



Different is better

Lenovo Data Center Group Solutions Guide

Lenovo[™]

The total technology ecosystem

You may know Lenovo as a company that makes PCs. These days, things are different. And we believe that *different is better*.

We've evolved, with our capability now including servers, storage, networking and software defined solutions. The combination of this expertise, industry leading technology, plus a suite of managed services covering the full

technology lifecycle, means Lenovo can deliver a single-vendor total technology ecosystem like no other.

We're different from our competition. Others also talk about "transformation" yet are proprietary and complex while we remain open, transparent and easy to do business with.

One of the biggest differences is that Lenovo has no legacy business or product set to protect; which frees us to bring to you the best solutions the industry has to offer through the strategic partnerships we have developed. The march of progress means that technology will never stop advancing and connecting our lives and work in more innovative ways. This is why we strive to offer our customers innovative technology solutions built to adapt and scale, designed to evolve, capitalize on disruption and make the most of tomorrow's opportunities.

The same obsession with innovation that drives our success in PCs extends into our passion for the future-defined data center.



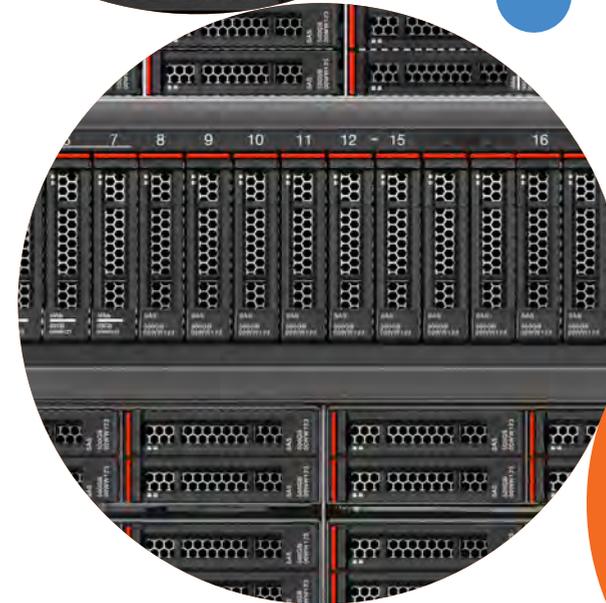
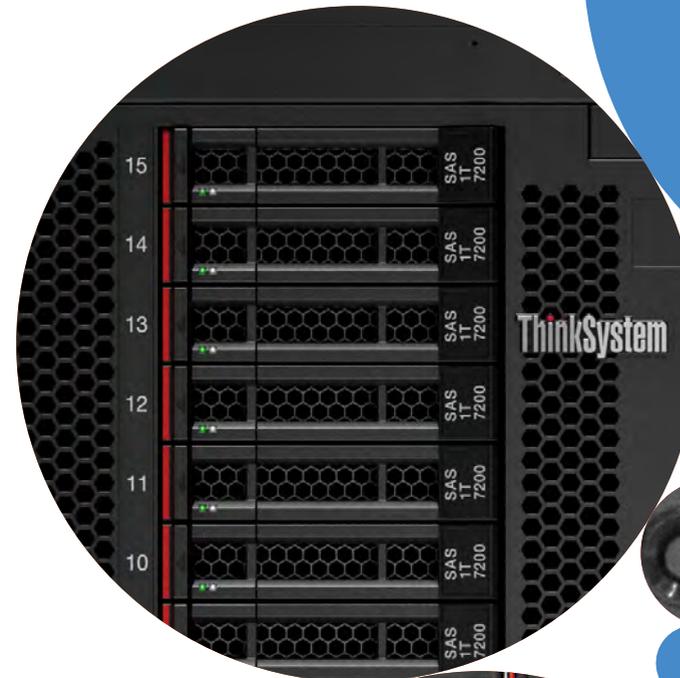
Servers, storage, networking



Technology lifecycle services



Software, virtualization, cloud solutions



Lenovo has evolved into one of the largest data center technology vendors in the world.

The future-defined data center

Data is transforming the way we do business the world over. We believe that transformation in the data center must do more than just keep in step—it should be leading the change. That's why we're [different in the data center](#).

The recent enhancement of our data center portfolio with the introduction of the ThinkSystem and ThinkAgile brands delivers customers the flexibility and agility required to boldly embrace the future. With rapid time-to-value, customers can balance cost, efficiency and productivity while meeting mission critical objectives.

Our focus is on working with customers, offering trustworthy advice to help solve their organization's existing challenges using innovative solutions crafted to flex and adapt as requirements change. Against the backdrop of a fast-evolving technology landscape, with a complete portfolio of hardware, software, solutions and services, Lenovo offers choice and flexibility like no other. To achieve this, we've made strategic partners of the world leaders in virtualization, networking and the software-defined

data center. Lenovo's collaboration with partners yields innovative solutions for our customers, designed to help make managing your data center simpler, faster and more efficient.

And even though we provide some of the world's leading data center technology, we have no legacy business to protect, so we won't lock customers in to a single technology or solution. This means customers can always benefit from best-of-breed solutions, both traditional and disruptive, built on the industry's leading software and infrastructure.

ThinkSystem

ThinkAgile



Servers



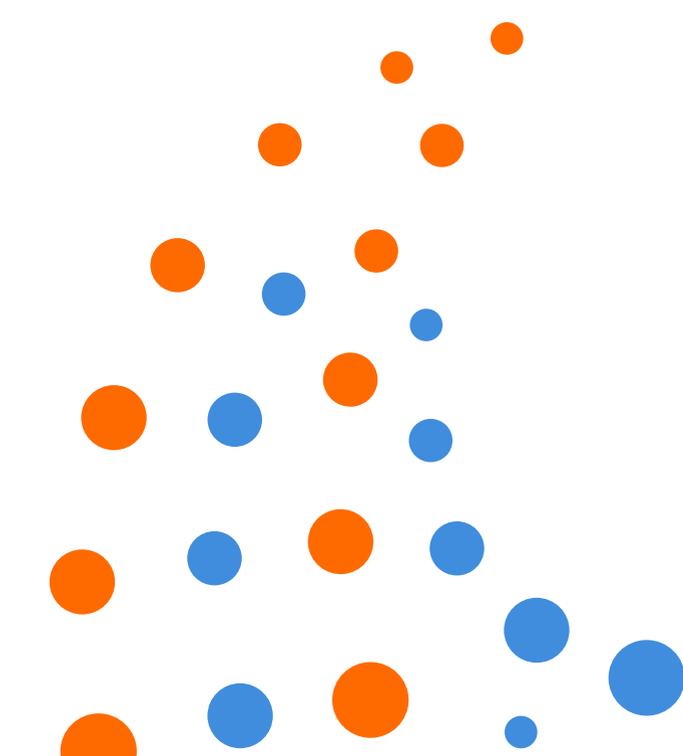
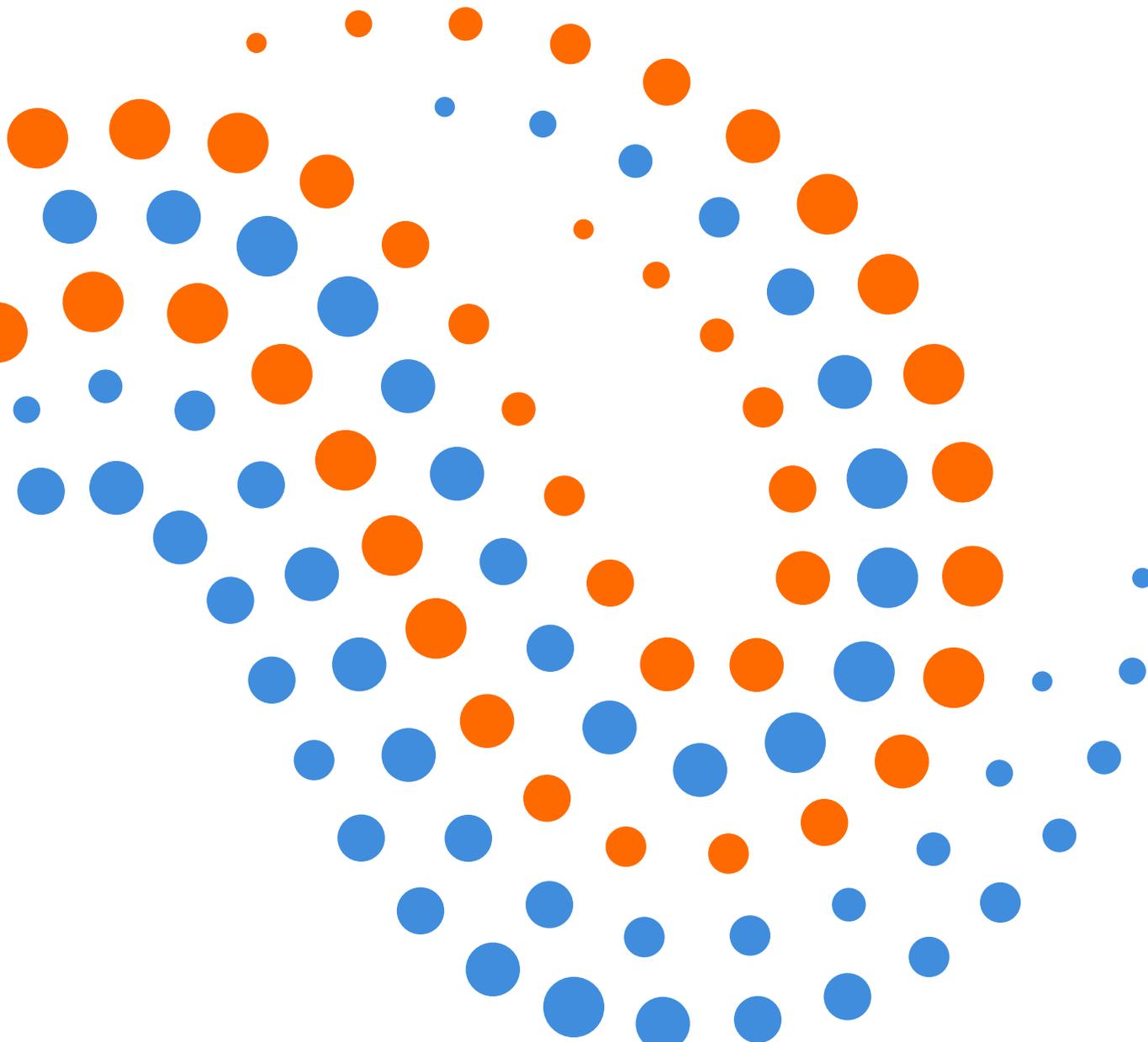
Networking



Storage



Solutions



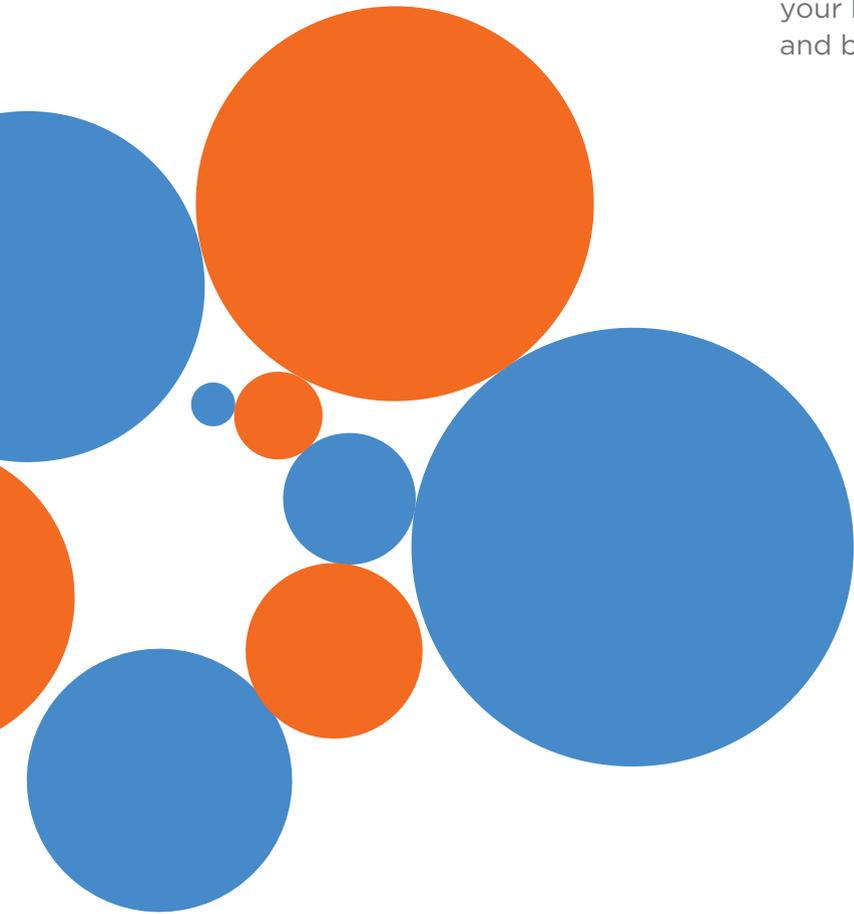
Center of excellence

Big data and analytics, cloud computing and the internet of things—major industry disruptions are all happening in the data center.

With the number of connected users rapidly multiplying, the demands on

data center infrastructure are greater than ever and the challenge of running an efficient, responsive and flexible data center is greater still.

Our complete server portfolio, able to deliver ultimate performance and industry-leading reliability today, is also flexible and adaptable enough to meet your business objectives tomorrow and beyond.



- #1 In customer satisfaction
- #1 x86 server reliability
- 88 x86 benchmark world records*

Rack and tower, mission critical, blade, dense, converged or hyperscale—our ThinkSystem portfolio covers every facet of data center foundation technology.

*As at November 8, 2017

A history of building the future

With a 25-year heritage of innovation in the data center, Lenovo is committed to leadership in servers and infrastructure.

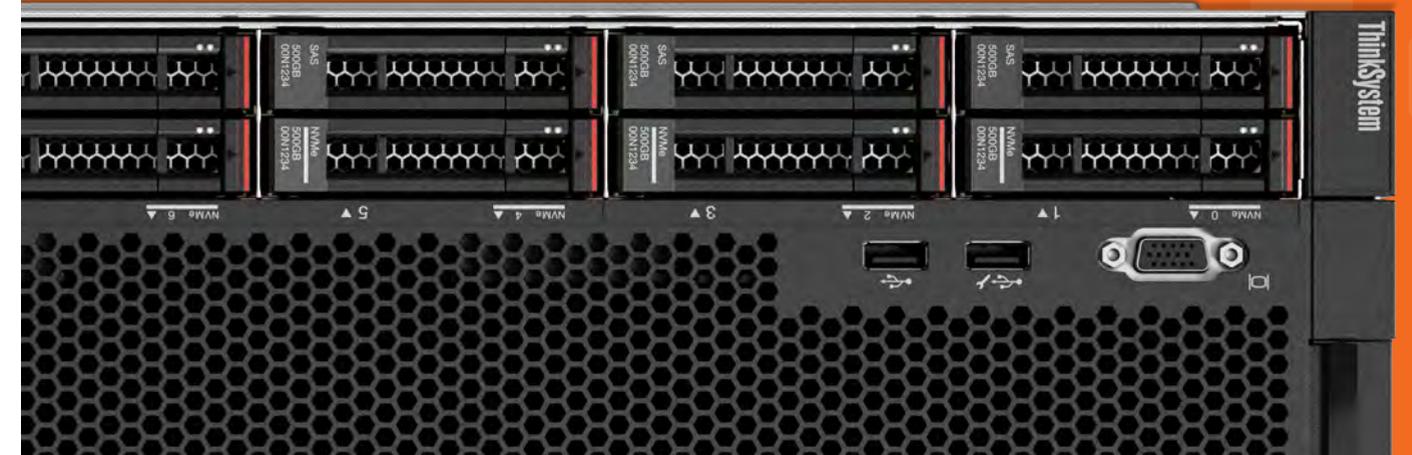


- 1992 ◀ 1st x86 servers enter the marketplace
- 1999 ▶ 1st 1U Tier 1 rack server
- 2002 ◀ 1st scalable 16-socket x86
- 2005 ▶ 1st high availability hot-swap memory
- 2008 ◀ 1st x86 server to break 1 million tpmC
- 2010 ▶ 1st to decouple memory from processor
- 2012 ◀ 1st warm water cooling technology
- 2014 ▶ 1st integrated memory channel flash storage
- 2014 ◀ 1st 45 °C operating servers
- 2015 ▶ Lenovo XClarity reduces deployment time by 75%
- 2017 ◀ Launch of ThinkSystem and ThinkAgile portfolios

The latest in the data center is only the beginning

Comprising next gen servers, storage and network switches, the 14 server platforms, 7 storage offerings and 5 network systems that make up Lenovo ThinkSystem are the culmination of years of dedicated experience and passionate innovation in data center technology.

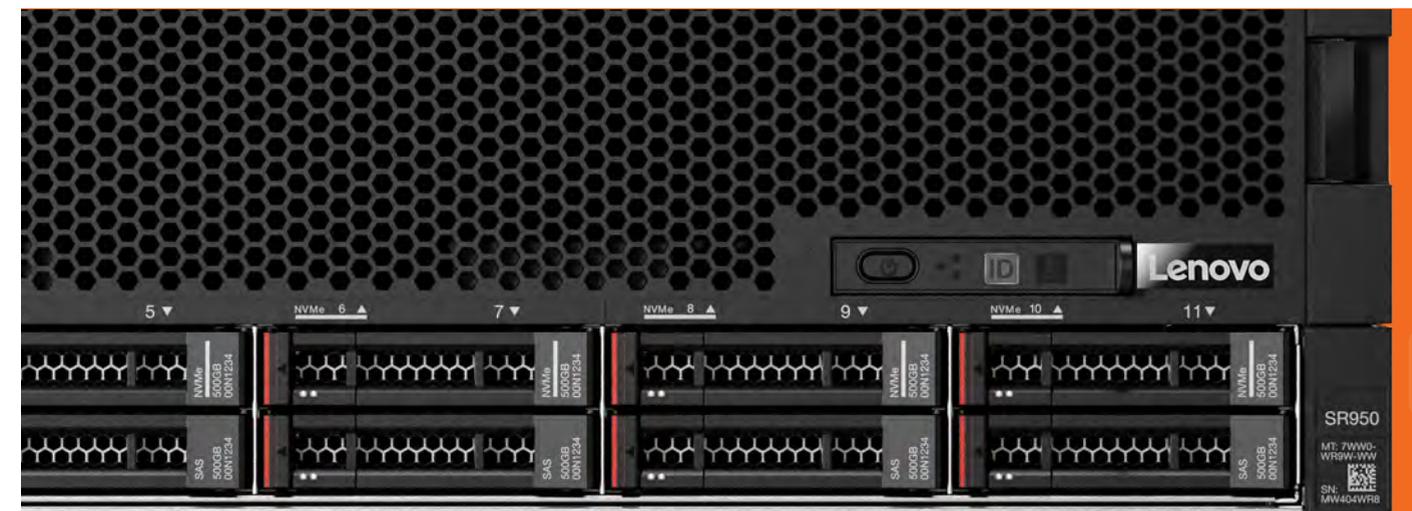
Open-standards management and revolutionary modular engineering gives ThinkSystem flexibility that's unique in servers, storage and networking.



But, our commitment to the future means we know that ThinkSystem is just the first step. We know that because of how things change, it's really the foundation on which your future data center will be built.

Expandable, flexible and powerful, ThinkSystem data center solutions provide low TCO, while simultaneously making it simple to integrate new

capabilities efficiently and cost-effectively from deployment throughout the lifecycle. Modular designs enable systems to flex and scale while delivering consistent high-performance that powers through demanding workloads such as transactional databases, real-time analytics and virtualized server workloads with unshakeable reliability.



Making the right connections

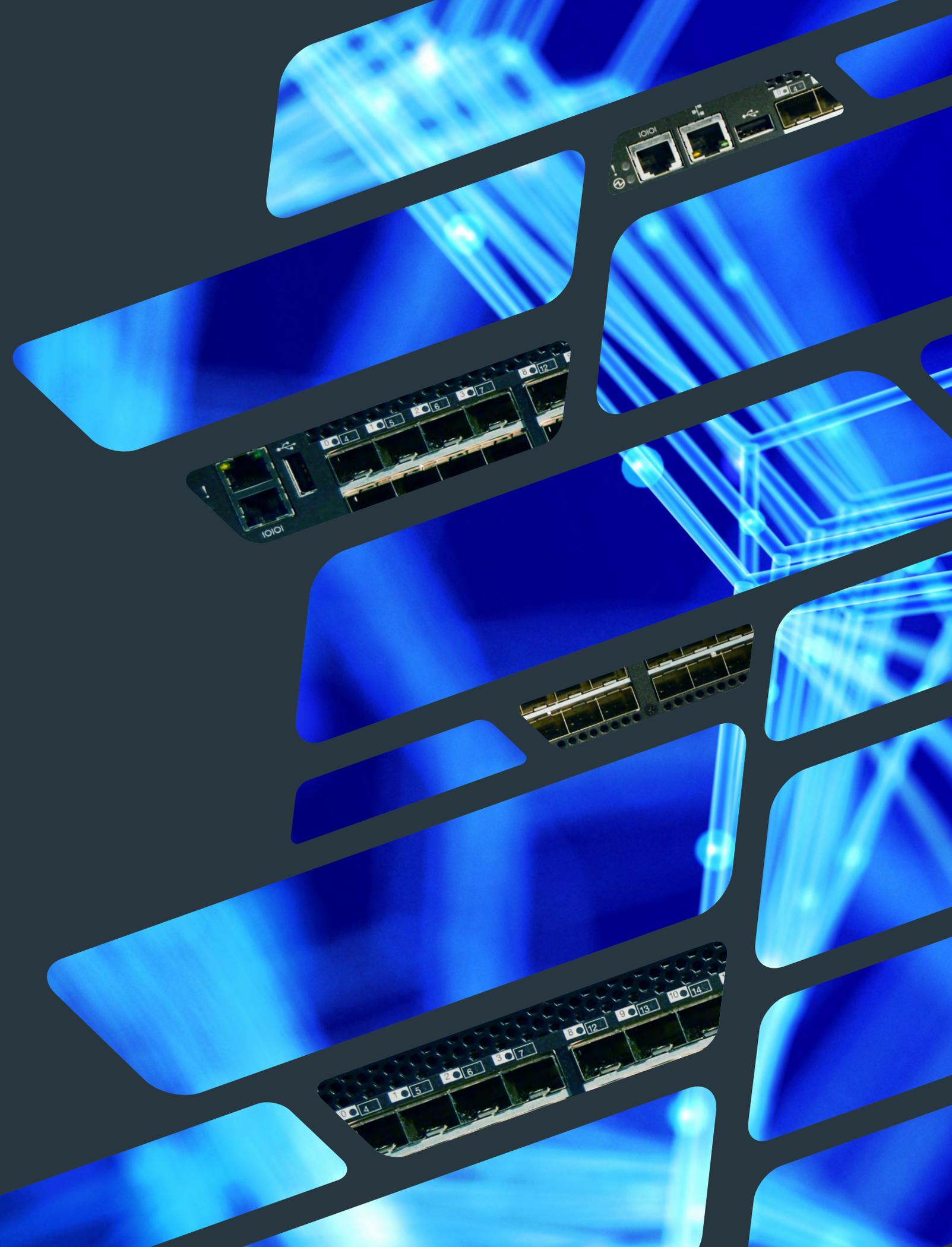
With the global explosion of data and information, the role of software defined storage and networking is becoming more critical in the data center structure.

Lenovo offers turnkey software-defined storage solutions with flexible options to match your specific requirements. We provide factory integrated, pre-tested appliances with SDS technology from leading ISVs running on proven Lenovo platforms. When companies optimize storage through automated provisioning, scaling and tiering will enable smart and efficient storage management, delivering up to 50% lower total cost of ownership.

Transformative, next-gen IT

To compliment well integrated and optimized top-of-rack and embedded switches, ThinkAgile software-defined network offerings are easy to deploy and manage with automation and smart orchestration tools. We support open standards and interoperability, so your network can grow and flex to support whatever's next in your data environment.

70% of IT decision makers consider exploiting big data critical to their future success.



Purpose driven innovation

It's not just about making the world's leading enterprise technology. In fact, our true focus is helping customers achieve their innovation and productivity goals. Our unmatched capability across disciplines and geographies is what makes us different.

In fact, we've recently activated the world's largest next-generation Intel-based supercomputer. Made up of 3,400 Lenovo servers connected by 48 kilometers of cable and capable of performing 13,677 trillion operations per second (11,000 times as powerful as a ThinkPad X1 Carbon), Mare Nostrum, in Barcelona, Spain, is powering advances in medicine and life sciences.

We see leadership in technology as an integral part of our total enterprise

solutions. Designed to deliver true value, our solutions are there to answer challenges—both now and in the future—whether it's to enable growth, to expand interoperability, to accelerate innovation or optimize productivity. Lenovo solutions create the agility required to lead the competition today as well as to adapt for what's to come. Working with Lenovo, you'll find that the completeness of our offering, our scale and commitment to innovation through strategic partnerships make just about anything possible.

Whether through existing platforms or emerging technologies, our partnerships with leading global vendors such as Intel, Microsoft, VMware, Red Hat and SAP helps make our technology solutions the world's most innovative and complete.



Where this makes a real difference:

- We are the #1 SAP partner providing the best solution for SAP HANA
- Our solutions can deploy virtualization from industry-leading proprietary and open source vendors, including virtualized desktop infrastructure for the next-generation mobile workforce
- Our scale can help you transcend the limits on high-performance computing and hyperscale
- Our systems are delivered with enhanced efficiency and manageability through Lenovo XClarity

Making the solutions that make the difference

Lenovo enterprise solutions are different. Our collaborative approach to innovation leverages partnerships with global technology leaders to transform our premium technologies into solutions that quickly deliver real value for customers. Whether your competitive advantage will come from virtualized infrastructure, workforce mobility, high performance computing or big data insights, our network of partners, scale, reach and unrivalled capability to deliver means our solutions lead the world.

Big data, analytics and insights

We have solutions to help manage data volume, variety and velocity, turning raw data into structured patterns to allow you to assess trends, make comparisons to unlock actionable data insights. Visualization of data-driven decisions enables business at the speed of now. Optimized systems are validated to harness the power of Apache™ Hadoop® and Apache™ Spark® with Cloudera®, Hortonworks®, IBM® and MapR®. Plus, as the #1 SAP partner providing the best solution for SAP HANA Lenovo technology enables business and transactional data to be analyzed and modeled in real time, putting you ahead of the trends in your industry.

Cloud solutions

We innovate at the systems level and collaborate with best-in-class technology partners including Microsoft®, RedHat®, SUSE® and VMware® Cloud to deliver turnkey cloud solution infrastructure. The result is end- to-end, secure, high performance and reliable private and hybrid cloud systems that minimize the time taken to realize value for your business or organization.

Database

Data is increasing in both volume and velocity. Our robust, powerful and economical database solutions tackle the rising cost of managing data, while meeting the challenge of serving reliable, responsive and rapid queries for power users running Oracle® or Microsoft® SQL.

Virtualization

Producing incredible efficiencies in enterprise environments, virtualization can reduce capital expenditure and lower total cost of ownership for vital infrastructure. We work with the world's best in the field, including Citrix® and VMware®, marrying best-in-class architectures with our industry-leading server technology.

High performance computing (HPC)

Already able to deliver ultra-dense infrastructure for the largest workloads, we're driving new developments by challenging existing paradigms. We are collaborating with customers and partners on HPC—investing in innovation, research and development, so we can help our customers capitalize on emerging trends.

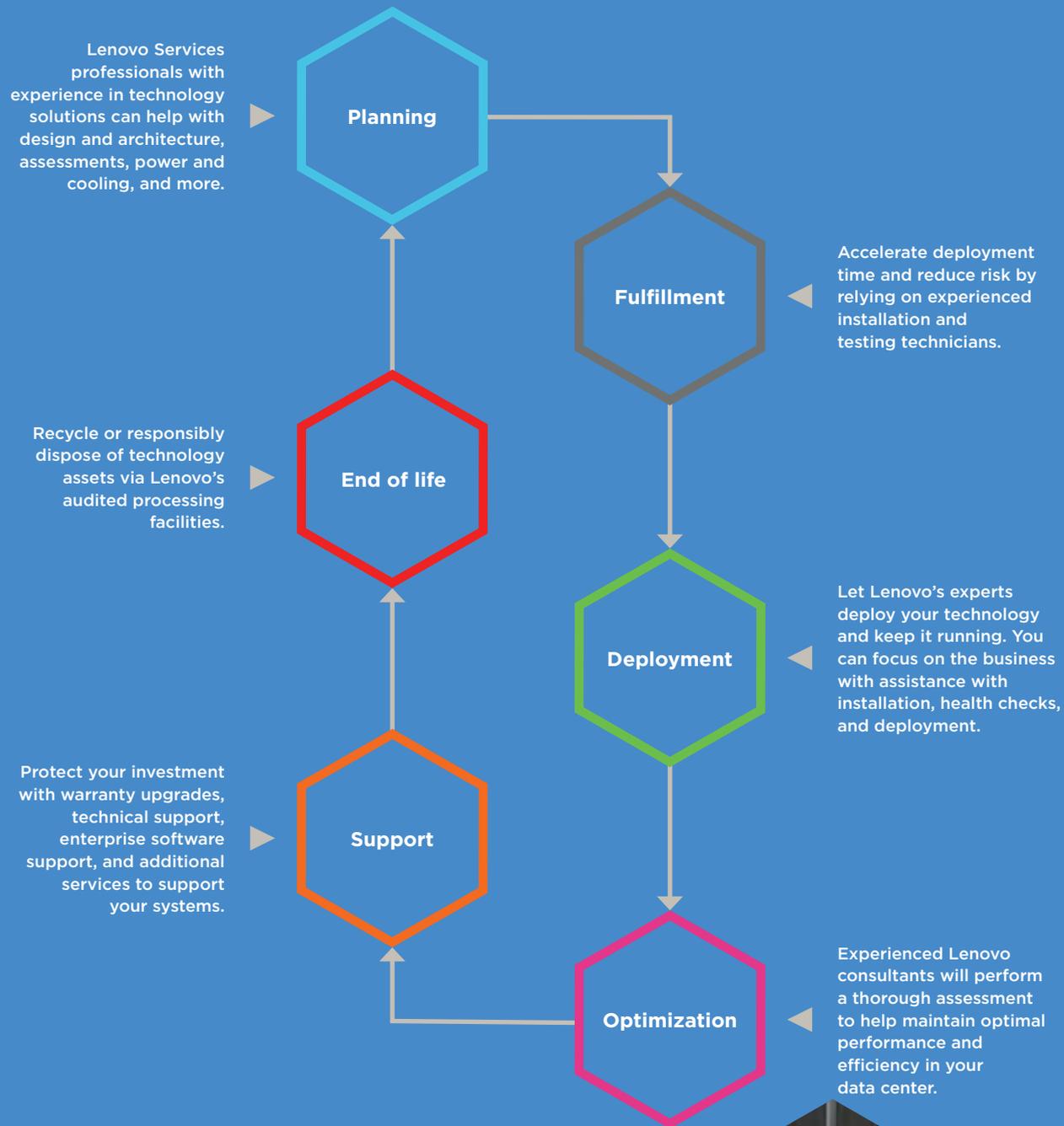
Collaboration, apps and workplace mobility

Lenovo solutions can enable your workforce to collaborate, share information and communicate from any location, from any device with total security. Virtual desktops and business apps solutions mean that core operational capability can be seamlessly delivered to employees around the globe on a range of devices, even accommodating current trends in BYOD.



Our commitment to research and development is not just an internal mantra, but extends to our collaborations with customers and partners.

Total lifecycle services



Creating value at every step of your hardware lifecycle

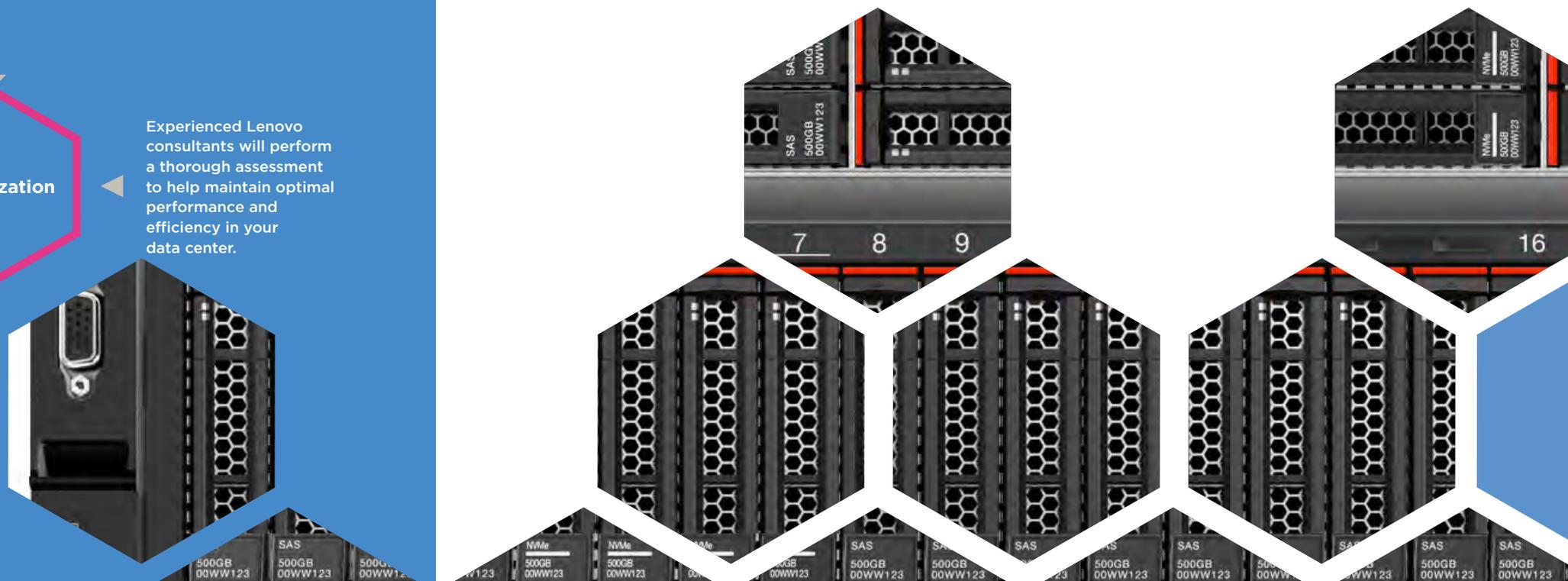
Lenovo Services can impact efficiency at key stages of the hardware journey from planning, to deployment, management and disposal.

We have a macro view and experience of global enterprise both from within our own business and our customers'. This gives us deep understanding of hardware lifecycles—inside and out—with unique insight on reducing expenditure, creating efficiencies and optimizing productivity benefits for users every step of the way.

Our comprehensive portfolio of services supports the full lifecycle of your Lenovo IT assets. From planning through end-of-life, we offer the expertise and services you need to develop the right IT strategy

Save time, spare your internal resources and make your technology investment go even further.

for your business, budget more accurately for IT expenses and deliver greater end-user satisfaction.



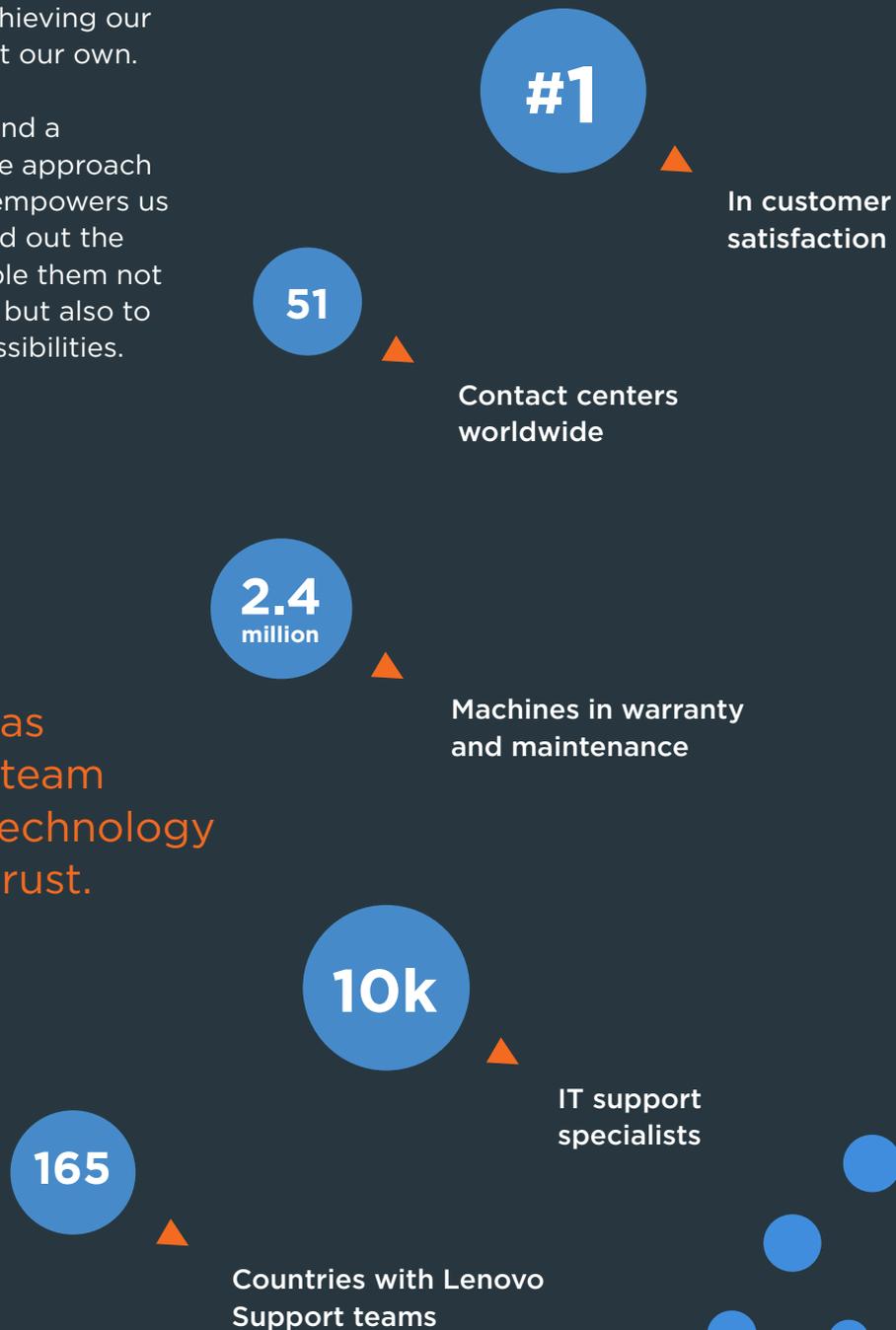
Customers say different is #1

World class data centers are built on leading edge technology, but relationships are built on trust.

Our commitment is to achieving our customers' ambitions, not our own.

Deep strategic thinking and a collaborative, consultative approach throughout the process empowers us to help customers to build out the capabilities that will enable them not only to reach their goals, but also to consider entirely new possibilities.

Lenovo has both the team and the technology you can trust.



Lenovo is different

No legacy. That will be our legacy.

The past is there to inform the future, not to define it. The truth is that the only future is an agile one, and that's a future we're excited about.

That's why we built our ThinkSystem and ThinkAgile portfolios on change. Designed to adapt, crafted to be flexible, they offer not just better answers to today's data center challenges, but more interesting questions about how they can enable the data centers of the future.

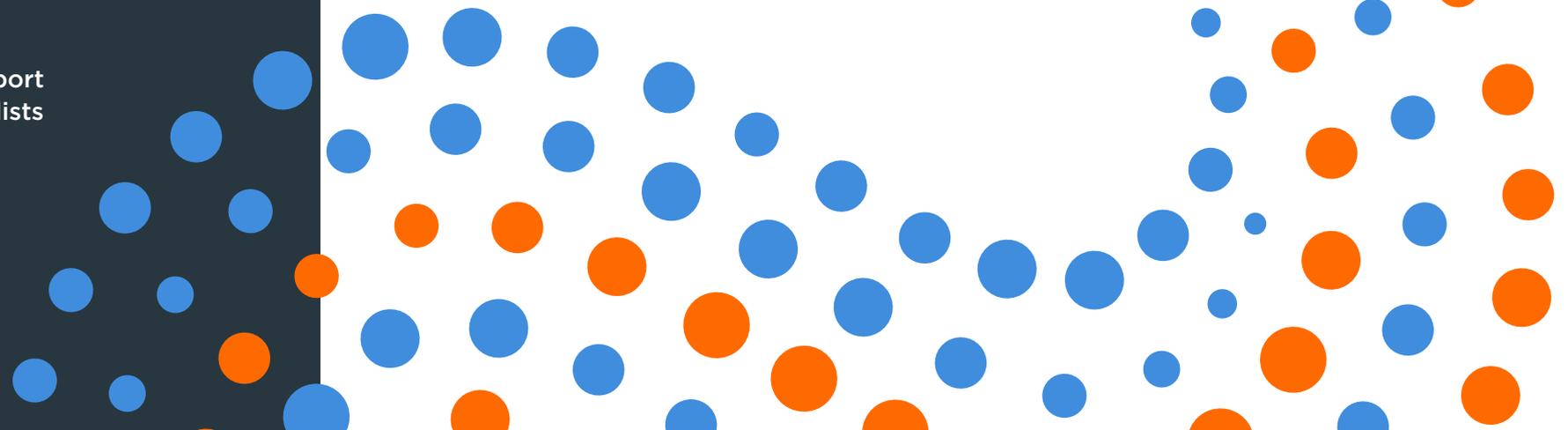
This future demands systems that are springboards to innovation, technology that enables and invigorates fresh thinking and solutions that scale to deliver high performance without the corresponding cost factors.

This future will ask a lot of us. It will need our commitment, not to stay the course, but to break new ground. Not to step forward, but to take leaps of faith into the

Intelligent, focused change is what attains true advancement in the relentless pursuit of a better way.

unknown. This future is thinking about tomorrow and reinventing itself today and so are we.

Because the future will be different. And we will work tirelessly to ensure that different truly is better.



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