

HP Integrity NonStop NS16000 Server

Data sheet



The HP Integrity NonStop NS16000 Server is a top-of-the-line enterprise computing solution that is designed to deliver unprecedented levels of application availability with absolute data integrity. Powered by next-generation Intel® Itanium® 2 processors, the Integrity NonStop server delivers significant performance improvements over earlier NonStop server models.

Applications running on the previous generations of the NonStop server platform transfer without change onto Integrity NonStop servers, transparently gaining increased throughput and raised levels of availability out of the box. Integrity NonStop servers offer scalability that is truly global, with the capability to grow with linear scalability from two to 4,080 processors.

HP Integrity NonStop NS16000 Servers offer the highest levels of service of any platform, while extending the framework of the HP Adaptive Enterprise and complex business applications.

Powered by the industry-standard Intel Itanium processor, Integrity NonStop servers provide new levels of throughput, out-of-the-box availability and manageability, ultimate scalability, and fail-safe data integrity for the most demanding customers.

The Integrity NonStop server is a leader in scalability. The integrated hardware, operating system, and database stack not only provide for the ultimate in scalability but also contribute to a server platform with the highest built-in reliability, availability, and serviceability (RAS) levels in the industry.

The Integrity NonStop server provides a single application that can efficiently and transparently make use of as much as 64 TB of main memory and 20 trillion PB to guarantee response times in the most demanding applications, such as operational data stores (ODSs), location-based services, E911, securities trading, payment solutions, and integrated patient records.

The Integrity NonStop server also offers significant consolidation opportunities, while maintaining a commitment to investment protection and lowest total cost of ownership (TCO) for mission-critical applications. And Integrity NonStop servers can take advantage of future Intel Itanium 2 processors through in-box upgrades—further taking advantage of HP's commitment to investment protection and low cost of ownership.

Key features of Integrity NonStop servers

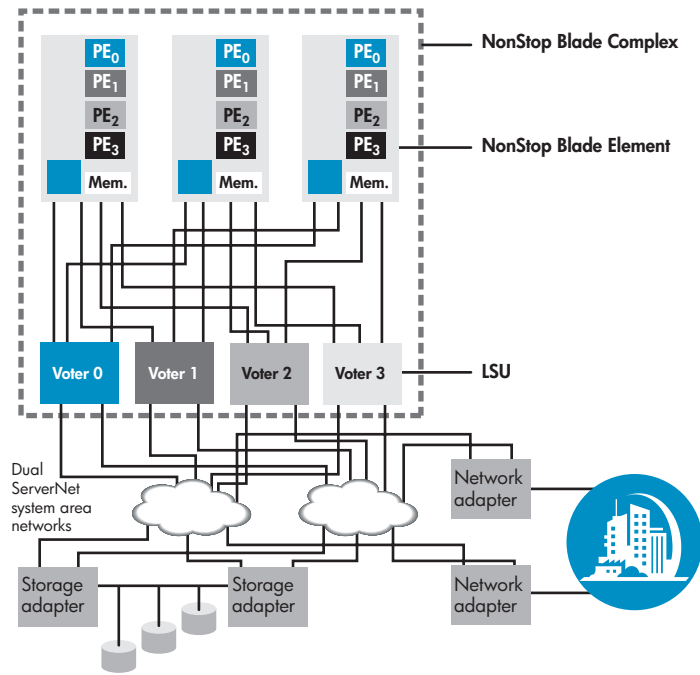
- Standards-based architecture utilizing the latest Itanium processor technology, the Itanium 2 processors at 1.6 GHz
- Integrated hardware and software enables application fault tolerance out of the box, delivering ultimate scalability and the highest built-in RAS levels in the industry
- The new HP NonStop Advanced Architecture offers unprecedented, NonStop system availability using Triple Modular Redundancy (TMR) technology

- A flexible platform for heterogeneous environments with a choice of application architectures and management tools
- Ease of upgrade to future generations of Intel Itanium processors
- Designed and built to last, extending the tradition of offering systems with average system uptimes measured in years, with no unscheduled downtime
- Complete application compatibility with previous generations of the NonStop server platform
- Support for connection to previous generation I/O storage and communications controllers, which improves your investment in NonStop S-series server technology

Key benefits of Integrity NonStop servers

- Supports real-time business interactions with the highest levels of service
- Leading integrated virtual application environment, allowing for ease of resource optimization
- Lowest TCO for complex mission-critical applications
- Provides a solid foundation to leverage and capitalize on change
- A flexible platform tailored for dynamic business environments
- Offers one-stop accountability and a complete portfolio for the best solution
- Integrates seamlessly with HP StorageWorks product offerings
- Flexible financing options and services optimized for 100 percent availability

**Architectural view of the NonStop
Advanced Architecture**



Note: PE in figure stands for processor element.

- Unmatched expertise through HP Services
- A complete range of support offerings from e-support through mission-critical support, plus education services
- A trusted platform for world-class partnerships to meet your complete solution requirements
- Protection of investment in previous generations of NonStop server-based applications
- Protection of investment in previous generation I/O subsystems

Superior choice

With the Integrity NonStop NS16000 Server, HP introduces a new line of servers that provide the highest level of application availability and industry-leading data integrity. This new server exploits the traditional advantage of NonStop servers with fully integrated hardware and software, which provides application availability and fault tolerance right out of the box.

The NonStop Advanced Architecture takes fault tolerance and availability to new levels, with the introduction of TMR, triplex configurations. The Integrity NonStop NS16000 Server uses industry standards by incorporating Intel Itanium 2 processor technology into the NonStop architecture.

Customers not only have the advantage of the world's most available system, now with even greater levels of resilience, they also have an innovative microprocessor technology targeted to meet ever-increasing demands of complex business applications with improved price/performance.

The new Integrity NonStop NS16000 Server delivers the ultimate in scalability. Like its predecessors, the Integrity NonStop NS16000 Server supports the scaling of applications linearly up to 2,000 times, without user interruption.

As business needs evolve and demand grows, the Integrity NonStop NS16000 Server is designed to support even the most complex application requirements. Systems can start out with as few as two Itanium processors, and grow to as many as 4,080, as business landscapes change.

Focused innovation

The new Integrity NonStop NS16000 Server is tailor made for meeting your real-time business needs, providing real-time business interaction with the industry's highest levels of service. The server is an integral part of a business solution that supports the patented HP Zero Latency Enterprise (ZLE) architecture. You can develop new systems that enforce business rules with HP Real Time Information Director Software. Using HP's ZLE Data Store, applications deliver exceptional response times, even when massive concurrent mixed workloads (transactions plus queries plus batch) are required.

Because of the necessity to react to changing business demands, HP delivers a leading integrated virtual application environment. Data can be pooled and shared across an enterprise to optimize information utilization. The HP NonStop operating system, Mission Critical Operating Environment, offers even greater flexibility by providing the ability to transparently distribute applications across two to 255 nodes, spreading risk geographically.

With the Integrity NonStop NS16000 Server, you can manage your system based on your specific needs, distributing critical applications across the street (HP Metroclusters for NonStop servers) or across the globe (HP Continentalclusters for NonStop servers).

Manageability is designed into the Integrity NonStop NS16000 Server, not added later. Advanced manageability features are delivered right out of the box, even for the most demanding workloads. You can manage large applications with a single system image. Availability features are built in and automatically configured. No complex reconfiguring is required.

Ultimately, with the Integrity NonStop NS16000 Server, HP is delivering an advanced architecture with value-added innovation above and beyond the benefits of a new server. The introduction of TMR synchronizes performance of three Itanium processors for maximum availability, while the Duplex Modular Redundancy (DMR) option provides an availability profile similar to HP NonStop S-series systems. As business environments change, capacity can be added in real time with HP ServerNet advanced fabric capability and Temporary Instant Capacity (TiCAP).

World-class experience

With the introduction of the Integrity NonStop NS16000 Server, HP continues to deliver world-class servers using a collaborative approach to design and build an agile infrastructure. HP offers much more than high-availability servers, delivering on the promise of the agile enterprise by designing complete real-time solutions—solutions used to power HP Real Time Financial Services and Real Time Supply Chain in the manufacturing sector. HP offers these solutions at the right price, with the lowest TCO for complex, mission-critical applications.

When you add up the scorecard, the Integrity NonStop NS16000 Server is a trusted platform that, when coupled with world-class HP partnerships, will meet your complete solution requirements. HP partners with best-of-breed ISVs for business-critical solutions in many vertical industries, and delivers a complete portfolio of enterprise solutions from leading HP partners, extending our joint capability, and ultimately enhancing customer value.

HP Services—getting the most out of your HP Integrity NonStop server

HP Services offers a collaborative approach to help you reduce IT complexity. HP Services works with customers to design, deploy, integrate, and manage an agile IT infrastructure that can respond to change and more closely align IT with business goals.

Drawing from a broad portfolio of global services, HP Services can help you build an Adaptive Enterprise that provides greater business value with reduced risk, enabling you to realize higher, more predictable service levels and lower TCO while maximizing the value of your IT investments.

HP understands that every IT organization has a blend of products from a variety of vendors. That's why HP delivers services for your entire IT infrastructure, tailored to your specific needs. We're trained to support products from more than 1,300 vendors, including industry-standard platforms, networks, and operating systems, including the NonStop operating system, UNIX®, Microsoft® Windows®, Linux®, and HP OpenVMS systems. More companies trust HP Services with their mission-critical support than any other.

For more information, contact your HP sales representative or visit www.hp.com/hps/support.

HP Integrity NonStop NS16000 Server

Technical specifications

Processors	2–16 processors per node Itanium 2, 1.6 GHz processors
Cache	32 KB L1, 256 KB L2, 6 MB L3
RAM standard/maximum	Minimum: 4 GB Maximum: 16 GB*
RAM type/speed	PC2100 ECC registered DDR266A/B
Hot-swap ServerNet I/O	Minimum: 10 Maximum: 60
I/O adapters supported	Fiber Channel, Gigabit Ethernet
Fibre Channel disk modules	14 disks per module
Disk drives supported	73 GB, 146 GB, and HP StorageWorks XP12000 Disk Array
Standard features	N + 1 power supplies N + 1 fans

*Although 32 GB capable, Integrity NonStop NS16000 Servers will not deliver 32 GB until the cost of 4 GB DIMMs is lower.

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Environmental specifications

Altitude	Operating: 10,000 ft (3,000 m) maximum Nonoperating: 40,000 ft (12,000 m) maximum
Temperature	Operating: 40° to 100° F (5° to 35° C) Nonoperating: -40° to 150° F (-40° to 66° C) Maximum rate of temperature change: 36° F (20° C) per hour
Humidity	Operating: 10% to 85% relative noncondensing maximum Nonoperating: 95% maximum at 150° F (66° C)
Dimensions	79 x 24 x 45 in (2,007 x 610 x 1,143 mm)
Weight	1,200 lb (545 kg)*
Power supply	Typical power dissipation: 2,800 VA Input current: 14 A @ 200 VAC AC input power: 200–240 V, 50–60 Hz
Electromagnetic interference	Complies with FCC rules and regulations, Part 15, as a Class A Digital Device; manufacturer's declaration to EN 55022 Level A
Power line LF emissions	EN 61000-3-2 (Europe); EN 61000-3-3 (Europe)
Regulatory	Certifications are for individual modules
Safety	CUL certified; compliant with EN 60950

*This table represents a single rack, 4-processor stack, without UPS. It includes two P-Switches, LSU with four voters, IOAME with two FCSAs, two G4SAs, and two FCDMs with 28 drives.

System configurations

Minimum configuration	Maximum single-node system configuration	Maximum configuration
2 processors	16 processors	255 nodes
4 GB/processor	512 GB main memory	127 TB main memory
144 GB internal storage capacity	473 TB internal storage capacity	58 PB internal storage capacity

Ordering information for HP Integrity NonStop NS-series servers

Part number	Description
Enclosure options	
M8001-16	HP Integrity NonStop Server 4-Processor Enclosure, which supports up to 8 GB of memory. This unit contains DIMM carrier for 16 DIMMs, fans for cooling, power supplies and distribution, I/O interfaces, memory reintegration logic, and front-panel control.
M8001-32	Integrity NonStop Server 4-Processor Enclosure, which supports up to 32 GB of memory. This unit contains DIMM carrier for 32 DIMMs, fans for cooling, power supplies and distribution, I/O interfaces, memory reintegration logic, and front-panel control.
Memory options	
M8010-4	4 GB memory quad for use in a duplex or triplex processor configuration. Each processor chassis is configured with 4 GB of memory, using 1 GB memory DIMMS. For use in M8001-16 Integrity NonStop server 4-processor chassis version.
M8010-8	8 GB memory quad for use in a duplex or triplex processor configuration. Each processor chassis is configured with 8 GB of memory, using 2 GB memory DIMMS. For use in M8001-16, Integrity NonStop server 4-processor chassis version. Can also be used in the M8001-32 chassis, allowing for future expansion.
M8010-16	16 GB memory quad for use in a duplex or triplex processor configuration. Each processor chassis is configured with 16 GB of memory, using two 8 GB memory quads (M8010-8 with 2 GB memory DIMMS). For use in M8001-32, Integrity NonStop server 4-processor chassis version.
Processor options	
M8030-162	Processor board containing two 1.6 GHz, Itanium 2 processors with 6 MB cache. Board can be used in all Integrity NonStop server processor enclosure versions.
M8030-164	Processor board containing four 1.6 GHz, Itanium 2 processors with 6 MB cache. Board can be used in all Integrity NonStop server processor enclosure versions.
Logical synchronization components	
M8100	Integrity NonStop LSU enclosure. Contains up to eight logical synchronization units (or voters), along with AC distribution via a mid-plane. There are eight slots, one for each LSU pair, corresponding to one logical processor, either DMR or TMR.
M8101	The LSU voter logic and optics are a mated pair, providing lockstepping logic for either DMR or TMR logical processors for the Integrity NonStop server.
Processor switch components	
M8155	The Integrity NonStop processor switch connects processor elements to LSUs, creating a logical processor that is either DMR or TMR. The processor switch comes standard with 2 MMF PICs (one PIC allocated to support up to four processors, and the other allocated as an I/O PIC that connects to an IOAME). The processor switch also comes with PICs to support the maintenance function and cross-link function. There are additional slots reserved to support up to 12 more processors and five more IOAMEs.
M8155MM	The quad MMF PIC can either be used to connect processor enclosures or IOAMEs. Each PIC has four inputs and plugs into the P-Switch.
M8155SM	The Dual SMF PIC is reserved for ServerNet clustering. It is used to interconnect with the ServerNet II protocol.

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For more information

For more information about HP Integrity NonStop NS16000 Servers, visit

www.hp.com/go/integritynonstop.

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www.hp.com/go/hpfinancialservices.

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