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BÜROZENTRUM BEUTELMAYR GMBH

Lenovo DCG Storage Portfolio

Robert Bacci

Lenovo Data Center Group - Business Development Storage

+ Lenovo – DCG: Hardware - Portfolio

World class portfolio for end-to-end data center requirements

Server Highest reliability in the industry 	Rack & Tower System x, ThinkServer 	Mission Critical X6 	Dense NeXtScale, ThinkServer 	Blades Flex System 	Hyperconverged HX Series
Storage Unbeatable Price perf. & latest innovations	Entry SAN S Series 	Mid-range SAN V Series 	SDS DX8000C,N,D; DSS-G 	All Flash Array (AFA) V Series; DS Series, DX Series 	Direct Attach & Archive D Series, TS Series
Networking Best performance at lower cost 	Embedded 	Top of Rack 	Campus and Core 	Storage Switches 	Network OS
Solutions Best of breed Engineered Solutions 	Cloud 	Big Data 	Analytics 	Database 	VDI
HPC The Racing Arm of Lenovo IT	Compute NeXtScale nx360 	Storage nx360 + Storage NeX 	PCI nx360 + PCI NeX 	GPU & Storage nx360 + Storage & GPU 	Water Cooled nx360 WCT
Hyperscale Customer-Centric, Strategic Partner-Based Approach	Compute & Warm Storage 		Application Optimized 		Rack Scale Architecture

Note: Lenovo XClarity features reserved across portfolio.

End to end services that span from basic to consultative engagements



+ Lenovo Storage



SAN

DS Series
DV Series
DB Series

Shared
Storagesysteme
(HDD, SSD)

Fibre Channel, FCoE,
iSCSI

DAS

DE1012 / DE1024
(6Gb)
DS1212 / DS1224
(12Gb)
DS3284 (12Gb)

JBOD
Expansion für S Series
Storage-Kapazität für
SDS

SDS

DX8200C
DX8200N
DX8200D

Software Defined
Storage für:
Object-Storage
File&Block-Storage
Block-Storage +
Storage-Virtualisierung

HCI

Nutanix
HX- Serie

DSS-G

Distributed Storage
Lösung für
IBM® Spectrum Scale™

Archive

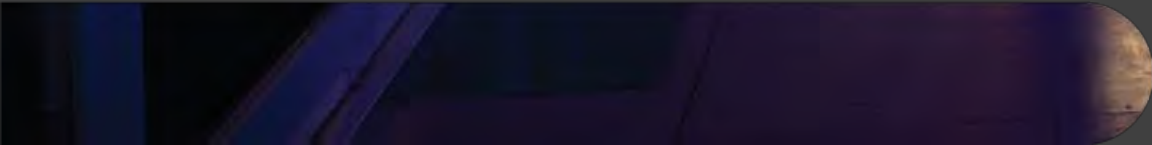
Tape Drive,
Autoloader,
Library

Entry- und Midrange-
Tape-Systeme



Portfolio Details

Product Overviews, Specifications



SAN Overview

DS Series

DV Series

DB Series

Lenovo™

+ Specifications – Lenovo Storage S2200 / S3200



	S2200	S3200
Max HDD	96	192
Enclosures	2U24 / 2U12	2U24 / 2U12
Max Enclosures	1 + 3	1 + 7
Controllers	Single/Dual	Single/Dual
Cache	12GB	12GB
Host Ports/Connectivity	(2 per controller) 6/12Gb SAS 1/10Gb iSCSI 8Gb FC Single Connectivity	(4 per controller) 6/12Gb SAS 1/10Gb iSCSI 8/ 16Gb FC Hybrid Connectivity
SSD Support / Caching	Base	Base
Intelligent Real-Time Tiering	Base HDD Optional (HDD+SSD)	Base HDD Optional (HDD+SSD)
Snapshot	Base 64 Optional 256 Optional 512	Base 128 Optional 512 Optional 1024

Common Hardware Features

- ✓ Active / passiv Controllers
- ✓ SSD / HDD Hybrid configurations
- ✓ Highly Scalable and Upgradable
- ✓ Choice in Connectivity
- ✓ High Performance
- ✓ Unified Chassis Design
- ✓ Designed for 99.999% Availability
- ✓ Battery Free Cache Protection

Common Software Features

- ✓ Intelligent Real-time tiering
- ✓ Rapid RAID Rebuild
- ✓ Rebalancing
- ✓ Large LUNs
- ✓ Thin Provisioning
- ✓ Snapshots
- ✓ Synchronous Caching

+ Approved Nomenclature for ThinkSystem

ThinkSystem

• Data Storage

- DP – Predictive Analytics / SAN
- DD – DAS
- DS – S Series / SAN
- DV – V Series / SAN
- DB – Brocade FC SAN

• Server

- ST – Tower
- SR – Racks
- SB – Blade
- SD – Dense

• Networking

- NE - Ethernet
- NI - Infiniband
- NF - Fibre Channel
- NL - Converged

Lenovo ThinkSystem DS6200 -- Storage

Lenovo ThinkSystem SR650 V6 Server

Lenovo ThinkSystem NE4348T -- RackSwitch

Corporate
Brand

DCG Portfolio
Sub-brand

Series/Class
Generation

Descriptor

+ ThinkSystem Model Naming



Original Model Name	New ThinkSystem Model Name
Lenovo Storage S2200 V2	Lenovo ThinkSystem DS2200
Lenovo Storage S4200 V2	Lenovo ThinkSystem DS4200
Lenovo Storage S6200 V2	Lenovo ThinkSystem DS6200
Lenovo Storage S Series 12G Exp Unit	Lenovo ThinkSystem DS Series Exp Unit



+ Executive Summary

Lenovo ThinkSystem DS Series



Form Factor

- 2U 12 LFF (DS2200/DS4200 only)
- 2U 24 SFF

Segment

- Entry Block SAN Storage (Price Band 1-4) for DS2200/DS4200
- Entry Mid Range SAN Storage (**Price Band 5**) for DS6200

Target Market

- Entry Level / Departmental / ROBO for DS2200/DS4200
- Shared Data Center / OLTP databases for DS6200

Value Proposition

- Creating a NEW category in the Price & Performance grade
- Enterprise-class functionality at entry level price point
- Entry and Mid level storage for server led sales
- Flexible configurations and value added features

Key Features

- End-to-End 12Gb performance | Hybrid drive support
- Real Time Intelligent Tiering | Rapid Raid Rebuild
- Asynchronous Replication | Multi-protocol support
- XClarity integration supporting storage alerts

Key Dates*

- Announce Date: Juni 20, 2017

+ DS Series Overview

Model	DS2200	DS4200	DS6200
Target Market	Entry / Pure Value	Entry / Value+	Mid Range / Performance for Value
Target Workloads	<ul style="list-style-type: none"> • Entry Shared storage • Remote & Branch Office 	<ul style="list-style-type: none"> • Primary Storage • Remote & Branch Office • Virtualization, Backup 	<ul style="list-style-type: none"> • Enterprise Storage • Transaction & I/O intensive • OLTP Databases
Performance	100k IOPs* (RD)	235k IOPs* (RD)	375k IOPs* (RD)
Value Proposition	<p>Establishes New Performance for Price Category All-flash capability with AFA license included Highly Scalable and Upgradable</p>		
HW Features	<p>Lenovo Branded 2U12 LFF (DS200/4200 only) & 2U24 SFF 12Gb host and backend IO Interchangeable drive trays, chassis and power supply</p>		
SW Features	<p>Real-time Tiering, Async Replication, RoW Snap of Snap, Improved integration with XClarity</p>		

+ DS Series Positioning

Common SW Stack, Common HW Chassis, Drive Trays & Power Supply

Best Value
for SMB



DS2200

- Target 100K IOPS
- Up to 96 drives
- 12Gb Host & BE
- 2U12/2U24
- Upgradeable controllers
 - to DS4200 or DS6200

Best Value
with Improved Performance



DS4200

- Target 235K IOPS
- 2x faster than S3200
- Up to 240 drives
- 12Gb Host & BE
- 2U12/2U24
- SPC-1 benchmark planned as proof point (\$/GB leader)
- Upgradeable controllers
 - to DS6200

Performance targets are 100% read, 4K blocks, virtual mode

Best Performance for Value
in the Industry

1st to Market



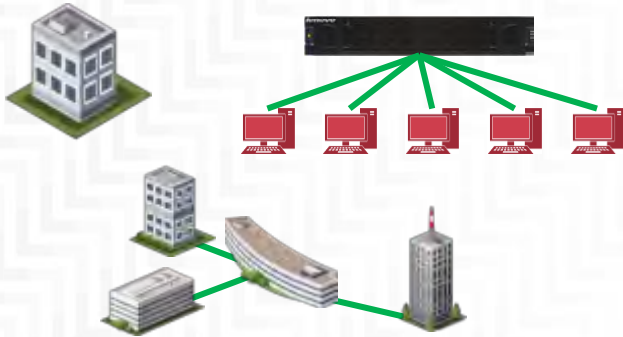
DS6200

- Target 375K IOPS
- Up to 240 drives
- 12Gb Host & BE
- 2U24
- Breakthrough performance & scale at best-in-class pricing
- SPC-1 benchmark planned as proof point (\$/IOP leader)



+ Target Customers/Workloads

DS2200



**General Purpose / Small Office
Remote & Branch Offices
Target Backup Appliance**

Ideal for :

Web serving, file serving, and print serving
Small databases applications

DS4200



**Data Center High IOPS
Data Center High Throughput
Primary Storage & Backup**

Ideal for :

Video Streaming, Media
Backup
Archive

DS6200



**Enterprise Solutions
Mission Critical Applications
Transaction & I/O intensive**

Ideal for :

OLTP Databases
Data Mining
HPC
Video Streaming
Digital Video Production

+ DS Series – Key features

Hardware Features

- Active / Active Controllers
- SSD / HDD Hybrid configurations
- Highly Scalable and *Upgradable*
- *Choice in Connectivity*
- *High Performance*
- Unified Chassis Design
- *Designed for 99.999% Availability*
- *Battery Free Cache Protection*

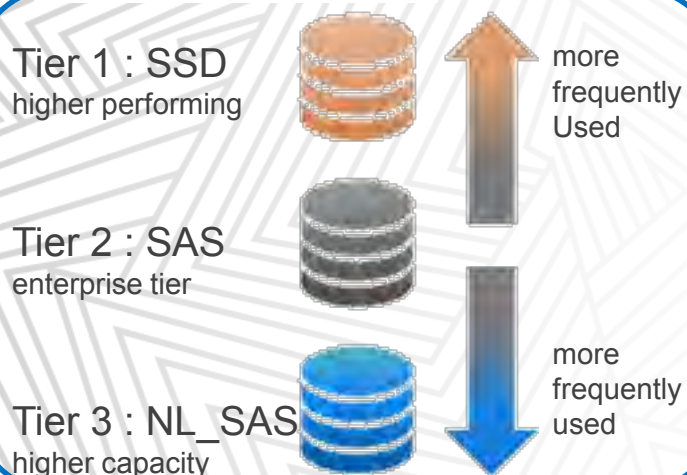
Software Features

- *Intelligent Real-time tiering*
- *AFA mode*
- *SSD Read Cache*
- Rapid RAID Rebuild
- Rebalancing
- Large LUNs
- Thin Provisioning
- Snapshots
- *Synchronous Caching*
- Asynchronous Replication (optional)



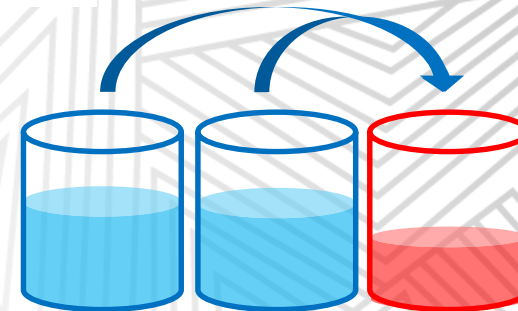
+ DS Series functions

DATA TIERING



REBALANCING

improves performance by distributing I/O requests



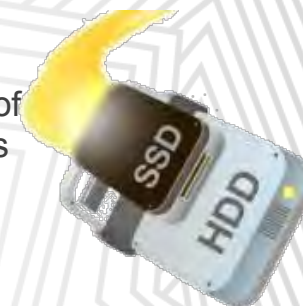
RAPID RAID REBUILD

increase data RAID restoration speed rebuilding only used data and not the full RAID set



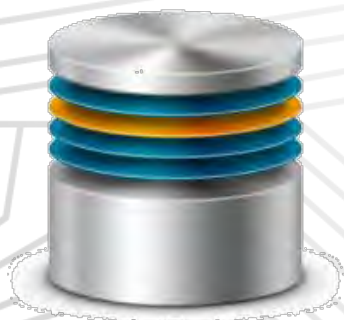
READ CACHING

to accelerate the fulfillment of future requests for the data



THIN PROVISIONING

Allocating space when data is written to disk



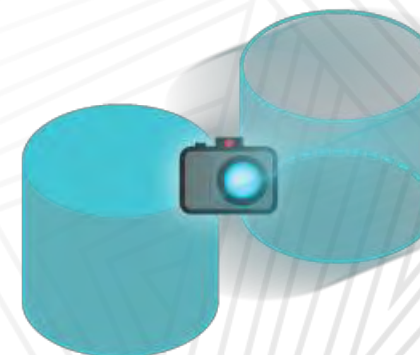
STORAGE POOLING

pooling drives and make them look as if they were all part of a single pool of disk space



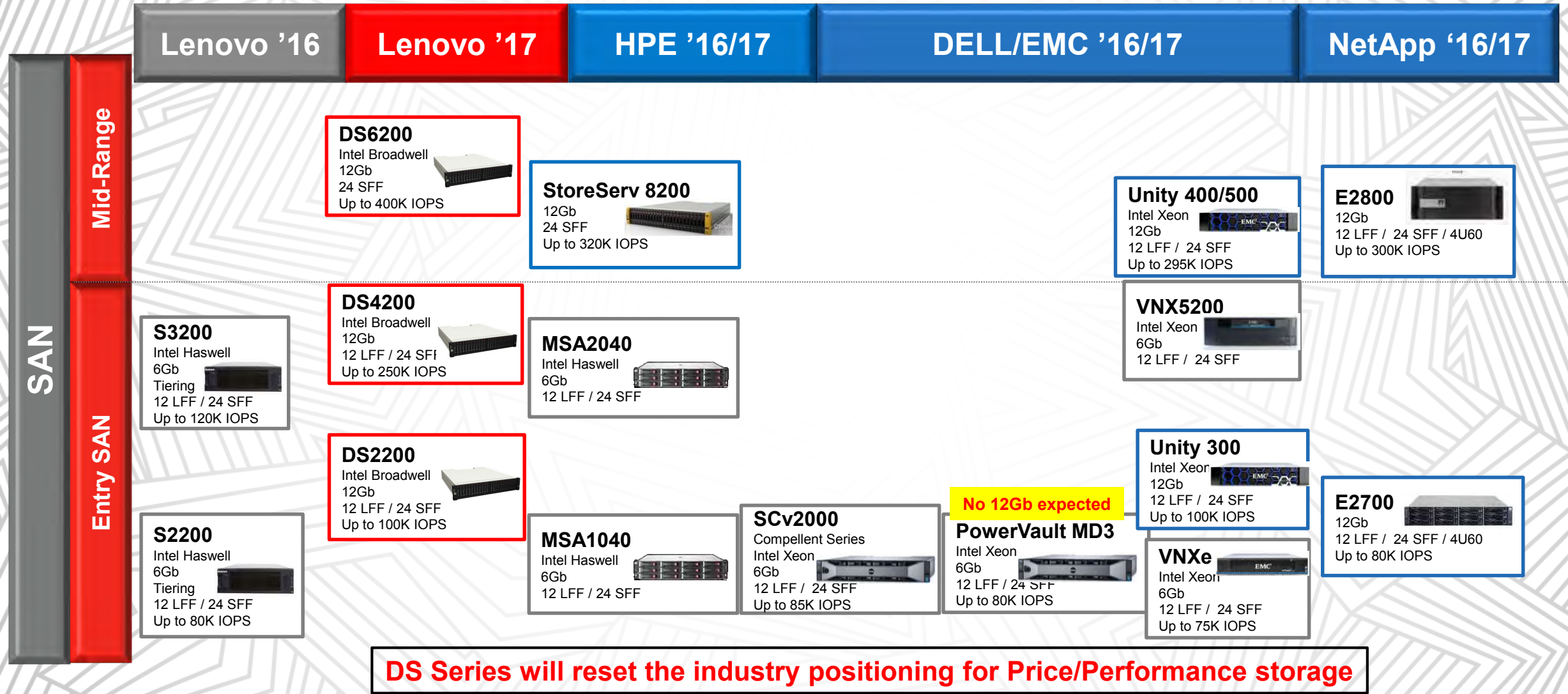
SNAPSHOTS

state of a system at a particular point in time



+ Entry and Mid-Range SAN Competitive Landscape

Projection: All Competitors will move to 12Gb Controllers by 2017



SAN Overview

DV Series

DS Series

DB Series

Lenovo™

+ The Lenovo DV Series Family

A comprehensive range of fully virtualized storage systems

- ❖ One code base on all platforms
- ❖ One set of functions (selectively licensed)
- ❖ One User Interface
- ❖ One CLI

Software:

Easy Tier, Remote Mirror, FlashCopy, Thin Provisioning, Data Migration, Internal Virtualization

Software:
Same as V3700 V2
+ Encryption, Real-time Compression, External Virtualization, HyperSwap



DV3700



Lenovo DV3700 V2, XP
Up to 240 drives - **960 TB**



Lenovo DV5030
Up to 504 drives – **2016 TB**
Two-way clustered system – **4032 TB**



DV7000
Up to 1056 drives



+ Lenovo Storage DV und IBM Storwize for Lenovo

V Series is a hybrid storage system designed with sophisticated capabilities with efficiency and flexibility through built-in Advanced Functionality and non-disruptive migration of data from existing storage



DV3700 V2

6535-HC1/HC4

Up to 240 drives

Small

- Internal Virtualization
- Thin Provisioning
- Data Migration
- Advanced GUI
- Multi Host support
- VMware & MS Integr
- FlashCopy
- EasyTier
- Remote Mirror

DV3700 V2 (XP)

6535-HC2/HC5

Up to 240 drives

Medium

- V3700 V2 plus...
- Higher Performance

* 2 SAS host ports standard

DV5030

6536-HC3/HC6

Up to 1008 drives

Large

- V3700 V2 plus...
- Higher Performance
- Higher scalability
- Clustering
 - 2 I/O Groups
- Encryption
- Compression
- External Virtualization
- HyperSwap

DV7000

6195-SC5

Up to 1056 drives

Large

- V5030 plus...
- Clustering
 - 4 I/O Groups)
- Higher scalability
- Higher Performance
- Hardware Accelerators

Target Workloads:

Cloud/
Virtualization

DB/Analytics/HPC

Backup/Disaster
Recovery

LOB Apps

Storage Consolidation

SAN Overview

DS Series
DV Series

DB Series

Lenovo™

+ Top of Rack FC SAN Switches

Broadcom



Lenovo Storage DB300
12 to 24-port 8Gbps Entry Switch



Lenovo Storage DB6505
12 to 24-port 8/16Gbps Switch



Lenovo Storage DB6510
24 to 48-port 8/16Gbps Switch

Entry to Enterprise Fibre Channel Switches

Lenovo Storage SAN Switches combine simplicity, reliability, and flexibility

- Advance Performance , Availability, Diagnostic and Management upgrade options
- Ports on Demand “Pay as you grow” Scalability
- Entry-level to Enterprise-class switches
- 8Gbps or 16Gbps, local and long range optics

+ Erweiterung des SAN-Switch-Portfolios 1H2017

DB Series

DB620S



Breakthrough Performance

Accelerate application response time by up to 71%



Increased Scalability

Simplify scale-out network architectures, reducing cost and complexity



Increase Agility

Adapt and optimize your business for next-gen storage requirements

DB800D

DB400D





Direct Attached Storage

Lenovo™

+ Product Positioning DAS JBOD



+ Direct Attach Storage for High Capacity Applications

The DD1212/DD1224 delivers maximum capacity and performance at an affordable price

Performance Oriented

- 12 Gbps SAS interface connectivity
- Dual ESMS and redundant power supply units for high availability

Maximum Scalability and Capacity

- DD1212 features up to (12) 3.5-inch SAS hot-swap hard drives
- DD1224 features up to (24) 2.5-inch SAS hot-swap hard drives
- Daisy chain up to 8 enclosures of the D1212
- Daisy chain up to 8 enclosures of the D1224

High Quality

- Cost effective, highly reliable backplane
- Three year warranty standard
- NEBS compliant, ruggedized components designed for 99.999% availability

Best-of-Breed

- Integrates seamlessly with Lenovo ThinkServer and System x servers
- Optimized for best price performance



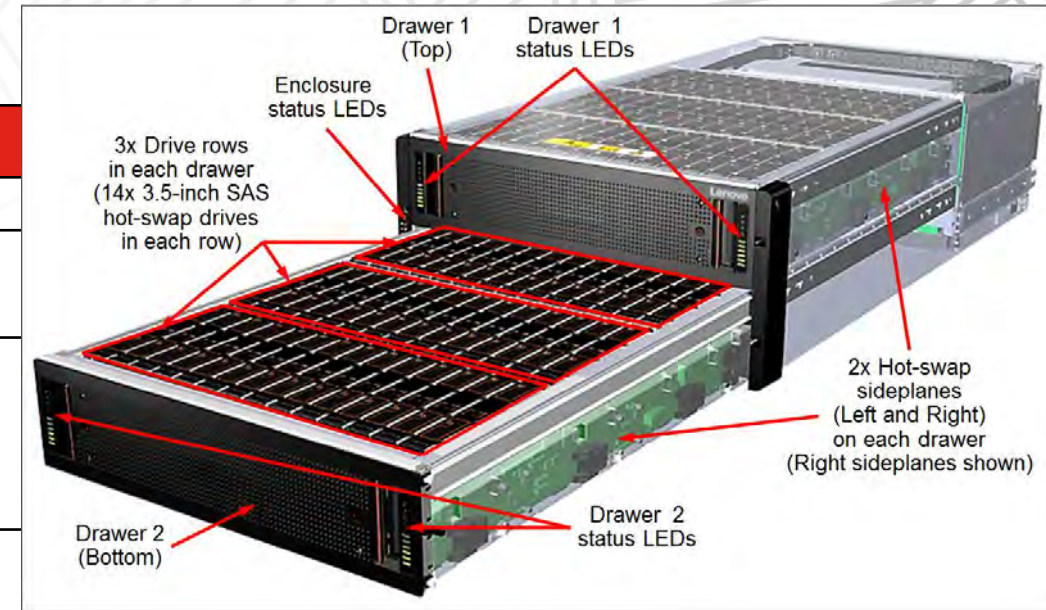
Ideal for:

- Multiple host connectivity up to 6 hosts under SAS zoning
- Cost-sensitive customers
- Space constrained environments
- Current and future high capacity data needs
- Over utilized server capacity
- Server virtualization
- Extreme capacity for archive or cold storage solutions



DD3284 JBOD Expansion

Product Name	Lenovo Storage D3284 Expansion
Form Factor	5U DICC
Rack Support	➤ 19-inch, industry-standard rack (EIA-310)
Supported Drives	<ul style="list-style-type: none"> ➤ 400GB SAS SFF SSD ➤ 7.2K 10/8/6/4TB NL-SAS LFF HDD ➤ 84 x Disk Drives or SSD
Key Features	<ul style="list-style-type: none"> ➤ 12Gb SAS ➤ High density 84 drives enclosure ➤ Multiple hosts access (application based)
Drive Interface	➤ 12Gbps SAS (SFF-8482)
Host/EXP Interface	➤ 3x 12Gbps Mini-SAS HD (SFF-8644) per ESM
Cooling and PSU	<ul style="list-style-type: none"> ➤ 5x redundant and hot-swappable cooling module up to one failure tolerance ➤ Dual (Redundant) and hot-swappable , 1+1, 2214W PCMs ➤ 80PLUS Platinum or higher PSU
SAS cable	<ul style="list-style-type: none"> ➤ Mini-SAS HD to Mini-SAS HD (SFF-8644) SAS cable ➤ Mini-SAS HD to Mini-SAS (SFF-8088) SAS cable





Tape Archiving Storage

Lenovo™

+ External LTO Tape Drive Portfolio

- Designed for capacity requirements of less than 6.25TB compressed
- Dual SAS port and one ethernet port
- External stand-alone or rack-mountable unit
- 1 tape drive and 1 cartridge



TS2250 Tape Drive

- LTO5 half-high tape drive
- 1.5TB native; 3.0TB compressed



TS2260 Tape Drive

- LTO6 T half-high tape drive
- 2.5TB native; 6.25TB compressed



TS2360 Tape Drive

- LTO6 full-height tape drive
- 2.5TB native; 6.25TB compressed



TS2270 Tape Drive

- LTO7 half-height tape drive
- 6TB native; 15TB compressed

+ LTO Tape Autoloader / Library Portfolio

- Designed for capacity requirements greater than 6.25TB compressed
- Automated tape backup for open system servers
- Remote management through web interface
- Supports systems managed and library managed encryption
- External, stand-alone or rack-mountable units



TS2900 Tape Autoloader

- LTO7 support
- 54TB max. native capacity
 - 135TB compressed
- 1 drive (max.)
- 9 cartridges** (max.)



TS3100 Tape Library

- LTO7 support
- 144TB max. native capacity
 - 360TB compressed
- 2 drives (max.)
- 24 cartridges** (max.)



TS3200 Tape Library

- LTO7 support
- 288TB max. native capacity
 - 720TB compressed
- 4 drives (max.)
- 48 cartridges** (max.)



Distributed Storage Lösung DSS-G

Lenovo™

+ Storage ist essentiell und wir haben die Tools

Basis ist unser Server- und Speicherportfolio

Kombiniert mit führender HPC Storage Software



Distributed Storage
Lösung
für
IBM Spectrum Scale

DSS - G

Lösung speziell für große
Kapazität, Hochleistungs-
workloads in HPC
Umfeldern

Distributed Storage
Lösung
für
SUSE Enterprise Storage

DSS - C

Lösung speziell für
Zusammenarbeit mit
Lenovo scale-out HANA
Lösungen.*

Distributed Storage
Architecture
für
SUSE Enterprise Storage
/ Red Hat Ceph Storage

DSA - C

Getestete Architektur als
Einstiegspunkt für Mittel-
klasse CEPH Angebote in
HPC Umfeldern

Distributed Storage
Architecture
für
Intel Lustre EE

DSA - L

Getestete Architektur als
Einstiegspunkt für Mittel-
klasse Lustre offering in
HPC Umfeldern

Mid April Announcement

Future Aspirations

*formerly published as „ThinkStorage für SAP HANA TDI“

+ DSS Produkt Überblick

DSS-G

Distributed Storage Lösung für IBM Spectrum Scale™

Eine voll integrierte Rechenzentrumslösung über Lenovo Scalable Infrastruktur (LeSI)

DSS ist eine LeSI Lösung für File- und Objektspeicherangebote mit hochkompakten Speichersystemen I/O-Leistung und überlegender Verfügbarkeit, Zuverlässigkeit und Strapazierfähigkeit.

Projekt

DSS-G für IBM Spectrum Scale™

Lösungsdefinition

- 2 x3650 M5 HPIO Server
- Software: RedHat Enterprise Linux, IBM Spectrum Scale für DSS Standard oder Daten Management Edition
- 2, 4 oder 6 Storageeinheiten
 - Lenovo D3284 12Gb JBOD (5U84) oder
 - 4TB, 6TB, 8TB, 10TB NL-SAS
- 1, 2, 4 oder 6 Storage Enclosures
 - Lenovo D1224 12Gb JBOD (2U24)
 - 0.3TB – 1.8TB SAS, 0.4TB – 3.8TB SSD
- Anschlüsse: 10GbE/25GbE/40GbE/100GbE/FDR IB/EDR IB/OPA
- HPC, BigData, Cloud
- HPC und Distributed File Systems
- Hohe Speicherdichte und I/O performance mit führender Verfügbarkeit, Zuverlässigkeit und Strapazierfähigkeit
- Lizenziert je Platte/Kapazität, kein Server/Client Lizenz
- weltweites Produkt
- Q2 2017 (SC'16 Public Disclosure 11/14) – Mid April Avail.

Zielmarkt

Ziel Workloads

Mehrwert

Lizenzmodell

Ziel GEO

Ziel Launch

x3650 M5

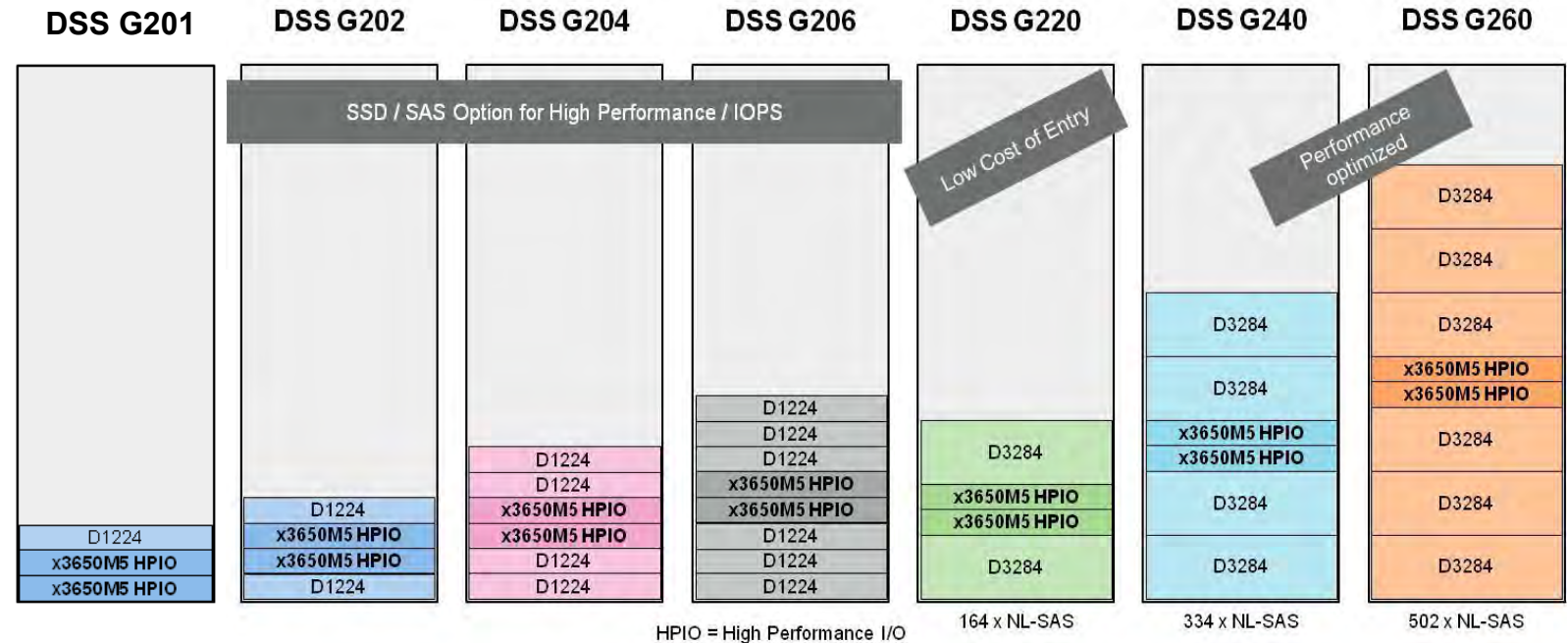


D3284



+ DSS-G Storage verfügbar entweder als D3284 oder D1224

- Lenovo D3284 JBODs (5U84)
- Lenovo D1224 JBODs (2U24)
- Zwei x3650M5 Server
 - SAS p2p Verbindung to JBODs (12Gbps)
 - HPC Interconnect: Ethernet, IB, OPA
- 2, 4 oder 6 D3284 JBODs (5U84, 12Gbps)
 - 3.5" Auswahl an 4,6,8,10 TB NL-SAS Platten
 - Bis zu **5 PB raw Kapazität**
- 1, 2, 4 oder 6 D1224 JBODs (2U24, 12Gbps)
 - 2.5", choice of:
 - 15K - 600GB oder 300GB
 - 10K - 1.8TB , 1.2TB, 900GB,600GB
 - 7.2K - 2TB NL-SAS, 1TB NL-SAS
 - SSD - 1.6TB 3 DWD, 800GB 3 DWD, 400GB 3 DWD





Software Defined Storage

Lenovo™

+ Lenovo Storage & SDS Strategy

Traditional SAN portfolio



- Lenovo S series
(Seagate partnership)



- Lenovo V series
(IBM partnership)



- Lenovo SAN Switches
(Brocade partnership)

Software Defined Area

vmware®



NUTANIX



Be the partner of choice in this period of dramatic change

+ Lenovo Storage & SDS Strategy

Software Defined Area



Hyper Converged Area



Be the partner of choice in this period of dramatic change

+ Anforderungen an Storage

Storage muss:

- einfach zu Skalierung sein – hohe Kapazitäten
- erschwinglich sein
- flexible – grow as needed – pay as you grow
- einfach zu implementieren und managen sein

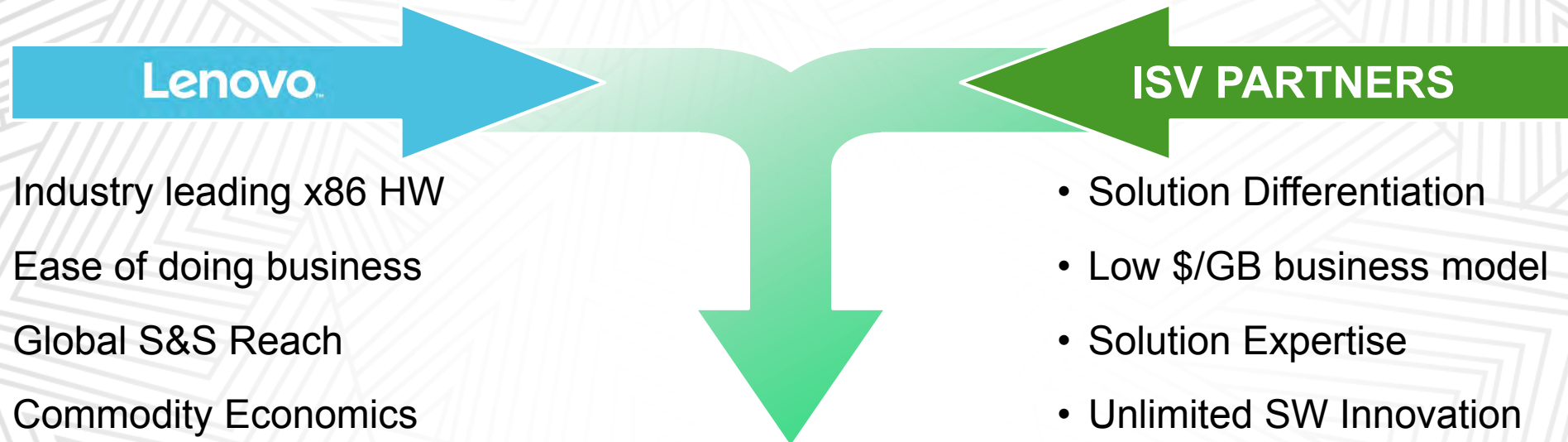


+ Basis Anforderungen an SDS

- Es **verschiedenartigen** Speichergeräte ermöglichen, miteinander zu **kommunizieren**
- Das **Trennen** von Vorteilen in der **Software** von Vorteilen in der **Hardware**
- Das **Bündeln** aller Speicherkapazitäten und über ein zentrales **Management** zur Verfügung stellen
- Hardware-Wartung, Daten-Migration und Hardware-Austausch **vereinfachen**

+ Lenovo StorSelect Addresses Explosive Data Growth

Lösungspaket aus Lenovo Server + ISV-Software - mit Lenovo - Support






- Industry leading x86 HW
- Ease of doing business
- Global S&S Reach
- Commodity Economics

- Solution Differentiation
- Low \$/GB business model
- Solution Expertise
- Unlimited SW Innovation

Lenovo StorSelect

- ✓ Lower Storage CapEx
- ✓ Confidently deploy secure SDS
- ✓ Simplify data management

+ StorSelect Software Defined Storage Positioning

Lenovo Offering	DX8200N <i>Powered by Nexenta</i> 	DX8200C <i>Powered by Clouidian</i> 	DX8200D <i>Powered by DataCore</i> 
SDS Type	Block & File Scale-up	Object Storage Scale-out	Block & File Scale-up or scale-out
Value Proposition	Capex Savings Enterprise Scale Flash Support	Storage mgt of objects S3 Standards Based Capex Savings -\$.01/GB	High Performance Storage Virtualization Internal Storage
Primary Use Cases	Transactional DB, Email Near-line Archive	Backup/Archive Public/Private Cloud Media Content Store	Extend existing storage life Transactional databases, Analytics, ERP, CRM
Usage Focus	Scale-up File storage Transactional apps	Large Sets of Unstructured Data Service providers	Virtualize existing HW Non-disruptive upgrades
	BLOCK AND FILE STORAGE	OBJECT STORAGE	STORAGE VIRTUALISATION

+ StorSelect - Konfiguration und Gewährleistung



Configurator and Tools

- SSCT, LESC Online, LESC Offline; DCACT

Base Warranty

- Access to call centers during normal business hours
- Help from skilled technicians to diagnose hardware problems
- Replacements for failed parts - next business day delivery
- 3 year coverage
- Configuration issues and software problems
- Access to ISV for SW L3 support



+ Lenovo Storage DX8200N Powered By NexentaStor

High performance, scalable unified block & file storage



Make SDS a reality – affordably and with confidence

- Unified block and file storage with unlimited file size
- Massive storage scalability
- Inline compression on full system
- Turnkey solution: pre-integrated, pre-tested appliance
- Based on proven Lenovo servers, ranked #1 in reliability
- XClarity for simple hardware management
- Single point of global contact support through Lenovo



50% Lower CAPEX¹

Generic
File Share
(CIFS)

Cloud
Backend
(NFS)

Home
Directories
(NFS)

Near Line
Archive

Transac-
tional
databases,
email

Backup &
archive
block
storage

Target Customer: Any customer with > 300TB who requires unified block & file

Target Sectors: Healthcare, Education, Service Providers, telecom, Government/Public Sector

Target Deployment: Private cloud, on premises

Configuration: Pair of x3650 M5 servers with up to 8 JBODs. Workload-optimized configurations: all-flash, hybrid, all-drives

+ Lenovo Storage DX8200C Powered By Clouidian

Massive Skalierbare Objektspeicher Lösung



Make SDS a reality – kostengünstig und zuverlässig

- 100% AWS/S3 object storage Lösung
- Einfach, flexible, erschwingliche scale-out Technologie
- Schlüsselfertige Lösung: vor installiert, vorab getestet appliance
- Data sharing across data centers and regions
- Basierend auf bewährten Lenovo server, #1 in Zuverlässigkeit
- XClarity für einfaches Hardware Management
- Single point of global contact support through Lenovo



56% Lower \$/TB/year TCO vs traditional storage¹

\$0.01 per GB per month¹

Target Customer: Any customer with > 300TB with object data and/or any large enterprise for backup and archive

Target Sectors: Healthcare, Education, Public Sector & Research, Service Providers (Telcos, ISPs, MSPs)

Deployment: Private or hybrid cloud (S3 compatible), multi-tenancy, multi-datacenter or multi-region

Configuration: Three to hundreds of x3650 M5 servers

File
Distribution
& Sharing

Backup /
Archive

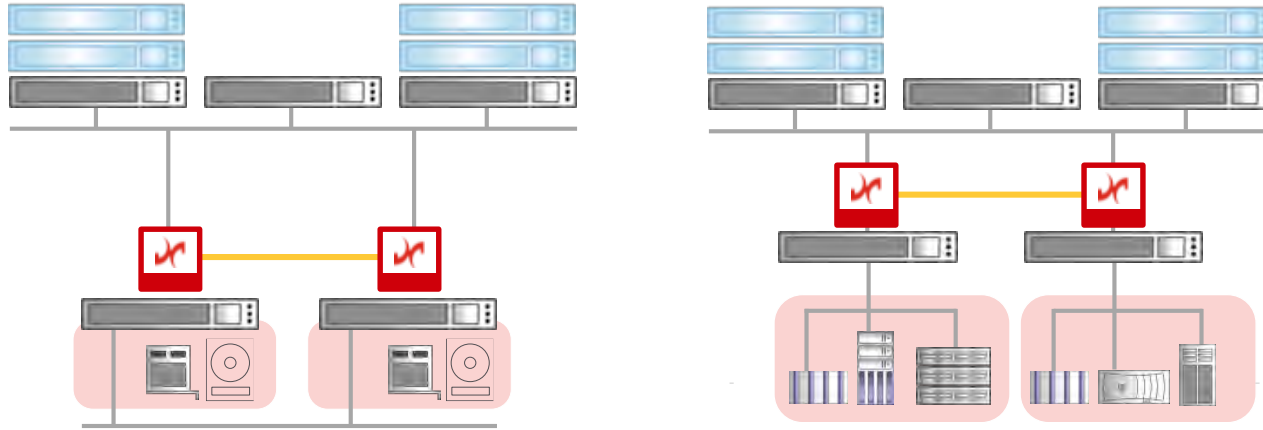
Media
Content
Store

SaaS /
Cloud
Storage

Object
(Medical or
Educational
records)



Lenovo Storage DX8200D powered by DataCore



SANsymphony Software-defined Storage Platform

Converged Server SAN

Efficient, high performance Server-based Storage services for applications running on external hosts

Virtualized Storage Server

Integrate, manage, and enhance existing storage array(s)

Make SDS a reality – kostengünstig und zuverlässig

- Schlüsselfertige Lösung: vor installiert, vorab getestet appliance
- ein einzigartiges und vielseitiges Storage System für Mission Critical Applikationen & Datenverfügbarkeit
- die schnellste und kostengünstigste SDS-Lösung auf dem Weltmarkt, mit höchsten Verfügbarkeit
- Single point of global contact support through Lenovo

DX8200D Architektur-Konzept

DX8200D Configurator model detail

CTO models

Storage Virtualization (external storage)

5135AC1	DX8200D StorVirt Entry 3yr
5135AC2	DX8200D StorVirt Mid 3yr
5135AC3	DX8200D StorVirt High 3yr

ServerSAN (internal storage, scale-out)

5135AC4	DX8200D ServerSAN Entry 3yr
5135AC5	DX8200D ServerSAN Mid 3yr
5135AC6	DX8200D ServerSAN High 3yr

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LFO models (fixed)

5135A2Y	DX8200D StorVirt Entry 3yr
5135J2Y	" 4yr
51351VY	" 5yr
5135B2Y	DX8200D StorVirt Mid 3yr
5135L2Y	" 4yr
51352VY	" 5yr
5135C2Y	DX8200D StorVirt High 3yr
5135M2Y	" 4yr
51353VY	" 5yr

5135D2Y	DX8200D ServerSAN Entry 3yr
5135N2Y	" 4yr
51354VY	" 5yr
5135F2Y	DX8200D ServerSAN Mid 3yr
5135P2Y	" 4yr
51355VY	" 5yr
5135G2Y	DX8200D ServerSAN High 3yr
5135Q2Y	" 4yr
51356VY	" 5yr

+ Lenovo HX Nutanix die Hyper Converged Lösung



Definition: Webscale Infrastruktur

Die **konvergente HX Serie** von Lenovo integriert die Software des Markführers für Hyperkonvergenz, Nutanix, in die äußerst zuverlässigen und skalierbaren Server von Lenovo. Das flexible Modul, bestehend aus vollständig integrierten und getesteten Rechen- und Speicherressourcen und einer vorinstallierten Virtualisierungsmanagementsoftware (**Webscale SW** von Nutanix), ermöglicht einfache Scale-out-Cluster, um das Unternehmenswachstum ohne eine räumliche Vergrößerung des Rechenzentrums zu fördern.

Value

- Vorhersagbare Skalierbarkeit: Schrittweise Vergrößerung oder Reduzierung der Infrastruktur
- Reduzierte TCO: Niedrigere Kapital- und Betriebskosten
- Geschäftliche Agilität: Schnellere Reaktion auf Geschäftsanforderungen

http://shop.lenovo.com/us/en/systems/converged-systems/hx_series/

- Hoch zuverlässig,
- Hohe Sicherheit
- Grenzenlose hohe skalierbarkeit
- Einfaches Management
- Reduziert TCO
- Hyper-Konvergenz auf x86-Knoten von Lenovo M3650M5

Markt Kunden Clientel:

für Rechenzentren, die zuerst von Web-Unternehmen und **Cloud-Anbietern** wie Google, Amazon und Facebook genutzt wurden. Die Vorteile einer Web-Scale Infrastruktur lassen sich mittlerweile bei jeder Skalierung und allen Workloads nutzen.

HCI Infrastruktur von Nutanix , integriert Compute, Storage und Virtualisierung auf Lenovo x86 Technologie .

HX Series Nutanix Workload optimized Appliances :

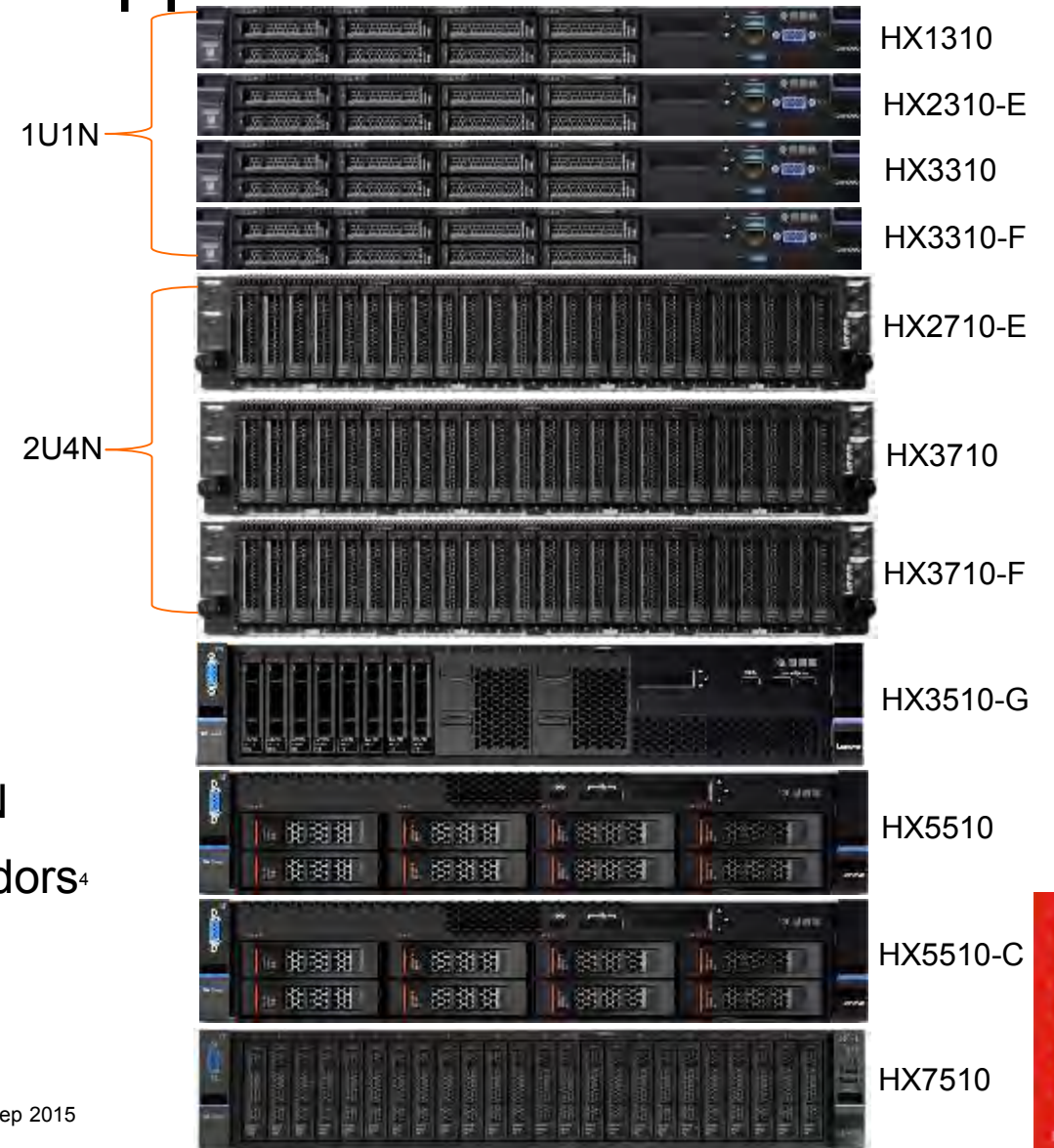
- HX 1000 (ROBO)
- HX 2000 (SMB)
- HX 3000 (Compute Heavy)
- HX 5000 (Storage Heavy)
- HX 7000 (High Performance)

+ Lenovo HX Series Hyperconverged Appliances

- Simple – Setup in 1 hour vs. days for competition¹
- Scalable – From as little as 3 servers to unlimited web scale architecture
- Advanced – \$150K or 23% lower cost than competition for the same 1,000 VDI workload using traditional converged systems²

- Ultra Dense – 84 servers per rack & 48TB of storage per 2U4N
- Maximum Uptime – #1 in reliability compared to other x86 vendors⁴
- Gain Insights Faster – 44% faster system performance³

1. Internal testing of HX Series setup with XClarity to traditional systems with comparable capacity
2. Comparison using Lenovo VDI Reference Architecture compared with VCE Vblock 340 implementation guide for 1,000 VDI seats; Sep 2015
3. Intel Xeon E5 v4 top-bin comparison to previous generation top-bin processor SKU
4. ITIC Global Server HW, Server OS Reliability report, 2016



ZUSAMMENFASSUNG SDS/HCI

- Hyper-converged ist ein Trend, der aus Software Defined Storage entstanden ist
- Wahlfreiheit in der Architektur durch nahtlose Interoperabilität und Upgrade-Möglichkeiten
- Das „Next Generation DataCenter“ kombiniert Architektur-Konzepte



thanks.

Lenovo™