Multi-Workload **Enterprise Storage**  Performance Tuned Storage Single-Workload Exa-scale

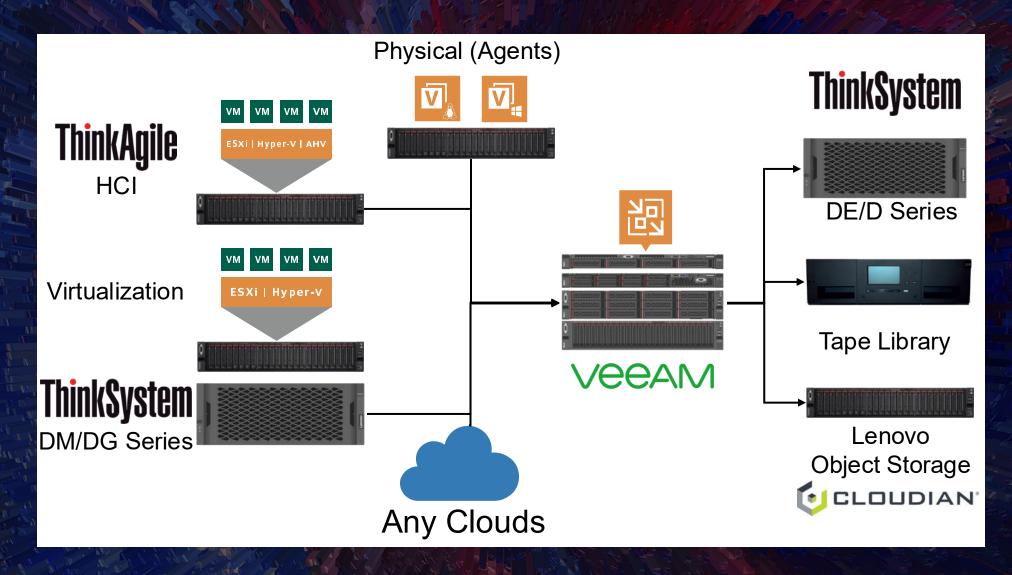






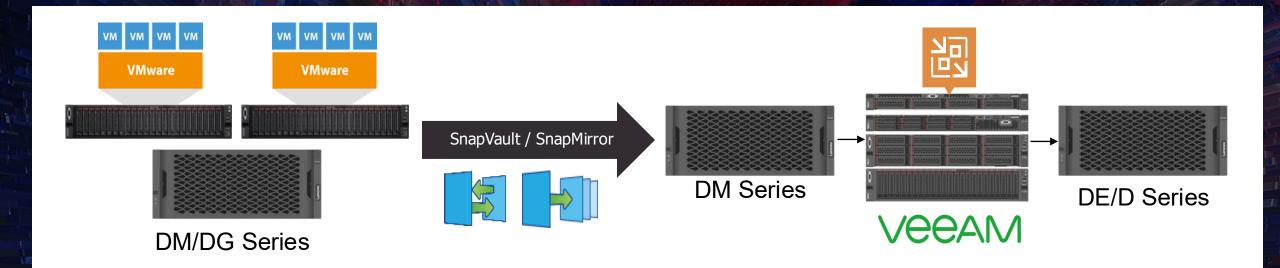
Ransomware Protection

# Lenovo & Veeam - Typical System Design





## Lenovo & Veeam – DM/DG Series Integration

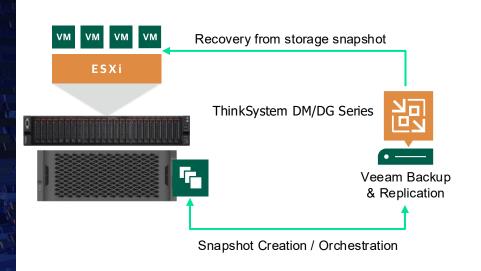


**Faster backups**: Back up VMware virtual machines (VMs) directly from Lenovo storage snapshot copies. **Quick recovery**: Recover entire VMs or individual items from Lenovo storage snapshot, and SnapMirror software. **Improved protection**: Create instant secondary backups from Lenovo storage snapshot copies.

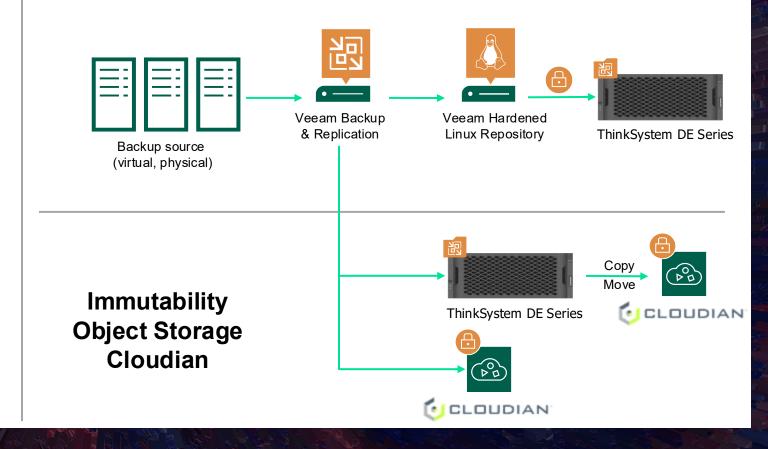


### Lenovo & Veeam - Ransomware Protection

Immutability
Lenovo DM Series SnapLock
Snapshots



# Immutability Lenovo DE Series or DAS Hardened Linux Repository

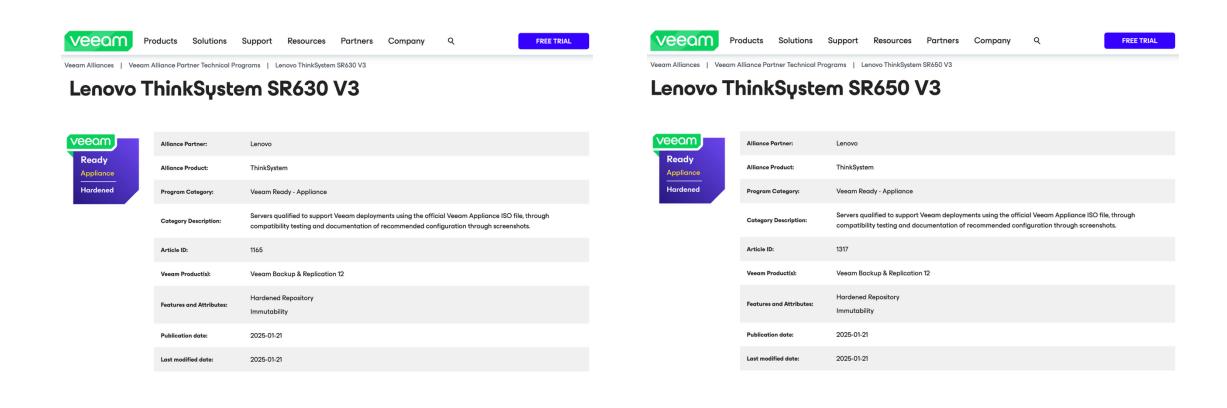


### **Veeam Ready – Appliance - Hardened Repository**





## **Veeam Ready – Appliance - Hardened Repository**





\* https://www.veeam.com/sys1165

Lenovo

\* https://www.veeam.com/sys1317

### **Veeam Ready - Repository**

Veeam Alliances | Veeam Alliance Partner Technical Programs | Lenovo ThinkSystem DE Series

#### Lenovo ThinkSystem DE Series



Lenovo
ThinkSystem DE Series
Veeam Ready - Repository
Primary backup target solutions that have been qualified as meeting or exceeding both functional and performance tests for backup and restore operations.
1448
Veeam Backup & Replication 12
Backup Target - Disk ISCSI
2025-04-25
2025-04-25

#### **Product Details**

Model number: DE4800H

Storage Category: Hybrid storage

Drive quantity, size, type: 12 x 800GB SSD (THINKSYSTEM 800GB TOSHIBA SSD)

Storage configuration: RAID 6 Firmware version: SANOS 11.90 R2

Connection protocol and speed: iSCSI, 25 GbE

Additional support: All models and configurations of Lenovo ThinkSystem DE4800H with specifications equivalent or greater than the above.

#### General product family overview:

Lenovo ThinkSystem DE Series Storage Arrays are SAN storage systems that combine ease of management with high I/O throughput and scalable storage capacity.

#### **Veeam Testing Configuration**

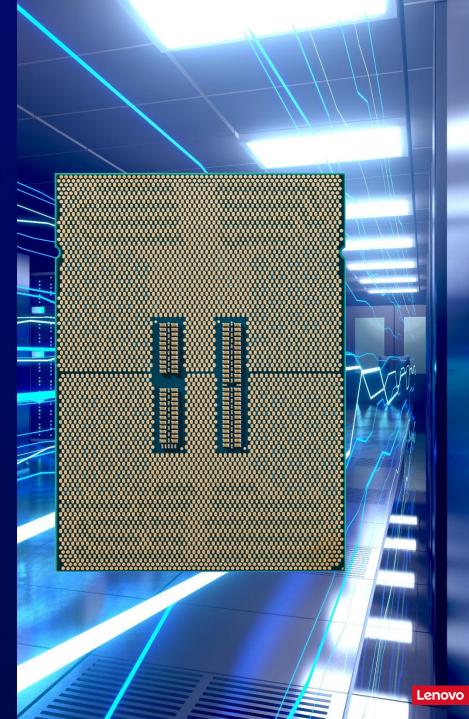
Veeam Build Number: 12.2.0.334

# Servers



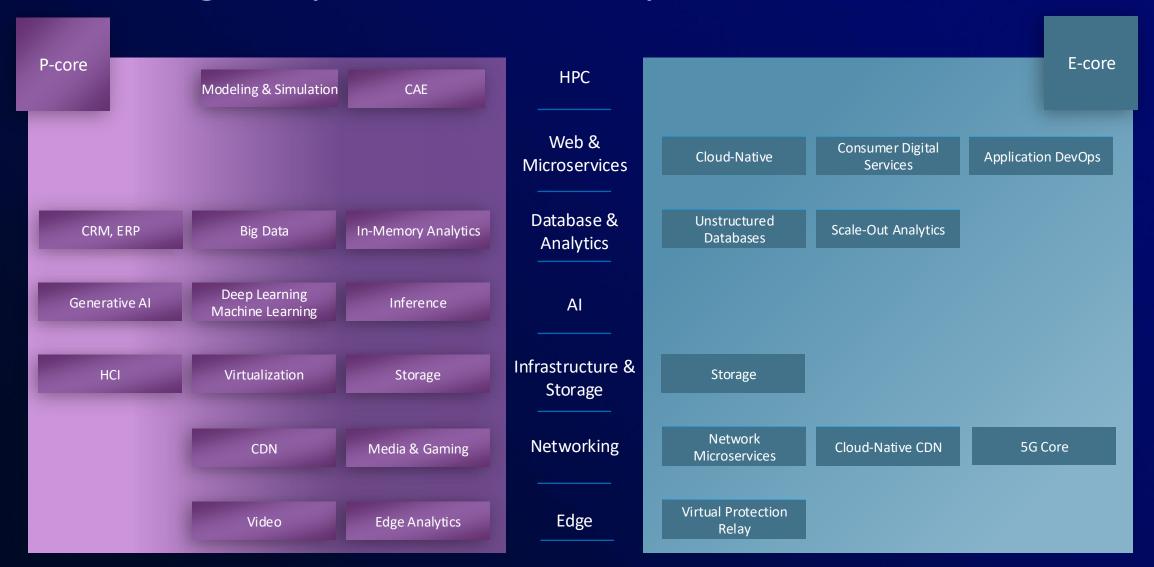
Intel<sup>®</sup> Xeon<sup>®</sup> 6
Processors







## Addressing Unique Workload Requirements

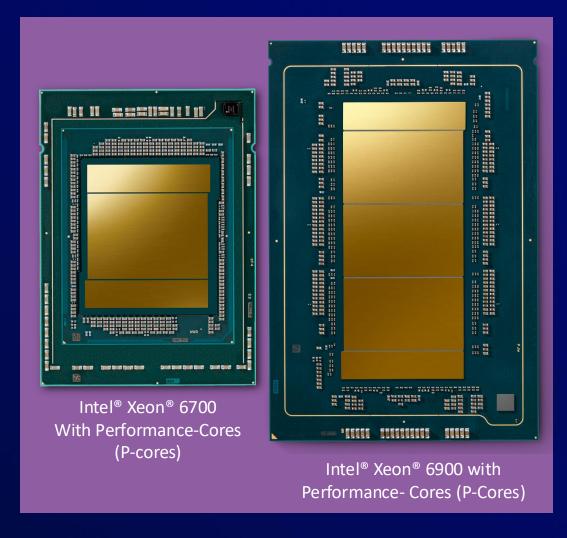




Granite Rapids-AP (Advanced Performance) with the larger LGA 7529 socket Granite Rapids-SP (Scalable Performance) with the smaller LGA 4710 socket Sierra Forest with the smaller LGA 4710 socket

Intel® Xeon® 6
Processor
Microarchitectures





### Intel<sup>®</sup> Xeon<sup>®</sup> 6 Processors

P-Core & E-Core SKUs Up to 288 cores

per processor

Increased Memory Bandwidth Up to 1.7x (DDR5)

vs. 5th Gen Intel® Xeon® CPU

Up to 2.3x (MRDIMM)\*\*

vs. 5th Gen Intel Xeon CPU

Increased I/O Bandwidth 1.2x (PCIe 5)

vs. 5th Gen Intel Xeon CPU

Increased Inter-Socket Bandwidth Up to 1.8x (UPI 2.0)

vs. 5th Gen Intel Xeon CPU

Compute Express Link (CXL) 2.0 Type 1, Type 2, & Type 3



Socket Scalability 1 to 8S

**Increased Last Level Cache** 

Up to 504MB total

#### **Integrated IP Accelerators**

Intel® QuickAssist Technology (Intel® QAT)
Intel® In-Memory Analytics Accelerator (Intel® IAA)
Intel® Data Streaming Accelerator (Intel® DSA)
Intel® Dynamic Load Balancer (Intel® DLB)

Al Accelerator Built In

Intel® Advanced Matrix Extensions (Intel® AMX)\*\*

Hardware Enhanced Security

Intel® Trust Domain Extensions (Intel® TDX) Intel® Software Guard Extensions (Intel® SGX)

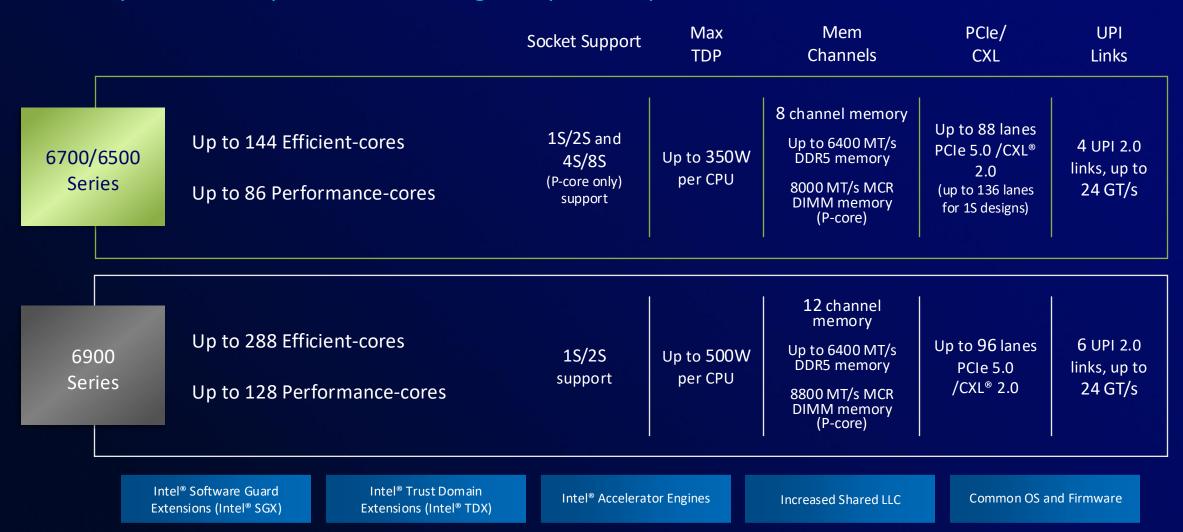
Common OS and Firmware

Simplify development and deployment



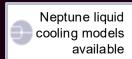
# Intel® Xeon® 6 Processors Platform Offerings

Scalability and flexibility across a wide range of optimized products





### Lenovo ThinkSystem Server Portfolio



Comprehensive compute capabilities from the edge to the enterprise



### **Workload Improvements**

ThinkSystem SR650 V3 vs SR650 V1

#### Up to:

128% more VMs

77% better performance per watt

110% More SAP users per server

Up to 30x increase in performance for AI Inference

2x Al Modeling

44% less total system power

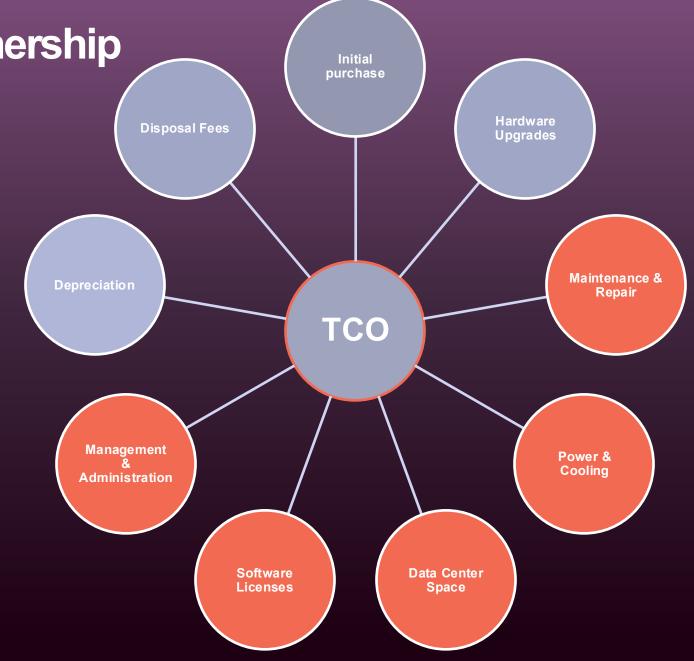






**Optimize Total Cost of Ownership** 

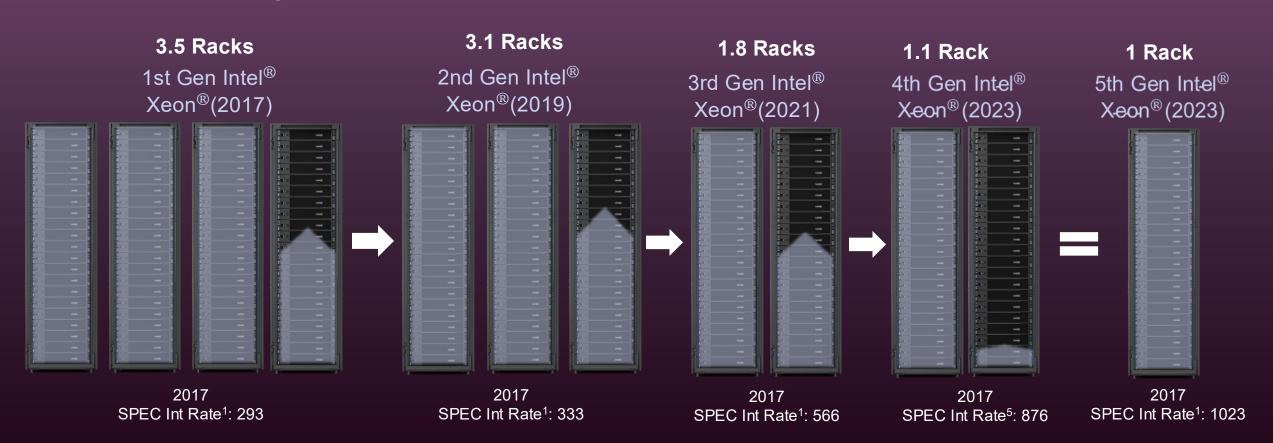
- Maintenance
  - Reduce number of servers
  - Free up IT resources with 2X less maintenance windows
- Power & Cooling
  - Higher efficiency PSUs
  - Liquid cooling options
- Data Center Space
  - Consolidate workloads with higher performance servers
  - Optimize and reduce Data Center footprint
- Software Licensing
  - Consolidate licenses
  - Reduce software support
- Management & Administration
  - Improved IT automation with inclusion of Redfish standards
  - Increased self healing reduces active support





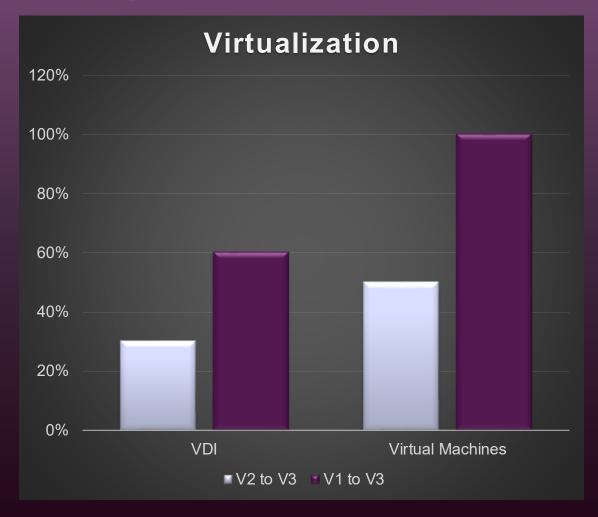
#### 4<sup>th</sup> & 5th Gen Intel<sup>®</sup> Xeon<sup>®</sup>: Server Consolidation, Efficiency & Increased Performance

#### Example: 2U2S SR650 V3 with 8480+ & 40U Rack Cabinet



Up to 100% more Virtual Machines per server on a SR650 V3 vs. SR650 V1

### Improved Performance



#### Virtual Machines\*\*:

- V1 to V3: up to **128**% more Virtual Machines/Containers per server
- V2 to V3: up to 60% more Virtual Machines/Containers per server

#### **VDI\*\***:

- V1 to V3: up to 60% more VDI users per ThinkAgile node
- V2 to V3: up to 30% more VDI users per ThinkAgile node





### Lenovo ThinkAgile V4 Portfolio

Simplify and accelerate Hybrid Cloud and Hybrid AI adoption with ThinkAgile SDI

#### ThinkAgile HX V4



#### NUTANIX

- ThinkAgile HX630 V4
- ThinkAgile HX650 V4
- ThinkAgile HX650 V4 Storage

#### **GPT-in-a-box**

- Industry 1<sup>st</sup> liquid cooling
- Rapid deployment of Al/LLM/RAG
- BYO LLM models
- Lenovo + Nutanix validated

#### ThinkAgile VX V4



#### **m**ware

by **Broadcom** 

- ThinkAgile VX630 V4
- ThinkAgile VX650 V4
- ThinkAgile VX650 V4-SAP

#### **Private Al**

- NVIDIA + Lenovo validated
- Highly secure AI deployment
- Validated with NVIDIA NIMs
- Ease of mgmt. with vCenter

#### ThinkAgile MX V4





- ThinkAgile MX630 V4
- ThinkAgile MX650 V4

#### **Azure Local Al**

- Azure ML catalog access
- Deploy models from Azure
- GPU virtualization
- RAG for Azure Al search

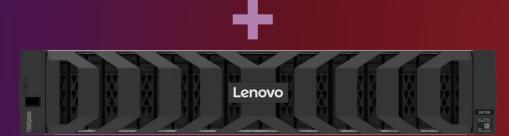


### New ThinkAgile Converged Solution for VMware

Optimize your virtualized environments with ThinkAgile Converged solutions

**ThinkAgile** 





**ThinkSystem** 



#### **Reduction in Investments** for VMware environments

#### **Use cases:**

- Repatriation of VMware public cloud workloads
- General purpose virtualized workloads
- Workload Migration & Server Consolidation
- **DevOps & Test Environments**

#### **Benefits:**



Simplified system management



Dynamic resource scalability



Easy to Order

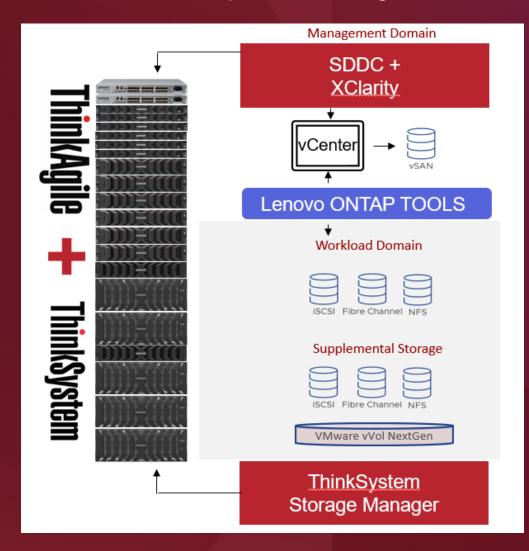


**Unified Support** Experience

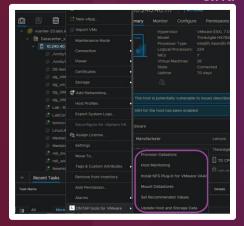


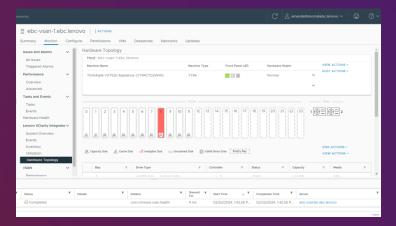
### Lenovo ThinkAgile Converged Solution for VMware

Seamless Compute & Storage for VMware Environments

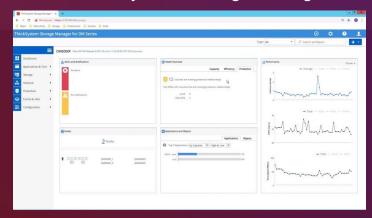


Fully integrated with vCenter via Lenovo Xclarity Integrator and ONTAP tools for VMware



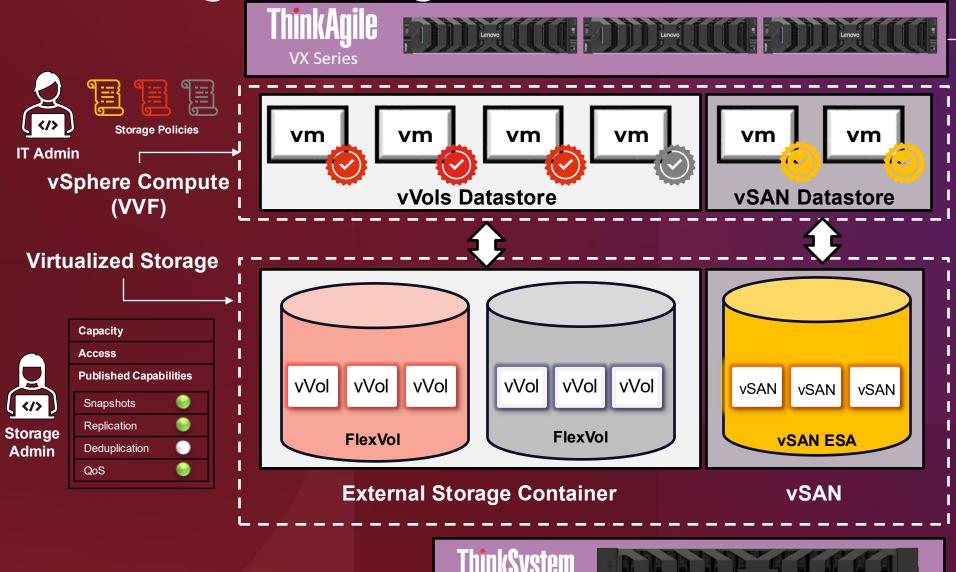


Storage Deployment and additional configuration via ThinkSystem Storage Manager



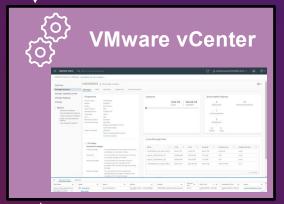


### ThinkAgile Converged Solution for VMware



**DG** Series





"Single Pane of Glass"

Management

Lenovo ONTAP Tools for VMware



# NUTANIX **ThinkAgile**

Simplify Distributed Hybrid Cloud adoption with ThinkAgile HX

## Why ThinkAgile HX V4 Series



Seamless Management with Al-driven security Virtualization Savings

Manage hybrid multi-cloud, achieving up to 53% TCO savings\*. Strengthen monitoring with XClarity One Al-driven security



**Maximize** 

Save up to 63%\* in TCO. Up to 2X\*\* cost savings with VMware migration to ThinkAgile HX, guided by Lenovo Services



**Efficient High-Density Computing** 



Liquid-Cooled ThinkAgile solution accelerates enterprise Gen AI strategy & lowers power consumption by 25%\*\*\*



<sup>\*</sup> Up to 53% HX V1 to V4 comparison. Up to 63% TCO savings compared to VxRail V1

<sup>\*\*</sup>Up to 2X SW license savings when moving from Vmware V1 to HX V4

<sup>\*\*\*</sup>compared to traditional air cooling

### ThinkAgile HX V4



- Intel AMX support for CPU only Al Inferencing
- Multi-cluster configuration management with Prism Central
- Multi-cluster Lifecycle Management via Prism Central
- Optional Neptune Liquid cooling
- Up to 30TB NVMe Drives
- Unified Management With XClarity One

1st & Only

**Nutanix Certified Liquid Cooled Appliance** 

Only Al Edge-to-Cloud Solution

With edge & GPT-in-a-Box 2.0 Nutanix Validated Designs

#1 in Full Stack Support. With an NPS of 95!

Average is 90

**Quicker Update Availability\*** 

For UEFI & XCC using XClarity One integration with Nutanix
Cloud Manager





### ThinkAgile HX V4 Solutions







#### HX630 V4

Cost optimized entry-level, dual socket

Medium density virtualization and Cloud-Native requiring low-medium local storage

(up to 3 SW GPUs)

Traditional database and scale out database with low-medium local storage

#### HX650 V4

Designed to boost acceleration performance across the widest range

Maximizes results from AI to Modeling & Simulation apps with maximum flexibility (up to 10 SW GPUs)

AI-ML/DL inferencing, Metaverse, Digital Twins modeling,
high-performance compute,
render farms and virtualization

#### **HX650 V4 Storage**

Capacity and performance optimized platform

Built for high performance database applications (Microsoft SQL, PostgreSQL, Oracle) and storage heavy enterprise applications (Exchange, Sharepoint)





### One Platform to Run All Apps & Data, Anywhere

#### **Nutanix Central**

Prism Federation

API | Alerts | LCM | IAM

**Cloud Manager** 

AlOps | Self-Service | Cost | SecOps

Kubernetes Platform

LCM | Fleet Management | Security

Data Lens

Security | Privacy

Files, Objects

Data for K8s

**Database Service** 

**Enterprise Al** 

**Project Beacon** 

**Nutanix Cloud Infrastructure** 

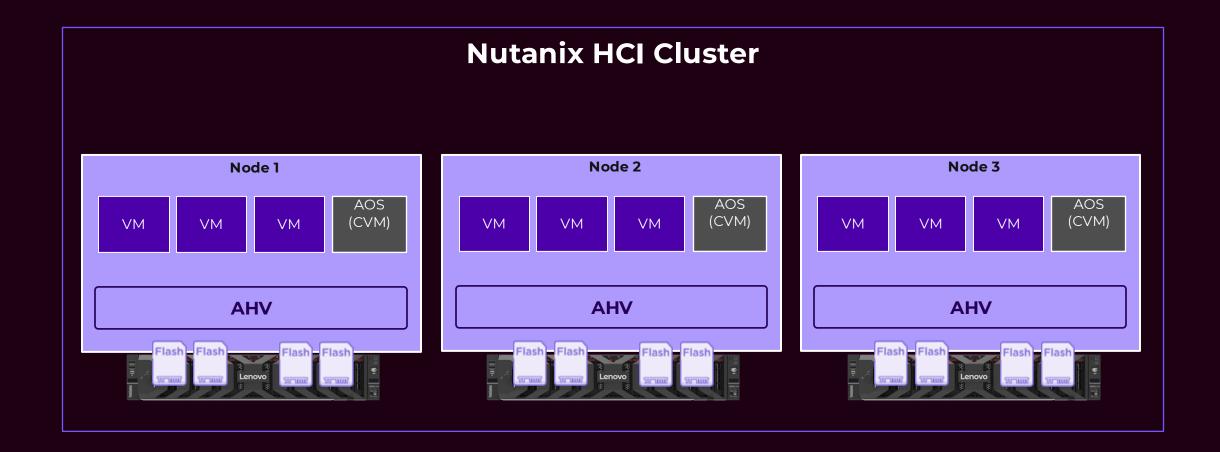








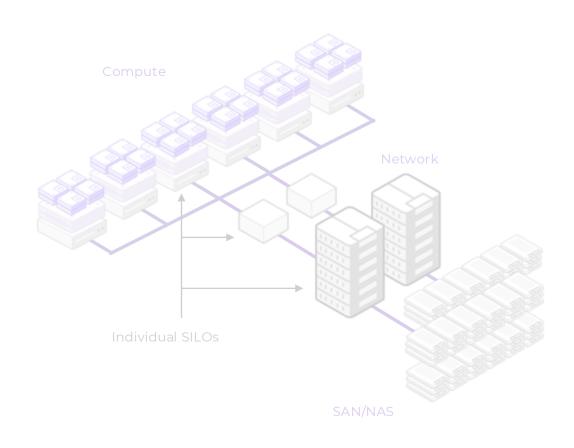
#### Nutanix Cloud Platform

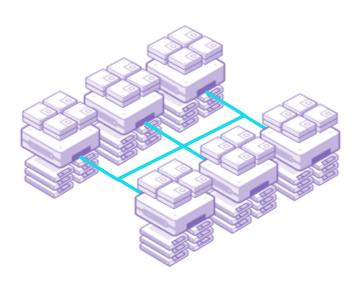






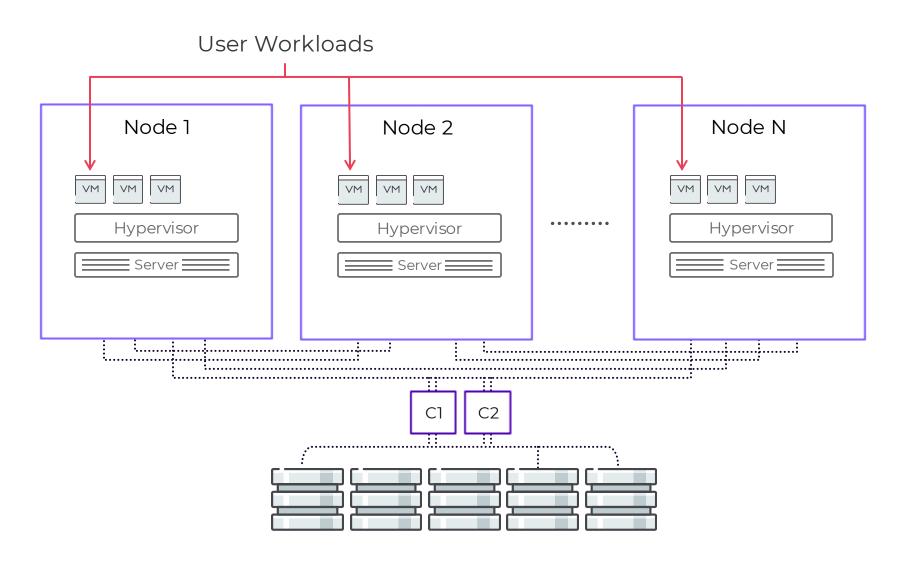
### Nutanix HCI is a Fully Distributed Infrastructure



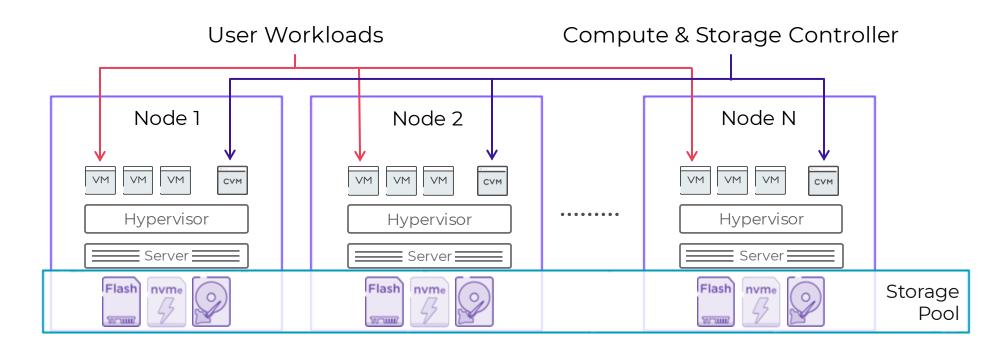


Integrated Compute, Storage, Virtualization, Network, and Security

# Converging Storage Services



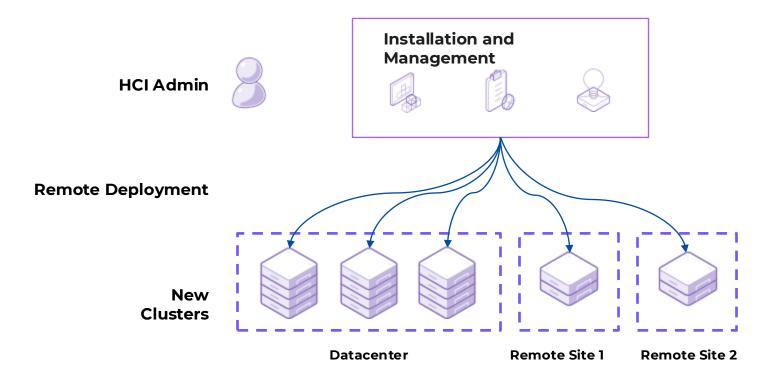
#### Flexible Scale-out Architecture





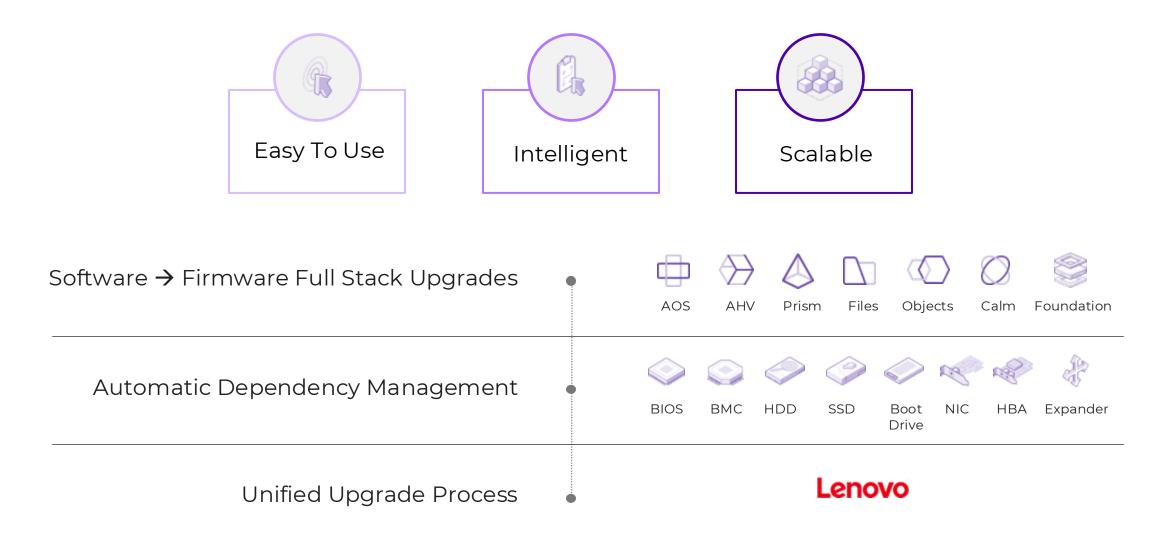
- ✓ Start small and scale without limits
- ✓ Keep data local for maximum performance
- ✓ Increase capacity one node at a time
  ✓ Mix node types and hardware generations

### Simple, Fast Deployments



- Complete install in less than 1 hour
- Single installer for all deployments
- Image multiple clusters, across sites
- Deploy Hypervisor + AOS

### Simplified Maintenance and Upgrades



# Unified Management



### Observations From the Field



Kubernetes is the predominant platform for Al



Infrastructure and Kubernetes teams will merge over time



Customers are looking to consolidate infra vendors



Kubernetes on the edge is growing fast



NKP is a strong cloud-first play too

NUTANIX



#### NKP vs. DIY

#### DIY

- ✓ Built on best-of-breed open source
- Customizable
- X Build your own automation
- X Build your own platform
- X Self-supported
- X Months/years to deploy
- X Manual time-consuming upgrades

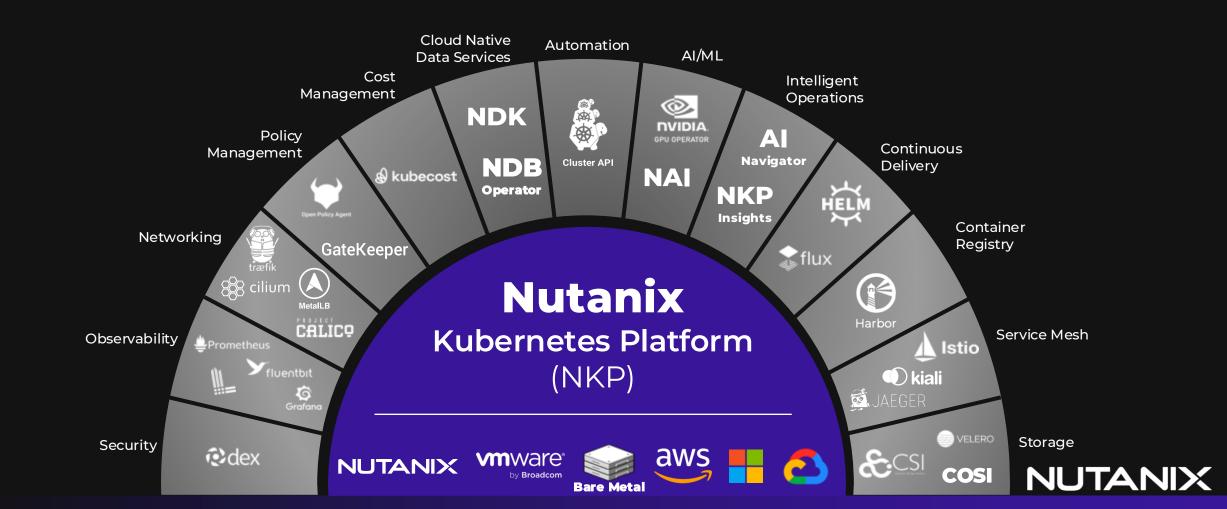
#### NKP

- ✓ Built on best-of-breed open source
- Customizable
- Built-in automation
- Enterprise Ready Complete Platform
- Industry Leading Nutanix Support
- Hours to deploy
- Automated upgrades

### Simply

# Deploy, Secure, Manage & Upgrade

Enterprise-Ready Cloud Native Stack at Scale



# ThinkAgile MX V4



- Manage your on-premises and cloud infrastructure with one consistent experience.
- Run AVD on prem increasing performance while saving money with the added flexibility when needed.
- EDSFF drives for better cooling and increased capacity
- Up to 75% faster read speeds with PCIe Gen5
- Optional Neptune Liquid Cooling
- NVME only configurations

- High Performance, Reliable Lenovo Servers tested validated in close Partnership with Microsoft for choice of Premier, Integrated Systems
- Automated deployment at scale using Lenovo Open Cloud Automation
- Single Pane of glass management for monitoring and lifecycle management with Lenovo xClarity Integrator
- Industry 1st Appliance with Lenovo IP liquid cooling technology for increased VM density and energy savings
- Single Click Update via Azure Portal using Lenovo's Solution Builder Extension
- Frequent **easy to use and flexible best recipes** for firmware update

# ThinkAgile MX V4 Solutions



### MX630 V4

Cost optimized entry-level, dual socket

Medium density virtualization and Cloud-Native requiring low-medium local storage

(up to 3 SW GPUs)

Traditional database and scale out database with low-medium local storage



### **MX650 V4**

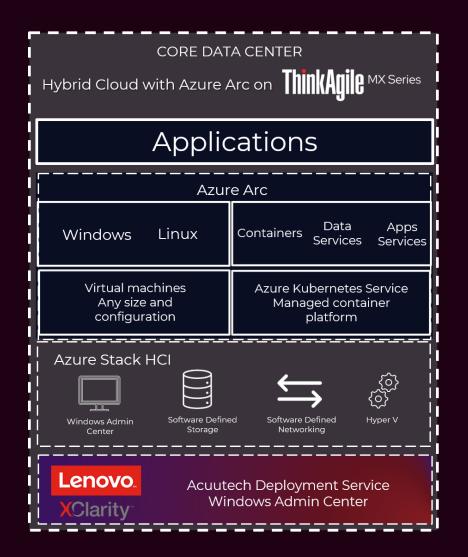
Designed to boost acceleration performance across the widest range

Maximizes results from AI to Modeling & Simulation apps with maximum flexibility (up to 8 SW GPUs)

AI-ML/DL inferencing, Metaverse, Digital Twins modeling, high-performance compute, render farms and virtualization



# **Hybrid Cloud with ThinkAgile MX**





Integration with Azure Kubernetes Service enabled by Azure Arc to run cloudnative apps on premises



Small form factor Azure Local nodes for intelligent edge and remote- or branch-office solutions



Performance-optimization for managing on-premises workloads

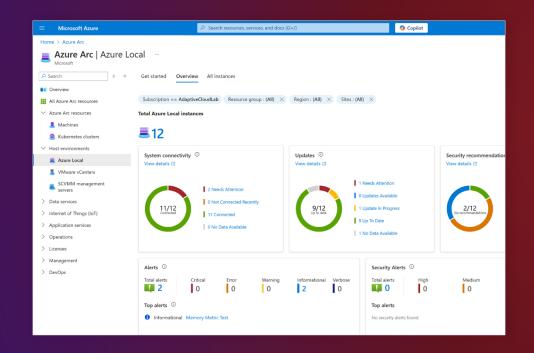


Flexible, large scale VDI platform and support for Azure Virtual Desktop on premises





# **Unified Management for ThinkAgile MX**





### Easy deployment with automation

Deploy distributed infrastructure from Cloud using Lenovo Open Cloud Architecture



### **Central Visibility across all locations**

Monitor infrastructure, VMs, Kubernetes clusters, AVD resources with Xclarity One or Azure portal

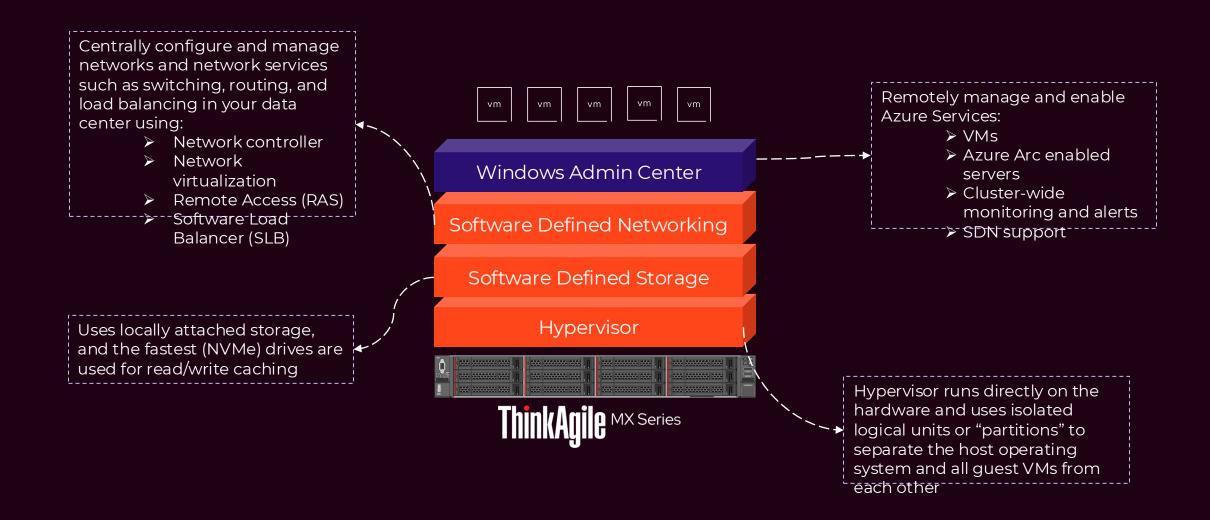


### Faster easier updates

One-click updates from a central location with Lenovo Solution Builder Extension (SBE)

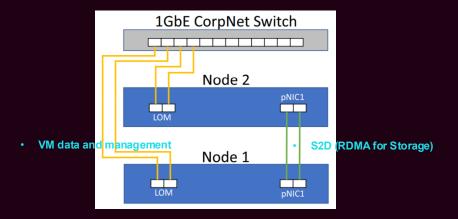


# **Azure Local Components**

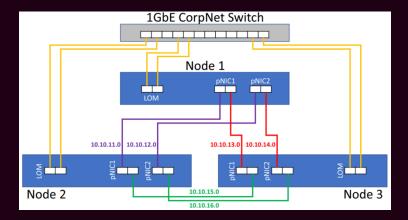




# **Networking Configurations – direct connected**



- 2 node connectivity for directconnected deployment scenario
- External witness is recommended, e.g for MX1021 - a Cloud witness or USB drive

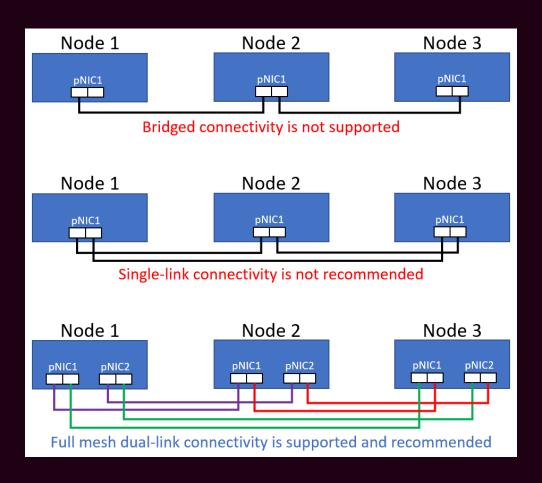


- 3 node connectivity for direct-connected deployment scenario full-mesh configuration
- Each node is connected to each of the other two nodes in a redundant manner, which requires a total of four network ports
- Not recommended for MX1021 as risk for having "partitioned network"





# **Networking Configurations – direct connected**

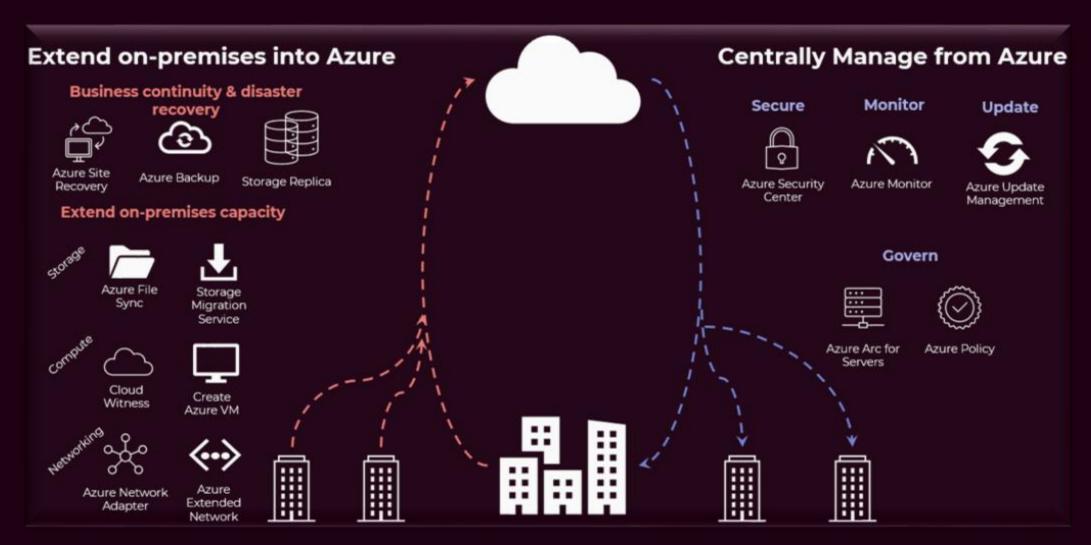


Cluster quorum overview			
The table below gives an overview of the Cluster Quorum outcomes per scenario:			
Server nodes	Can survive one server node failure	Can survive one server node failure, then another	Can survive two simultaneous server node failures
2	50/50	No	No
2 + Witness	Yes	No	No
3	Yes	50/50	No
3 + Witness	Yes	Yes	No
4	Yes	Yes	50/50
4 + Witness	Yes	Yes	Yes
5 and above	Yes	Yes	Yes
Cluster quorum recommendations			
<ul> <li>If you have two nodes, a witness is required.</li> <li>If you have three or four nodes, witness is strongly recommended.</li> <li>If you have Internet access, use a cloud witness</li> </ul>			
• If you're in an IT environment with other machines and file shares, use a file share witness			



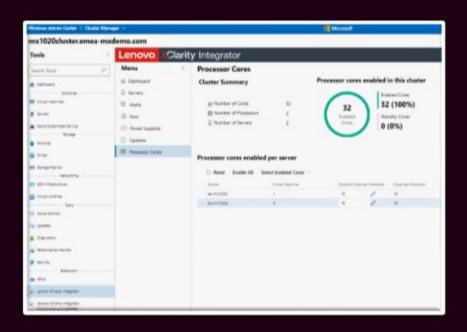
# Windows Admin Center (WAC)

Reimagined "in-box" platform and tools





# **Lenovo XClarity Integrator**





### **Key Features**

- System Update
  - Firmware/driver update based on Lenovo-predefined best recipe for Azure HCI clusters running on ThinkAgile MX appliances or certified nodes
  - > Firmware update for bare metal servers
- Cluster hardware health status
  - Manage hardware nodes
  - > Power consumption and nodes temperature
- Turn on/off Physical cores in WAC
  - Scale your on-premis Azure Local with Xclarity Integrator
  - Cluster Aware Update (CAU)
- Life cycle management
  - Firmware/driver update for the Azure Local cluster deployment scenario



### Nutanix Kubernetes Platform Capabilities

### Multi K8s Distribution **Hybrid Multicloud Fleet Management Enhanced User Support** Certified Kubernetes Multitenancy App Catalog Log Mgmt. Intelligent Copilot EKS RCA Cost Mgmt. AKS Quotas GitOps Anomaly Detection Resolution Runs Anywhere **Platform Services Operations Data Services** NutanixAWS Disaster Recovery Observability GCP Al Service Mesh Logging Azure Backup Al Assistant Policies VMware Bare metal ServerlessContainer registry Cluster Lifecycle Management OS Upgrade Kubernetes Upgrade Cluster Upgrade Cluster Autoscaling Cluster Self-Healing **Cluster Services** Networking Load Balancing Security **RBAC** SSO Install Air-gapped Ingress Storage **Kubernetes** Pure Upstream Kubernetes Linux OS **Rocky** Linux<sup>tm</sup> Bring-Your-Own (Managed OS) Infrastructure Al-Optimized Infra MSPs **Public Cloud** Physical Edge Private Cloud

# **XClarity Software Suite**

Cloud automation and IT service management processes

4

### Lenovo

**XClarity Integrators** 

- Integration into leading virtualization management consoles and IT service management tools
- VMware, Microsoft, Cloudforms, Chef, Puppet, ServiceNow, MSFT WAC

Innovative Centralized Management 3

### Lenovo

**XClarity Orchestrator** 

Lenovo

**XClarity Administrator** 

- Centralized software-based delivery and management for ThinkSystem servers, storage, and networking
- Mobile app for anywhere management
- REST APIs for ease of integration into software-defined environments

Platform Management Tools 2 Lenovo
XClarity Essentials

- Collection of one-to-one management tools
- Scripting tools
- Bootable Media Creator

Embedded Platform Management

1 Lenovo
XClarity Controller

- Embedded management engine common in all ThinkSystem servers
- Fresh, uncluttered graphical user interface
- Redfish-compliant web-based REST APIs for ease of inter-operability



### Начиная работать

- Работу с оборудованием Lenovo, крайне рекомендуем начать с портала <a href="https://pubs.lenovo.com">https://pubs.lenovo.com</a> и ознакомиться с документацией по серверам и конкретно разделам, посвящённым первоначальной настройке серверов, например, ThinkSystem SR650 V3 <a href="https://pubs.lenovo.com/sr650-v3/update\_the\_firmware">https://pubs.lenovo.com/sr650-v3/update\_the\_firmware</a> и <a href="https://pubs.lenovo.com/sr650-v3/update\_the\_firmware">https://pubs.lenovo.com/sr650-v3/update\_the\_firmware</a> и установке ОС <a href="https://pubs.lenovo.com/sr650-v3/install">https://pubs.lenovo.com/sr650-v3/install</a> the operating system.
- Продакт гайд по оборудования можно найти на портеле https://lenovopress.lenovo.com/
- Мы рекомендуем проверять совместимость серверных платформ и конкретных компонентов серверов с ОС на портале OSIG https://lenovopress.lenovo.com/osig.
- Полную информацию о поддерживаемых серверов опций и их совместимости с ОС можно найти на портале https://serverproven.lenovo.com/server/sr650-v3/.
- Перед установкой настройкой RAID и установкой ОС крайне рекомендуем ознакомиться с последними обновлениями прошивок, драйверов и другого ПО для серверов <a href="https://datacentersupport.lenovo.com/us/en/products/servers/thinksystem/sr650v3/downloads/driver-list/">https://datacentersupport.lenovo.com/us/en/products/servers/thinksystem/sr650v3/downloads/driver-list/</a>. Для удобства можно выбрать конкретную ОС, планируемую к установке на сервер:
- И посетить портал Lenovo Server OS and Solution <a href="https://datacentersupport.lenovo.com/us/en/solutions/ht505329">https://datacentersupport.lenovo.com/us/en/solutions/ht505329</a>, где можно получить больше информации о работе с различными операционными системами, например, Red Hat <a href="https://support.lenovo.com/us/en/solutions/ht508265">https://support.lenovo.com/us/en/solutions/ht508265</a>.
- Для поддержания оборудования в актуальном состоянии рекомендуем ознакомиться со статьей Lenovo ThinkSystem Firmware and Driver Update Best Practices <a href="https://lenovopress.lenovo.com/lp0656-lenovo-thinksystem-firmware-and-driver-update-best-practices">https://lenovopress.lenovo.com/lp0656-lenovo-thinksystem-firmware-and-driver-update-best-practices</a>, в ней приведены базовые рекомендации по обновлению и рекомендуемые инструменты для проведения обновления.
- Инструкцию по модулю удаленного управления можно найти по адресу <a href="https://pubs.lenovo.com/xcc2/">https://pubs.lenovo.com/xcc2/</a>.
- Для настройки централизованного управления оборудованием рекомендуем ознакомиться со статьей <a href="https://lenovopress.lenovo.com/tips1200-lenovo-xclarity-administrator">https://lenovopress.lenovo.com/tips1200-lenovo-xclarity-administrator</a>. Инструкцию на ПО XClarity Administrator можно найти по адресу <a href="https://pubs.lenovo.com/lixca/">https://pubs.lenovo.com/lixca/</a>.
- Рекомендации по использованию ПО VMware можно найти на портале <a href="https://vmware.lenovo.com">https://vmware.lenovo.com</a>.
- Используйте брошюру <a href="https://www.dropbox.com/scl/fi/x185beoh547fli8zrvbji/lenovo\_brochure.pdf?rlkey=2dn91rr7iy701pczxteaheh81&st=yaa2fw4g&dl=0">https://www.dropbox.com/scl/fi/x185beoh547fli8zrvbji/lenovo\_brochure.pdf?rlkey=2dn91rr7iy701pczxteaheh81&st=yaa2fw4g&dl=0</a>.

# Smarter technology for all Smarter

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