ENTDECKEN SIE DIE VORTEILE DER ZWEITEN GENERATION DER SKALIERBAREN INTEL® XEON® PROZESSOREN

JULI 2019

DATA CENTER GROUP

MOVE | STORE | PROCESS

CLOUDIFICATION EXPANSION AND SCALE TO THE POINT OF USE

DATA-CENTRIC ERA

DELIVER NEW SERVICES FASTER TO HANDLE THE DELUGE OF DATA

DELIVER OPERATIONAL EFFICIENCIES

DELIVER SECURE INFRASTRUCTURE TO PROTECT DATA PRIVACY

90%

OF WORLD'S DATA WAS CREATED IN THE PAST TWO YEARS

AND ONLY

2%

IS BEING USED

Source: https://www.forbes.com/sites/bernardmarr/2018/05/21/how-much-data-do-we-create-every-day-the-mind-blowing-stats-everyone-should-read/

INFRASTRUCTURE CHALLENGES

- DRIVE THE BEST EXPERIENCE & SLA
- PROTECT DATA PRIVACY
- DRIVE HIGHER REVENUE
- REDUCE DOWNTIME
- DRIVE OPERATIONAL EFFICIENCY

- PREPARING FOR 5G
- NETWORK TRANSFORMATION
- DEMANDS AT THE NETWORK EDGE
- NEW SERVICE OPPORTUNITIES / RPU

- SILOED APPLICATIONS & DATA PACKETS
- SLOW DEPLOYMENTS OF NEW SERVICES
- SECURITY EXPLOITS GROWING
- DATA MOVEMENT & NETWORK BOTTLENECKS
- CONVERGED WORKFLOWS & INFRASTRUCTURE

DELIVERING CUSTOMER VALUE IN THE DATA-CENTRIC ERA

PERFORMANCE TO PROPEL INSIGHTS

BUSINESS RESILIENCE
THROUGH HARDWARE-ENHANCED SECURITY

AGILE SERVICE DELIVERY

BUILT-IN VALUE | CUSTOMER ORIENTED | WORKLOAD OPTIMIZED | GLOBAL ECOSYSTEM | FASTER TIME TO VALUE

INTEL: ACCELERATING DATA-CENTRIC TRANSFORMATION

MOVE FASTER

- ETHERNET
- SILICON PHOTONICS
- OMNI-PATH FABRIC

STORE MORE

- OPTANE™ DC PERSISTENT MEMORY
- OPTANE™ DC SOLID STATE DRIVE
- DC SERIES SSD QLC 3D NAND DRIVE

PROCESS EVERYTHING

- INTEL® XEON® SCALABLE PROCESSORS
- INTEL® XEON® D PROCESSORS
- INTEL ATOM® C PROCESSORS
- INTEL® FPGAs
- INTEL® NERVANA™ NNP
- INTEL® MOVIDIUS™ TECHNOLOGY

HARDWARE ENHANCED SECURITY | SOFTWARE AND SYSTEM-LEVEL OPTIMIZED | FASTER TIME TO VALUE

intel select solution

INTRODUCING SECOND GENERATION
INTEL® XEON® SCALABLE PROCESSORS

PROCESSOR SKU STRUCTURE

INTEL® XEON® PLATINUM # 2 # # α α PROCESSOR

- # 2 — PROCESSOR LEVEL
- # — PROCESSOR GENERATION
- # — PROCESSOR SKU
- α α — PROCESSOR OPTIONS

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

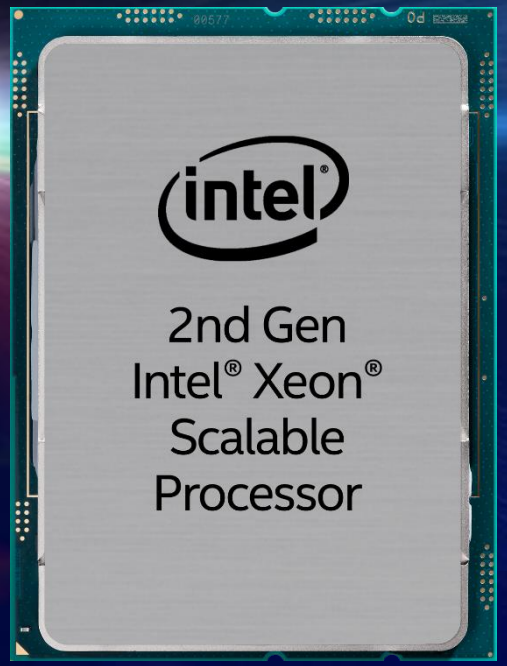
BUILT-IN VALUE

- **UNINTERRUPTED** LEADERSHIP WORKLOAD **PERFORMANCE**
- **GROUNDBREAKING** MEMORY INNOVATION
- **EMBEDDED** ARTIFICIAL INTELLIGENCE **ACCELERATION**
- **HARDWARE ENHANCED** SECURITY
- **ENHANCED** AGILITY & UTILIZATION

INTEL.COM/XEONSCALABLE

SECOND GENERATION INTEL® XEON® SCALABLE PROCESSORS
PERFORMANCE TO PROPEL INSIGHTS

95 WORLD RECORDS AND COUNTING...



8+ SOCKETS IN A SYSTEM

UP TO 4.4 GHZ INTEL® TURBO BOOST TECHNOLOGY 2.0

UP TO 36 TB SYSTEM MEMORY IN A EIGHT SOCKET SYSTEM
USING INTEL® OPTANE™ DC PERSISTENT MEMORY AND DRAM

UP TO 2X SYSTEM MEMORY CAPACITY
COMPARED TO INTEL® XEON® PLATINUM 8180 PROCESSOR

UP TO DDR4 2933 MT/S & 16 GB DIMMS

95 World Records featuring Intel® Xeon® processors as of September 14, 2018.
https://newsroom.intel.com/news/intel-xeon-scalable-processors-set-95-new-performance-world-records/

INTEL.COM/XEONSCALABLE

INTRODUCING SECOND GENERATION INTEL® XEON® SCALABLE PLATFORM

BUSINESS RESILIENCE WITH HARDWARE-ENHANCED SECURITY

MITIGATIONS FOR SIDE-CHANNEL METHODS

- Enhanced performance over software-only mitigations

ENCRYPTION + ACCELERATORS

- Available with Intel® QuickAssist Technology
- Integrated Intel® Advanced Vector Extensions 512
- Intel® Optane™ DC persistent memory on-module data encryption

INTEL® SECURITY LIBRARIES

- New Intel® Threat Detection Technology
- Intel® Trusted Execution Technology
- Intel® Cloud Integrity Technology

AGILE SERVICE DELIVERY WITH ENHANCED EFFICENCY

INTEL® DEEP LEARNING BOOST

- New integrated AI acceleration for inference

INTEL® SPEED SELECT TECHNOLOGY

- Configurable core/frequency processor attributes
- Prioritize workload performance
- Supports platform TCO optimizations

INTEL® INFRASTRUCTURE MANAGEMENT TECHNOLOGIES

- Industry-leading Intel® Virtualization Technology
  - Seamless VM migration for over 5 generations
- Enhanced Intel® Resource Director Technology
  - New Intel resource orchestration software
- New Intel® Ethernet 800 series with Application Device Queues (ADQ) and Dynamic Device Personalization (DDP)
- New Intel® Optane™ DC D4800X (Dual Port) SSDs

INTEL.COM/XEONSCALABLE

SECOND GENERATION INTEL® XEON® SCALABLE PROCESSORS DELIVER INFRASTRUCTURE-WIDE AI READINESS

NEW AI ACCELERATION

INTEL® DEEP LEARNING BOOST

VNNI VECTOR NEURAL NETWORK INSTRUCTION

FOR BUILT-IN INFERENCE ACCELERATION

OPTIMIZATIONS FOR DEVELOPERS & DATA SCIENTISTS

OpenVINO™ TOOLKIT

OPTIMIZED FRAMEWORKS

TensorFlow · mxnet · Caffe · PYTORCH · PaddlePaddle

ONNX

DATA TYPE

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 52. 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.

INTEL® SECURITY LIBRARIES FOR DATA CENTER

A SET OF SOFTWARE LIBRARIES AND SERVICES THAT SIMPLIFY
DEPLOYING INTEL SECURITY TECHNOLOGIES, ROOTED IN SILICON, AT CLOUD SCALE.

Library-centric model to expose & utilize **Current** and **Future** Intel security technologies

Provides pre-validated components and services to enable critical customer security use cases

Released under Open Source license

USE CASES

Platform Integrity:
Enables servers to be attested

Data Sovereignty:
Enables geo fencing usages of data in the cloud

NEW ON 2ND GEN INTEL® XEON® SCALABLE PROCESSORS

Threat Detection: Uses machine learning and CPU telemetry to detect advanced threats

THE NEXT EVOLUTION OF INTEL® CLOUD INTEGRITY TECHNOLOGY

INTEL.COM/XEONSCALABLE

NEW INTEL® ETHERNET 800 SERIES
WITH APPLICATION DEVICE QUEUES (ADQ)

Application Device Queues

– An application specific queuing and steering technology
– Filters application traffic to a dedicated set of queues

>45% LATENCY REDUCTION[13]
WITH OPEN SOURCE REDIS USING 2ND GEN INTEL® XEON® SCALABLE PROCESSORS AND INTEL® ETHERNET 800 SERIES WITH ADQ

>30% THROUGHPUT IMPROVEMENT[14]
WITH OPEN SOURCE REDIS USING 2ND GEN INTEL® XEON® SCALABLE PROCESSORS AND INTEL® ETHERNET 800 SERIES WITH ADQ

BETTER TOGETHER

CONSISTENTLY IMPROVED SERVICES AND SLA
WITH 2ND GEN INTEL® XEON® SCALABLE PROCESSORS AND INTEL® ETHERNET 800 SERIES

INCREASES APPLICATION PREDICTABILITY

REDUCES APPLICATION LATENCY

IMPROVES APPLICATION THROUGHPUT

CONSISTENT APPLICATION RESPONSE TIME WITH ADQ

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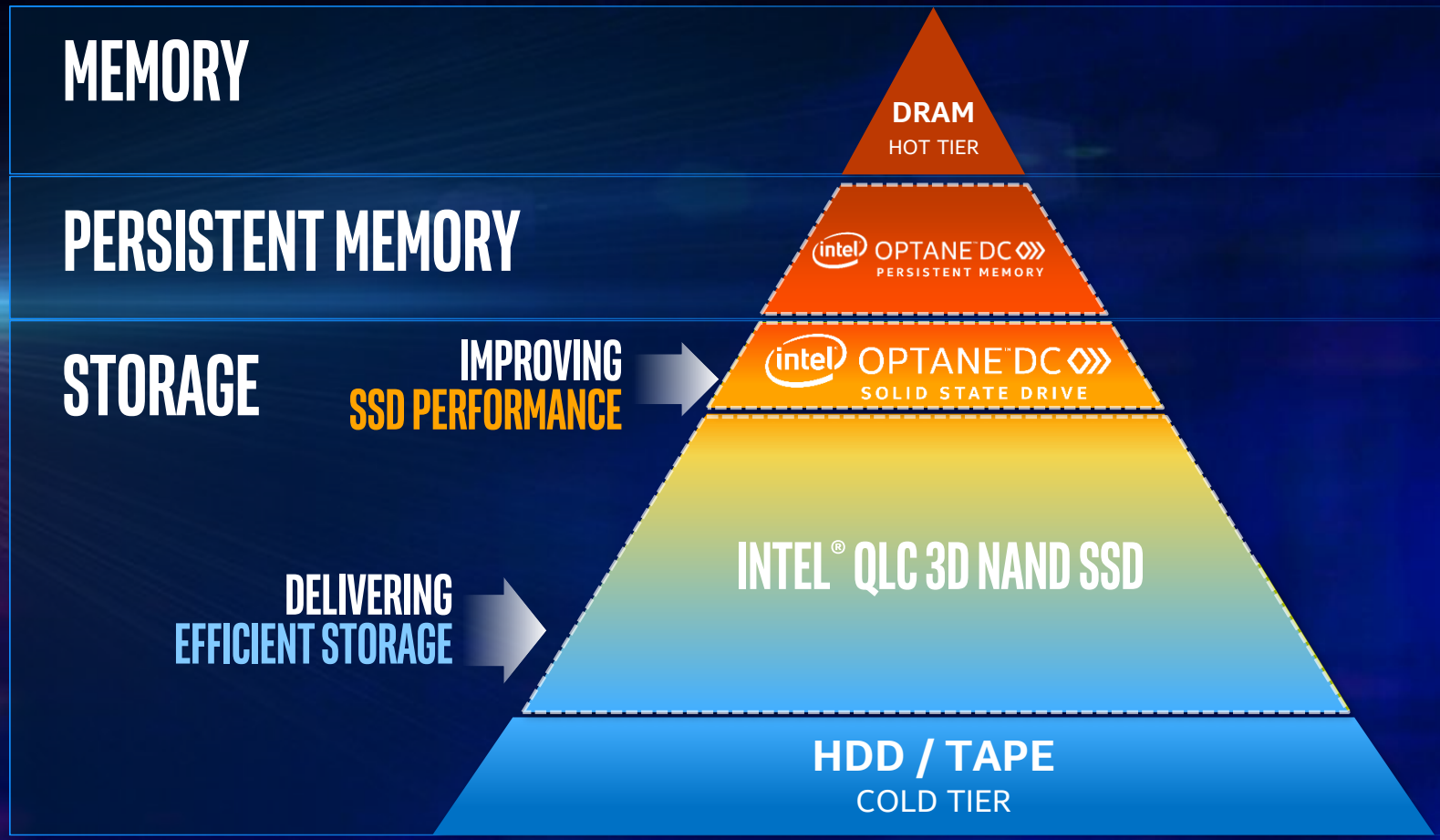
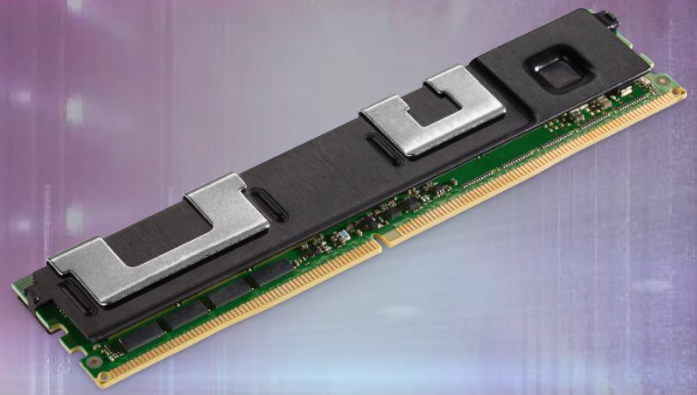
BREAKTHROUGH INNOVATION FOR MEMORY AND STORAGE



INTEL.COM/OPTANE

PROVIDING VALUE ON MULTIPLE VECTORS



intel® OPTANE™ DC PERSISTENT MEMORY

BREAKTHROUGH MEMORY INNOVATION

AFFORDABLE ALTERNATIVE TO DRAM

IMPROVE TCO

ON-MODULE ENCRYPTION

INFRASTRUCTURE CONSOLIDATION

INCREASE MEMORY SIZE

CONSOLIDATE WORKLOADS

SCALE UP TO SCALE OUT

PERFORMANCE AND PERSISTENCE

BREAK IO BOTTLENECKS

FASTER RECOVERY

HIGH SPEED STORAGE

INTEL.COM/OPTANEDCPERSISTENTMEMORY

INTEL® OPTANE™ DC TECHNOLOGY ENHANCED WORKLOADS

BEST FIT IS SHOWN, BOTH PRODUCTS MAY BE VIABLE

STORAGE

RDMA/Replication

Oracle Exadata*

SDS

Ceph*

INFRASTRUCTURE

Memory

VMWare ESXi*
MSFT Hyper-V*
KVM*
Redis Labs*
Memcached*
VDI

DATABASE

Caching/Persistence

SAP HANA*
MS-SQL*
Oracle Exadata*
Aerospike*
Redis*
RocksDB*

AI/ANALYTICS

Real Time Analytics

SAS*

Machine Learning Analytics

Apache Spark*

HPC

Scratch & IO Nodes

HPC Flex Memory

COMMS

Content Delivery Network (CDN)

Comms SP custom

Hyper-Converged (HCI)

STORAGE	MEMORY
VMware vSAN Microsoft S2D Nutanix* Cisco HyperFlex*	VMWare ESXi* MSFT Hyper-V* KVM*

intel OPTANE DC PERSISTENT MEMORY

intel OPTANE DC SOLID STATE DRIVE

INTEL.COM/OPTANE

LOWER COST PER VIRTUAL MACHINE (VM)

MEMORY MODE – WINDOWS SERVER® 2019/HYPER-V

Microsoft

	DDR4 DRAM ONLY	DDR4 DRAM WITH intel OPTANE™ DC PERSISTENT MEMORY	
	SYSTEM MEMORY 768 GB	SYSTEM MEMORY 1 TB	UP TO 33% MORE MEMORY
DO MORE	22 VMS	30 VMS	UP TO 36% MORE VMS PER NODE[17]
SAVE MORE	~$1,588 USD/VM	~$1,108 USD/VM	UP TO 30% LOWER COST PER VM[18]
	CPU: Intel® Xeon® Platinum 8276 processor **MEMORY:** 768 GB DDR4 DRAM memory	**CPU:** Intel® Xeon® Platinum 8276 processor **MEMORY:** 192 GB DDR4 DRAM memory + 1 TB Intel® Optane™ DC persistent memory	

Pricing Guidance as of March 1, 2019. Intel does not guarantee any costs or cost reduction.
You should consult other information and performance tests to assist you in your purchase decision.

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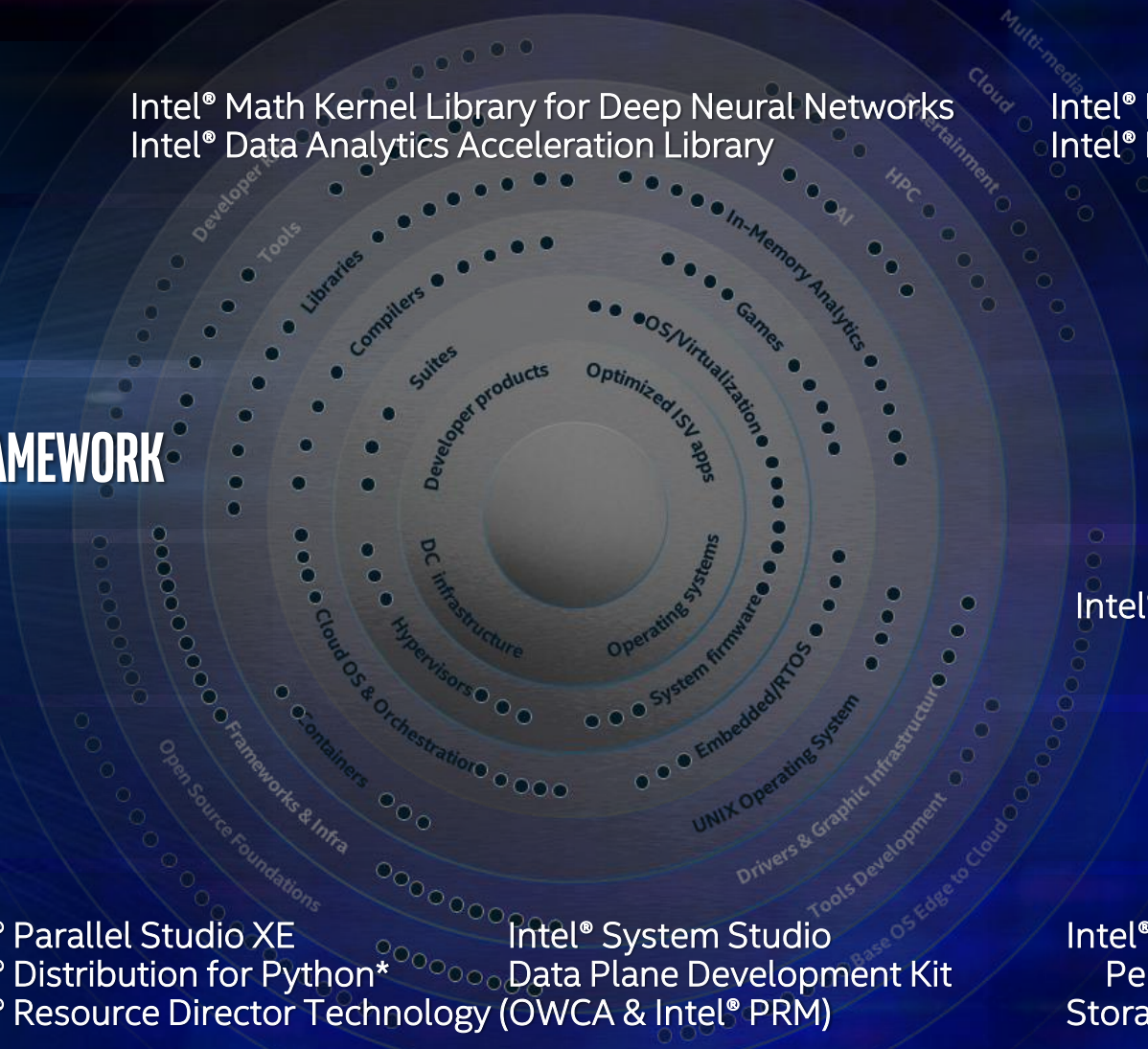
For detailed configs and pricing see slide/page 54.

WORKLOAD PERFORMANCE THROUGH OPTIMIZED SOFTWARE

OPTIMIZED LIBRARIES	Intel® Math Kernel Library for Deep Neural Networks Intel® Data Analytics Acceleration Library	Intel® Machine Learning Scalable Library Intel® Integrated Performance Primitives
OPTIMIZED AI FRAMEWORKS		TensorFlow*, PyTorch* Caffe*, PaddlePaddle* MXNET*, …
PARALLEL PROGRAMMING FRAMEWORK		Threading Building Blocks Intel® MPI Library OpenMP*
COMPILERS		Intel® Compilers (LLVM, GCC, Fortran) nGraph
PROFILING TOOLS		Intel® VTune™ Amplifier Intel® Advisor Intel® Inspector
TOOLKITS / TOOL SUITES	Intel® Parallel Studio XE Intel® Distribution for Python* Intel® Resource Director Technology (OWCA & Intel® PRM)	Intel® System Studio Data Plane Development Kit	Intel® Distribution of OpenVINO toolkit Persistent Memory Development Kit Storage Performance Development Kit



OWCA: ORCHESTRATION-AWARE WORKLOAD COLLOCATION AGENT
INTEL® PRM: INTEL® PLATFORM RESOURCE MANAGER

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

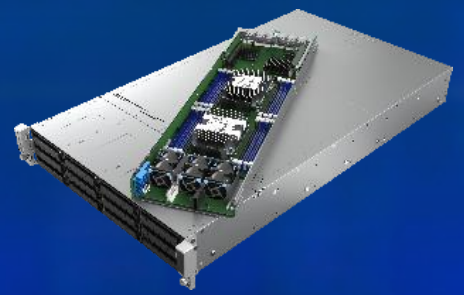
NEW INTEL® SERVER SYSTEM S9200WK FAMILY

FEATURING NEW INTEL® XEON® PLATINUM 9200 PROCESSORS

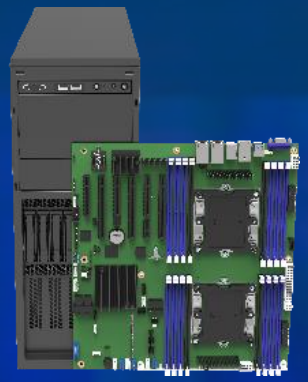
INTEL® DATA CENTER BLOCK
2U/4N RACK SERVER WITH AIR-COOLED AND LIQUID-COOLED OPTIONS

NEW 2ND GEN INTEL® XEON® SCALABLE PLATFORMS

INTEL SERVER SYSTEM S2600WFXR
1U OR 2U RACK SERVER WITH MAXIMUM FLEXIBILITY



INTEL® SERVER SYSTEM S2600BXR
2U/4N RACK SERVER WITH OPTIMIZED COMPUTE DENSITY



INTEL® SERVER SYSTEM S2600STXR
1U RACK, 4U TOWER GENERAL PURPOSE SERVER

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

INTEL.COM/SERVERPRODUCTS

SUMMARY

- Competitiveness in the digital economy relies on digital infrastructure
- Digital transformation is essential to agility, efficiency, and insight
- Engage with Intel about critical solutions and technologies
- **Build the Future** of your enterprise with Intel

RESOURCES

- Engage with Intel at itcenter.intel.com
- Learn more about Intel Partner Programs https://www.intel.com/content/www/us/en/partner/programs-overview.html
- 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