



Powerful possibilities

How the Microsoft platform powers change for the edge of enterprise



All hail the power of data

In this digital era, business runs on data. Data can solve the toughest problems, disrupt the competitive landscape, and create new business opportunities.

And with all the benefits of this data explosion come challenges:

- The increase in connected devices gives cybercriminals more entry points.
- IoT data can eat up network bandwidth and swamp the datacenter.
- Organizations need help accessing and processing data for real-time actions.

OEMs that provide integrated solutions that help business collect, curate, and analyze data—all while keeping it secure—will be tomorrow's market leaders. And when those devices run on the latest platform technology, you become the power player of the edge of enterprise.

In this e-book, we'll show you how to take your business to the next level with Windows Server 2016, SQL Server 2016, and the power of the cloud.

Let's dive in. Opportunity is waiting.

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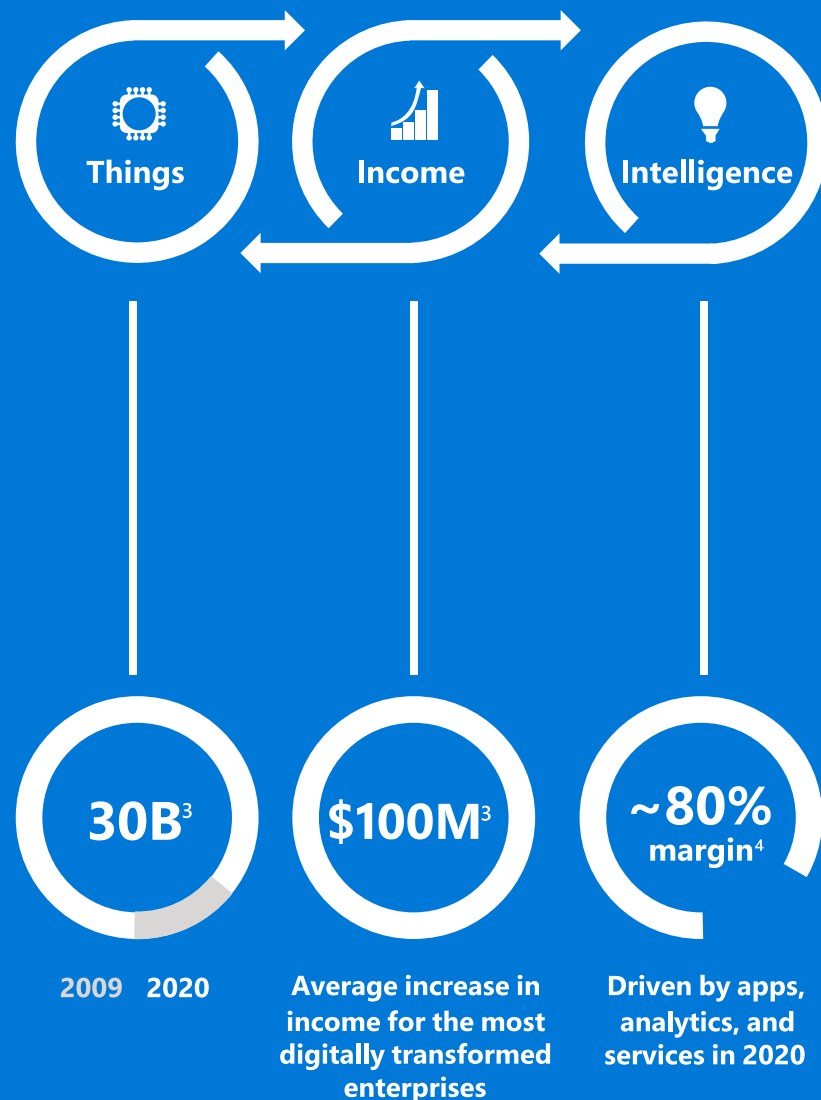
Start your IoT solution with Azure IoT Suite

We've all read the statistics about the torrent of data the Internet of Things (IoT) will unleash. Analysts project that there will be 30 billion "things"—machines, sensors, gateways—connected to the cloud by 2020.

The shared belief is that the intelligence gleaned from all these devices can help create new business models—models which will result (on average) in a \$100 million increase in income for the most digitally transformed enterprises. The new business models can lead to margins akin to the 80 percent gross margin of software. Think about it this way: companies in any industry will be looking at how they can transform through data—connecting legacy and new IoT devices, building apps, using advanced analytics, and providing SaaS services.¹

And therein lies opportunity. This onslaught of devices on the edge will "require entirely new levels of authentication, management, and security; improved processing and analytics capabilities to prevent local resources from becoming overwhelmed."²

Don't wait. Microsoft SQL Server 2016 and Windows Server 2016 are the power tools you need to put that data to work for your customers and help you own IoT.



¹<http://www.computerweekly.com/news/2240242478/Satya-Nadella-Every-business-will-be-a-software-business>

²<http://www.enterprisenetworkingplanet.com/datacenter/datacenter-blog/reassessing-the-network-edge-in-the-age-of-sdn.html>

³IDC, 2016 - details: MacGillivray, Carrie, Worldwide Internet of Things Forecast Update, 2015–2019, International Data Corporation (IDC), February 2016.

⁴McKinsey, How IoT Can Support A Dynamic Maintenance Program, 2016

Digital leadership is a 'team sport,' says Gartner, and enterprises will need to strengthen partnerships with software and device companies to create new sources of value. That's especially true with IoT, which will provide unprecedented insights into consumer and supplier behavior, MSM (machine-to-machine interactions), business operations, and more.⁵

Gartner recommends taking a “**platform**” approach to business



A SYSTEM VIEW of Business



A PLATFORM VIEW of Business

Companies that create a “platform” business model can take advantage of the best insights, talent, and services from outside their business walls.
Source: Gartner.⁶

⁵Building the Digital Platform: Insights from the 2016 Gartner CIO Agenda Report, Gartner Executive Programs, 2015, https://www.gartner.com/imagesrv/cio/pdf/cio_agenda_insights_2016.pdf.

⁶Building the Digital Platform: Insights from the 2016 Gartner CIO Agenda Report, Gartner Executive Programs, 2015, https://www.gartner.com/imagesrv/cio/pdf/cio_agenda_insights_2016.pdf.

Digital business is good business

So just what is digital business? According to Gartner thought leader Jorge Lopez, VP and distinguished analyst, digital business is about creating “new business designs” that are enabled by “blurring the digital and physical world.”⁷ It’s why many are calling the era we live in the Industrial Revolution 4.0.

Digital leaders know that the time to move is now. As they fuse business and digital strategies, they are also aligning their organization, equipping their workforce, and evolving their infrastructure to meet new challenges. They are moving from “sense and respond” enterprises to ones that use analytics and machine learning to predict the future and make early bets on emerging market demand.

Here’s what industry leaders have to say:

“Walmart is redefining the next generation of retail growth and is the best-positioned retailer to win at the convergence of digital and physical retail.”

— Doug McMillon, Walmart CEO

“We are putting 70 percent of our applications on the cloud to improve flexibility. And we are launching game-changing applications to improve our efficiency.”

— Jeffrey Immelt, GE CEO

“It’s about looking ahead to the changes coming to the global auto business, particularly from potential ‘disruptors’ in Silicon Valley—and preparing Ford to thrive through those changes.”

—Mark Fields, Ford Motor Company CEO

9 out of **10**
DIGITAL LEADERS
have fully integrated **DIGITAL**
into strategic planning
versus **60%**
OF ALL LEADERS.⁸

⁷Jorge Lopez, “Digital Business Is Everyone’s Business,” Gartner, Inc., May 7, 2014, Forbes, <http://www.forbes.com/sites/gartnergroup/2014/05/07/digitalbusiness-is-everyones-business/#4800d20d2d66>.

⁸<http://www.mckinsey.com/business-functions/organization/our-insights/six-building-blocks-for-creating-a-high-performing-digital-enterprise>

Building without boundaries

When you extend the power of your devices beyond the edge, to scale and connect with other rich sources of information, you help your customers extend their digital ecosystem and create new service opportunities for your business.

- Build a connected solution that links your customers to theirs so they can identify new ways to create value.
- Help your customers evolve into smart businesses that use analytics and machine learning to make automated, real-time decisions, with precision focus.
- Equip them with data they need to proactively identify changing market demand, new customer needs, and process improvements that can transform their business.

With digital ecosystems, it's not about the one-time product sale. It's about creating outcomes for the "we economy."⁹

⁹Thor Olavsrud, "How Digital Ecosystems Are Creating the 'We Economy,'" CIO, February 2, 2015, <http://www.cio.com/article/2878419/innovation/how-digialecosystems-are-creating-the-we-economy.html>.



Why wait to innovate?

The 2016 embedded server products offer all new levels of edge-to-enterprise security, flexibility, and performance, so what are you waiting for?

Here are three reasons to make the move.



#1 Security

Security is a top priority for your customers, and they're looking for OEMs that can deliver the highest possible levels of security. SQL Server 2016 and Windows Server 2016 take security to new levels with even more granular access control and data encryption.

#2 Performance

Businesses want devices that not only collect data, but also allow them to access and analyze it in real time.

Microsoft embedded server products optimize data storage while improving accessibility.

#3 Flexibility

Your devices need to work across platforms, in the office, and in the field. Microsoft embedded server products help you provide easy-to-use and cost-effective data storage solutions and advanced analytics with the flexibility needed to handle a wide array of applications.

SQL Server 2016

- Protect your data at rest, in motion, and while in use, whether on-premises or in the cloud.
- Keep encryption keys at the client level, reducing the number of people who can access sensitive data.

Windows Server 2016

- Secure access by granting time-fenced administration credentials for specific tasks.
- Keep unauthorized users from extracting credentials from a machine.
- Prevent unauthorized applications and devices from accessing your systems.

SQL Server 2016

- Get the performance needed for real-time analytical processing with up to 30X faster transactions.
- Improve storage utilization by compressing data as much as 10X while still delivering up to 100X better analytical performance than disk-based relational databases.
- Protect data loss in the event of power interruption, system failures, and restarts.

Windows Server 2016

- Create highly available, highly scalable, software-defined storage at a fraction of the cost of traditional SAN or NAS arrays.
- Supports up to 6X more physical (host) memory and up to 12X more virtual machine memory than Windows Server 2012.
- Supports up to 240 VPs per VM, 3.75X Windows Server 2012 R2.

SQL Server 2016

- Stretch the same database across platforms, including on-premises and into Azure, giving your users easy access to all the data they need to make the right decisions fast.
- Create a consistent user experience across cloud and on-premises platforms.
- Use advanced analytical capabilities such as mobile BI on any device at a fraction of the cost of other vendors.
- Use predictive analytics to forecast everything from customer behavior to equipment performance.
- Go mobile with responsive, interactive reports optimized for your devices.

Windows Server 2016

- Improve business continuity with synchronous and asynchronous replication between clusters or sites with zero loss at file level during a failure.
- Easily connect devices and solutions on other platforms with open source compatibility.
- Enable more connections and improve graphics experience as part of desktop virtualization.
- Use IP Address Management to support many devices coming online and going offline, such as wristbands on cruises.

Customer Spotlight: Tyco International

Tyco provides fire and security protection for sprawling corporate campuses, retail stores, universities, and even ships at sea. To keep its eyes and ears open, Tyco has to ensure that its monitoring systems are up and running around the clock.

Tyco is taking advantage of Windows Server 2016, and in particular Windows Server Containers in conjunction with the Docker Engine, to first containerize legacy applications and later re-architect them into microservices.

This one-two software punch will give the security giant the ability to update large, older applications in a modular fashion and keep monitoring applications running continuously. It also lets Tyco scale applications to handle larger monitoring loads and run those applications in the cloud to reduce costs. Systems run smoothly so everyone can sleep better at night.

"The story Tyco never wants to hear is that the bad guy goes undetected, or a fire spreads, because its monitoring system was temporarily out of commission due to a routine software update."

Stephen Tarmey, Chief Architect, Tyco International





Customer Spotlight: DocuSign

By digitizing the signature and automating paper-based and manual processes related to legal and commercial paperwork, DocuSign is reinventing the way many of the world's major industries conduct business.

To scale its business model to match its rapid growth, DocuSign uses Microsoft SQL Server 2016 as the foundation of its document transaction processing system. And by using Microsoft Azure cloud services, DocuSign can quickly stand up entire datacenters worth of infrastructure that allow it to continuously improve and deploy features—including the ability to interface with mobile devices—without the upfront costs.

"Companies that use DocuSign tend to care very much about performance, and very much about scalability and security and speed. They want to process transactions in real time. These are the reasons why we use Microsoft SQL Server as the core of our system: performance, scalability, reliability."

Eric Fleischman, Chief Architect and Vice President of Platform Engineering, DocuSign.

Taking it to the cloud

Microsoft Azure is the cloud platform for digital transformation across the enterprise. As your customers gather more and more data, cloud technologies like Azure play a vital role, helping them affordably and securely manage all that data. Azure provides a platform of technologies that helps Microsoft partners:



1. Accelerate app innovation through rapid app development and agility in the cloud.



2. Deliver integrated data and intelligence—data for rich insights to intelligence embedded within apps.



3. Use the tools and technologies you already have, where you can, with the open and flexible Azure platform.



4. Protect business assets. As more customers expect digital experiences, they expect the data they share with an organization to be protected. We help you help them do that.

With Microsoft Azure, OEMs can build simple to complex projects within a consistent portal experience using deeply integrated cloud services, to rapidly develop, deploy, and manage their solutions.

“Microsoft’s comprehensive hybrid story, which spans applications and platforms as well as infrastructure, is highly attractive to many companies, drawing them towards the cloud in general.”

Lydia Leong, Gartner

Summary of Major Vendor Emphasis

	Build Private Services		Services Delivered*			Private Offerings	
	Build Private Services	Deliver Services	IaaS	PaaS	SaaS	Enabling Tech.	Packaged Cloud
Amazon	○	●	●	●	○	—	None —
salesforce.com	○	●	○	●	●	—	None —
Google	○	●	○	●	●	—	None —
Microsoft	●	●	●	●	●	●	—
IBM	●	●	●	●	●	—	● —
VMware	●	●	○	●	●	—	● —
Oracle	●	●	○	●	●	●	—
SAP	○	●	○	●	●	—	None —
HP	●	●	●	●	●	—	● —

Note: This is not an evaluation of capabilities, but rather of emphasis.



* The provider may offer public, community or virtual private services

Gartner

Azure IoT Suite brings your devices to life

Integrate your existing devices and systems with IoT solutions that can be tailored to your customers' specific needs, helping uncover data and insights that transform their business and create new revenue streams for you. Azure IoT Suite enables application innovation—for web and mobile, IoT, data management, and microservices.

Azure IoT Suite addresses partners' needs to:

- **Start now**—Use preconfigured solutions for the most common IoT scenarios and start developing in five minutes.
- **Connect to anything**—Use Azure IoT Suite to connect any device, operating system, data source, software, or service.
- **Stay secure**—Help protect corporate and consumer data with security solutions that encompass every endpoint and connection and data as it passes through the cloud.
- **Scale and grow**—Use BI and analytics tools to make sense of data from millions of devices and endpoints and deploy apps and services over the hybrid cloud worldwide.
- **Predict the future**—Use advanced analytics and machine learning to capture insights from data that weren't possible before.

Secure
End-to-end



From endpoint and connection through to data and the cloud

Fast
Start in minutes



Preconfigured solutions for the most common IoT scenarios

Open
Connect anything



Any device, OS, data source, software, or service

Scalable
Grow effortlessly



Millions of devices, terabytes of data, on-premises and in the cloud, in 30 regions worldwide

Devices



Devices



Gateways



Data



Insights



Action



People

People

Embedded servers end of support: **Why count down when you can move forward?**

If you are still providing solutions based on SQL Server 2005 or 2008, it is vitally important that you upgrade.

- SQL Server 2005 reached end of support in April 2016, which means there will be no more security patches from Microsoft.
- SQL Server 2008 is on extended support and will reach end of support on July 9, 2019.
- Mainstream support for Windows Server 2012 ends October 9, 2018.

Customers who continue to use unsupported versions of SQL Server risk business disruption due to technical and security issues.

Why wait? Help your enterprise customers become digital masters by building your device—and their businesses—on the best database platform in the market. Learn more about how the Microsoft platform is empowering IoT solutions at: www.innovateonwindows10iot.com



10 reasons to choose the Microsoft platform

Simply put, Windows Server 2016 and SQL Server 2016, both world-class products on their own, are better together.

Coupled with the power of the cloud, they deliver what you need to power IoT.

1 MICROSOFT IS THE RECOGNIZED INDUSTRY LEADER

Gartner has recognized Microsoft as the #1 company in the market for operational database management systems for its completeness of vision and ability to execute. Microsoft has also been cited as a leader for business intelligence and analytics platforms and data warehouse and database management solutions for analytics.¹⁰ And integration with System Center and Microsoft Azure as well as the new security features in Windows Server 2016 reinforces its leadership in the Gartner X86 Server Virtualization Infrastructure quadrant, as well.¹¹

2 LASER-FOCUSED ON SECURITY

For the past six years in a row, SQL Server 2016 has been ranked the most secure and least vulnerable database on the market. New features in Windows Server 2016 helps prevent attackers from using your devices to steal credentials and sensitive data.

3 GROUNDBREAKING PERFORMANCE AND SCALE

Microsoft is the market leader in OLTP, powering transaction-intensive businesses such as retail, healthcare, and more.

4 BUSINESS INTELLIGENCE DOESN'T WAIT

Get mobile BI capabilities to make decisions when and where your customers need them—on a factory floor, drilling operation, or government office—at a fraction of the cost of other solutions.

5 HYBRID CLOUD

Most enterprises have migrated to a hybrid cloud scenario, using private clouds or on-premises datacenters for mission-critical apps and systems but running development, testing, and production in less expensive public clouds. Help them tap the full power of data—real-time, historic, and on-premises—with SQL Server 2016, Windows Server 2016, and Azure IoT Suite.

6 ENABLES MISSION-CRITICAL INTELLIGENT APPLICATIONS

Develop apps that take advantage of your wealth of structured and unstructured data, and then make sense of it with Azure IoT Suite. Protect data and ensure system performance with AlwaysOn availability and failover clustering.

7 ALWAYS ON AVAILABILITY

Windows Server 2016 and SQL Server 2016 bring improvements to availability and disaster recovery features, providing an unprecedented level of interoperability in a variety of environments.

8 ENABLES MISSION-CRITICAL INTELLIGENT APPLICATIONS

Windows Server 2016 provides open source compatibility with devices and solutions on other platforms. Azure IoT Suite enables you to use and connect just about any device and operating system, programming languages, frameworks, databases, and devices including open source technologies.

9 PROVIDES PLATFORM CHOICE

Whether data is in the datacenter, private cloud, or Microsoft Azure, enterprises get a consistent experience across server and database as a service.

10 EXPAND YOUR OFFERING FROM EDGE TO ENTERPRISE

Enterprises need guidance in identifying the business-changing insights they need and how to capture it. Microsoft partners play a critical role in teaming with each other and customers to provide the data visualization capabilities required to turn data into insight.

¹⁰T.K. Ranga Rengarajan, "Gartner positions Microsoft as a leader in the Magic Quadrant for Operational Database Management Systems," SQL Server Blog, October 15, 2015, <https://blogs.technet.microsoft.com/dataplatforminsider/2015/10/15/gartner-positions-microsoft-as-a-leader-in-the-magic-quadrant-for-operational-database-management-systems/>.

¹¹<http://www.thomasmaurer.ch/2016/08/microsoft-a-leader-in-gartner-x86-server-virtualization-infrastructure-2016-magic-quadrant/>

IoT extends its reach **across industry**

Oil and gas

When you integrate your existing devices and systems with Microsoft platform technologies like Windows Server 2016 and SQL Server 2016, you help uncover data and insights that can transform the oil and gas industry and flow new business your way.

Security cameras with built-in facial recognition help spot known criminals and suspicious behavior using Cortana Intelligence for machine learning and other data sources stored within SQL Server 2016.

Real-time communication between the charging station and the network can validate membership, dynamically modify pricing, and monitor stations for maintenance needs. New layers of protection built into Windows Server 2016 and SQL Server 2016 help ensure members' information is kept secure.

Enable station owners to deliver promotional offers targeted specifically to the consumer, integrated with mobile apps and using location data. And when connected to SQL Server 2016 Analysis Services you can create powerful BI semantic models, and create new service revenue streams.

Connect Azure IoT analytics to bike stations to timely forecast the need for restocking using parameters like weather, time of day, or day of week.



Petrobras Argentina uses an extranet, hosted in Microsoft Azure, to get the latest pricing, promotions, product specifications, and other information to its 263 gas stations. Azure ensures Petrobras can scale to optimize resources and respond to business needs.

Retail

When you build your devices to run on the latest Microsoft technologies like Windows Server 2016 and SQL Server 2016, you can deliver the next generation of smart devices and systems that enable progressive retailers to more securely integrate and store their data and get the highest performance available while minimizing downtime.

To integrate its various online retail, banking and credit, travel, securities, and entertainment businesses, **The Rakuten Group** turned to Windows Server 2016 Remote Desktop Services (RDS). RDS provided an easy path to integrating heterogeneous systems, as well as an additional layer of security.

Smart shelves tap into back-end inventory systems running on SQL Server 2016 to ensure quick retrieval of item quantities, alerting store associates when product levels are running low or when a theft is detected.

Security cameras capture shopper heat maps and "in-store journeys," informing product placement and optimal pricing. Power BI, tapping into SQL Server 2016, turns data into rich visuals for better decision making.

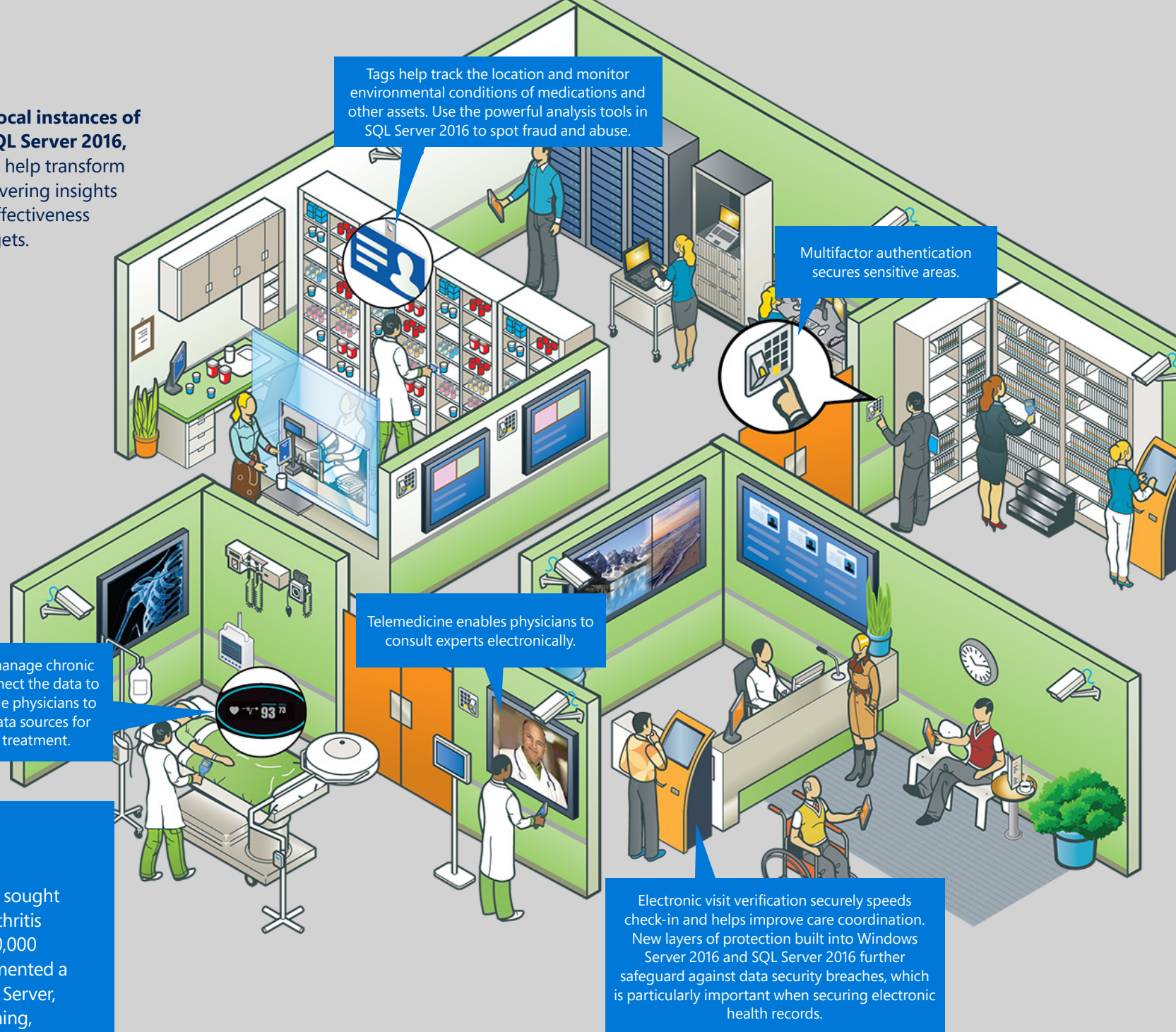
Smart mirrors with touchscreen navigation proactively alert shoppers to complementary pieces and allow shoppers to interact with clerks on the floor. Data captured and stored in SQL Server 2016 enables brick-and-mortar stores to catch up with data-rich e-commerce.

Digital signage, using a SQL Server database as a back end that's connected to the cloud, enables retailers to quickly tailor offers based on past purchases and preferences.

Two-factor authentication, digital, keycard, and biometric access points secure endpoints, data, and identities. New layers of protection built into Windows Server 2016 further safeguard against data security breaches.

Healthcare

Your devices, connected to local instances of Windows Server 2016 and SQL Server 2016, or connected to the cloud, can help transform the healthcare industry by delivering insights that help increase care team effectiveness and optimize equipment budgets.



Toronto Western Hospital officials sought to improve surgery outcomes for arthritis sufferers in Canada, who exceed 600,000 individuals. The organization implemented a platform powered by Microsoft SQL Server, SQL Data Warehouse, machine learning, and other tools to acquire data insights on predictors of surgery success and other factors.

Manufacturing

Your devices connected to data sources in the cloud can give manufacturers the insights and levers they need to understand and predict customer and market demands, streamline operations, and fuel explosive growth.

Using Azure cloud services and machine learning (powered by virtualization using Windows Server and analysis tools within SQL Server) you can help manufacturers spot inefficient practices, facilities, or production lines.

Multifactor authentication helps secure sensitive areas and, when connected to Windows Server 2016 and SQL Server 2016, gains you new layers of protection built in to further safeguard against data security breaches.

Using virtual and augmented reality, you can help manufacturers lay out and walk through assembly processes to maximize efficiency.

Smart connectivity embedded in equipment and connected via Azure IoT Suite services can monitor and predict maintenance needs prior to failure. Powerful analysis tools within SQL Server 2016 like Power BI and Cortana Intelligence machine learning help ensure more efficient operations and reduced downtime.

Help protect high-value goods from shrinkage or theft with sensor tags and connected vehicles, and overlay them with route data using Azure IoT.



To accelerate the efficiency of its own crew, **Race Winning Brands** deployed a BI solution based on Microsoft SQL Server 2016 and Microsoft Power BI. It provides on-demand, comprehensive reports and dashboards that save employees as much as 65 hours of effort per month.

Together, Windows Server 2016 and SQL Server 2016 are delivering the best in next-generation scalability, availability, and security features. It's the age of "edge to enterprise" and it's time to make your move.

NEXT STEPS



Evaluate and deploy
Windows Server 2016 and SQL Server 2016 with your devices.



Connect your devices, sensors, and systems (including brownfield or existing legacy) to the cloud using Azure IoT Suite.



Seek out
Microsoft partners and collaborate to deliver on IoT.



Build an **end-to-end** solution with the Microsoft platform.



Go beyond selling "things" to **delivering results.**