

HP NonStop S86000SE and NonStop S76SE servers

Data sheet



The HP NonStop S86000SE and NonStop S76SE are high-performance online transaction processing (OLTP) systems specially designed to meet the rigorous standards set for equipment used in telecommunications central office environments. They comply with Bellcore's Network Equipment Building Systems (NEBS) generic equipment requirements and can withstand extremes in operating conditions such as power outages, fluctuations in ambient temperatures, and earthquakes.

The NonStop S86000SE combines the fundamental advantages of the NonStop server architecture—scalability, reliability, and distributed processing—with features such as a rugged design, redundant power supplies, and a three-stage alarm interface. This combination ensures the highest possible availability

for your critical OLTP, messaging, and decision support applications. The NonStop S76SE server offers all the features and compatibility of the NonStop S86000SE, with the exception of scalability. The NonStop S76SE server is available only as a two-processor configuration. Expansion beyond two processors requires conversion to the NonStop S86000SE system.

As your business needs increase, you can easily expand the NonStop S86000SE server: A single server can be scaled from 2 to 16 processors, and as many as 4,000 processors can be linked in a worldwide network. Applications developed and deployed on other NonStop servers run on the NonStop S86000SE with little or no modification.

Both the high-end NonStop S86000SE server and the entry-level NonStop S76SE server maximize system availability in telecommunications central office environments.

Key features and benefits

- Scalable performance and bandwidth
- Continuous system availability
- Features for special environments
- Easy service and management
- Flexibility in configuration and expansion
- High-performance disk drives
- Wide range of networking and connectivity options

The NonStop S86000SE and S76SE servers are designed to meet the requirements of telecommunications central office environments but also are appropriate for other industries or applications that depend on exceptionally high system availability. They are ideal for use in geographic regions where power fluctuations, elevated temperatures, or earthquakes are common occurrences.

The NonStop S86000SE and S76SE servers provide peak performance for your largest applications, centralized or distributed, even under the most difficult operating conditions.

Scalable performance and bandwidth

At the heart of the NonStop S86000SE and S76SE servers is HP ServerNet architecture, a technology that provides high-performance interconnection among processors and I/O devices. This technology offers enormous growth potential, both in processing performance and system bandwidth, to handle the increasing demands of the most powerful online transaction processing, decision support, and electronic commerce applications.

Although ServerNet architecture can accelerate the performance of current applications, it is designed to support the next generation of data-intensive applications by efficiently moving extraordinary amounts of data within the NonStop S86000SE and S76SE systems.

Loosely coupled multiprocessor architecture

The processing performance of the NonStop S86000SE and S76SE servers is scaled in a linear fashion through a unique, loosely coupled multiprocessor architecture, which uses ServerNet technology to connect processors to each other and to I/O devices. This architecture alleviates performance bottlenecks caused by shared-resource conflicts.

Each processor has its own instruction unit, memory, memory access, cache, and router connections. The architecture delivers linear performance improvement for expanding applications. As each processor is added, a full processor's worth of performance is delivered to the application.

A separate copy of the operating system runs inside each NonStop processor. This distributed operating system eliminates the physical boundaries between processors by making it possible for each processor to access system resources in other processors. The processors operate independently but in a cooperative manner, with control of processes distributed throughout the server.

Point-to-point connections

Using high-speed, point-to-point data paths, I/O devices connect directly to processors, communications devices, and other I/O devices in the NonStop S86000SE and S76SE servers, allowing data transfer directly from one system resource to another without unnecessary transfers. This capability streamlines data transfers and frees processors for other important tasks.

With the addition of each ServerNet router, the aggregate system bandwidth grows. Optional disk and communications adapters, each connected via additional ServerNet routers, can be added cost-effectively to the NonStop S86000SE and S76SE servers. I/O capacity scales independently from processor scaling and allows virtually unlimited device connectivity.

Continuous system availability

The NonStop S86000SE and S76SE servers are designed to minimize both planned and unplanned downtime. The NonStop operating system detects, isolates, and recovers from component failures without affecting applications. No modifications to applications are required to enable this transparent recovery.

Fault-tolerant processor and memory architecture

The NonStop S86000SE and S76SE servers provide comprehensive fault detection and isolation and preserve data integrity. Self-checking processors and ServerNet routers use data replication and comparison logic to ensure that faults are detected and that faulty components are taken offline so that error propagation does not occur. ServerNet technology prevents adapters and controllers from corrupting memory and ensures that data and addresses are correctly transmitted.

Two CPUs with comparison logic and main memory reside on the processor multifunction (PMF) unit. PMF units have dual-ported access to the ServerNet adapters. Running in lockstep, the CPUs on PMF units execute the same instruction stream out of local cache. The output of each CPU is continuously compared to that of the other CPU. If the two CPUs disagree, the operating system immediately shuts down the processor, thus preventing any corruption of data. The operating system records the failure in the system event log, and sophisticated diagnostic software analyzes the problem.

Each PMF unit contains an error-correcting code (ECC) memory system that detects and corrects single-bit errors. If a double-bit error is detected, the operating system recognizes the hard memory failure and takes the failed PMF unit offline until memory can be replaced. The NonStop server continues running, without impact on applications, using a second PMF unit, which contains the backup process. In a NonStop S86000SE configured with two or more processors, backup processes can run in any PMF in the server. This allows the workload from a failed processor to be distributed across the other processors.

Comprehensive system interconnect architecture

ServerNet technology ensures fault tolerance by providing multiple paths to all elements of the NonStop S86000SE and S76SE servers.

All processors, I/O devices, and communications adapters are monitored by the service management subsystem, which can detect and isolate any failure within the server, allowing a failed component to be taken offline quickly, diagnosed, and replaced. If any component fails, data is routed via a different path to the same destination. Each processor has two independent paths to other processors or ServerNet adapters.

Data integrity is ensured by cyclic redundancy checking of packets (header, data, and address), which validates all data transferred between ServerNet adapters and memory. Access validation tables ensure that adapters do not contaminate memory. Command link integrity isolates single-bit errors on all high-speed data paths, and hardware protocol acknowledgments ensure end-to-end reliable data transfer.

Disk mirroring

The NonStop S86000SE and S76SE servers support disk mirroring to ensure continuous access to data stored on disks. If a disk drive fails, the server continues to operate using the mirrored copy. When the faulty disk is replaced, the mirrored data is copied to the new disk while the server remains online and operational. Reintegration of the repaired disk is performed online while the server remains operational.

Features for special environments

The NonStop S86000SE and S76SE servers are designed to continue working through earthquakes and elevated ambient temperatures. They meet the rigorous standards for equipment installed in telecommunications central office environments and are compatible with Bellcore's NEBS generic equipment requirements specification GR-63-CORE and with similar requirements of other telephone companies worldwide.

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As the most reliable, rugged servers available today, the NonStop S86000SE and S76SE are appropriate for any business that requires exceptionally high system availability. In addition to the fundamental advantages of NonStop servers, they offer the following special features.

Fault-tolerant DC power subsystem

The NonStop S86000SE and S76SE servers are designed to operate from dual fault-tolerant power inputs of nominal -48 volts DC. Dual universal power converters give the servers a full operational input power range of -40 volts DC to 60 volts DC.

Grounding and cabling

The NonStop S86000SE and S76SE servers can be installed with isolated grounding (per Bellcore's TR-NWT-000295 specification) for protection against lightning strikes or other conditions that could compromise the reliability of the network.

All external equipment cables are routed from the rear of the system cabinet and can be installed from either the top or the bottom of the cabinet, depending on your system environment.

Extended temperature range

An enhanced environmental monitoring subsystem allows the NonStop S86000SE and S76SE servers to operate at a maximum of 50 degrees Celsius (122 degrees Fahrenheit) for up to 96 hours, in the event of a loss of the ambient cooling system. This feature is especially valuable in geographic regions where unreliable AC input power causes temporary outages of the ambient cooling system.

Alarm subsystem

The NonStop S86000SE and S76SE servers have a three-stage alarm system that provides audible and visual notification of minor, major, and critical fault conditions. The servers are compatible with Bellcore's interface standards (specification TR-NWT-000474) for identifying hardware, software, and application malfunctions.

Seismic bracing

The NonStop S86000SE and S76SE servers are designed to withstand—and remain operational after—a severe earthquake, as specified in Bellcore's NEBS requirements for Seismic Zone 4. This rugged design is appropriate for any business-critical installation in any area that experiences frequent seismic activity, including the entire Pacific Rim region.

Fire-retardant materials

The NonStop S86000SE and S76SE are built with fire-retardant materials and have been shown by an independent laboratory to meet Bellcore's NEBS fire-resistance standards.

Support of the Signaling System 7 protocol

For intelligent network applications, HP provides several interfaces between the NonStop S86000SE and S76SE servers and Common Channel Signaling/Signaling System 7 (CCS/SS7) networks. The available interfaces for SS7 include channelized T1 and E1, IP (SS7 over standard 10-megabits-per-second Ethernet/M3UA), and unchannelized T1 high-speed links (SS7 over ATM/SAAL) via the Integrated Signaling Controller (ISC).

The interfaces implement the transport layers of the SS7 protocol, including the message transfer part (MTP) and the signaling connection control part (SCCP). They comply with several SS7 protocol standards, including the CCITT Blue Book, the European Telecommunications Standards Institute (ETSI), and the ANSI Issue 2 SS7 protocols.

Easy service and management

The management and service features of the NonStop S86000SE and S76SE servers maximize system availability and minimize operating costs. Special diagnostic and maintenance software automatically isolates faults, tests and restarts components, and reports any needed action. For ease of manageability, the NonStop S86000SE and S76SE include a toolset called TSM, which provides a graphical, object-oriented interface for maintenance and administration. This subsystem comprises the following components:

- TSM workstation, which provides a graphical, object-oriented interface for maintenance and administration
- TSM workstation applications, which perform basic operations and service tasks
- TSM open service applications, which run under the NonStop operating system
- Service processor, which works in conjunction with other subsystem components to perform operations and service functions

While providing sophisticated service management, TSM coexists with other operations management software provided by HP and with major third-party software products.

Service management subsystem

The TSM subsystem of the NonStop S86000SE and S76SE comprises hardware and software that begin maintenance and test functions as soon as the server is powered up. Monitoring conditions within the server, the service management subsystem detects and isolates failures, performs analysis, and allows recovery while the server continues running.

The service management subsystem logs events, notifies the system administrator of needed actions, and makes it possible to perform service action tasks.

If a component needs to be replaced, a NonStop server can be configured to dial out to the Global Customer Support Center, which will dispatch a replacement part. When a component is replaced, the service processor manages the reintegration process.

The service management subsystem includes software to test the hardware modules in the NonStop S86000SE and S76SE and to check and control the operating state of each module.

Online expansion and servicing with minimal training

System upgrades and servicing of the NonStop S86000SE and S76SE servers are quick and easy. With minimal training, a user can replace major system components—including system processing units, memory, ServerNet expansion boards, ServerNet adapters, disk drives, fans, and power supplies—without special tools and without disrupting application processing. User serviceability helps keep your maintenance costs low.

To meet your specific needs, HP offers a variety of service and support options. These programs are complemented by the features of the NonStop S86000SE and S76SE that support remote access for diagnostics and repair, which maximize system availability and minimize operating costs.

Efficient system monitoring and control

System management products from HP and its partners give flexibility and choice to tailor specific system management environments to specific business needs. Additionally, NonStop servers easily integrate into standards-based network management environments like HP OpenView.

Flexibility in configuration and expansion

NonStop S-series servers let you configure and expand the system to match the needs of your business. The NonStop S-series server family for the central office includes both high-end and entry-level servers.

The newest model of the high-end server line for central office environments is the NonStop S86000SE, which is based on the MIPS R14000 microprocessor. Earlier models include the NonStop S74000SE, which is based on the MIPS R12000 microprocessor.

The newest model of the entry-level server line is the NonStop S76SE server. This model is a two-processor configuration and is available only as a low-cost entry point for distributed applications that require continuous availability and data integrity but not scalability. If a NonStop S76SE server needs to be scaled to more than two processors, it will have to be converted to a NonStop S86000SE server, with the appropriate license fee changes applied.

As applications grow, systems with either of these servers can be expanded in increments of 2 processors at a time, up to 16 processors in a single node. To expand commercial high-end servers, you can attach up to 36 additional I/O enclosures, each supporting 16 internal disk drives and 4 dual-ported ServerNet adapters. If this capability is needed in your central office environment, contact your HP sales representative for assistance.

From their smallest to their largest single-node configuration, NonStop S-series servers offer an eightfold increase in performance. With the added capability to expand to multiple nodes, NonStop S-series servers offer scalability for your most critical applications.

A comprehensive set of capabilities is included with each processor. The NonStop S86000SE and S76SE server PMF units have a multifunction I/O board that includes the following components:

- ServerNet router. Provides connections between the two processors, the MSEBs in the system enclosure, and storage connections (such as the SCSI ports) within an I/O or system enclosure.
- Three SCSI ports. Includes one differential Ultra SCSI port for attaching external tape subsystems and two Ultra SCSI ports to control internal disk drives.
- Ethernet controller. Supports the system console.
- Service processor. Provides the hardware component of the server's maintenance and diagnostic functions.

NonStop S-series servers have a minimum of two PMF units with the following memory configurations:

- NonStop S76SE server. Accommodates 1 gigabyte or 4 gigabytes of main memory.
- NonStop S86000SE server. Accommodates 1 gigabyte, 2 gigabytes, 4 gigabytes, 8 gigabytes, or 16 gigabytes of main memory. Each processor in the server configuration can have a different memory size, to cost-effectively allow for varying application environments.

NonStop S-series servers provide a wide range of performance. From the entry-level NonStop S76SE server to the massively parallel NonStop S86000SE server, they offer the highest levels of scalability and connectivity in the industry. A single 16-processor node can support up to 18.4 terabytes of internal disk capacity. NonStop S-series servers can scale from 2 to more than 4,000 processors, providing virtually unlimited disk and I/O capacity. Each server appears as a single entity to applications and users, regardless of the physical distribution of the nodes. NonStop S-series servers can accommodate your largest critical business applications—centralized or distributed—at peak performance.

The NonStop S86000SE and S76SE servers—with a compact system design that minimizes floor space requirements—can operate in a noncomputer room environment. A four-processor NonStop S86000SE server containing up to 1.1 terabytes of disk storage fits into an industry-standard 19-inch rack occupying only 6 square feet.

For the S86000SE processors, the following restrictions apply:

1. You cannot mix NonStop S70000SE processors with S86000SE processors in the same node.
2. NonStop system with four or more NonStop S86000SE processors (including add-on processors) must have modular ServerNet expansion board (MSEB) units (6750M) installed in slots 51 and 52 of all system enclosures (groups 01–08). These MSEB units must also utilize either fiber or serial copper connections to adjacent system enclosures.

In addition, for S86000SE processors with 16 gigabytes of main memory, the following restrictions apply:

1. At least one 72-gigabyte disk volume must be present for RECEIVEDUMP; 20 gigabytes of available space is required on the 72-gigabyte disk volume.
2. It is recommended that between 1 to 2.5 times the physical memory size be allocated to swap space.

High-performance disk drives

HP offers two high-performance disk drives for the NonStop S86000SE and S76SE servers: the 18-gigabyte 4619 disk drive and the 72-gigabyte 4672 disk drive. The 18-gigabyte 4619 disk drive addresses the key requirements of the online transaction processing (OLTP) market segment: low price and high performance. The aim is to deploy multiple access arms (disk drives) cost-effectively to support massively parallel high-volume OLTP applications. The 4672 disk drive provides the

NonStop S-series servers can be configured with any combination of communications adapters without limitations.

highest capacity storage available on NonStop servers and should be configured when very large databases are required. The 4672 disk drive offers the best value in terms of low cost per megabyte of storage.

The 4619 disk drive makes significant contributions to OLTP and delivers higher performance than any previous NonStop system disk storage product, with its 15,000-rpm rotational speed and reduced seek times. Disk random I/O throughput performance on a NonStop S86000SE or an S76SE server can be as much as 25 percent greater than with any earlier 10,000-rpm NonStop system disk drive product, depending on the specific application.

Wide range of networking and connectivity options

NonStop S-series servers support open networking standards, including Parallel Library TCP/IP, IPX/SPX, NetBIOS, SNA, and OSI. They also support protocols that enable you to integrate a wide variety of standard and nonstandard devices into your information system.

Using a LAN-based communications architecture, NonStop S-series servers can be configured with the four-port ServerNet/4E adapter (3861 E4SA) for 10-megabits-per-second Ethernet LANs, the one-port ServerNet Fast Ethernet adapter (3863 FESA) for 10/100-megabits-per-second Ethernet LANs, the one-port ServerNet Gigabit Ethernet adapter (3865-C GESA-C for copper cabling, 3865-F GESA-F for multimode fiber cabling), or the one-port ServerNet ATM adapter (3860 ATM3SA) for 155-megabits-per-second Asynchronous Transfer Mode (ATM) networks, providing connection to a wide range of workstations, other servers, and/or wide area networks (WANs). These high-performance adapters are designed for the demands of peak-load, low-latency client/server use. To support more users, you can add adapters, one at a time or in pairs (for fault tolerance). NonStop S-series servers can be configured with any combination of communications adapters without limitations.

If desired, you can also use HP Expand software to connect NonStop S-series servers to other NonStop servers. The NonStop ServerNet Cluster product provides high-performance, low-latency connections between NonStop S-series servers. This is the best performing medium (that is, the physical layer on which data is transmitted) available for Expand connections.

There are also several ways to connect NonStop S-series servers to WANs, including via the ServerNet Wide Area Network (CO-SWAN) concentrator, which provides WAN client connectivity to servers that have Ethernet ports and appropriate communications software.

HP NonStop S86000SE and NonStop S76SE servers

Specifications

Physical dimensions

Weight

Processor cabinet (full ¹)	494 kg (1,090 lb)
With shipping package ²	522 kg (1,150 lb)
Peripheral cabinet (full ³)	216 kg (475 lb)
With shipping package ²	243 kg (535 lb)

Height 182.9 cm (72 in)

Width 61 cm (24 in)

Depth 91.4 cm (36 in)

Floor space requirements

Cabinet only	0.56 sq m (6 sq ft)
With service clearance	1.39 sq m (15 sq ft)
Front (appearance side)	76.2 cm (30 in) clearance
Rear (service side)	61 cm (24 in) clearance

Environment

Temperature

Normal operating	5° to 40° C (41° to 104° F)
Short-term (excludes tape operation)	-5° to 50° C (22° to 122° F)
Nonoperating	-40° to 70° C (-40° to 158° F)

Relative humidity

Operating	5% to 85%, noncondensing
Nonoperating	5% to 95%, noncondensing

Power dissipation

Processor cabinet (full ¹)	9,560 Btu/hr (2,800 W) per cabinet
Peripheral cabinet (full ³)	1,707 Btu/hr (500 W) per cabinet

Altitude

Maximum operating	4,000 m (13,123 ft)
Temperature derating factor	1° C per 305 m above 1,800 m (1.8° F per 1,000 ft above 5,900 ft)

Acoustic noise 67 dBA (maximum operation)

Earthquake safety Compatible with Bellcore Seismic Zone 4 upper-floor standards when bolted to a concrete floor. No ceiling or wall support is required.

System cabling Designed to accommodate top-down cabling using either cable grid work or cable trays installed on tops of cabinets. Design will also accommodate underfloor cabling system if cabinets are installed on a conventional computer room raised floor.

Installation features Can be installed on solid concrete floors, either bolted (in earthquake zones) or unbolted. Can also be installed on conventional computer room raised floors.

HP NonStop S86000SE and NonStop S76SE servers

Specifications *(continued)*

Environment *(continued)*

DC input voltage

Nominal value	-48 V DC
Operating range	-40.5 to -60 V DC
Operating current	60 A maximum at -48 V DC (processor cabinet ¹) 11 A maximum at -48 V DC (peripheral cabinet ³)

Circuit breaker rating (system)⁴

Processor cabinet	80-A magnetic circuit breaker with medium trip curve
Peripheral cabinet	50-A thermal circuit breaker with medium trip curve
Circuit breaker rating	100-A magnetic circuit breaker (customer) ⁵ with medium or slow trip curve 60-A magnetic circuit breaker with slow trip curve

Regulatory compliance

Safety UL1950, third edition, CSA950-M95, and EN 60950:1992 +A1 +A2 +A3:1993

Emissions and immunity FCC CFR47 Part 15, Subpart B (Class A verified), ICES-003, Digital Apparatus (Canada), CNS 13438 (Taiwan)
AS/NZS 3548, 1995 (Australia and New Zealand), VCCI V3/01.04 Annex 1, 2001 (Japan), EN55022/CISPR 22 (EU) EN55024 Immunity Standard

¹ Two enclosures with all slots filled.

² Includes unloading ramp.

³ Eight 3880SE CO-SWAN concentrators and a CO-DAT subsystem.

⁴ Electrical rating of protection provided by the system.

⁵ Electrical rating of recommended protection provided by the customer.

HP NonStop S86000SE and NonStop S76SE servers

Ordering information

Product ID	Product description
7184SE	Processor cabinet The cabinet can contain one or two 7190SE enclosures; includes a frame mounting installation kit.
7184SE-2	Telco two-processor cabinet The cabinet can contain one or two 7190SE enclosures; includes a frame mounting installation kit.
7190SE	NonStop S-series telco enclosure Mounted in a frame, the CO enclosure can contain a pair of processors, up to 16 disk drives, and I/O controllers. The enclosure includes the appropriate power-on cables.
7197SE	Alarm panel option One alarm panel option is needed per system.
1972-BSE	NonStop S86000SE processor CRU for telco This processor CRU includes 1 GB of main memory. The processor must be ordered in pairs. It includes applicable power cables.
1972-CSE	NonStop S86000SE processor CRU for telco This processor CRU includes 2 GB of main memory. The processor must be ordered in pairs. It includes applicable power cables.
1972-DSE	NonStop S86000SE processor CRU for telco This processor CRU includes 4 GB of main memory. The processor must be ordered in pairs. It includes applicable power cables.
1972-ESE	NonStop S86000SE processor CRU for telco This processor CRU includes 8 GB of main memory. The processor must be ordered in pairs. It includes applicable power cables.
1972-FSE	NonStop S86000SE processor CRU for telco This processor CRU includes 16 GB of main memory. The processor must be ordered in pairs. It includes applicable power cables.
1961-BSE	NonStop S76SE processor CRU for telco This processor CRU includes 1 GB of main memory. The processor must be ordered in pairs. It includes applicable power cables.
1961-DSE	NonStop S76SE processor CRU for telco This processor CRU includes 4 GB of main memory. The processor must be ordered in pairs. It includes applicable power cables.
7182SE	Telco isolating converter (TIC) ground isolation unit This option, which accompanies a processor, must be installed in pairs. The TIC ground isolation unit includes an applicable power cable.
718SHLF	TIC shelf The TIC shelf is required to hold TICs. One TIC shelf can be used per processor cabinet.
6723SN	Seismic mounting kit This option comprises four anchor bolts that secure a 7184SE, 7184SE-2, or 7196SE frame to a concrete floor. One kit should be ordered per frame.
CO-KITS	Caster kit This kit includes detachable wheels for moving cabinets. It is intended for use as a reusable tool by customer engineers.
7196SE	Peripheral frame The package includes power wiring for up to 8 CO-SWAN units and DAT tape drives, and a frame mounting installation kit.
3880SE	CO-SWAN Up to eight CO-SWAN units can be installed in a 7196SE. Ethernet connection cables must be ordered separately.
6EHUBSE-20	Ethernet crossover cable: 6 m (20 ft) long The cable provides a direct connection between 3861 ports and 3880SE CO-SWAN inputs. A pair of cables is required per CO-SWAN.

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Ordering information (*continued*)

Product ID	Product description
6EHUBSE-30	Ethernet crossover cable: 9 m (30 ft) long The cable provides a direct connection between 3861 ports and 3880SE CO-SWAN inputs. A pair of cables is required per CO-SWAN.
51422SE	CO-DAT with dual drives This package includes a pair of DAT drives in one rack-mounted unit. A pair of SCSI cables is required and must be ordered separately.
51421SE	CO-DAT with a single drive This package includes a DAT drive in one rack-mounted unit. A SCSI cable is required and must be ordered separately. The CO-DAT (with a single drive) cannot be upgraded to a dual drive.
4619	18-GB disk drive at 15,000 rpm
4672	72-GB disk drive at 15,000 rpm
3860	ATM3SA ATM OC-3 ServerNet adapter
3861	E4SA Ethernet ServerNet adapter, four ports at 10 Mb/s each
3863	FESA Ethernet ServerNet adapter, one port at 10/100 Mb/s
3865-C	GESA-C Ethernet ServerNet adapter CAT-5, one port at 10/100/1,000 Mb/s
3865-F	GESA-F Ethernet ServerNet adapter for multimode fiber, one port at 1,000 Mb/s
6763	CCSA SS7 Common Communications ServerNet adapter
SS7TE2	Channelized T1/E1 SS7 plug-in-card for 6763 CCSA This CCSA plug-in card provides SS7 connectivity via channelized T1 or E1 interface over Category 5 cables with RJ-48C connectors.
SS7TE3	SIGTRAN plug-in-card for 6763 CCSA This CCSA plug-in card provides SIGTRAN (SS7 over IP) connectivity via 10 Mb/s Ethernet.
J714IPGW	Integrated Signaling Controller (ISC) for SS7 via unchannelized T1 with two VIP cards The ISC provides SS7 over ATM high-speed links via unchannelized T1 conforming to the Telcordia GR-2878 standard HSL interface. This version includes two VIP cards.
J714IPGW3	Integrated Signaling Controller for SS7 via unchannelized T1 with three VIP cards The ISC provides SS7 over ATM high-speed links via unchannelized T1 conforming to the Telcordia GR-2878 standard HSL interface. This version includes three VIP cards.
SG10	ServerNet download code for the SS7TE, SS7TE1, and SS7TE2 CCSA plug-in cards
SG11	ServerNet download code for the SS7TE3 CCSA plug-in cards (includes support for SS7TE, SS7TE1, and SS7TE2 CCSA plug-in cards)
6750M	Modular ServerNet expansion board ServerNet II based expansion board, with interface options
6750M-C	ServerNet II copper interface card for 6750M

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Ordering information (*continued*)

Product ID	Product description
678-xxx	ServerNet cables Various cable lengths are required, from 2.5 m (8.2 ft) up to 25 m (82 ft), depending on the size of the system.
518-025W	SCSI cable, 7.6 m (25 ft) This cable connects a DAT tape drive to a 1951-4SE. One cable is required per drive. Longer cable lengths are available if required.
SWAC32	RS-232 cable This cable connects outputs of 3880SE CO-SWAN to user's equipment.
SWAC49	RS-449 cable This cable connects outputs of 3880SE CO-SWAN to user's equipment.
SWAC35	V.35 cable This cable connects outputs of 3880SE CO-SWAN to user's equipment.
SWAC21	X.21 cable This cable connects outputs of 3880SE CO-SWAN to user's equipment.
S7X-NSC4	System console This HP workstation system console requires an Ethernet hub to attach to the NonStop server.
SHUB-12	Ethernet hub This product is the worldwide version of a 12-port Ethernet hub, used to connect NonStop system consoles to NonStop S-series servers.
SMOD-USB	Modem This product is the worldwide version of a USB-connected modem for the NonStop system console. The modem is optionally used to dial out system log entries to the global customer support center.

For more information

To learn more about HP NonStop S86000SE and NonStop S76SE servers or other NonStop S-series servers from HP, contact any of our worldwide sales offices or visit www.hp.com/go/nonstop.

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