Winning Workloads

HCI as part of your Hybrid Cloud Solution

Turn a Challenge into an Opportunity. Build a Solution.

Need a faster trial analysis in a Precision medicine study? Require a specific section of the analysis under a **secured enclave** in memory while processing the data? Is the data in different databases or different Operating Systems and need to be migrated without losing **performance**? Those challenges and others like manufacturing image defect identification, route optimization in sales distribution, track/reduce carbon emissions in a new production line must be tackled with precise tools, yet in a comprehensive solution and secure ecosystem from the tool to the database.

Intel's advantage

-Planning for workload portability is key. Data movement across data centers and clouds is inevitable for modern IT environments. Interoperability is tailored to power mission-critical workloads with consistency across the ecosystem.
How it Works: You can migrate live VMs between Intel processor-based servers but migration in a mixed CPU environment requires downtime and administrative hassle that will disrupt your business and customer trust. Reduce the time it takes to deploy new solutions and support live VM migration across infrastructure.
Intel's 3rd Gen Xeon® Scalable Processors comes with up to 40 cores per CPU and these processors scale up and out with ease.
As a result, you have flexibility to evolve your infrastructure for changing needs, streamlining cost and enhancing data governance.

-Intel's 3rd Gen Xeon® Scalable Processors supports up to 8 memory channels. Memory channels are the physical layer on which the data travels between the CPU and memory modules.
How it Works: more channels of memory mean you get to have higher bandwidth (e.g. more lanes on a road). Consequently, huge bandwidth means faster data transfer rates, hence improved performance and lower cost per user for memory sensitive workloads, e.g. faster image comparison for defects detection.

-Data security and confidentiality aim to enable information protection by processing encrypted data in memory without exposing it to the rest of the system, independent of operating system or hardware configuration. This is done by utilizing **Intel® Software Guard Extension** (Intel® SGX), a capability of Intel® Xeon® Scalable Processors.
How It Works: Intel® SGX helps protect selected code and data from disclosure or modification. Developers can partition their application into hardened 'enclaves' or trusted execution modules to help increase application security. Using this new application-layer trusted execution environment, developers can enable increased identity and records privacy, more secure browsing, Digital Rights Management (DRM), hardened endpoint protection, and many high assurance security use cases that need to more safely store secrets or protect data. With Intel's 3rd Gen Xeon® Scalable platform, the enclave size capacity is up to 512 GB per CPU allowing for bigger datasets, such as clinical images, X-rays and electrocardiograms to be processed in a faster and more efficient way.

	Live Migration [1]
Intel to Intel	✓
Intel to AMD	✗

	Max Memory Capacity per Socket [2]
Intel Xeon 8380	6 TB (DDR+PMem) 4TB (DDR)
AMD Epyc 7763	4TB (DDR)

	Intel Xeon 8380 vs AMD Epyc 7763 * [3]
Public Key Cryptography Open SSL ECDHE	2.03X Performance
Public Key Cryptography Open SSL RSA Sign	3.2X Performance
Cloud XPRT: Web microservices	3X performance

Building the Solution

Enterprise Segment	Intel Xeon	Cores	Base (GHz)	Single Core Turbo (GHz)	Intel SGX Enclave Capacity (per processor)	Persistent Memory 200 Series	Optane SSD P4800X Series P5800X Series	Ethernet 800 Series Adapter
Large	Platinum 8358P *	32	2.6	3.4	8 GB	2 TB PMem	750 GB capacity	Dual 100 GB (max 100 Gb)
Medium	Gold 6348	28	2.6	3.5	64 GB	1 TB Pmem	375 GB capacity	Quad port (max 100 Gb)
Small	Silver 4314	16	2.4	3.4	8 GB	DRAM-only	375 GB capacity	Dual port (max 50 Gb)

* sku Cloud Optimized for VM Utilization

For the most up-to-date information, please visit **intel.com/xeon**, **ark.intel.com** or **intel.com/cloud**

Performance results are based on testing as of dates shown in configurations and may not reflect all publicly available updates No product or component can be absolutely secure.

Intel Software Guard Extensions

Intel Crypto Acceleration

Intel Cloud

Intel Optane

[1] Live Migration: https://www.principledtechnologies.com/Intel/Migration-in-mixed-CPU-environment-0419-v2.pdf
Intel contributes to the development of benchmarks by participating in, sponsoring, and/or contributing technical support to various benchmarking groups, including the BenchmarkXPRT Development Community administered by Principled Technologies.
[2] Memory: https://www.intel.com/content/www/us/en/products/docs/memory-storage/optane-persistent-memory/optane-persistent-memory-200-series-brief.html
[3] Security (Public key): Page 99: 3rd Gen Intel Xeon Scalable Processors Product 30-3-30 Public 19 May 2021
https://dpgresources.intel.com/asset-library/3rd-gen-intel-xeon-scalable-processor-product-30-3-30/