

Lenovo Sales Opportunity:

Build Better Microsoft SQL Server[®] Solutions with Lenovo

February 2018



Lenovo Database Solutions for Microsoft SQL Server

Our Customer Story

The rapid growth of technology and the proliferation of mobile devices has resulted in an unprecedented growth in data and online transactions. As the volume and velocity of data increases, extracting meaningful insights in a timely manner and supporting online transactions has become more complex. Opportunities are being missed and effort is being wasted. To compete, businesses in the 21st century are demanding the tools to derive true value from their data.

Lenovo Database Solutions for Microsoft SQL Server bring together the right mix of hardware infrastructure, software, and services to optimize a wide range of data warehouse and transactional database use cases. The configurations integrate a variety of Lenovo ThinkSystem servers, storage, and infrastructure products combined with the capabilities of Microsoft SQL Server 2016/2017 Enterprise and Standard Editions to provide the following benefits:

- + Improved time to value with pretested hardware configurations
 - Microsoft Data Warehouse Fast Track
 - Intel Select SQL Server OLTP
- + Optimized SQL Server deployment with a significant reduction in hardware testing and tuning
- + Reduced total cost of ownership through better price and performance, rapid deployment, and advanced hardware
- + Consolidated storage and matched IT investment-to-information-value with several high-performance storage options

Selling Opportunity

Market intelligence leader IDC projects that the size of the digital universe will double every two years toward 2020 and beyond, a fifty-fold growth rate from 2010 to 2020. Organizations that can acquire and analyze a myriad of data sources — and subsequently transform it into actionable insight — will create \$430 billion in productivity benefits.

The writing is on the wall: Within a few years, organizations will need to be fully proficient in all three types of data warehousing — traditional, operational, and modern — to stay relevant.

- + Traditional: Customers will always need historical insights from their relational data that lives in traditional data warehouse solutions
- + Operational: If customers want to stay responsive and competitive, they'll have to have real-time insights enabled by operational data warehousing
- + Modern: To chart the course forward, they'll require insights they can only get by asking questions of big data using modern data warehousing

Undoubtedly, customers are already executing to some degree in each area. But are they doing everything they should be doing? Can they support new and varied requests from business users? Can they test theories quickly with data, and gain actionable insights? And can they trust the results in a world where the technology continues to grow in leaps and bounds every few months?

It's all possible with Microsoft SQL Server running on Lenovo enterprise ThinkSystem servers — the ideal platform for breakthrough scalability, performance, and availability for mission-critical, intelligent applications; data warehouses; and real-time analytics.

With industry-leading performance, leading reliability, and a portfolio that spans the entire range of customer needs, SQL Server customers can benefit greatly by running their workloads on Lenovo servers. Lenovo has worked with Microsoft to create SQL Server solutions — such as those for data warehousing and online transaction processing (OLTP). These balanced, pre-tested configurations accelerate deployment and lower the risk and cost of any implementation.

Call to Action

- + Identify target accounts with your Intel BDM to present Lenovo/Intel Select SQL Server OLTP solutions
- + It is highly likely that customers and prospects you work with have deployed SQL Server to some degree. Reach out to all of them to discuss their plans to move to SQL Server 2017
- + Learn what your customers' plans are regarding SQL Server 2008 (end of extended support is July 9, 2019)
- + Upsell opportunities from SQL Server engagements: Expand "data" conversation beyond database to Big Data and ThinkAgile SX for Microsoft Azure Stack

Playbook Menu

This playbook guides you through the sales methodology to migrate customers to Lenovo Database Solutions for Microsoft SQL Server.

Market Opportunity

Learn the market conditions and trends for data warehousing and analytics, plus the current business situation for target customers.

Go

Prospecting

Identify an opportunity to sell Lenovo Database Solutions.

Go

Conversations

Get the conversation started with discovery questions for every customer and each solution.

Go

Sales Plays

Build the value proposition with the key offer, deployment options, and solution proof points.

Go

Trends

Market Opportunity

Hardware:

- + Total server and storage revenue for RDBMS (Relational Database System) workloads, like SQL Server, are forecasted to grow from \$9.1B in 2016 to \$9.9B in 2017
- + Server revenue growing from \$3B to \$3.2B and storage revenue growing from \$6.1B to \$6.7B for 2016 to 2017

SQL Server:

- + 37% of WW database servers run Microsoft SQL Server, with more than 50% running SQL Server 2008 R2 or older

With more than 50% of SQL Server customers running 2008 R2 or older, and with extended support for these customers ending in July 2019, now is the ideal time to talk to customers about modernizing database servers and services. Piggyback on Microsoft business transformation initiatives, targeting SQL Server customers running legacy versions of SQL Server (driving SQL Server 2017 migrations), as well as targeting opportunities to upsell Big Data and MS Azure Stack for Hybrid Cloud services.

Customer Situation

Databases are still being deployed on-premises for performance and business-critical requirements.

Customers running Windows-based servers are also likely running SQL Server databases.

- + SQL Server's ease of use, availability, and tight Windows operating system integration makes it an easy choice
- + Server 2016 helps enterprises build mission-critical applications with high-performance, in-memory security technology across OLTP (online transaction processing), data warehousing, business intelligence, and analytics

End of Support means no access to critical security updates.

Extended support for SQL Server 2008 R2 ends on July 9, 2019.

- + Opens the potential for business interruptions and can also mean higher maintenance costs
- + Maintaining legacy servers, firewalls, intrusion systems, and other related systems becomes expensive quickly
- + When support ends, it is likely the customer's organization will fail to meet regulatory compliance

Why Customers Buy

- + Exponential data growth, straining business infrastructure
- + 24 x 7 RAS requirements
- + SQL Server proliferation
- + Demand to leverage existing SQL Server tools, but expand to new data sets
- + The need to implement or scale a data warehouse quickly

Target Customer Profiles

Profiles and Triggers

Use the following characteristics to determine the ideal customer and environment for Lenovo Database Solutions:

Target Customers

- + SMBs, mid-range to large enterprises

Target Verticals

Lenovo's solutions for Microsoft SQL Server solutions benefit nearly any medium-to-large enterprise organization across verticals. For example:

- + **Healthcare** organizations can benefit from significant **improvements in business transactions**, such as extreme performance that meets SLA requirements by retiring traditional HDD-based SAN
- + **Media and broadcasting** can benefit from **high-density database consolidation**, reducing data center costs
- + **Retail** can accelerate **business analytics** by combining Microsoft SQL Server and Lenovo high-end servers

Customer Audience, Conversations, and Solutions

Customer Audience	Chief Data Officer (CDO) and CIO	BDMs (Business Analysts, VPs)	Data Engineers	DBAs	App Dev Leads	Enterprise Architects
Persona	CDO is a new and emerging C-level role responsible for the enterprise-wide data and information assets.	Line of business decision-makers who control the budget and purchasing authority.	Make data accessible to data scientists; assist in data collection, preparation and correlation. Critical role on the data science team.	Database Administrators (DBAs) direct all activities related to maintaining a successful database environment.	Responsible for development and ongoing operations and management of internal- and external-facing enterprise applications.	Set direction for enterprise-wide solution portfolio. Govern IT standards and policies. Key influencers on platform decisions.
Solutions	Business Analytics, App Innovation, Data Modernization, Big Data, Data Warehouse, Modern BI	Business Analytics, App Innovation, Modern BI	Business Analytics, Big Data, Data Warehouse, Modern BI	Data Modernization, Modern BI	App Innovation	App Innovation

Top Use Cases

Data Warehousing

Access points for business answers:

- + Point-of-sale (POS) transactions
- + Pricing and promotion analysis
- + Medical records and archival data
- + Parts planning, inventory analysis and cost trends

Data warehouses are used for:

- + Production strategies: Tune business decisions by comparing quarterly, yearly trends
- + Customer analysis: Analyze customer behavior, buying preferences, budget cycles, etc.
- + Operation Analysis: Analyze customer relationships, business operations, etc.

Online Transaction Processing (OLTP)

- + Order entry
- + Retail sales
- + Financial transaction systems

Target Customer Profiles

Profiles and Triggers

When meeting with the stakeholders below, focus your conversations on the areas they are concerned about:

Customer Audience	Chief Data Officer (CDO) and CIO	BDMs (Business Analysts, VPs)	Data Engineers	DBAs	App Dev Leads	Enterprise Architect
What they care about	<p>Driving new solutions for value and revenue generation</p> <p>Standardization and centralization of data governance and polices</p> <p>Data security and trust</p>	<p>Focus on platforms that deliver business outcomes and fast ROI</p> <p>Established business leadership through innovation</p> <p>Desire for a solution tailored to their vertical</p>	<p>Best in class and established products</p> <p>Scalability and ease of integration</p> <p>Overall platform and its future</p> <p>Skill set</p> <p>Familiarity with OSS</p>	<p>Capacity planning, installation, configuration, database design, migration, performance monitoring, security, troubleshooting, backup and data recovery</p> <p>Long-term viability and compliance</p> <p>Ensure database products meet basic enterprise needs</p>	<p>Agility</p> <p>Developer productivity</p> <p>Leverage existing skills, tools, and processes</p> <p>Adopting new cutting edge technologies to create new experiences</p>	<p>Long-term viability and maintainability of code/platform</p> <p>Integration and interoperability</p> <p>Technical architectures, features</p>

How We Engage

Qualifying Questions

How We Engage: Sales Motions

Prospect and Qualify

Accelerate Opportunities

Close and Upsell

- + Whiteboarding session
- + Create leads and qualify accounts by presenting overview deck
- + Qualify customers looking for the optimal platform for their SQL Server OLTP and Data Warehouse solutions
- + Identify account stakeholders and sponsors
- + Position solution with appropriate hardware solutions
- + Utilize Lenovo architects, Lenovo Expert Technical Sales (LETS) team, and Solutions Engineering team for domain knowledge and opportunity qualification

- + Account Executives (AEs) engage business partners and Microsoft field teams to move key projects and opportunities where Lenovo and Microsoft SQL Server solutions can help accelerate desired business outcomes or solve customer pains
- + Use outcome of prospect qualification session/workshop to propose “proof of technology” or “proof of concept” engagement with Lenovo Innovation Center
- + The Account team engages with customer/prospect to coordinate POT or POC details/needs
- + AE delivers solution vision to customer
- + AE engages SQL Server architect/LETS/Services team to prepare custom proposal for the prospect

- + AE engages customer to drive statement of work (SOW) creation and approval including negotiation modifications
- + AE/Account Team delivers and iterates proposal with customer to get signature
- + AE submits signed contracts to opps and initiates engagement with customer team
- + Contract/processes signed, and engagement scheduled with customer

How do you initially qualify leads and learn about their data solution needs?

Steer the conversation when speaking with **influencers – DBAs and IT Managers:**

If you hear...	Consider the following questions...	Based on a positive response, propose this Lenovo solution...
<ul style="list-style-type: none"> + We use Microsoft SQL Server for mission-critical applications + We are planning to consolidate multiple SQL Server instances to reduce our operational costs + My team has plans to migrate to SQL Server 2016/2017 + I am running business intelligence applications + Real-time data analysis is crucial to my organization + We are experiencing massive data growth, so we need a highly scalable solution + We are unhappy with the current performance of our applications 	<ul style="list-style-type: none"> + Is your team running business intelligence applications? + Is real-time data analysis (especially business intelligence) crucial to your organization in maintaining competitive advantage (understanding trends, buyer patterns, sales, etc.) + Why are you moving to SQL Server 2016/2017? What are you looking to accomplish? + Is your team building a data warehousing solution? + Are you experiencing massive growth in the amount of data that is coming into your organization? + Are you aware of the data warehouse work Lenovo has done with Microsoft? + Do you need a highly scalable solution? 	<ul style="list-style-type: none"> + Lenovo offers more Data Warehouse Fast Track solutions than any other server provider. Let's see what might make the most sense for you. + Lenovo leads in critical TPC-E, TPC-H, and TPC-DS benchmarks. Let's look at how you too can find the best performing, price-to-performance database solution

How do you initially qualify leads and learn about their data solution needs? (Continued)

Steer the conversation when speaking with **influencers – DBAs and IT Managers:**

If you hear...	Consider the following questions...	Based on a positive response, propose this Lenovo solution...
<ul style="list-style-type: none"> + We use Microsoft SQL Server for mission-critical applications + We are planning to consolidate multiple SQL instances to reduce our operational costs + My team has plans to migrate to SQL Server 2016/2017 + I am running business intelligence applications + Real-time data analysis is crucial to my organization + We are experiencing massive data growth, so we need a highly scalable solution + We are unhappy with the current performance of our applications 	<ul style="list-style-type: none"> + Do you use Microsoft SQL Server for mission-critical applications? + Do you need flexibility in how/where you deploy your applications? + Why are you moving to SQL Server 2016/2017? What are you looking to accomplish? + Would consolidating multiple SQL Server instances reduce operational costs? + Are you building a data warehousing solution? + Do you have the need to analyze exponentially more data than ever before? + Is your infrastructure (are your solutions) highly scalable? + Are you unhappy with the current performance of your applications? 	<ul style="list-style-type: none"> + Lenovo offers more Data Warehouse Fast Track solutions than any other server provider. Let's see what might make the most sense for you + Lenovo leads in critical TPC-E, TPC-H, and TPC-DS benchmarks. Let's look at how you too can find the best performing, price-to-performance database solution
If you hear...	Consider the following questions...	Based on a positive response, propose this Lenovo solution...
<ul style="list-style-type: none"> + Our order entry systems need an upgrade. Performance is lagging + We are unhappy with the performance of our online financial transactions + Sales is not happy with our CRM performance + Retail sales systems are causing customer satisfaction complaints 	<ul style="list-style-type: none"> + What database is currently supporting your order entry (or CRM, online financial systems, retail sales systems)? + Are you looking to upgrade your current database platform? + What is causing the performance problems of your OLTP systems? 	<ul style="list-style-type: none"> + Are you familiar with Lenovo's SQL Server offerings and solutions? We work closely with Microsoft to ensure optimal price-to-performance + Working with Intel and Microsoft, Lenovo has certified OLTP solutions that may help address your needs. Would you like to arrange time to review?

Microsoft SQL Server Data Center Deployments

	Physical Servers: Traditional	Converged Infrastructure	Private Cloud
Database Criteria	<ul style="list-style-type: none"> + Mission-critical OLTP + Data warehousing + Big data processing 	<ul style="list-style-type: none"> + OLTP + Data marts + BI intelligence 	<ul style="list-style-type: none"> + OLTP + Data marts + BI intelligence
Application Criteria	<ul style="list-style-type: none"> + Performance + Security + Availability 	<ul style="list-style-type: none"> + Management + Maintenance 	<ul style="list-style-type: none"> + Rapid Deployment + Scalability
Business Criteria	<ul style="list-style-type: none"> + Business-critical + Customer-facing + Revenue-generating 	<ul style="list-style-type: none"> + Economics + Consolidation 	<ul style="list-style-type: none"> + TCO + Economies of scale + Department cost allocation



What are the components of the solution?

Based on responses to qualifying questions, position the following potential solutions:

Sales Play #1: Data Warehouse

Microsoft Data Warehouse Fast Track (DWFT) for SQL Server

The Microsoft Data Warehouse Fast Track (DWFT) for SQL Server Program is designed to reduce the time necessary for enterprise leaders to build configurations that solve data warehousing issues. Lenovo has teamed with Microsoft to create DWFT solutions for Microsoft SQL Server, using not only its enterprise servers, but also a variety of System x servers to cover a wide range of data warehouse sizes. These tested and optimized configurations for data warehousing workloads:

- + Balance CPU, I/O, and storage with SQL Server DBMS
- + Improve time to value and optimized performance with balanced, pre-tested hardware configurations
- + Reduce hardware testing requirements and less need for immediate tuning
- + Reduce total cost of ownership, thanks to better price and performance, rapid deployment, and certified performance rating from Microsoft and Lenovo

Lenovo has more Data Warehouse Fast Track configurations than any other Microsoft partner:

	Lenovo components	Vendor components	Target customer deployment
9TB Data Warehouse Offering	<ul style="list-style-type: none"> + Based on SR630 1U rack servers + 6142 processors and 128GB memory + Samsung SATA Solid State Drives + Relative Performance: <ul style="list-style-type: none"> + Row Store Throughput: 91 + Column Store Throughput: 183 + Max. User Data Capacity: 12TB 	SQL Server 2017	<ul style="list-style-type: none"> + Entry-level data warehouse solution + ODS - Operational Data Store + Organizations looking to store operational data and run small business analytics at a smaller scale + Budget around \$10,000 for hardware + High-volume play

Sales Play #1: Data Warehouse (Continued)

Microsoft Data Warehouse Fast Track (DWFT) for SQL Server

	Lenovo components	Vendor components	Target customer deployment
44TB Data Warehouse Offering	<ul style="list-style-type: none"> + Based on SR650 2U rack servers + 8180 processors and 768GB memory + 3.84 TB NVMe PCIe Flash Adapters + Relative performance: <ul style="list-style-type: none"> + Row store throughput: 342 + Column store throughput: 620 + Max. user data capacity: 54TB 	SQL Server 2017	<ul style="list-style-type: none"> + Mid-range-level data warehouse, typically up to 100TB solution needed + Datamart + Organizations looking to consolidate all data into one data store for a single organization or group (i.e. Marketing) + High-performance data warehouse + Budget around \$100,000 for hardware
	Lenovo components	Vendor components	Target customer deployment
50TB Data Warehouse Offering	<ul style="list-style-type: none"> + Based on ThinkSystem SN550 servers (2 for Active-Active and Active-Passive) + 4110 8C processors and 768GB memory + ThinkSystem DS6200 Storage Array with eight 3.84TB SSDs + Lenovo Flex System FC5022 16GB SAN Switch 	SQL Server 2017	<ul style="list-style-type: none"> + High-availability + Disaster recovery and read-scale balancing + Small to medium organizations + Support for large data volumes in data warehouse up to 50TB in size + Require greater scalability

Sales Play #1: Data Warehouse (Continued)

Microsoft Data Warehouse Fast Track (DWFT) for SQL Server

	Lenovo components	Vendor components	Target customer deployment
60TB Data Warehouse Offering	<ul style="list-style-type: none"> + Based on clustered 2x x3650 M5 rack servers + E5-2690 v4 processors and 768GB memory + IBM V9000 All Flash Array storage + Relative performance: <ul style="list-style-type: none"> + Row store throughput: 212 + Column store throughput: 276 + Max. user data capacity: 60TB 	SQL Server 2016	<ul style="list-style-type: none"> + High-availability solutions + Customers who cannot afford downtime of business-critical applications + Price/performance-focused <p>Coming Soon: ThinkSystem-based, 50TB Data Warehouse solution focused on HA, validated for SQL Server 2017 and using Lenovo DS6200 for storage.</p>

	Lenovo components	Vendor components	Target customer deployment
90TB Data Warehouse Offering	<ul style="list-style-type: none"> + Based on ThinkSystem SR950 4U rack server + 8180 processors and 1536GB memory + Eight 3.84 TB NVMe Enterprise Mainstream AIC Flash Adapters + SQL Server 2017 + Relative Performance: <ul style="list-style-type: none"> + Row Store Throughput: 501 + Column Store Throughput: 720 + Max. User Data Capacity: 102TB 	SQL Server 2017	<ul style="list-style-type: none"> + High-end-level data warehouse, typically up to 100TB solution needed + Datamart + Organizations looking to consolidate all data into one data store for a single organization or group (i.e. Marketing) + High-performance data warehouse

For complete view of all Lenovo DWFT solutions for System x, see the [Database Solutions webpage](#).

Sales Play #2: Online Transaction Processing (OLTP)

	Lenovo components	Vendor components
Base		
Intel Select Solution	<ul style="list-style-type: none"> + SR630 - 6136/192GB + 3.84 NVMe SSDs + 800GB SAS SSDs + 4 million TPM + SQL Server 2016 Standard Edition 	Microsoft SQL Server 2016 Standard Edition
Base Plus		
Intel Select Solution	<ul style="list-style-type: none"> + SR650 - 8153/384GB + 3.84 NVMe SSDs + 800GB SAS SSDs + 6.5 million TPM 	SQL Server 2016 Enterprise Edition
Hyperconverged Solutions		
Nutanix	<ul style="list-style-type: none"> + Based on # 4 HX7510 server model + E5-2699 V4 processors and 512GB memory + 4 x 800GB SAS SSDs, 20 x 1.8GB SAS HDDs + Relative performance: 8 virtual machines - 24 million transactions 	SQL Server 2016 Enterprise Edition
VMware vSAN	<ul style="list-style-type: none"> + Based on # 4 SR650 server model + 8176 processors and 768GB RAM Hybrid: 4 x 800GB SAS SSDs, 20 x 1.8GB SAS HDDs + All Flash: 4 x 800GB SAS SSDs, 20 x 1.8GB SAS HDDs + Relative performance: + Hybrid: 8VMs: 12 million transactions per minute + All Flash: 8VMs: 13 million transactions per minute 	SQL Server 2016 Enterprise Edition

Lenovo and SQL Server: Record-breaking Performance

#1 TPC-H: Data Warehouse

The Microsoft SQL Server DWFT configurations utilize parts of TPC-H benchmark testing from tpc.org to assess platform performance. Below are the results for these TPC-H benchmark tests for Lenovo database configurations for Microsoft SQL Server:

- + [TPC-H 30TB Benchmark Result](#): Lenovo becomes the first company to publish a non-clustered TPC-H @30,000GB benchmark performance result (SR950 - MS SQL 2017, 1336109.9 Qph; 16% higher performance than #2)
- + [TPC-H 10TB Benchmark Result](#): Lenovo becomes the first company to publish a non-clustered TPC-H @10,000GB benchmark performance result (3950 X6, 11,059 tpsE; no competition)

Record-setting price/performance with in-memory technology

Workload	Performance	3-Year TCO
TPC-H	5.3% better than HPE	12% less than HPE
TPC-E	10% better than Fujitsu's	15% less than Fujitsu's

#1 TPC-E: Transaction Workload

- + Lowest \$USD/transaction per second per E benchmark (tpsE), first to break the \$100 USD/tpsE price barrier on TPC-E, with \$93.48 USD/tpsE2, 16% lower than the previous low of \$111.65 USD/tpsE
- + Highest TPC-E performance for any 2-socket system with 6,598.36 tpsE
- + The result: lower overall costs, while still achieving the performance required to process customer transactions

Data Warehousing

Elevator Pitch

Microsoft Data Warehouse Fast Track (DWFT) for SQL Server on Lenovo ThinkSystem servers improve time to value for your data warehouse (DW) needs with new, scalable reference architecture for Microsoft SQL Server 2016 and 2017. This standard solution uses high-performance System x3850 X6, x3950 X6 and System X servers with a scalable (4- or 8-way) design, delivering fast, agile, resilient performance for mission-critical database and analytics.

Microsoft Data Warehouse Fast Track program makes it easy to reduce costs, save time, and reduce risk with reliable, pre-tested hardware and best practices for data warehousing. This solution helps you:

- Improve time to value with pretested hardware configurations
- Reduce hardware testing and reduce tuning immediately
- Reduce total cost of ownership through better price and performance, rapid deployment, and advanced hardware
- Optimize performance with pretested ThinkSystem hardware configurations
- Consolidate storage and match IT investment-to-information-value with System x High IOPS MLC adapters

Value Messages

- + Transform business with predictive insights: Enhance investments with an advanced analytics engine
- + Derive value from any type of data: Expand data warehouse to unlock big data
- + Leverage the cloud to transform an existing workload: Access cloud scale, agility, and cost benefits
- + Modernize customers' entire data warehouse by consolidating to a single, powerful solution
- + #1 TPC-H, TPC-E, and TPC-DS performance benchmarks
- + Fast Track Data Warehouse expertise in cloud computing, business analytics, desktop virtualization, business applications
- + Leadership presence in SAP HANA market

SQL Server 2017

Elevator Pitch

Microsoft makes powerful database functionality available to small and mid-size organizations with a range of performance enhancements in SQL Server 2017 Standard Edition. SQL Server 2017 is proven to have 13x higher performance for traditional OLTP relative to SQL Server 2005, and 5.5x higher performance relative to SQL Server 2008. With in-memory OLTP technology built into SQL Server 2017 Enterprise Edition, businesses are able to perform transactions up to 30x faster on the same hardware.

SQL Server 2017 also includes built-in capabilities to avoid downtime — helping ensure your database, and your business, are always up and running.

With SQL Server, you also get a proven database you can rely on. With an install base in the millions, SQL Server's business-class data platform capabilities are the most widely used on the planet — 46% market share per IDC Unit Share.

Value Messages

Getting more with SQL Server 2017

Enhancements improve the Data Warehouse Fast Track experience

- + Up to 10X compression in data size
- + Additional indices for efficient single-row look up
- + Operator Pushdown optimizes query processing
- + Batch-mode processing

OLTP

Elevator Pitch

As one of the fastest growing transactional database platforms, Microsoft SQL Server deployments are becoming increasingly critical to organizations. They are used in everything from enterprise operational databases to business mission-critical applications, including enterprise online sales transactions, finance management, and business intelligence. When deployed on Lenovo ThinkSystem servers, Microsoft SQL Server is the optimal transactional database for these applications, with breakthrough transactional performance, end-to-end protection, simplified management, and support for high-availability requirements.

To address these demanding database applications, Lenovo has developed two transactional database solutions. Both solutions utilize Microsoft SQL Server 2016 database software deployed on Microsoft Windows Server 2016 operating system without server virtualization. Both of these solutions are based on the Intel Select Solution specifications, and performance results have been verified by Intel.

One solution is based on the Lenovo ThinkSystem SR650 server. It is deployed with the Microsoft SQL Server 2016 Enterprise Edition. The other solution is based on the Lenovo ThinkSystem SR630 server. It is deployed with the Microsoft SQL Server 2016 Standard Edition. The server configurations in both of these

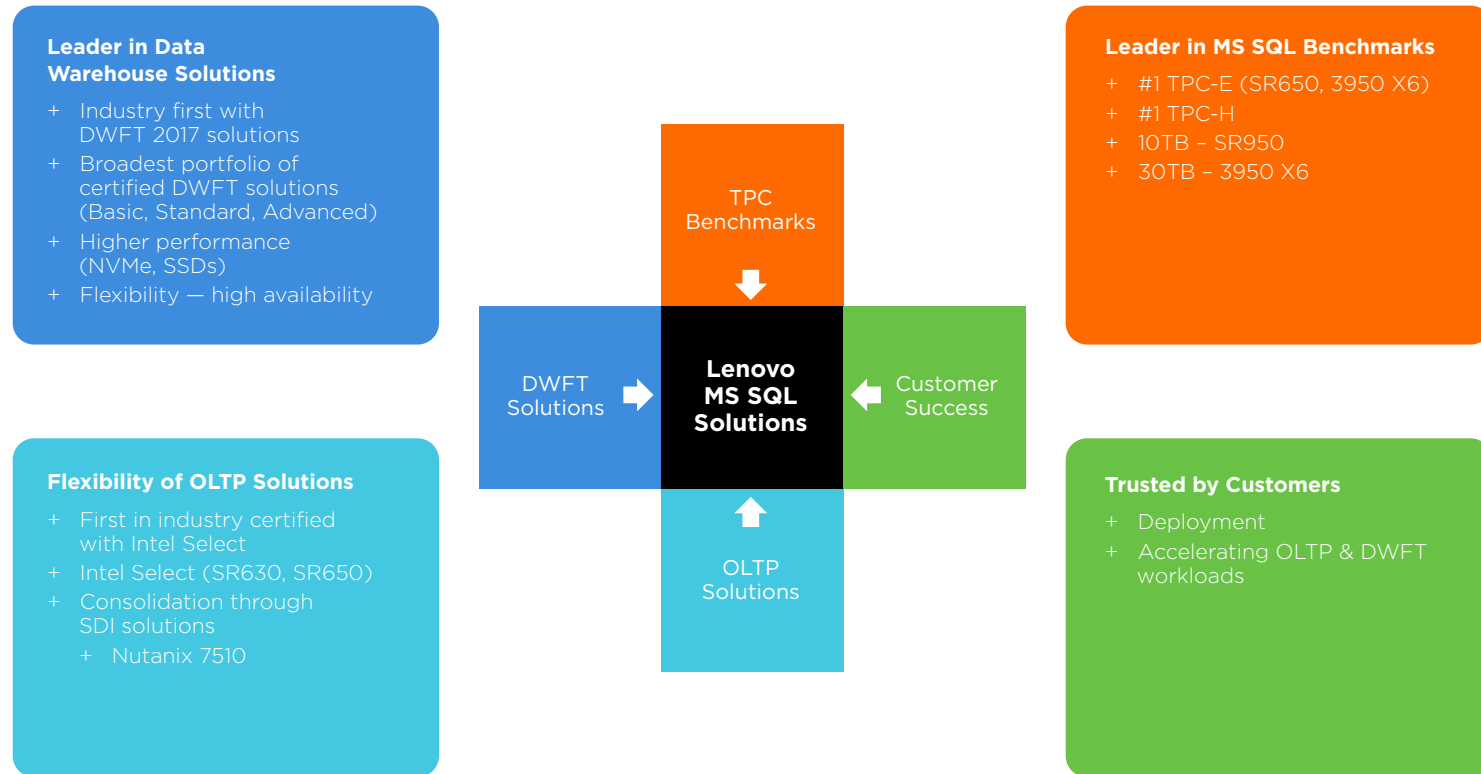
solutions are optimized to deliver extreme transactional database performance. To maximize application reliability, both of these solutions are deployed in a two-server, high-availability configuration.

These Lenovo database configurations for Microsoft SQL Server OLTP are methodically tested and tuned to save you months of configuration, setup, testing, and tuning.

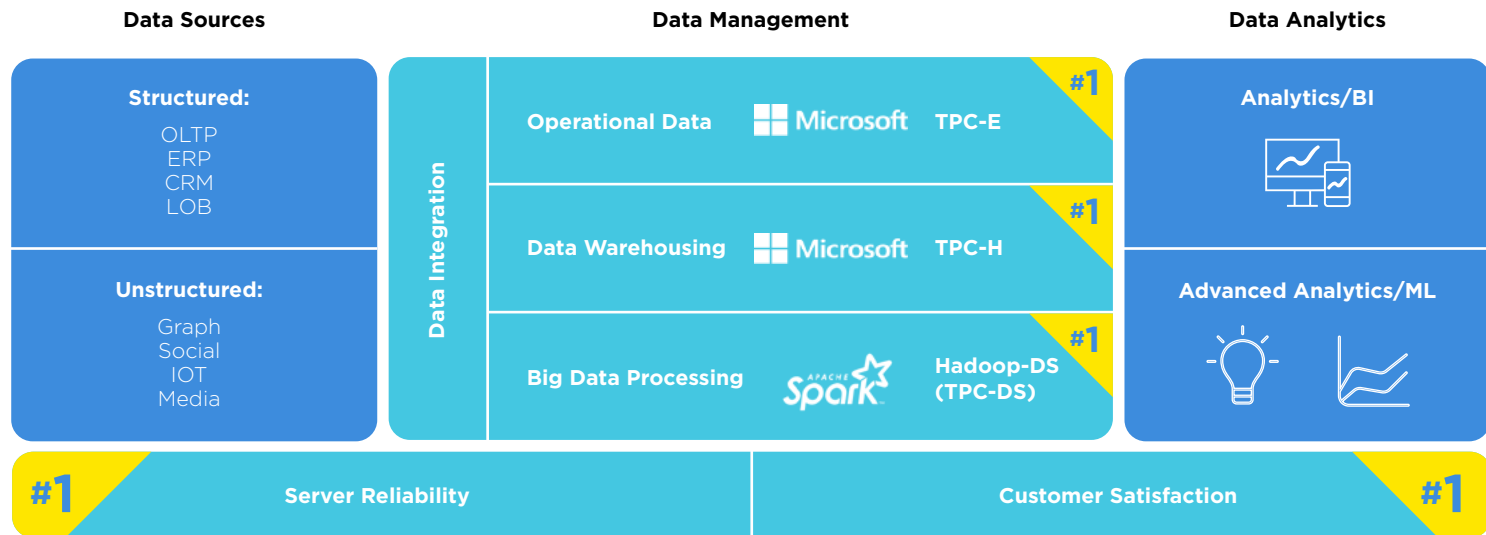
Value Messages

- + Optimized system that is tuned, tested, and approved as an Intel Select solution
- + Buy all the hardware that you need from only one vendor including servers, storage, and networking
- + Select from different levels of performance, scalability, and price to suit your business needs
- + Reduce time to value with pre-tested hardware configurations
- + Reduce TCO through better performance, rapid deployment and advanced hardware
- + Optimize cost and performance with ThinkSystem SR650 and ThinkSystem SR630 configurations that have been verified by Intel via the Intel Select program
- + Available with Microsoft SQL Server Standard Edition and Microsoft SQL Server Enterprise Edition
- + Consolidation through HCI solutions
 - ThinkAgile HX (Nutanix)
 - ThinkAgile VX (VMware vSAN)

Why Choose Lenovo for Microsoft SQL Server?



Lenovo E2E Data Architecture Advantage



Common Questions

How can I get a solution that we can start using quickly and will pay for itself almost immediately?

Lenovo SQL Server Data Warehouse Fast Track configurations provide step-by-step configuration guides for easy deployment and faster time to value.

How can I make sure that my people have all the information they need to make good decisions?

Rather than a one-size-fits-all approach, Lenovo SQL Server Fast Track configurations are built to be aligned with specific data warehouse workloads, and are balanced across key system components that minimize the risk of overspending for CPU or storage resources that will never be realized at the application level.

I don't want to wait 10 minutes when I'm in a meeting — how can I get faster answers?

As the first major vendor to offer true column store indexing with support for solid state storage and up to 256 logical cores, Lenovo servers provide a generational leap in performance (10 to 100x faster) for faster answers, even with highly complex queries on database scaling from 6TB to 145TB.

We operate in a global market. How can we make sure we're available 24/7?

Innovative technologies deliver near 100% availability. Database mirroring provides greater flexibility with availability groups and more efficient use of resources with active secondary servers. Server clustering provides cross-data center failover and fast, predictable failover.

How can we ensure the solution will be easy to maintain and manage?

Integrated management tools increase productivity and simplify administration.

Handling Objectives

Is Lenovo a serious data center player?

- + Lenovo is committed to being the most trusted enterprise IT company in the world
- + Showing data center leadership, Lenovo demonstrates unmatched reliability, customer satisfaction, and engineering innovation for x86 servers
 - + Once again, Lenovo was ranked No. 1 in reliability and customer satisfaction among x86 server vendors
 - + With the release of Lenovo's ThinkSystem server portfolio, Lenovo now owns 98 world record performance benchmarks across multiple enterprise IT workloads
 - + [Performance benchmarks](#) show Lenovo's leadership in online transaction processing (OLTP), price-to-performance, decision support/analytics, financial market analytics/big data, overall virtualization areas (OLTP), and data warehouse
- + ThinkAgile Advantage raises the bar on data center customer support
- + From device to data center, Lenovo has proven enterprise IT offerings that span servers, high-performance computing, hyperconverged systems, storage, and networking. Our industry partnerships enable best-in-class, software-defined solutions, providing customers with the flexibility and reliability to transform the data center

Proof Points

Share these proof points/customer evidence to reinforce value:

Why Choose Lenovo for Microsoft SQL Server

Leader in data warehouse solutions:

- + Highest number of certified DWFT solutions: (Basic, Standard, Advanced)
- + Latest - SQL 2016, SQL 2017
- + Higher performance (NVMe, SSDs)
- + Flexibility - HA

Leader in MS SQL benchmarks:

- + No. 1 TPC-E (SR650, 3950 X6)
- + No. 1 TPC-H
- + 10TB - SR950
- + 30TB - 3950 X6

Flexibility of OLTP Solutions:

- + First in industry certified with Intel Select
- + First to break the \$100 USD/transaction per second per E benchmark (tpsE) price barrier on TPC-E, with \$93.48 USD/tpsE2, 16% lower than the previous low of \$111.65 USD/tpsE
- + Consolidation through SDI solutions
- + Intel Select (SR630, SR650)
- + Nutanix 7510

Trusted by Customers:

- + No. 1 x86 server vendor for reliability and customer satisfaction
- + Accelerating OLTP & DWFT workloads

Top 10 reasons why customers need a SQL Server Data Warehouse solution from Lenovo

- + Microsoft is the recognized industry leader
- + Delivers the most secure and least vulnerable database
- + Provides groundbreaking performance and scale
- + Is the only end-to-end mobile BI solution in the market
- + Boasts the fastest in-memory technology across workloads
- + Enables mission-critical intelligent applications
- + Introduces accelerated hybrid cloud scenarios with Azure
- + Tackles big data workloads
- + Provides platform choice
- + Has everything built-in

Seller Resources and Tools

[Register](#) for the Lenovo Sales Portal for ongoing access to important sales tools and information. [View Lenovo Server Microsoft Solutions](#). Lenovo DCG Windows Server 2016 ROK part numbers are posted on the [Lenovo OEM Sales Portal](#).

Customer-Facing Assets

Database portfolio:

- + [Database Webpage](#)
- + [TPC-H 10TB Benchmark Result](#)
- + [TPC-H 30TB Benchmark Result](#)

Microsoft Data Warehouse Fast Track Solutions from Lenovo:

- + [Microsoft DWFT SQL 6TB DB Configuration Brief](#)
- + [Microsoft DWFT SQL 9TB DB Configuration Brief](#)
- + [Microsoft DWFT SQL 22TB DB Configuration Brief](#)
- + [Microsoft DWFT SQL 40TB DB Configuration Brief](#)
- + [Microsoft DWFT SQL 44TB DB Configuration Brief](#)
- + [Microsoft DWFT SQL 45TB DB Configuration Brief](#)
- + [Microsoft DWFT SQL 60TB DB Configuration Brief](#)
- + [Microsoft DWFT SQL 90TB DB Configuration Brief](#)
- + [Microsoft DWFT SQL 145TB DB Configuration Brief](#)

Intel Select Solutions - Lenovo Database Configurations for SQL Server OLTP:

- + [Lenovo Database Configurations for Microsoft SQL Server OLTP](#)

Lenovo Database Configuration for Microsoft SQL Server OLTP on Flex System with DS6200:

- + [Configuration Brief](#)
- + [Reference Architecture](#)
- + [White Paper](#)

Lenovo Database Validated Design for Microsoft SQL Server OLTP on ThinkAgile HX:

- + [Design Brief \(ThinkSystem\)](#)
- + [Design Brief \(System x\)](#)
- + [Reference Architecture \(ThinkSystem\)](#)
- + [Reference Architecture \(System x\)](#)

ADDENDUM | PROSPECTING EMAIL

Customer Email Content

Use the email messages below to generate interest in starting a conversation about database modernization solutions from Lenovo. You may also leverage solution benefit messaging above to tailor your outreach for the organization type or known needs.

Subject line options:

- + Running Microsoft SQL Server 2008? It's time to modernize with Lenovo
- + Modern business runs on SQL Server 2017: Is it time to upgrade?
- + Are you deriving true insights from your data? Lenovo is here to help

Hi <Customer Name>,

Staying competitive in 2018 is all about transforming data into actionable insights. And that means harnessing and processing a massive volume and velocity of data. Is your database infrastructure up to the challenge?

It's time to bring your database into the modern era. And Lenovo is here to help.

Lenovo Database Solutions for Microsoft SQL Server bring together the right mix of technology and software to align with your data warehouse and transactional database needs. Our configurations integrate a variety of Lenovo Systems and appliances, robust Lenovo Storage options, and the capabilities of Microsoft SQL Server 2016/2017 Enterprise and Standard Editions to provide the following benefits:

- Improved time to value with pre-tested hardware configurations
- Leading performance and security on Windows, Linux, and Docker containers
- Optimized SQL Server deployment with a significant reduction in hardware testing and tuning
- Reduced total cost of ownership through better price and performance, rapid deployment, and advanced hardware
- Consolidated storage and matched IT investment-to-information-value with several high-performance storage options

Let's start a conversation about modernizing your database, so you can start extracting meaningful insights from your data.

<Salutation>