
intel
DATA-CENTRIC INNOVATION SUMMIT
AUGUST 8, 2018 | SANTA CLARA, CA


intel
DATA-CENTRIC INNOVATION SUMMIT
INVESTING IN WORKLOAD-OPTIMIZED SOLUTIONS
LISA SPELMAN
VICE PRESIDENT & GENERAL MANAGER
INTEL® XEON® PRODUCTS AND DATA CENTER MARKETING

INCREASING CUSTOMER VALUE

INCREASED INTEGRATION AND OPTIMIZATION

INTEL® RACK SCALE DESIGN ARCHITECTURE

CLOUD SERVICE PROVIDERS

COMMS SERVICE PROVIDERS

ENTERPRISES

INTEL® SELECT SOLUTIONS

ANALYTICS

ARTIFICIAL INTELLIGENCE

HYBRID CLOUD

NETWORK TRANSFORMATION

HPC

INTEL SILICON FOUNDATION

CPUs

CHIPSETS

ETHERNET

FABRIC

NETWORK ASICs

SILICON PHOTONICS

PERSISTENT MEMORY

ACCELERATORS

SSDs

INTEL® SELECT SOLUTIONS

SIMPLIFY & ACCELERATE DEPLOYMENT OF WORKLOAD-OPTIMIZED INFRASTRUCTURE

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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

CREATION OF INTEL® SELECT SOLUTIONS

MARKET TRENDS

FOCUS WHERE THERE IS MARKET OPPORTUNITY | UNCERTAINTY | DIFFICULTY

INTEL SILICON FOUNDATION

+

SOFTWARE OPTIMIZATION

+

SYSTEM CONFIGURATION & VALIDATION

+

OPEN DOCUMENTATION

intel select solution

BROAD ECOSYSTEM ENABLING

INTEL® SELECT SOLUTION FOR VMWARE VSAN

MARKET TRENDS
SOFTWARE DEFINED STORAGE | ALL-FLASH ARRAYS

SILICON	+ SOFTWARE	+ CONFIGURATIONS	+ DOCUMENTATION
Intel® Xeon® Scalable Processors	VMware ESXi & vSAN 6.6, Optimized for:	Balanced Cache & Volume SSDs	Intel Solution Brief
Intel® Optane™ DC SSD	Intel® AVX-512	Optimized SW/FW Configuration	Reference Architecture
Intel® Ethernet	Intel Optane DC SSD	Validation Rigor for Consistent Performance	OEM Solution Briefs
	Intel® VMD		

UP TO **13X** MORE VMs SUPPORTED[1] VS. PRIOR-GEN VSAN CONFIG

UP TO **8X** BETTER PRICE/PERFORMANCE[1] VS. PRIOR-GEN VSAN CONFIG

Available

Lenovo, 中科曙光 Sugon, Supermicro, QCT

Coming Soon

HUAWEI, inspur 浪潮, World Wide Technology

DATA-CENTRIC INNOVATION SUMMIT

Performance results are based on testing as of August '18 and may not reflect all publicly available security updates. See configuration disclosure for details. No product can be absolutely secure.

#IntelDCISummit

For more complete information about performance and benchmark results, visit www.intel.com/benchmarks.
1. Config details on last slide

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GENOMICS DATA CHALLENGES

SIZE
DATA MANAGEMENT

90 GB[1]
OF DATA
GENERATED BY
ONE HUMAN GENOME

SPEED
WORKFLOW EFFICIENCY

TODAY:
WEEKS

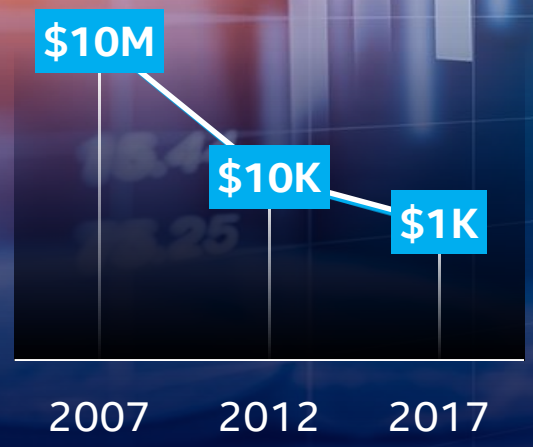
FUTURE:
ONE DAY

SCALABILITY
INCREASING REQUIREMENTS

HUMAN GENOMES SEQUENCED[2]

COST
RETURN ON INVESTMENT

COST PER GENOME[3]



1. Source: http://massgenomics.org/2014/11/brace-yourself-for-large-scale-whole-genome-sequencing.html
2. Source: "Big Data: Astronomical or Genomical?", PLoS Biology, Figure 1 http://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.1002195 .
3. Sources: "Sequencing Data Cost", NHGRI, https://www.genome.gov/27541954/dna-sequencing-costs-data/

INTEL® SELECT SOLUTIONS FOR GENOMICS ANALYTICS

Ease deployment and speed time to genomic pipelines for life sciences research and healthcare insights – based on the BIGstack* 2.0 reference architecture.

intel select solution

BROAD INSTITUTE

gatk

SCALABILITY

UP TO
5X
MORE GENOMES[1] PROCESSED WITH GenomicsDB

SPEED

UP TO
3X
FASTER[1]
FROM 6 TO 2 WEEKS

intel XEON PLATINUM inside™

intel ARRIA® 10 inside™

intel SSD inside™

Intel® Omni-Path Architecture

1. Source: Data presented by, and slide courtesy of Broad Institute, Geraldine Van der Auwera, Ph.D., BioIT World May 24, 2017 https://software.broadinstitute.org/gatk/gatk4

For more information on Intel® Select Solutions for Genomics Analytics, visit https://builders.intel.com/docs/intel-select-genomics-analytics.pdf

For more complete information about performance and benchmark results, visit www.intel.com/benchmarks. Config details on last slide

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

INTEL® SELECT SOLUTIONS

BROAD PORTFOLIO TO ADDRESS KEY WORKLOADS

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ANALYTICS

- MICROSOFT* SQL SERVER BUSINESS OPERATIONS
- MICROSOFT* SQL SERVER ENTERPRISE DATA WAREHOUSE
- GENOMICS ANALYTICS
- SAP* HANA CERTIFIED APPLIANCES

ARTIFICIAL INTELLIGENCE

- BIG DL ON APACHE SPARK*

HYBRID CLOUD

- MICROSOFT AZURE STACK*
- VMWARE CLOUD FOUNDATION*
- RED HAT OPENSHIFT* CONTAINER
- VMWARE VSAN*
- WINDOWS SERVER* SDS
- BLOCKCHAIN: HYPERLEDGER FABRIC

NETWORK TRANSFORMATION

- UNIVERSAL CUSTOMER PREMISES EQUIPMENT
- NFVI: RED HAT*
- NFVI: UBUNTU*

HPC

- SIMULATION & MODELING
- PROFESSIONAL VISUALIZATION

10%
HIGHER MIX OF GOLD/PLATINUM CPUs[1]

2X
ADJACENCY ATTACH[1]

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1. Source: Intel internal data

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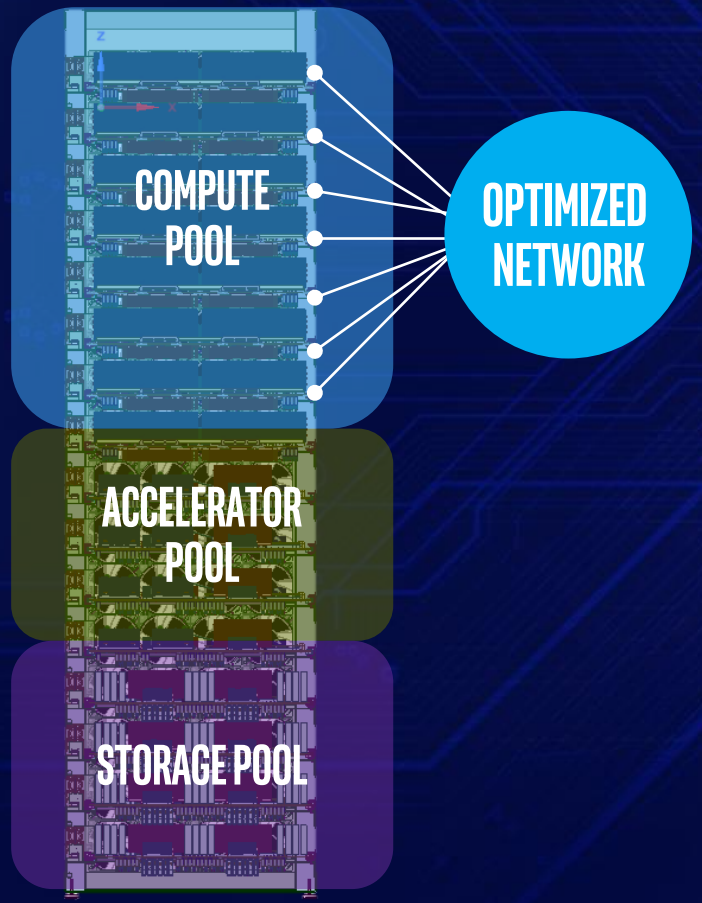
BRINGING CLOUD EFFICIENCIES
TO MORE DATACENTERS

INTEL® RACK SCALE DESIGN

INTEL'S ARCHITECTURE VISION FOR THE DATACENTER

CUSTOMER VALUE:

- Higher workload performance
- Pooled: increases utilization
- Disaggregated: late-binding and independent refresh
- Composable: software defined resource allocation



OPTIMIZED INTEL SI:

- Larger nodes: Intel® Xeon® Scalable processors & Intel® Optane™ DC persistent memory
- Faster, intelligent networks: SmartNICs, silicon photonics
- Pooling of accelerators and storage: Intel® FPGAs, Intel® Nervana™ NNP[1], Intel Optane DC SSDs

[1] *Future*

ALIGNED ECOSYSTEM

INTEL® SELECT SOLUTIONS

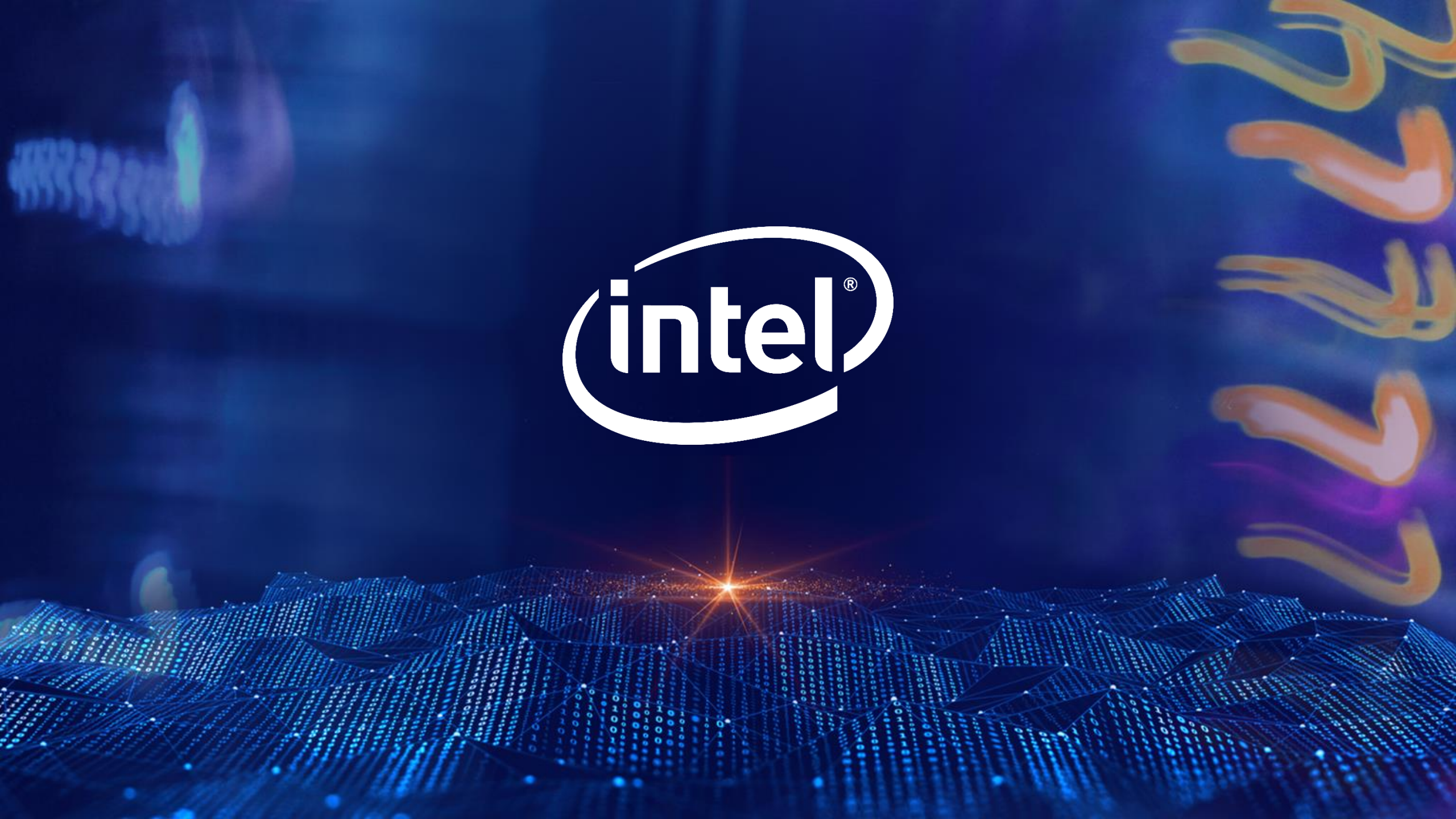
INTEL® RACK SCALE DESIGN

IN CONCLUSION

IT'S A NEW ERA OF DATA-CENTRIC COMPUTING

THE DATA-CENTRIC OPPORTUNITY IS MASSIVE

INTEL HAS UNPARALLELED ASSETS TO FUEL GROWTH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DISCLOSURES

Statements in this presentation that refer to business outlook, future plans and expectations are forward-looking statements that involve a number of risks and uncertainties. Words such as "anticipates," "expects," "intends," "goals," "plans," "believes," "seeks," "estimates," "continues," "may," "will," “would,” "should," “could,” and variations of such words and similar expressions are intended to identify such forward-looking statements. Statements that refer to or are based on projections, uncertain events or assumptions also identify forward-looking statements. Such statements are based on management's current expectations, unless an earlier date is indicated, and involve many risks and uncertainties that could cause actual results to differ materially from those expressed or implied in these forward-looking statements. Important factors that could cause actual results to differ materially from the company's expectations are set forth in Intel's earnings release dated July 26, 2018, which is included as an exhibit to Intel’s Form 8-K furnished to the SEC on such date. Additional information regarding these and other factors that could affect Intel's results is included in Intel's SEC filings, including the company's most recent reports on Forms 10-K and 10-Q. Copies of Intel's Form 10-K, 10-Q and 8-K reports may be obtained by visiting our Investor Relations website at www.intc.com or the SEC's website at www.sec.gov.

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No computer system can be absolutely secure.

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Intel does not control or audit third-party benchmark data or the web sites referenced in this document. You should visit the referenced web site and confirm whether referenced data are accurate.

CONFIGURATION DISCLOSURE

Intel Select Solution for Vmware vSAN

- **Source:** The Evaluator Group, August 2018. Report to be publicly available by September 1, 2018.
- **Baseline configuration:** Four-node cluster, based on four Intel® Server Boards S2600WTT, each with 2x Intel® Xeon® processors E5-2699 v4 (22 cores @ 2.2 GHz with Intel® Hyper-Threading Technology); tested with 256 GB DRAM, priced for comparison at 512 GB DRAM; 1x Intel® SSD DC S3700-400; 4x Seagate 1 TB HDD; VSAN 6.5; IOmark-VM-HC validated configuration. Performance: 88 IOmark-VM-HC. Price/performance: $1,862/IOmark-VM-HC.
- **Select Solution-compliant configuration**: Four-node cluster, based on four Intel® Server Systems R2208WF, each with 2x Intel® Xeon® Gold 6154 (18 cores @ 3.0 GHz with Intel® Hyper-Threading Technology); tested with 256 GB DRAM, priced for comparison with 2x Intel® Xeon® Platinum 8168 (24 cores @ 2.7 GHz) at 768 GB DRAM; Intel® Ethernet Converged Network Adapter X540 AT2; 2x Intel® Optane™ SSD DC P4800X Series; 4x Intel® SSD DC P4500 Series 4TB. VSAN 6.7. Configuration not IOmark VM-HC validated. Performance: 1,152 IOmark-VMs (Note: Measured as a storage system, not hyper-converged). Price/performance: $230/IOmark-VM (Note: Measured as a storage system, not hyper-converged).

Intel Select Solution for Genomics Analytics

- **Configuration details:** https://www.intel.com/content/www/us/en/analytics/high-performance-computing/select-solutions-for-genomics-analytics.html?wapkw=genomics