(intel®)

Intel Select Solutions for Nutanix HCI

Simplify deployment of a hyperconverged infrastructure (HCI) solution and fast-track your move to a hybrid cloud.

(intel®) select
solution

What differentiates a flood of data from a treasure trove of data? For many businesses, it comes down to infrastructure. Legacy hardware and software weren't designed to efficiently and affordably manage the massive influx of data pouring into most data centers. With legacy architecture, the data tends to become siloed in different systems that can't easily or quickly share resources. The result is inefficient use of infrastructure, because some systems go under-utilized while others are over-utilized. In addition, critical insights go undiscovered because the data can't be analyzed across disparate systems.

Most businesses recognize that infrastructure modernization is required to address these issues. But there's a large gap between recognition and implementation. IT admins face the daunting challenges of researching, purchasing, testing, deploying, tuning, and managing the infrastructure needed to assemble an optimized solution. As a result, the road to modernization and a hybrid cloud can be long and winding, eating up IT staffs' already limited time and budget.

Intel Select Solutions for Nutanix HCI offer a faster, simpler path to infrastructure modernization and a hybrid cloud, while providing efficient use of infrastructure and performance for demanding, latency-sensitive workloads in the data center. The solutions combine a Nutanix HCI software stack with hardware built on 2nd Generation Intel Xeon Scalable processors, the Intel Solid State Drive (SSD) Data Center Family, and other Intel technologies. In addition, they are pre-configured and verified to help you quickly modernize infrastructure to support multiple complex workloads simultaneously, so you can deliver on-premises IT services with the speed and operational efficiency of public cloud services.

Intel Select Solutions for Nutanix HCI help improve both capital expenditure (CapEx) and operating expense (OpEx) efficiency by offering:

- Server consolidation, which reduces data center footprint while providing price/performance improvements

- More efficient use of infrastructure and ease of management, without requiring any specialized skillset

- Incremental scale-out capability for increasing performance and capacity as needed

Intel Select Solutions for Nutanix HCI combine Nutanix software with hardware built with 2nd Generation Intel Xeon Scalable processors, Intel 3D NAND SSDs, Intel Ethernet Converged Network Adapters, and other Intel technologies. The solutions will also enable use of Intel® Optane™ SSDs for even lower-latency storage access. (Later in 2020, a second configuration will be available. This "Plus" configuration includes Intel Optane SSDs and is designed for workloads that require higher levels of performance.)

Nutanix Software

Nutanix HCI is a complete, 100 percent software-defined stack that integrates compute, virtualization, storage, networking, and security to power applications at scale. It delivers high performance, availability, and simplified management for all workloads by offering flexible orchestration and control across on-premises and cloud environments. The solution consists of Nutanix Acropolis, a complete HCI platform with built-in virtualization, storage services, virtual networking, and cross-hypervisor application mobility for creating a turnkey solution. Support is also included for the built-in Nutanix AHV hypervisor and for third-party hypervisor solutions from VMware, Microsoft, and Citrix. In addition, the solution includes Nutanix Prism, a simple infrastructure-management platform that enables comprehensive virtual-machine (VM) operations and performance monitoring.

Intel Select Solutions for Nutanix HCI

These Intel Select Solutions, available from a wide variety of data center solution providers, simplify your Nutanix HCI deployment by:

- Optimizing configurations specifically for Nutanix HCI software
- Reducing the time required to evaluate, select, and purchase the necessary hardware components
- Minimizing the time required to deploy new infrastructure
- Delivering performance optimized to a specific threshold across compute, storage, and network on trusted Intel architecture

Hardware Selections

Intel Select Solutions for Nutanix HCI combine 2nd Generation Intel Xeon Scalable processors, Intel 3D NAND SSDs, and Intel Ethernet Converged Network Adapters for 10/25/40 gigabit Ethernet (GbE), so your business can quickly deploy reliable, comprehensive hyperconverged infrastructure built on a performance-optimized platform designed for demanding applications and workloads.

2nd Generation Intel Xeon Scalable Processors

Intel Select Solutions feature the performance and capabilities of 2nd Generation Intel Xeon Scalable processors, which provide outstanding performance across a broad range of data-centric use cases running on HCI.

For the "Base" configuration, the Intel Xeon Gold 6226 processor provides an optimized balance of price and performance in a mainstream configuration. A higher-number processor can also be used.

The Plus configuration (available later in 2020) features Intel Optane SSDs and is designed to support high-density deployments or more demanding, latency-sensitive workloads, such as database transaction processing, analytics, or enterprise resource planning (ERP).

Intel 3D NAND SSDs

Nutanix HCI performs best on fast SSDs with low latency and high endurance. Intel SSD DC P4510 drives are used for write-intensive storage, because these drives deliver optimized performance with a combination of data integrity, performance consistency, and drive reliability. The entire cluster also benefits from the high combined capacity of Intel SSD DC P4510 NVM Express (NVMe) drives and Intel SSD DC S4510 Serial ATA (SATA) drives.

WHAT ARE INTEL SELECT SOLUTIONS?

Intel Select Solutions are pre-defined, workload-optimized solutions designed to minimize the challenges of infrastructure evaluation and deployment. Solutions are validated by OEMs/ODMs, certified by ISVs, and verified by Intel. Intel develops these solutions in extensive collaboration with hardware, software, and operating system vendor partners and with the world's leading data center and service providers. Every Intel Select Solution is a tailored combination of Intel data center compute, memory, storage, and network technologies that delivers predictable, trusted, and compelling performance.

To refer to a solution as an Intel Select Solution, a vendor must:

1. Meet the software and hardware stack requirements outlined by the solution reference-design specifications
2. Replicate or exceed established reference-benchmark test results
3. Publish a solution brief and a detailed implementation guide to facilitate customer deployment

Solution providers can also develop their own optimizations in order to give end customers a simpler, more consistent deployment experience.

INTEL XEON SCALABLE PROCESSORS

2nd Generation Intel Xeon Scalable processors:

- Offer high scalability that is cost-efficient and flexible, from the multi-cloud to the intelligent edge
- Establish a seamless performance foundation to help accelerate data's transformative impact
  - Support breakthrough Intel Optane persistent memory technology
  - Accelerate artificial-intelligence (AI) performance and help deliver AI readiness across the data center
  - Provide hardware-enhanced platform protection and threat monitoring

SOLUTION POWERED BY:

intel XEON GOLD inside

Intel Ethernet Converged Network Adapters for 10/25/40 GbE

Intel Ethernet Converged Network Adapters accelerate the performance while also providing data resiliency and service reliability.[1] Intel Ethernet Converged Network Adapters also provide hardware optimizations and intelligent offloads for cloud and network virtualization deployments. All Intel Ethernet products are backed by worldwide pre- and post-sales support and offer a limited lifetime warranty.

Verified Performance through Benchmark Testing

Intel Select Solutions are verified to meet a specified minimum level of workload-optimized performance capabilities. HCI solutions run both compute and storage workloads, so Intel measured both using two different benchmark workloads and applications:

- HammerDB on Microsoft SQL Server, an industry-standard, open source benchmarking and load testing tool for databases that measures both transactional and analytic scenarios

- Nutanix X-Ray, a flexible, vendor-neutral testing tool that runs real-world input/output (I/O) test scenarios that organizations can use to comprehensively assess their hyperconverged data center infrastructures

Intel Select Solutions for Nutanix HCI Base Configuration

The Base configuration specifies the minimum required performance capability for Intel Select Solutions for Nutanix HCI. Customers can upgrade or expand this configuration for additional capacity or performance.

Technology Selections for Intel Select Solutions for Nutanix HCI

In addition to the Intel hardware foundation, other technologies provide further performance and help strengthen security:

- **Trusted Platform Module (TPM) 2.0:** Helps protect the system start-up process by helping ensure it is tamper-free before releasing system control to the operating system. TPM 2.0 also provides secured storage for sensitive data, such as security keys and passwords, and performs encryption and hash functions. Intel Trusted Execution Technology (Intel TXT) utilizes this technology.

- **Intel Hyper-Threading Technology (Intel HT Technology):** Enables multiple threads to run on each core, so that systems can use processor resources more efficiently. Intel HT Technology also increases processor throughput, improving overall performance on threaded software.

- **Intel Turbo Boost Technology:** Accelerates processor and graphics performance for peak loads, automatically allowing processor cores to run faster than the rated operating frequency if they're operating below power, current, and temperature specification limits.

Table 1. Hardware and firmware components for Intel Select Solutions for Nutanix HCI Base configuration

INGREDIENT	INTEL SELECT SOLUTIONS FOR NUTANIX HCI BASE CONFIGURATION
NODES	4 nodes: either 4 x 2U 1-node or 1 x 2U 4-node
PROCESSOR	2 x Intel Xeon Gold 6226 processor (2.70 GHz, 12 cores/24 threads), or a higher number Intel Xeon Scalable processor
MEMORY	384 GB or higher (12 x 32 GB 2,933 MHz DDR4 DIMM)
BOOT DRIVE	1 x Intel SSD DC S4510 or higher, 240 GB or larger M.2*
STORAGE	Write-intensive endurance SSD/NVMe device: 2 x Intel SSD DC P4510 or higher, 2 TB or larger
	Capacity tier: 4 x Intel SSD DC S4510 or higher, 1.92 TB or larger*
DATA NETWORK	10/25/40Gb Intel Ethernet Converged Network Adapter
MANAGEMENT NETWORK	Integrated 1 GbE or better
SOFTWARE	
NUTANIX ACROPOLIS	5.10.7 LTS
OTHER	
TRUSTED PLATFORM MODULE (TPM)	TPM 2.0
FIRMWARE AND SOFTWARE OPTIMIZATIONS	Intel Hyper-Threading Technology (Intel HT Technology) enabled
	Intel Turbo Boost Technology enabled
	Xtended Prediction Table (XPT) prefetch disabled
	Enhanced Intel SpeedStep® technology enabled
	Power-management settings optimized for performance
	C-states disabled

MINIMUM PERFORMANCE STANDARDS

Verified to meet or exceed the following minimum performance capabilities:[2]

HAMMERDB 3.2 ON MICROSOFT SQL SERVER 2017, VERSION 14.0.1000.169, WITH MICROSOFT OPEN DATABASE CONNECTIVITY (ODBC) DRIVER 17 1,000 WAREHOUSES AND 100 USERS	3,680,000 transactions per minute (TPM) (Aggregated value from eight SQL Server databases)
NUTANIX X-RAY 3.6 I/O BENCHMARK FOR STORAGE—FOUR CORNERS TEST	Random read I/O operations per second (IOPS): 530,000 Maximum sequential read throughput: 10.0 GB per second (GBps)

*Recommended, not required

Fast-Track Your Move to HCI and a Hybrid Cloud

Intel Select Solutions for Nutanix HCI offer a fast path to an efficient, scalable hybrid cloud architecture. The solutions let you replace complex legacy infrastructure with an optimized, performance-tuned hyperconverged configuration verified for Intel Xeon Scalable processors—without the time and hassle required to configure the stack. (Visit intel.com/selectsolutions for more information on Intel Select Solutions.)

Learn More

Intel Select Solutions: **intel.com/selectsolutions**

Intel Xeon Scalable processors: **intel.com/xeonscalable**

Intel SSD Data Center Family: **intel.com/content/www/us/en/products/memory-storage/ solid-state-drives/data-center-ssds.html**

Intel Ethernet Technology: **intel.com/ethernet**

Intel Select Solutions are supported by Intel Builders: **builders.intel.com**. Follow us on Twitter: **#IntelBuilders**

Nutanix HCI: **nutanix.com/products/acropolis**