Lenovo Data Centre Group

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A Strong Foundation

#1
Customer Satisfaction

In the latest TBR survey (1H 2016), Lenovo again was the #1 vendor for the 6th consecutive quarter, and for 9 of the last 10 quarters.

#1
x86 Server Reliability

#1 in ITIC Reliability Survey for 3 years running.

$5B
Data Center Group Revenue

Nimble, focused, with no legacy to protect.

#1
SAP HANA Server Installations

Lenovo is SAP's largest partner with over 50% of SAP installs on Lenovo hardware.

28
Current World Record x86 Benchmarks[1]

Lenovo enables faster data analysis.

#2
TOP500 HPC Vendor[2]

Lenovo is the fastest growing TOP500 HPC vendor worldwide and ranks 2nd in the number of fastest systems.

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Challenges We're Hearing from Customers and from Industry

Speed of IT Delivery

SLA's
Management complexity
Shadow IT

Data Growth & Business Insights

New customer opportunities
New business models
Value in the answer

Complexity

Changing view of the platform
Adaptability
Scalability

Escalating Costs

TCO
Lack of return
Vendor lock-in

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Lenovo – Transforming the Data Center

Lenovo's vision is a secure and agile data center that accelerates IT delivery

…delivering this vision with a strong hardware foundation, and best of breed partners

- **Cloud**
- **Software Defined Storage**
- **Data Analytics**
- **Hyperconverged**

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Cloud

Digital Transformation is Driving Cloud Adoption

New Digital-Centric

businesses pioneering new customer services and business models

1/3 of the Top 20

companies in most industries will be disrupted by digitally transformed companies by 2018[1]

Top Challenges

- Keep up with business demands
- Access to infrastructure
- Faster time to market
- Flexible scalability
- Complexity
- Controlling costs

1. IDC, March 2015 http://www.idc.com/getdoc.jsp?containerId=prUS25494215

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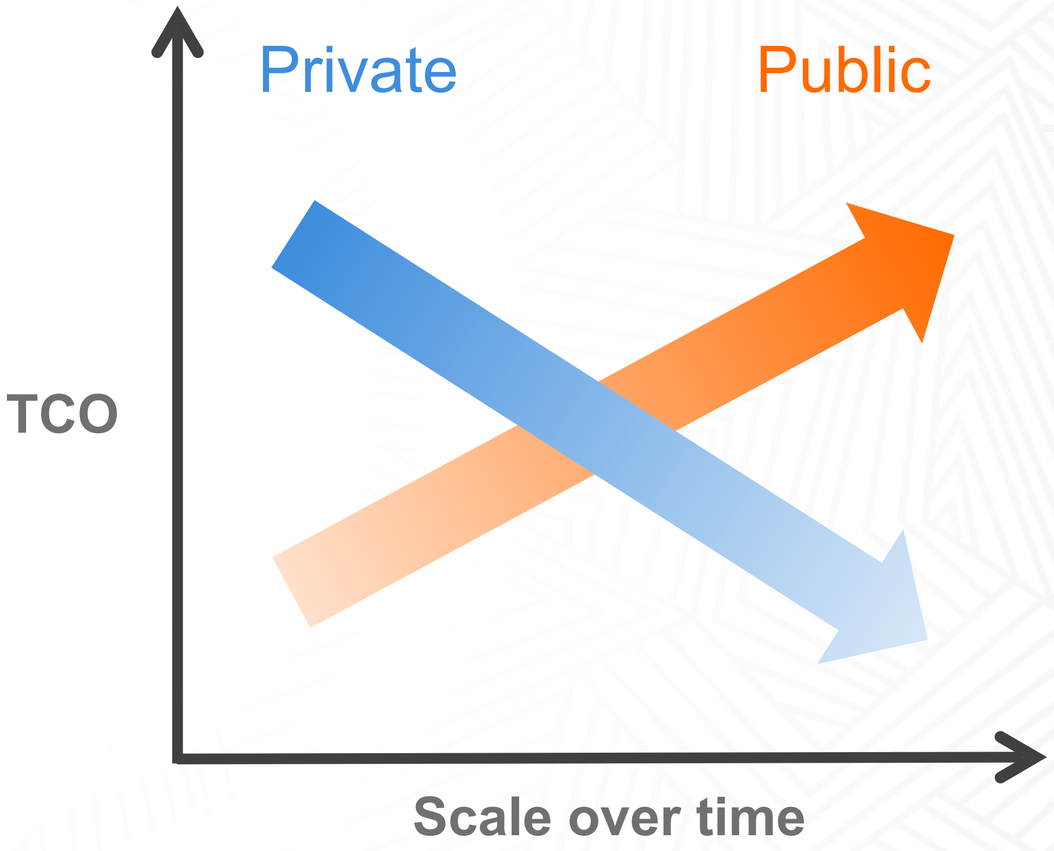
Public Cloud Costs are Not Always Better

- Private cloud
  - Higher initial acquisition cost
  - Economies of scale through density
- Public cloud
  - Lower initial acquisition costs
  - OPEX grows rapidly
- Results
  - 71% of enterprises adopt hybrid cloud[1]
  - 68% have repatriated from public cloud to some form of private cloud[2]



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1. RightScale, State of the Cloud Report, 2016, http://www.rightscale.com/lp/2016-state-of-the-cloud-report
2. 451 Research, Cloud 2.0 Report, 50% moved to off premises private and 18% moved to on premises private http://www.451research-hcts.com/files/02_hcts_2015_bailey_rd3.pdf

Lenovo Engineered Cloud Solutions – Flexibility of Choice

- Built on the most powerful, open, and resilient hardware foundation
- Deliver and manage hardware like software with Lenovo XClarity
- Design, implementation, and training services

Microsoft

Azure Stack Solutions[1]

On premise hybrid capable integrated and certified stack

RED HAT CLOUDFORMS
openstack

Private & Hybrid Solutions[2]

Reduce complexity with 6 steps to cloud deployment

vmware

SDDC Solution

Deploy IT as-a-service with XClarity Service Blueprints for vRealize Automation

1. Hyper-V reference architecture available today, Azure Stack pending availability from Microsoft in 2017

2. OpenStack and Cloudforms reference architectures available today, XClarity integration available 2017

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Lenovo Cloud Solutions Enable Digital Transformation

Accelerated IT Delivery

Customer Experience

Business Efficiency

Top Benefits

- **#1 world record** for x86 virtualized workloads[1]
- **#1 world record** for server performance per watt for all virtualized workloads[2]
- Lenovo XClarity Administrator, delivers Lenovo physical infrastructure like software
  - **48% Less time** to deploy than competition
  - **72% Fewer steps** to deploy than competition
  - **25% less power** – Optimized thermals reduce cooling power required
- **Services** to install, manage and maintain

1. #1 SPECvirt_sc 2013
2. #1 SPECvirt_SC2013_server PPW

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Introducing the Lenovo ThinkAgile CX Series

Lenovo ThinkAgile

1. **Solution-centric** approach to IT
2. **Single or multiple** Rack-level deployments
3. **Ease of configuration**, acquisition, deployment
4. **Seamless** management framework
5. **Optimized ROI** by workload
6. **Reduced OPEX** w/ consolidated familiar mgmt. tools

Lenovo

ThinkAgile CX

Lenovo ThinkAgile CX

Product Definition	• Fully integrated and validated solutions shipped from Lenovo manufacturing
	• Scalable and configurable based on workload needs
	  • Server: Lenovo x3550 M5
	  • Storage: Nimble CS1000/CS3000 Hybrid, AF5000 All Flash Arrays
	  • Networking: Lenovo 10G & 1G TOR switches
	  • Management: XClarity, VMware vCenter, Nimble InfoSight

Ideal Workloads	• Small/Medium/Large Enterprises • Server consolidation, virtualization, VDI, Microsoft applications, Test/Development • Ref Arch: VMware Horizon VDI – Mid Hybrid Configuration (CX2400), Citrix XenDesktop VDI – Mid Hybrid Configuration (CX2400), Online Transaction Processing (OLTP) MS SQL Server – Mid All Flash Configuration (CX4600), Mid All-Flash Configuration (CX4600), VMware vRealize – Mid Hybrid Configuration (CX2400), MS (Data Warehouse Fast Track) DWFT SQL Server – Mid All Flash Configuration (CX4600
Value Proposition	• Easy ordering and acquisition, Fast deployment, Lowers TCO vs. traditional infrastructure, Workload optimized, Optimized for key workloads
GEOs	• NA Oct 2016, EMEA planned 1H2017
Launch	• Announce Monday 17th October 2016 • EMEA Planned 1H 2017

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Software Defined Storage

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Need for Better Data Growth Management Strategies are Driving SDS

New Digital-Centric

IT must rethink the way capacity across all layers of the stack is managed

Top 3 Business Drivers[1]

1. Future proof Infrastructure
2. Lower costs / avoid lock-in
3. Simplify management through automation

Top Challenges

- Managing data growth
- Performance & availability
- Controlling costs
- Access to infrastructure
- Flexible scalability
- Complexity

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1. The State of Software-Defined Storage (SDS) 2015 Market Survey https://www.datacore.com/sf-docs/default-source/whitepapers/english/the-state-of-sds-2015-survey.pdf

Lenovo Provides Choice and Flexibility in SDS Solutions

- Built on the most powerful, open, and resilient hardware foundation
- Deliver and manage hardware like software through Lenovo XClarity

StorSelect for Software Defined Object Storage

- Static Data Share
- Photos, Videos
- Backup & Archive
- Private Cloud

StorSelect for Software Defined Block + File Storage

- Block: transactional DB Email
- File: Large Data File
- Cloud Backend
- Near-line Archive

Hyperconverged SDS

- ERP
- Virtualization
- VDI
- Database

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Lenovo SDS Solutions Change the Economics for Storage

Top Benefits

Simplified Data Management

Turnkey solutions

- Factory-integrated / Pre-tested appliances
- Proven Lenovo x3650 M5 Server platforms

Disruptive Storage Economics

Scale-out Object Storage for **$.01 per GB** per month – **56% lower $TB/year TCO** vs traditional storage

Flexible Scalability

Scale-up Unified File & Block storage with up to **50% Capex Savings**

Single point of contact for **global support**

Open API to simplify management across cloud environment

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Data Analytics

Opportunities for New Business Insights are Driving Data Analytics

New Digital-Centric

Major competitive advantages being created by creatively leveraging connected devices and users

70% of Decision-Makers

consider their organization's ability to exploit value from Big Data is critical to their future success[1]

Top Challenges

- Making sense of the data deluge
- Opportunities for business growth
- Volume / Velocity / Variety
- 80% of data growth is unstructured
- Manage risk, fraud, cost

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Forbes March 2015 http://www.forbes.com/sites/louiscolumbus/2015/03/22/56-of-enterprises-will-increase-their-investment-in-big-data-over-the-next-three-years/

Lenovo Provides Engineered Data Analytics and Big Data Solutions

- Built on the most powerful, open, and resilient hardware foundation
- Deliver and manage hardware like software through Lenovo XClarity
- Design, implementation, and training services

SAP and SAP Business One with SAP HANA

- Standard configuration templates, installation and managed services, and other partner related solutions

Big Data Solutions

- Validated and tested reference architectures
  - Cloudera Hadoop
  - IBM InfoSphere BigInsights and Hadoop
  - MapR Hadoop

Lenovo Database Solutions for Microsoft SQL Server

- Pre-tested, performance-tuned Microsoft SQL Server Data Warehouse Fast Track Solutions
- Microsoft certified configurations

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Lenovo SAP Solutions Enable Faster Insights

Enable real-time analysis for business processes

Create tighter integration of data

Accelerate reporting performance

Top Benefits

Lower TCO

- Lenovo delivers **19 – 31% lower TCO** over 3 years[1]
- **Investment protection** – one platform for scale-up/ out
- **No SAN** required

Design, deployment, and managed **services** delivered by **certified, experienced professionals**

Unmatched Performance

- Scale-out to **94x4TB** nodes
- **World record** SAP application performance[2]

SAP HANA **market leader** with **over 50% share**

- More than 5300 SAP HANA systems shipped
- Broadest portfolio of certified SAP HANA appliances

SAP runs development and IT operations including HR and CRM HANA implementations on System x servers

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1. Cost/Benefit Case for SAP HANA Deployment. ITG Group, July 2015 (Link)
2. www.sap.com/benchmark (SD 2 Tier & BW-EML)

Lenovo MS SQL 2016 DWFT Solutions Power Data Solutions

Improved time to value

Reduced TCO through better price and performance

Top Benefits

First three Microsoft certified SQL 2016 Data Warehouse Fast Track configurations in the industry

Highest SQL Server 2016 Performance

- Lenovo x3950 X6 TPC-H @ 30,000 GB non-clustered[1], Lenovo x3850 X6 TPC-H @ 10,000 GB non-clustered[2]
- Lenovo x3650 M5 TPC-E[3] and Lenovo x3850 X6 TPC-E[4]

Reduce costs & minimize risk with pre-tested choices

Performance-optimized to minimize onsite tuning

Results as of 7/11/2016.

1. http://www.tpc.org/3321
2. http://www.tpc.org/3325
3. http://www.tpc.org/4076
4. http://www.tpc.org/4078

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Hyperconverged

L ig

Reduction in IT Cost and Complexity are Driving Hyperconverged

New Digital-Centric

IT's value is enabling business growth – transformation difficult due to cost and complexity

42% of Decision-Makers

planning to adopt hyperconverged rank operational efficiency as their top IT priority[1]

Top Challenges

- Legacy inflexible and complex
- Silo'd systems hard to manage
- Cost
- Business growth
- Rapidly provision new services

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1. "2016 State of Hyperconverged Infrastructure" http://www.simplivity.com/wp-content/uploads/atm-2016-state-of-hyperconverged-infrastructure-market-report-en.pdf

Lenovo Provides Choice and Flexibility in Hyperconverged Solutions

- Built on the most powerful, open, and resilient hardware foundation
- Deliver and manage hardware like software through Lenovo XClarity

NUTANIX

WebScale Infrastructure

- Static Data Share
- Photos, Videos
- Backup & Archive
- Private Cloud

simplivity

Balance and scalability of compute and storage

- Core IT, Storage growth
- SQL Database
- VDI
- Exchange

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Lenovo Hyperconverged Solutions Reduce Traditional IT Cost and Complexity

Reduced complexity

Ease of Scalability

Reduced Cost and Outstanding TCO

Improved SLA's

Top Benefits

HX Series with **ESXi provides 15% cost savings** vs Traditional[1]

HX Series with **AHV provides 40% cost savings** vs Traditional[1]

HX Series can be **implemented up to 80% faster** vs Traditional[1]

SimpliVity OmniStack Solution with Lenovo provides[2]:

- **3x TCO** savings through hyperconvergence
- **40:1** average data efficiency

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1. Wikibon HX Series TCO Study 2016
2. http://news.lenovo.com/article_display.cfm?article_id=2019

In summary - what drives us:

Purpose-driven Innovation

Designing with purpose to solve real customer problems

Choice & Flexibility

Transitioning to emerging technologies without ties to legacy investments

Customer Experience

Making the customer journey a priority

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thanks.