

DATA CENTER TECHNOLOGY UPDATE

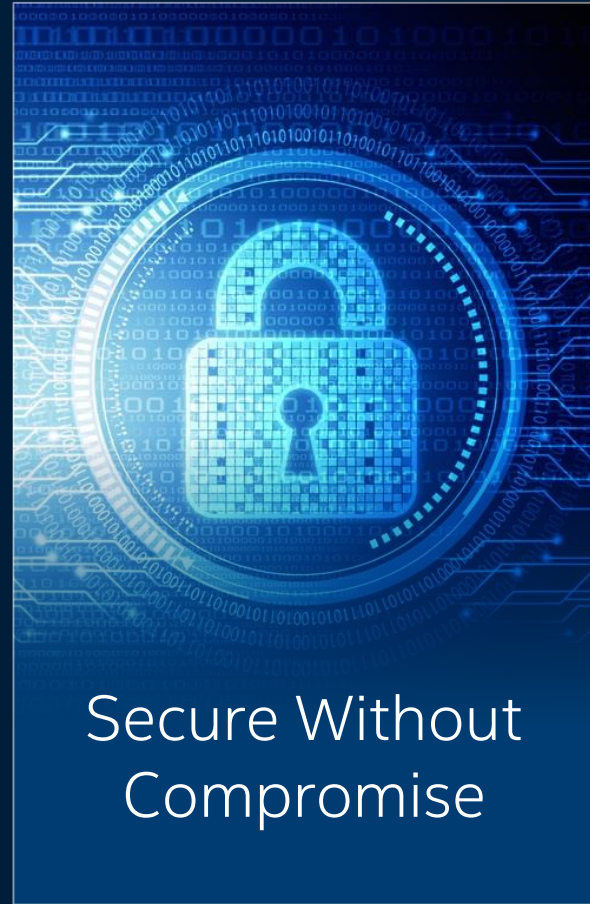
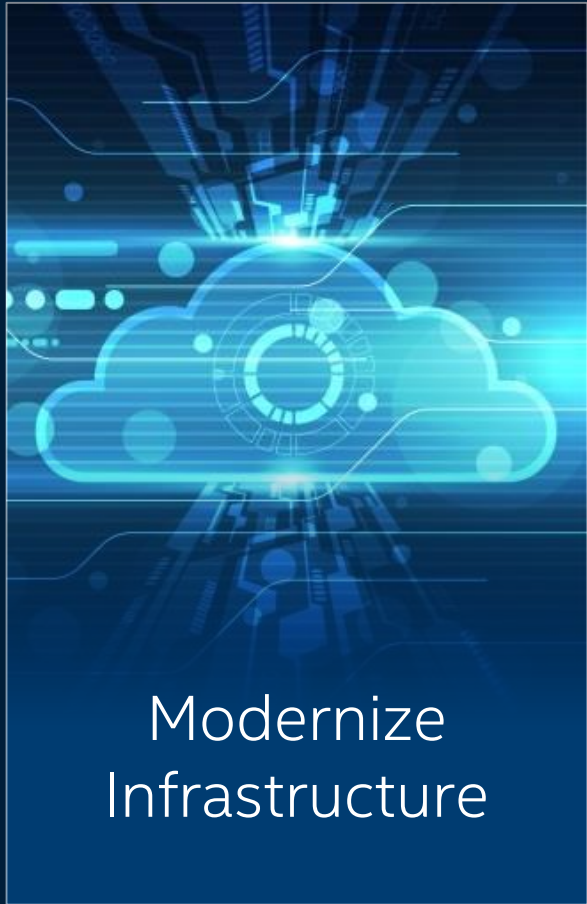
Name
name

Event

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DIGITAL TRANSFORMATION: IT IMPERATIVES



BUSINESS CANNOT COMPETE ON OLD INFRASTRUCTURE

✓ SILO'D APPLICATIONS & DATA POCKETS

✓ SLOW DEPLOYMENT OF NEW SERVICES

✓ SECURITY EXPLOITS GROWING

✓ NETWORK BOTTLENECKS

✓ DATA INFLUX SWAMPING STORAGE

✓ HIGH COST OF TECHNICAL DEBT

71% of IT organizations cite **legacy infrastructure as biggest barrier** to business transformation¹

The average server age has increased from

5 TO 7 YEARS¹

1. CMR: Server Market Insights, 02-2018; 2. ESG 2017 (<https://www.emc.com/collateral/analyst-reports/esg-dellemc-it-transformation-maturity-report.pdf>)

MODERN INFRASTRUCTURES ENABLE BUSINESS GROWTH



2X

nearly double
operating margin¹



\$40K

more revenue
per employee²



50%

higher average net
income on revenue³

1. <https://www.emc.com/collateral/analyst-reports/esg-dellemc-it-transformation-maturity-report.pdf>

2. Data & Analytics Maturity Model & Business Impact and 3. The Digital Business Divide white papers, both from Keystone in 2016, <https://www.microsoft.com/en-us/sql-server/data-maturity-model-assessment>

IT TRANSFORMATION REQUIRES A HOLISTIC APPROACH

HYBRID CLOUD



90%
of enterprises will adopt
a hybrid strategy by
2020¹

VIRTUALIZED NETWORK



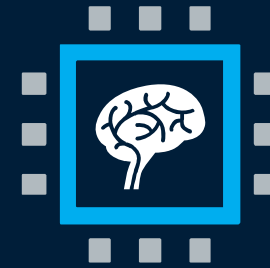
Enterprise IP traffic
will grow
3X
from 2016 to 2021²

FUTURE-READY STORAGE



Data growth
>30%
CAGR while IT storage
investment is
~3%
growth³

ANALYTICS & AI STRATEGY



CIOs
#1
Investment
Priority⁴

MULTI-LAYERED SECURITY



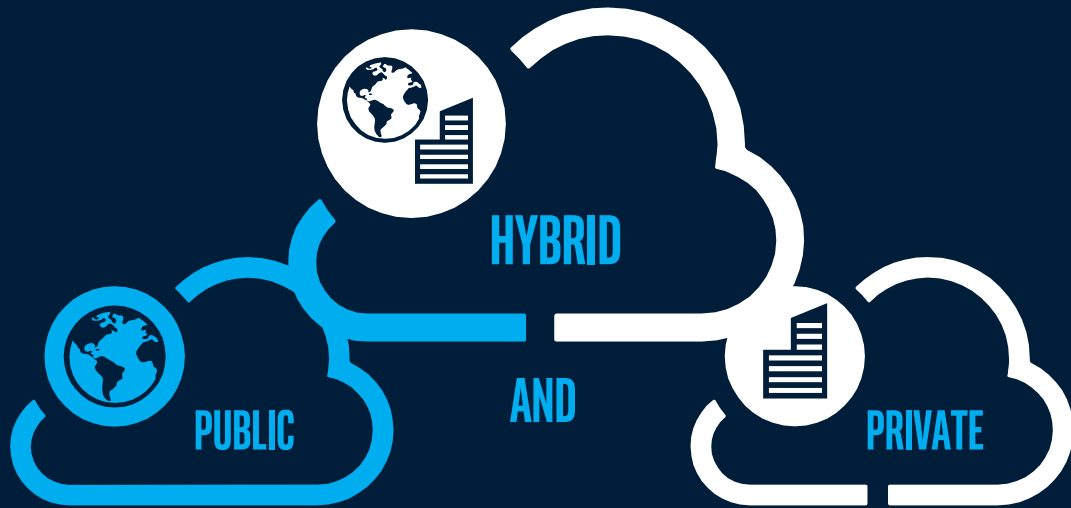
SECURE. PROTECT. DETECT.

\$2.1 TRILLION
projected cost of cyber
crime to business by
2019⁵

1. Gartner, <https://www.gartner.com/newsroom/id/3666917>; 2. Cisco VNI Complete Forecast 2016-2021 <https://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/complete-white-paper-c11-481360.html>; 3. Worldwide Semiannual IT Spending Guide: Industry and Company Size, IDC February 2017; 4. Gartner CIO Survey 2017; 5. Juniper Research 2015 <https://www.juniperresearch.com/press/press-releases/cybercrime-cost-businesses-over-2trillion>

HYBRID & MULTI CLOUD

MULTIPLE CLOUDS DRIVE BUSINESS SUCCESS



90% of enterprises will adopt a hybrid strategy by 2020.¹

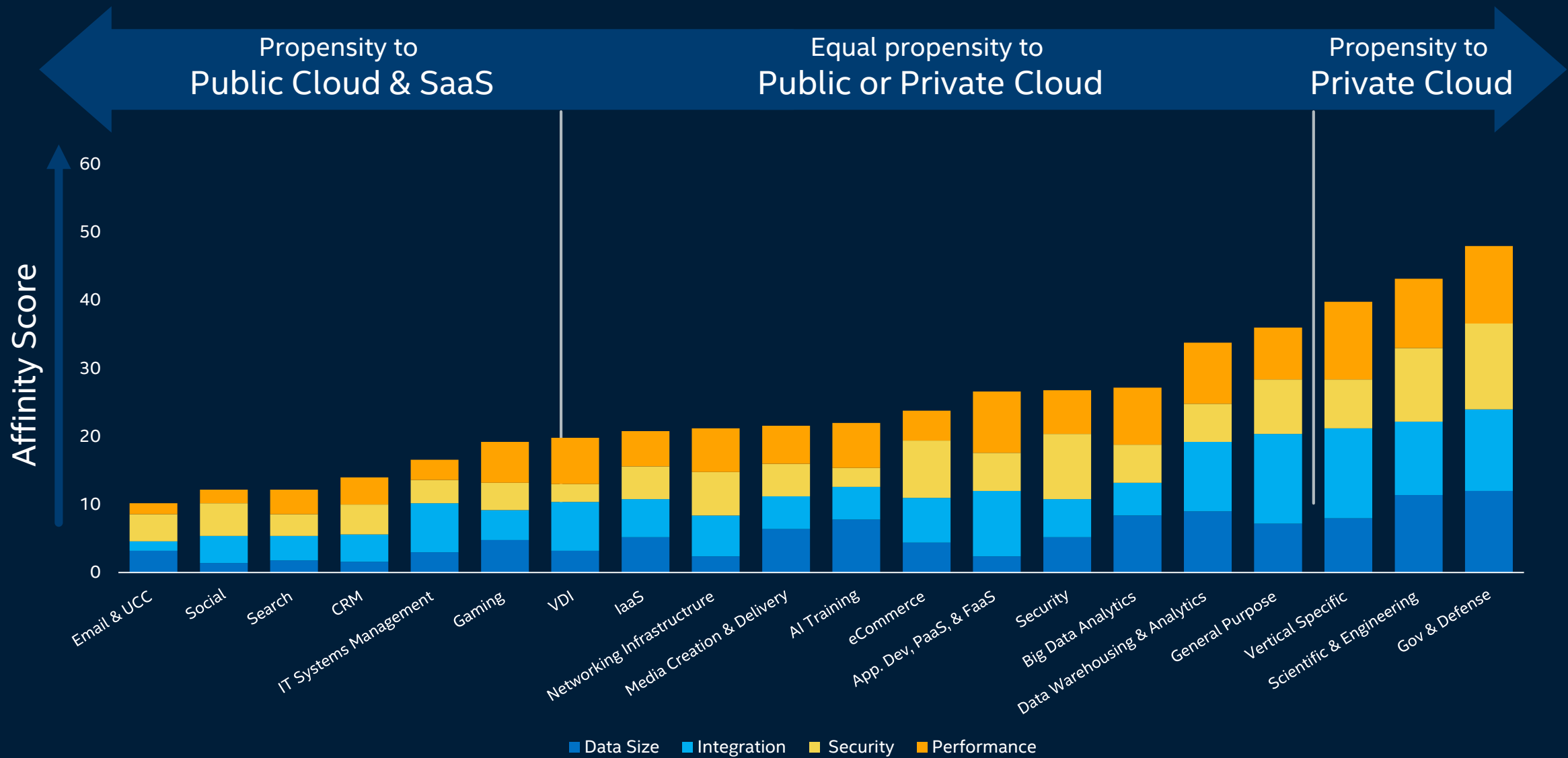
BOTH PUBLIC AND PRIVATE CLOUD CAN MAKE SENSE FOR DRIVING STRONG ROI.

A Holistic Cloud Strategy should:

- Drive faster time to market
- Optimize performance and ROI
- Provide control, transparency and compliance
- Enable app portability and consistency

1. Enterprise Strategy Group, <https://www.dellemc.com/en-us/whitepaper/esg-it-transformation-maturity-report-agility-innovation-business-value.htm#chapter3>

INTEL® AFFINITY MODEL FOR WORKLOAD PLACEMENT



HYBRID CLOUD USE CASES

“**Less than half** of organizations actively optimize workload configurations today, and are therefore likely **not effectively rightsizing workloads** in public or private clouds.”¹

APPLICATION SCALE & FLEXIBILITY

ANALYTICS & AI

EXPERIMENTAL WORKLOADS

DATA SOVEREIGNTY & SECURITY








DISASTER RECOVERY & BACKUP

LATENCY/SLA SENSITIVITY

1. Unlock The Value Of Cloud, Forrester for Intel Survey, 2017. https://plan.seek.intel.com/us_en_influencer-ess_registration-form-Forrester_HybridCloud_html




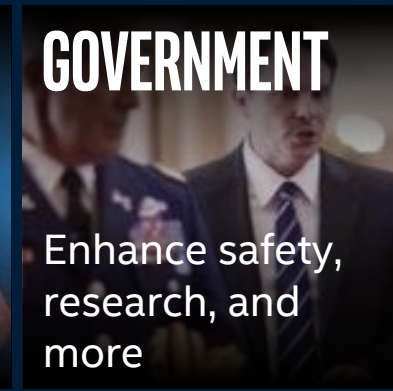


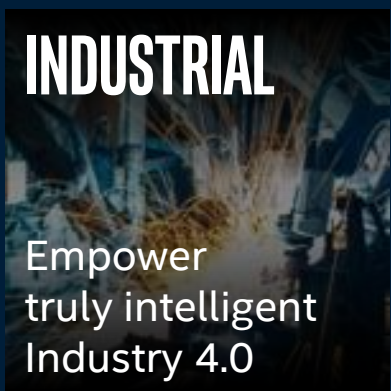
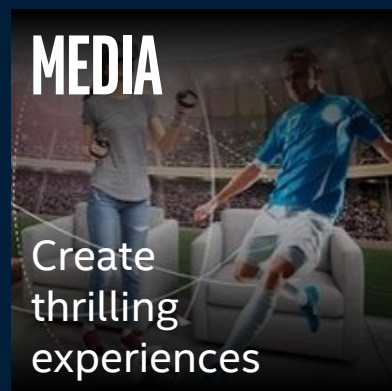
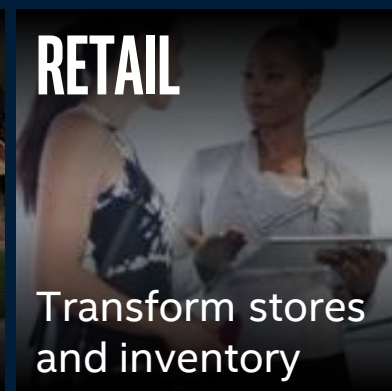
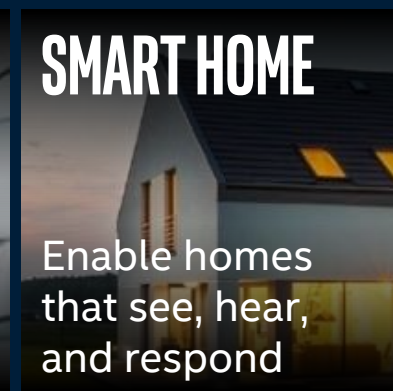

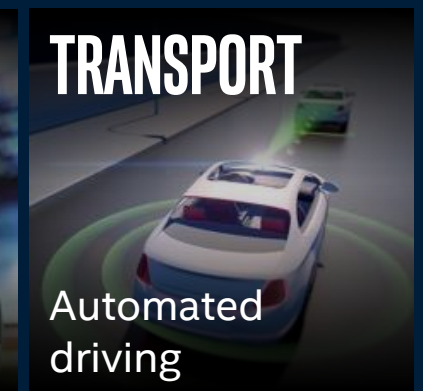
WHAT ARE MY SOLUTION OPTIONS?

MODERN DATA CENTER SOLUTIONS

 <p>SOLUTIONS</p> <ul style="list-style-type: none"> ▪ vSphere ▪ vSAN – <i>Intel® Select Solution</i> ❖ ▪ NSX ▪ VMware Cloud Foundation – <i>Intel Select Solution</i> ❖ <p>RESOURCES</p> <p>VMware DCG Resources Micro Site – NEW!</p>	 <p>SOLUTIONS</p> <ul style="list-style-type: none"> ▪ Windows Server ▪ WS2D & WSSD – <i>Intel Select Solution</i> ❖ ▪ SQL Server – <i>Intel Select Solution</i> ❖ ▪ Azure Stack – <i>Intel Select Solution</i> ❖ <p>RESOURCES</p> <p>Microsoft DCG Resources Micro Site – NEW!</p>	 <p>SOLUTIONS</p> <ul style="list-style-type: none"> ▪ Red Hat OpenShift Container - <i>Intel Select Solution</i> ❖ ▪ Red Hat HCI ▪ Red Hat Cloud Forms Satellite ❖ ▪ Red Hat NFVi - <i>Intel Select Solution</i> ▪ IBM Cloud Private <p>RESOURCES</p> <p>Red Hat DCG Resources Micro Site – NEW!</p>	 <p>SOLUTIONS</p> <ul style="list-style-type: none"> ▪ Huawei FusionStorage - <i>Intel Select Solution</i> ❖ ▪ Huawei FusionCube (HCI) ▪ Huawei FusionSphere - <i>Intel Select Solution</i> ❖ ▪ Alibaba Apsara Stack (private) ▪ Tencent Virtual Private Cloud (VPC) <p>RESOURCES</p> <p>Coming soon!</p>	 <p>SOLUTIONS</p> <ul style="list-style-type: none"> ▪ Nutanix Hyperconverged ▪ Cisco Hyperflex ▪ HPE Simplivity <p>RESOURCES</p> <p>Coming soon!</p>   <p>OPEN SDI</p>
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INDUSTRY-LEADING SOLUTIONS OPTIMIZED FOR INTEL® ARCHITECTURE

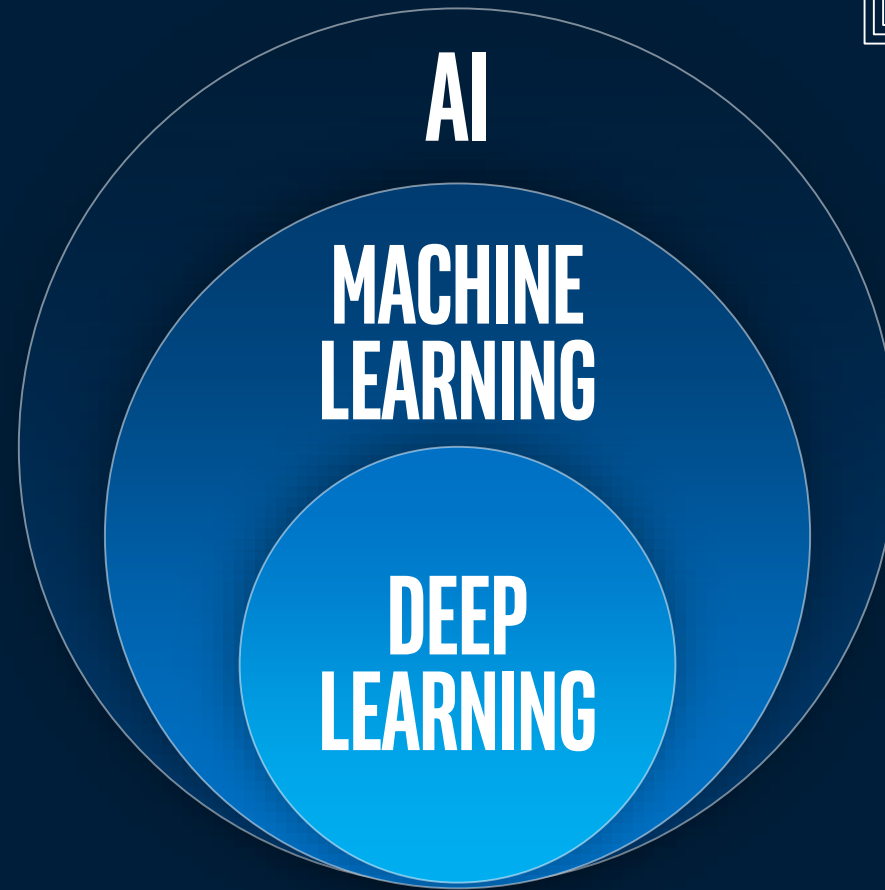
AI SOLUTIONS IN EVERY MARKET

 <p>AGRICULTURE</p> <p>Achieve higher yields & increase efficiency</p>	 <p>ENERGY</p> <p>Maximize production and uptime</p>	 <p>EDUCATION</p> <p>Transform the learning experience</p>	 <p>GOVERNMENT</p> <p>Enhance safety, research, and more</p>	 <p>FINANCE</p> <p>Turn data into valuable intelligence</p>	 <p>HEALTH</p> <p>Revolutionize patient outcomes</p>
 <p>INDUSTRIAL</p> <p>Empower truly intelligent Industry 4.0</p>	 <p>MEDIA</p> <p>Create thrilling experiences</p>	 <p>RETAIL</p> <p>Transform stores and inventory</p>	 <p>SMART HOME</p> <p>Enable homes that see, hear, and respond</p>	 <p>TELECOM</p> <p>Drive network and operational efficiency</p>	 <p>TRANSPORT</p> <p>Automated driving</p>

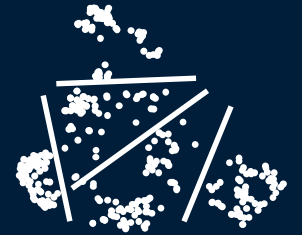
OUR PARTNERS ARE DRIVING REAL-WORLD VALUE WITH INTEL AI

WHAT IS AI?

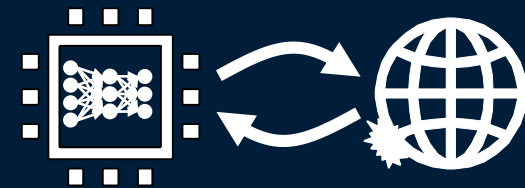
- Regression
- Classification
- Clustering
- Decision Trees
- Data Generation
- Image Processing
- Speech Processing
- Natural Language Processing
- Recommender Systems
- Adversarial Networks



**SUPERVISED
LEARNING**



**UNSUPERVISED
LEARNING**



**REINFORCEMENT
LEARNING**

NO ONE SIZE FITS ALL APPROACH TO AI

BREAKING BARRIERS BETWEEN AI THEORY AND REALITY

PARTNER WITH INTEL® TO ACCELERATE YOUR AI JOURNEY



All products, computer systems, dates, and figures are preliminary based on current expectations, and are subject to change without notice.

*Other names and brands may be claimed as the property of others

[Optimization Notice](#)

INTEL® SELECT SOLUTIONS FOR AI

All Intel® Select Solution configurations and benchmark results are



VERIFIED BY INTEL



[intel.com/
selectsolutions](https://intel.com/selectsolutions)



**SIMPLIFIED
EVALUATION**

Tightly-specified HW and SW components, eliminating guesswork



**FAST AND EASY
TO DEPLOY**

Pre-defined settings and system-wide tuning, enabling smooth deployment



**WORKLOAD
OPTIMIZED**

Designed and benchmarked to perform optimally for specific workloads

AI SOLUTIONS FOR (1) DL INFERENCE AND (2) ANALYTICS+DL ON BIGDL (SPARK*)

*Other names and brands may be claimed as the property of others

NEW ERA OF DATA CENTER TECHNOLOGY



DATA-CENTRIC INFRASTRUCTURE

MOVE **FASTER**



STORE **MORE**



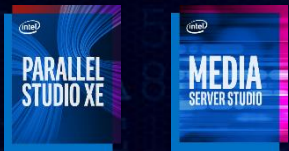
PROCESS **EVERYTHING**



No product or component can be absolutely secure.

INTEL 2019 DATA CENTER PORTFOLIO

FIRMWARE, DRIVERS,
LIBRARIES, FRAMEWORK,
TOOLKITS, SOFTWARE



Intel® DL Boost (VNNI)

TensorFlow, Caffe, DigDL,
MXNet, OpenVINO

Intel® MKL, ISA-L libraries

SPDK, DPDK, PMDK
dev kits

VTune Amplifier

Intel® Select Solutions

Intel® DataCenter
Manager

+ SECURITY

COMPUTE

Intel® Xeon Scalable
Skylake / Cascade Lake



1-8 Socket DDR4/PMEM

Intel® Xeon
Processor E



1S DDR4
for GFX

Intel® Xeon
Processor W



1S DDR
workstation

Intel® Xeon
Processor D



1S DDR4
for Edge

Intel Atom™
Processor



1S DDR4
for SoC

Accelerators

Intel Agilex FPGA

Intel Smart NICs

Intel NERVANA
NNP

Intel MOVIDIUS
Neural Compute Stick

QAT, SGX, VCA2,
VMD, VROC

NETWORKING

1/10/25/40/100+ GbE
Network Cards

Intel® PCSD Servers
and Boards

Intel® Rack-scale
Architecture

HPC Fabrics:
Intel Omni-Path Fabric

Intel Silicon Photonics
Technology

STORAGE

Intel Optane DC Persistent
Memory (NVDIMM)

Intel® Optane SSDs

Intel® 3D-NAND
NVMe SSDs

Intel® 3D-NAND
SATA SSDs

CASCADE LAKE (CLX)

SECOND GENERATION INTEL® XEON® SCALABLE PROCESSOR WITH INTEL® OPTANE™ DC PERSISTENT MEMORY

Leadership Performance

Higher CPU Frequencies

Higher Memory Bandwidth

Hardware-Enhanced Mitigations



Support for  **OPTANE™ DC**
PERSISTENT MEMORY

Intel® Deep Learning Boost (VNNI)

Intel® Resource Director Technology

Intel® Speed Select Technology

CASCADE LAKE IS A DROP IN COMPATIBLE CPU ON PURLEY PLATFORM

INTRODUCING SECOND GENERATION INTEL® XEON® SCALABLE PROCESSORS

INTEL® XEON®
PLATINUM 9200
PROCESSORS



A NEW CLASS OF
ADVANCED
PERFORMANCE

INTEL® XEON®
PLATINUM 8200
PROCESSORS



INTEL® XEON®
GOLD 6200
PROCESSORS



INTEL® XEON®
GOLD 5200
PROCESSORS



INTEL® XEON®
SILVER 4200
PROCESSORS



INTEL® XEON®
BRONZE 3200
PROCESSORS



**BUILT-IN
VALUE**

**UNINTERRUPTED
LEADERSHIP WORKLOAD
PERFORMANCE**

**GROUNDBREAKING
MEMORY INNOVATION**

**EMBEDDED
ARTIFICIAL INTELLIGENCE
ACCELERATION**

**HARDWARE ENHANCED
SECURITY**

**ENHANCED
AGILITY & UTILIZATION**

ACCELERATE YOUR CLOUD STRATEGY



**2ND GEN INTEL[®] XEON[®]
SCALABLE PLATFORM**



**HIGHER PERFORMANCE
& VERSATILITY**

**UP TO
1.33X**

Average Generational Gains
on Gold mainstream SKUs
vs. 2 year-old server¹



**BETTER
VIRTUALIZATION**

**UP TO
3.5X**

Better VM density performance
with 2nd Gen Intel Xeon Scalable
processor vs. a 5 year-old server²



**TCO
SAVINGS**

**UP TO
59%**

TCO savings at similar performance
with 2nd Gen Intel Xeon Scalable
processor vs. 5 year-old servers³

**ADVANCING VIRTUALLY EVERY ASPECT: BRAND NEW CORE, CACHE,
ON-DIE INTERCONNECTS, MEMORY CONTROLLER & MORE**

Performance results are based on testing by Intel as of March 2019 and may not reflect all publicly available security updates. See configuration disclosures for details. No product or component can be absolutely secure. Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. For more complete information visit www.intel.com/benchmarks.¹⁻³ Configurations: See slides 49.

FASTER QUERY PERFORMANCE

WITH 2ND GEN INTEL® XEON® PROCESSOR + SQL SERVER*



FASTER DATA WAREHOUSE QUERY PERFORMANCE WITH LATEST SW & HW

PAST CUSTOMER EXPERIENCE

33,681 queries per hour at 1TB scale factor with a 4 yr old system

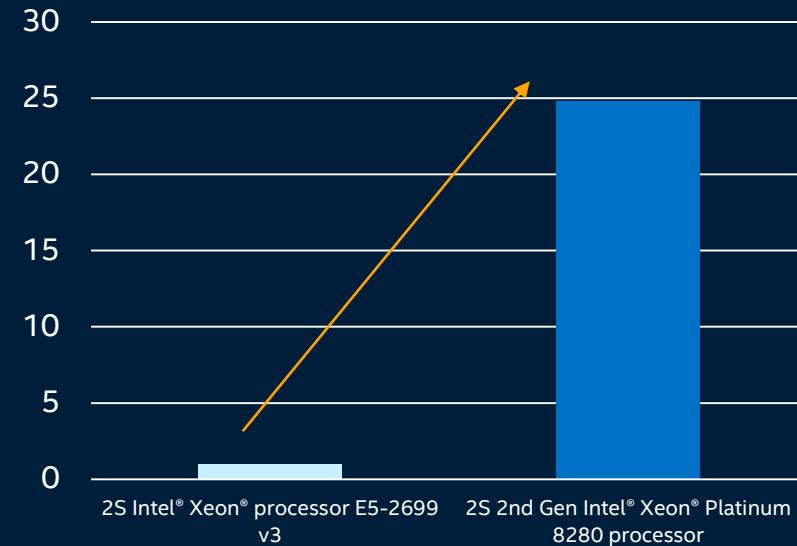
CUSTOMER EXPERIENCE TODAY

With 2S Intel Xeon Platinum 8280 processors:

836,261 queries per hour at 1TB scale factor

24.8x better¹

Queries/hr.

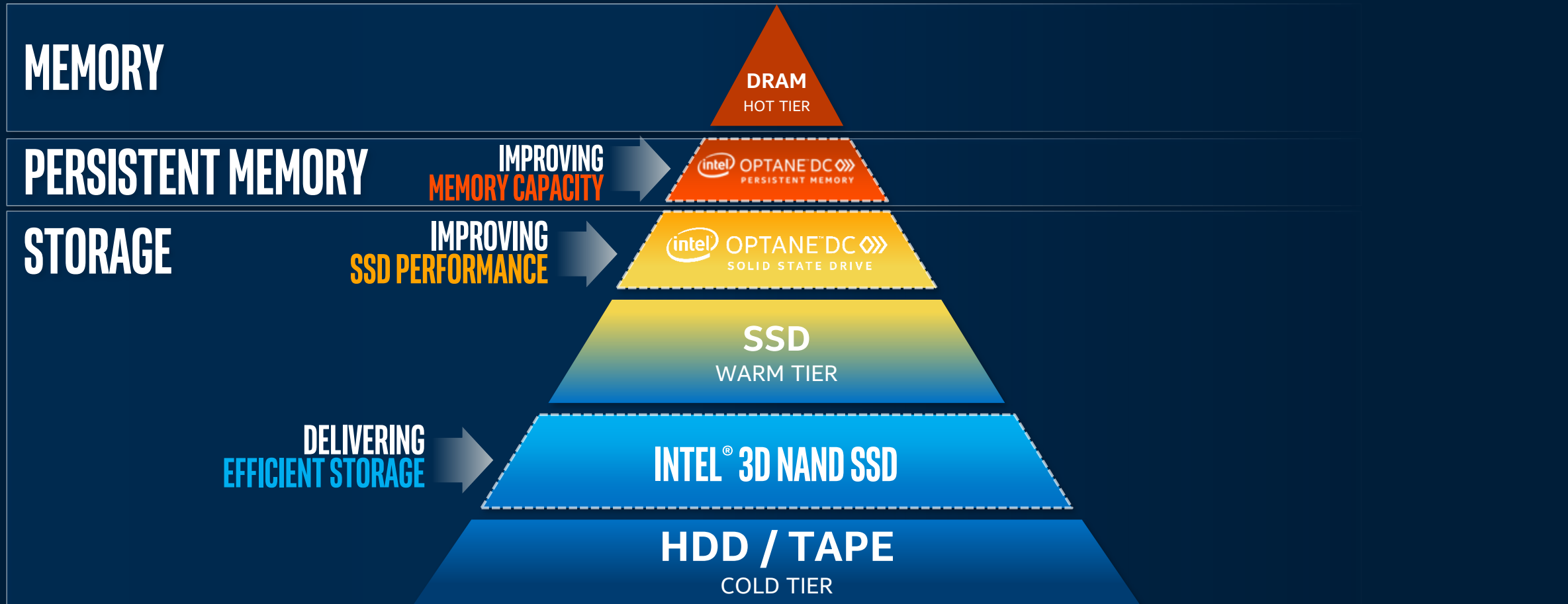


Results have been estimated or simulated using internal Intel analysis or architecture simulation or modeling, and provided to you for informational purposes. Any differences in your system hardware, software or configuration may affect your actual performance. Performance results are based on testing or projections as of March 13, 2019 and may not reflect all publicly available security updates. See configuration disclosure on Slide 56 for details. For more complete information about performance and benchmark results, visit www.intel.com/benchmarks.

1. Configurations: 1-node, 2x Intel® Xeon® Processor E5-2699 v3 on Wildcat Pass with 768 GB (24 slots / 32GB / 2666) total memory (workload uses 691GB), ucode 0x3D on Windows Server 2008 R2, 1 x S710 (200GB), 1 x S3500 (1.6TB), 2 x P4608 (6.4TB), SQL Server 2008 R2 SP1 (Enterprise Edition), HT on, Turbo on, result: queries per hour at 1TB =33681, test by Intel on 12/21/2018. 1-node, 2x Intel® Xeon® Platinum 8280 on Wolf Pass with 1536 GB (24 slots / 64GB / 2666 (1866)) total memory (workload uses 691GB), ucode 0xA on Windows Server 2016 (RS1 14393), 1 x S710 (200GB), 1 x S3500 (1.6TB), 4 x P4610 (7.6TB), SQL Server 2017 RTM - CU13 (Enterprise Edition), HT on, Turbo on, result: queries per hour at 1TB =836261, test by Intel on 3/13/2019.



RE-ARCHITECTING THE MEMORY / STORAGE HIERARCHY



A NEW CLASS OF MEMORY & STORAGE IS BORN

intel[®] OPTANE™ DC 
PERSISTENT MEMORY



Byte-addressable,
Load/store access

128, 256, 512GB

Near DRAM Latency/BW

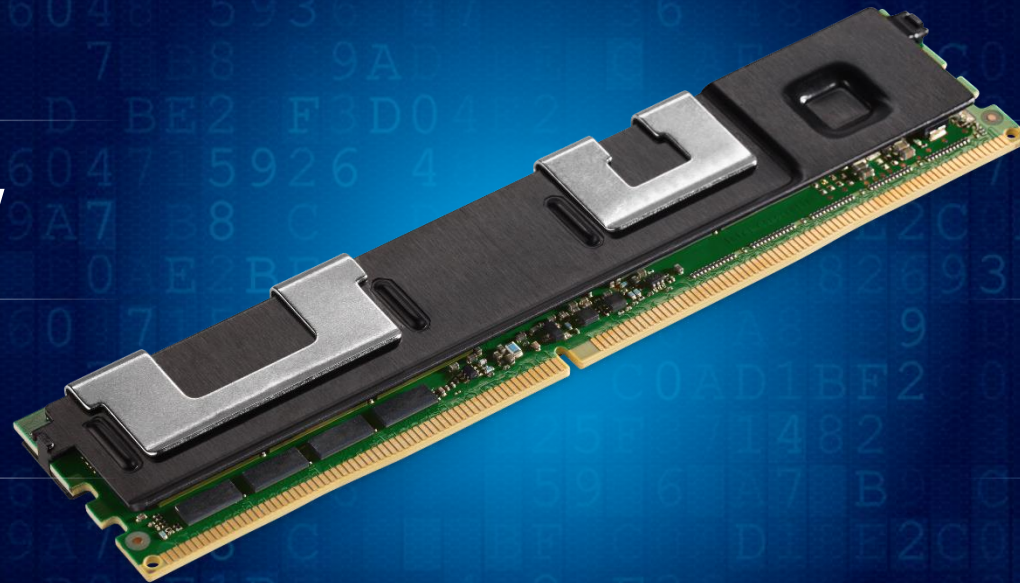
DDR4 Pin Compatible

Memory is Persistent

Mixing with DDR4

Wide SW Support

Hardware Encryption



DRAM & NAND SSD - THE BEST OF BOTH WORLDS

ACCELERATING ANALYTICS



WITH INTEL® OPTANE™ DC PERSISTENT MEMORY



MORE MEMORY
CAPACITY



LOWER TCO



FASTER INSIGHTS

AT SAME OR LOWER COST

52%
ON SAP HANA 2 LANDSCAPE

More
Capacity¹



MAINTAINING SESSION RUNTIME

43%
Less
Cost²

MACHINE LEARNING



SAS Viya^{*}

MODERNIZING INFRASTRUCTURE

2.2X
Lower
Runtime¹

SAP BUSINESS WAREHOUSE
ON SAP* HANA 2



MINIMIZED
DOWNTIME

1 - Performance results are based on testing as of 03/12/19 and may not reflect all publicly available security updates. See slide 52-53 for configuration details. See additional disclaimers on slide 54.

2 - Results have been estimated or simulated using internal Intel analysis or architecture simulation or modeling, and provided to you for informational purposes. Any differences in your system hardware, software or configuration may affect your actual performance. Performance results are based on testing or projections as of Jan 15, 2019 and may not reflect all publicly available security updates. See configuration disclosure on Slide 55 for details.

Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. For more information go to www.intel.com/benchmarks

No product or component can be absolutely secure.



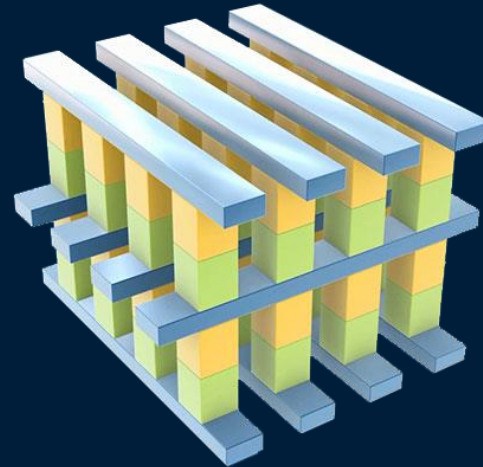
INTEL® OPTANE™ TECHNOLOGY

BREAKING THROUGH DATA BOTTLENECKS

Under Unprecedented Technology, should the first & second bullets be all one bullet? I suspect so because Intel® 3D XPoint™ should be followed by an approved noun, and Memory Media is an approved noun.

UNPRECEDENTED TECHNOLOGY

- Intel® 3D XPoint™
- Memory Media with Intel-built advanced system memory controller
- Interface hardware
- Software IP



UNPRECEDENTED PERFORMANCE

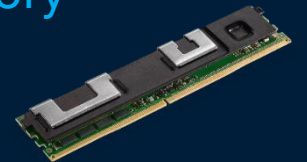
- Low Latency
- High QoS
- High Endurance
- High Throughput

DELIVERED IN MULTIPLE FORM FACTORS

Intel® Optane™ DC SSDs
Breakthrough bottlenecks to increase value of storage data



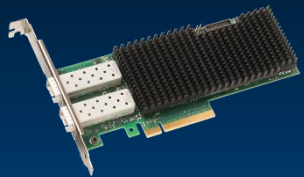
Intel® Optane™ DC Persistent Memory
Enable new insights with bigger, more affordable memory



INTEL® ETHERNET NETWORK ADAPTERS

Intel® Ethernet Products

Increase performance of enterprise data centers powered by Intel® Xeon Platinum processors **up to 2.5X** with 25Gb Intel® Ethernet 700 series when compared to 1Gb Intel Ethernet product.



Intel® Ethernet 700 Series Network Adapters

Connection speeds: 1GbE, 10GbE, 25GbE, 40GbE

Ports per card: Single, dual, quad

Cabling options: Fiber, direct-attach or twisted-pair copper



Intel® Ethernet 500 Series Network Adapters

Connection speeds: 1GbE, 2.5GbE, 5GbE, 10GbE

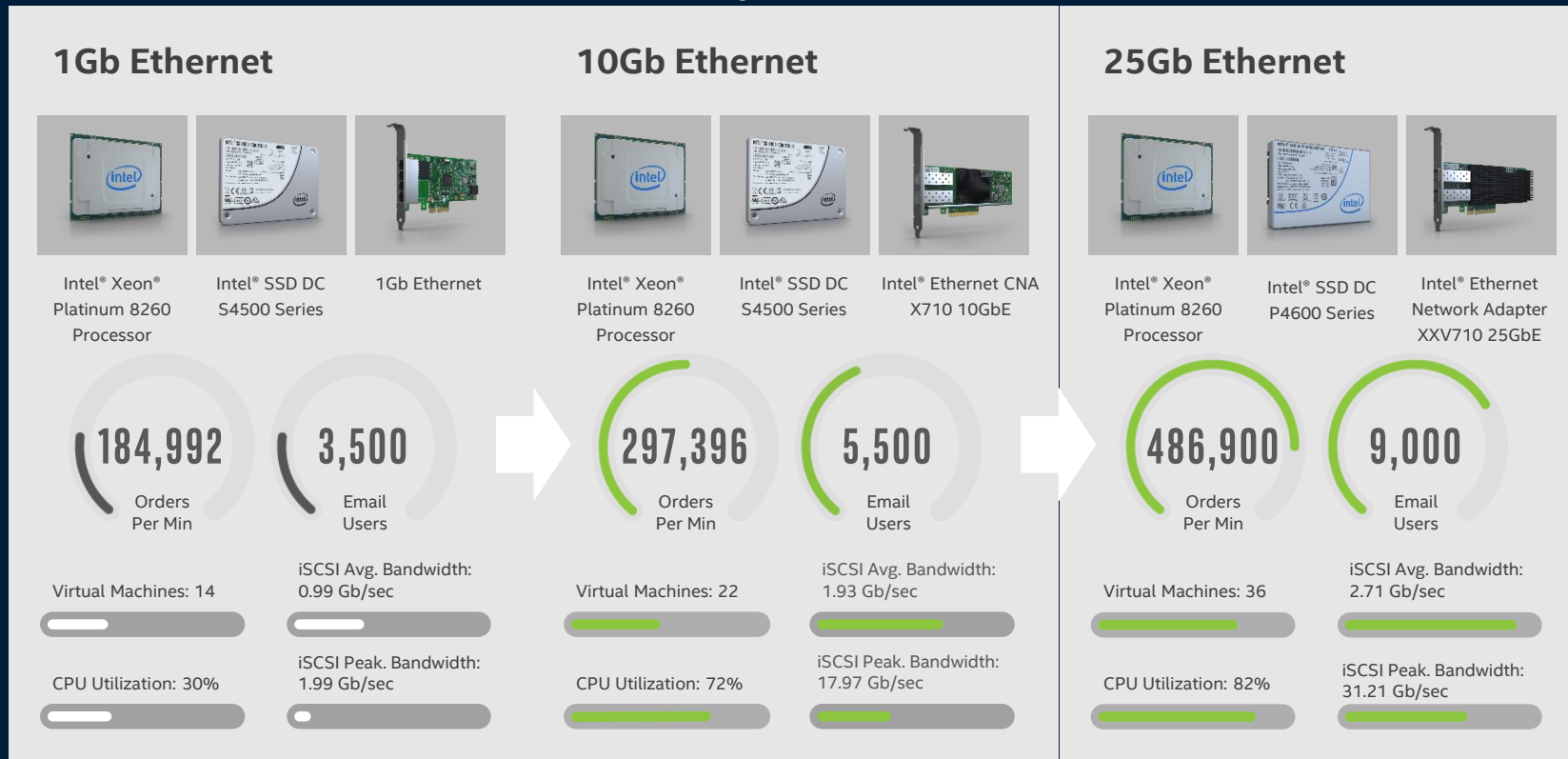
Ports per card: Single, dual

Cabling options: Fiber, direct-attach or twisted-pair copper

INTEL® ETHERNET 700 SERIES [AND INTEL® SSD DC P4600 SERIES] INCREASES PERFORMANCE OF DATA CENTERS

POWERED BY THE INTEL® XEON® PLATINUM 8260 PROCESSOR

Based on workloads: MS SQL, MS Exchange.



UP TO 2.7X[^]

More orders per minute



UP TO 2.5X[^]

More email users



UP TO 2.5X[^]

Greater VM density

[^]Comparing 1Gb and 25Gb performance

Performance results are based on testing as of February 2019 and may not reflect all publicly available security updates. See configuration disclosure on slide 57-58 for details. No product can be absolutely secure.



INTEL® SELECT SOLUTIONS

Simplify and accelerate deployment of workload-optimized infrastructure



**SIMPLIFIED
EVALUATION**

Eliminate guesswork through tightly specified HW and SW components



**FAST & EASY
TO DEPLOY**

Deploy smoothly with pre-defined settings and system-wide tuning



**WORKLOAD
OPTIMIZED**

Benchmarked for specific workloads to deliver optimal performance

[INTEL.COM/SELECTSOLUTIONS](https://www.intel.com/selectsolutions)

INTEL® SELECT SOLUTION PORTFOLIO



Analytics

Microsoft SQL Server Business Operations **REFRESH**

Microsoft SQL Server Enterprise Data Warehouse Windows Server* **REFRESH**

Microsoft SQL Server Enterprise Data Warehouse Linux*

SAP HANA* **COMING SOON**



Artificial Intelligence

BigDL on Apache Spark*

AI Inferencing **COMING SOON**



Hybrid Cloud

Microsoft Azure Stack*

Red Hat OpenShift* Container Platform

VMware vSAN* **REFRESH**

Microsoft Windows Server Software Defined* **REFRESH**

Huawei FusionStorage*

Blockchain: Hyperledger Fabric*



Network Transformation

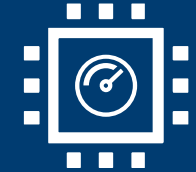
Universal Customer Premises Equipment

NFVi: Red Hat* **REFRESH**

NFVi: Ubuntu* **REFRESH**

NFVi: FusionSphere*

Visual Cloud Delivery Network **COMING SOON**



HPC

Simulation & Modeling

Professional Visualization

Genomics Analytics

HPC AI Converged **COMING SOON**



1H'19 Solution Refresh - Existing Workloads

1H'19 Solutions on NEW Workloads

[INTEL.COM/SELECTSOLUTIONS](https://www.intel.com/SELECTSOLUTIONS)

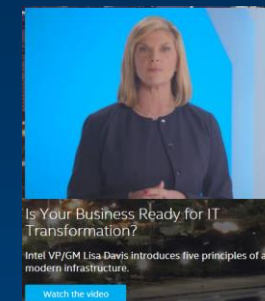


SUMMARY

- **Competitiveness** in a data-driven economy relies on digital infrastructure
- **IT transformation** is essential for agility, efficiency, and insight
- **Modernize and innovate** from the data center to cloud to edge
- **Build the future** of your enterprise with Intel-based solutions and technologies

RESOURCES

- Engage with Intel at itcenter.intel.com
- Learn more about Intel IT best practices at www.intel.com/it
- Engage with Intel® Builders at www.builders.intel.com
- Learn more about Intel® Select Solutions at www.intel.com/selectsolutions
- Stay connected and learn with Intel Communities, Blogs and Social@Intel at <https://www.intel.com/content/www/us/en/blogs-communities-social.html>



INTRODUCING THE ADVANCED PERFORMANCE OF INTEL® XEON® PLATINUM 9200 PROCESSORS



LEADERSHIP XEON PERFORMANCE

9282 **56 CORES** 2.6 GHz BASE
3.8 GHz TURBO 77MB CACHE

9242 **48 CORES** 2.3 GHz BASE
3.8 GHz TURBO 71.5MB CACHE

9222 **32 CORES** 2.3 GHz BASE
3.7 GHz TURBO 71.5MB CACHE

9221 **32 CORES** 2.3 GHz BASE
3.7 GHz TURBO 71.5MB CACHE

2X

**AVERAGE PERFORMANCE
IMPROVEMENT¹**

COMPARED TO INTEL® XEON®
PLATINUM 8180 PROCESSOR

UP TO 30X

**AI PERFORMANCE WITH
INTEL® DL BOOST²**

COMPARED TO INTEL® XEON® PLATINUM
8180 PROCESSORS (JULY 2017)

UP TO 5.8X

**BETTER PERFORMANCE
THAN AMD EPYC 7601³**

COMPARED TO INTEL® XEON® PLATINUM 9282
PROCESSOR RUNNING LINPACK

HIGHEST DDR4
NATIVE BANDWIDTH OF ANY
INTEL® XEON® PLATFORM

HIGHEST FLOPS
PER 2S SYSTEM WITH
INTEL® ARCHITECTURE

HIGHEST DENSITY
INTEL® XEON® SCALABLE PROCESSOR
CORES IN A 2S SYSTEM

Performance results are based on testing as of dates shown in configuration and may not reflect all publicly available security updates. Configurations and benchmark details can be found on slide/page 53. No product or component can be absolutely secure. Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. For more complete information visit www.intel.com/benchmarks.





SECOND GENERATION INTEL® XEON® SCALABLE PROCESSORS ENABLING SYSTEM-LEVEL OPTIMIZED PLATFORMS

NEW INTEL® SERVER SYSTEM S9200WK FAMILY



FEATURING NEW INTEL® XEON®
PLATINUM 9200 PROCESSORS



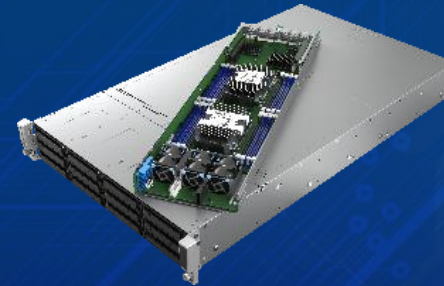
INTEL® DATA CENTER BLOCK
2U/4N RACK SERVER WITH AIR-COOLED AND
LIQUID-COOLED OPTIONS

NEW 2ND GEN INTEL® XEON® SCALABLE PLATFORMS



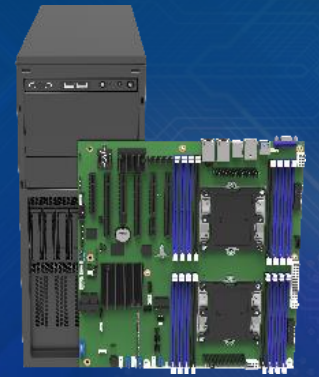
**INTEL SERVER SYSTEM
S2600W_{fxR}**

1U OR 2U RACK SERVER WITH
MAXIMUM FLEXIBILITY



**INTEL® SERVER SYSTEM
S2600B_{xR}**

2U/4N RACK SERVER WITH
OPTIMIZED COMPUTE DENSITY



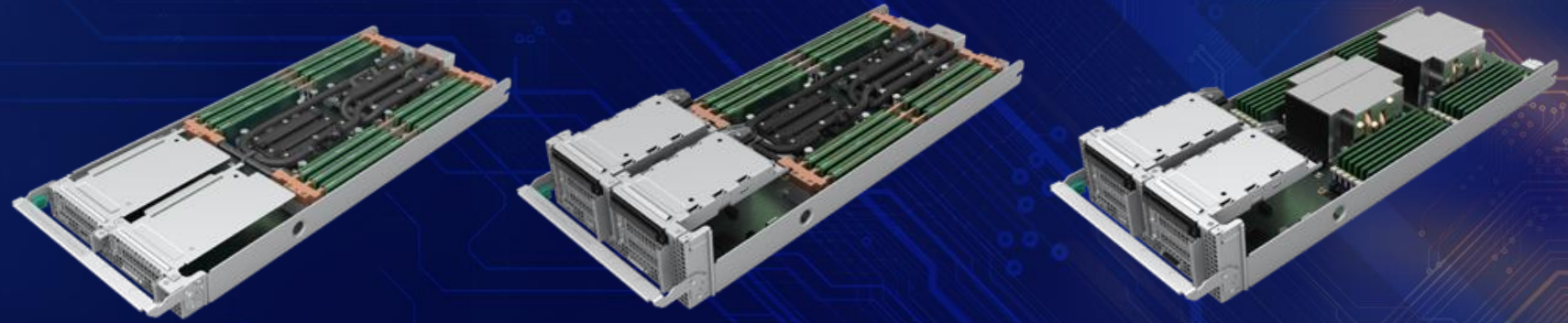
**INTEL® SERVER SYSTEM
S2600ST_{xR}**

1U RACK, 4U TOWER GENERAL
PURPOSE SERVER

AVAILABLE AS BOARDS, SYSTEMS, OR INTEL® DATA CENTER BLOCKS FOR CLOUD, HPC, AI, STORAGE



Intel® Server System S9200WK Compute Modules



Compute Module Technical Specifications			
Compute Module	1U ½ width Liquid-Cooled Compute Sled	2U ½ width Liquid-Cooled Service Sled	2U ½ width Air-Cooled Compute/Service Sled
Processor	56C 400W, 48C 350W, 32C 250W	48C 350W, 32C 250W	48C 350W, 32C 250W
Hot-swap Storage	None	2x U.2 2.5" SSDs	2x U.2 2.5" SSDs
Fixed Storage	2 M.2 80/110 SSDs	2 M.2 80/110 SSDs	2 M.2 80/110 SSDs
Chassis (2U)	2U/4 liquid-cooled nodes	2U/2 liquid-cooled nodes	2U/2 air-cooled nodes
PCIe* Gen 3	Two low profile PCIe cards through riser slot 1&2 risers	Four low profile PCIe cards through riser slot 1&2 risers	Four low profile PCIe cards through riser slot 1&2 risers
Video	One multi-purpose port on front panel per Compute Module		
Cooling	Direct-to-chip Liquid-Cooling via cold-plates	Direct-to-chip Liquid-Cooling via cold-plates	High-velocity Air-Cooling

INTEL® SERVER SYSTEM S9200WK PRODUCT FAMILY

Intel® Data Center Block Technical Specifications	
Form Factor	2U rack enclosure; Up to 4 independent warm-swap compute nodes
Processor	Intel® Xeon® Platinum 9200 Processors
Memory	DDR4 DIMMS, 12x DIMM channels per processor socket Supports 8GB to 128GB DIMM options, number and capacity configurable
Memory Speed	Up to 2933 MHz (1DPC)
Storage	Up to 4x hot-swap U.2 NVMe SSDs (2x per node with 2U Compute Modules) M.2 and U.2 number and capacity configurable
Power Supply	3x hot-swap CRPS 2100W (Platinum) or 1600W (Titanium) PSUs
Ethernet	Integrated 1Gbase-T RJ45 (two ports per node)
Cooling	Available with 1U High-density Liquid or 2U High-performance Air & Liquid Cooling Options
I/O	2 x16 Gen3 slots (per 1U node); 4x x16 Gen3 slots (per 2U node)
High Speed Network	Intel® Omni-Path Architecture x16 PCIe card (optional and configurable)
Manageability	Dedicated, consolidated Management Module
Security	TPM 2.0 (optional) ; Hot-swap/redundant drives (U.2 only), fans, and PSUs; light path diagnostic LEDs

S9200WK Front View



S9200WK Rear View



Configurable options in bold



INTEL® SERVER CHASSIS FC2000 FAMILY

- New Chassis Designed for Improved Power, Cooling, Flexibility
 - Wider node tray (8.5"), new node configurations
 - Shared resources of power & cooling
- Front I/O Design
 - Node trays install from front of chassis
 - I/O cards and cabling at front of node tray
- Improved Power & Cooling
 - Three power supplies (1600W & 2100W)
 - Fans (2x 80mm, 3x 60mm) or distributed liquid cooling



SUMMARY

- Increasing Performance for HPC & AI
 - Intel® Xeon® Platinum 9200 Processors deliver the highest performance & memory bandwidth¹, per core & scale, for a broad set of HPC, and AI applications
- Simplifying Solutions
 - Intel® Data Center Blocks built on Intel® Server System S2900WK Product Family provide leadership compute enabling the highest compute density²
 - Fully validated, unbranded server systems include Intel's latest data center technology



¹ Intel® Xeon® Platinum 9282 compared against Intel® Xeon® Platinum 8180

² Comparing Intel® Xeon® Platinum 9200 Processors against 2nd Gen Intel® Xeon® Scalable Processors



THANK YOU!

