

H06.03 Release Version Update Compendium

Abstract

This compendium provides a summary for the products that have major changes in the H06.03 release version update (RVU), including the products' new features, migration issues, and fallback considerations. The compendium is written for system managers or anyone who needs to understand how migrating to H06.03 affects installation, configuration, operations, system management, maintenance, applications, networks, and databases.

Product Version

N.A.

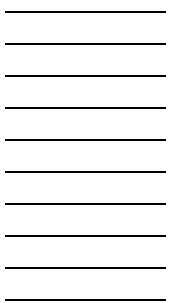
Supported Release Version Updates (RVUs)

This publication supports the H06.03 RVU only.

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H06.03 Release Version Update Compendium

Tables

- [What's New in This Manual](#) v
 - [Manual Information](#) v
 - [New and Changed Information](#) v
- [About This Manual](#) vii
 - [Who Should Use This Guide?](#) vii
 - [Organization](#) vii
 - [Related Manuals](#) vii

1. H06.03 Overview

- [NonStop Advanced Architecture](#) 1-1
- [Operational Differences Between Systems Running H-Series and G-Series](#) 1-2
- [Application Differences Between the H-Series and G-Series RVUs](#) 1-3
- [Networking Differences Between the H-Series and G-Series RVUs](#) 1-4
- [Major New Features for H06.03](#) 1-5
- [SUT-Based Products Migrating to H-Series](#) 1-7
- [SUT-Based Products Not Migrating to H-Series](#) 1-10
- [IPs Available at H06.03](#) 1-12
- [IPs Not Migrating to H-Series](#) 1-14
- [IPs That Become SUT Products on H-Series](#) 1-15
- [Preparation, Planning, and Migration](#) 1-15

2. Operating System

- [DCT Limits](#) 2-1
- [NonStop Operating System Software](#) 2-1
- [OSS Compiler Utilities](#) 2-2
- [Standard POSIX Threads](#) 2-2

3. Application Development Products

| | |
|---------------------------------------------|-----|
| AXCEL Binder, PCI, and APE | 3-1 |
| DLLs on TNS/E | 3-2 |
| NonStop CRE/RTL | 3-2 |
| TACL | 3-2 |
| TNS Object Code Accelerator | 3-3 |
| Migration | 3-4 |
| TNS Object Code Interpreter | 3-4 |
| TNS Compilers and Utilities | 3-4 |
| TNS/E Compilers and Linkers | 3-5 |
| TNS/E Platform Debuggers | 3-6 |
| Visual Inspect Version 3.0 | 3-6 |
| Native Inspect | 3-7 |
| Inspect | 3-7 |

4. Database and Transaction Processing Products

| | |
|---------------------------------|-----|
| DDL | 4-1 |
| FUP | 4-1 |
| NonStop ODBC/MX | 4-1 |
| NonStop RDF | 4-1 |
| Migration | 4-1 |
| NonStop SQL/MX | 4-2 |
| SMF | 4-2 |
| TMF | 4-2 |

5. Installation and Configuration Products

| | |
|-----------------------------------------------------|-----|
| CONFTEXT | 5-1 |
| DSM/SCM | 5-1 |
| Migration | 5-2 |
| Firmware Updates | 5-3 |
| Migration | 5-3 |
| Halted State Services Millicode | 5-4 |
| Maintenance Entity | 5-4 |
| Processor Switch Maintenance Entity | 5-4 |
| Maintenance Entity for IOAM | 5-4 |
| SCF | 5-4 |
| Standard Millicode | 5-5 |
| System Startup | 5-5 |

6. Manageability Products

- [KMSF](#) 6-1
- [MeasTCM](#) 6-1
- [Measure](#) 6-1
 - [Migration](#) 6-2
- [OSM](#) 6-2
- [PSTATE](#) 6-3
- [Safeguard](#) 6-3
- [TFDS](#) 6-4
- [WHOHAS](#) 6-4

7. Hardware Products

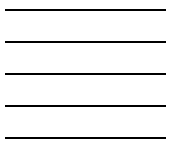
- [Integrity NonStop NS16000 Server](#) 7-1
- [Disk Drives](#) 7-1
- [Tape Storage](#) 7-2
- [Storage I/O Products](#) 7-2

8. Networking Products

- [QIO](#) 8-1
- [SANMAN and SNETMON](#) 8-1
 - [Migration](#) 8-1
- [Service Processor I/O Library](#) 8-2
- [TCP/IP, TCP/IPv6, and Socket Library](#) 8-2
- [TNet Services](#) 8-2

Tables

- [Table 1-1.](#) [Summary of the H06.03 RVU](#) 1-6



What's New in This Manual

Manual Information

Abstract

This compendium provides a summary for the products that have major changes in the H06.03 release version update (RVU), including the products' new features, migration issues, and fallback considerations. The compendium is written for system managers or anyone who needs to understand how migrating to H06.03 affects installation, configuration, operations, system management, maintenance, applications, networks, and databases.

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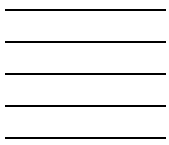
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New and Changed Information

This is a new manual.



About This Manual

This compendium provides categorized information for new features, migration issues, and fallback considerations for H06.03. It also includes references and sources for migration planning.

Who Should Use This Guide?

This compendium is written for system managers or anyone who needs to understand how migrating to H06.03 affects installation, configuration, operations, system management, maintenance, applications, networks, and databases.

Organization

| Section | Description |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Section 1, H06.03 Overview | An overview listing the products that have major changes |
| Section 2, Operating System Section 3, Application Development Products Section 4, Database and Transaction Processing Products Section 5, Installation and Configuration Products Section 6, Manageability Products Section 7, Hardware Products Section 8, Networking Products | Categorized product information that summarizes: <ul style="list-style-type: none">● New features● Migration issues (if available)● Fallback considerations (if available) |

Related Manuals

- *H06.03 Software Installation and Upgrade Guide*
Provides procedures for upgrading to the H06.03 RVU. Instructions include installing the H06.03 SUT and other related installation tasks.
- *H-Series Application Migration Guide*
Describes changes required to migrate a program from a G-series system to an H-series system.

- *NonStop NS-Series Planning Guide*

Describes the HP NonStop™ NS-series hardware and the ServerNet system area network (SAN) and how to plan and configure the site in preparation for installation of the system.

- *NonStop NS-Series Site Preparation Guide*

Provides the physical, electrical, and environmental specifications for use by HP professional service providers for site preparation, HP field support personnel, and by customer consultants, engineers, and contractors in the design and construction of the installation site for HP Integrity NonStop NS-series servers.

1 H06.03 Overview

This section provides an overview to the H06.03 RVU:

- [NonStop Advanced Architecture](#)
- [Operational Differences Between Systems Running H-Series and G-Series](#)
- [Application Differences Between the H-Series and G-Series RVUs](#)
- [Networking Differences Between the H-Series and G-Series RVUs](#)
- [Major New Features for H06.03](#)
- [SUT-Based Products Migrating to H-Series](#)
- [SUT-Based Products Not Migrating to H-Series](#)
- [IPs Available at H06.03](#)
- [IPs Not Migrating to H-Series](#)
- [IPs That Become SUT Products on H-Series](#)
- [Preparation, Planning, and Migration](#)

NonStop Advanced Architecture

HP Integrity NonStop NS-series systems employ a unique method for achieving fault tolerance in a symmetrical multiprocessor (SMP) environment: the modular NonStop advanced architecture (NSAA). NSAA utilizes standard Intel® Itanium® SMP microprocessors without cycle-by-cycle lock-stepping. Instead, two or three microprocessors run the same instruction stream concurrently in a loose lockstep process. In loose lockstep:

- Each microprocessor runs at its own clock rate.
- Results of each command execution are compared on processor output to the ServerNet fabric.
- Error recovery and minor indeterminate processing results from one microprocessor do not cause output comparison errors.

For details, see the *NonStop NS-Series Planning Guide*.

The H-series RVUs of the HP NonStop operating system run on the new Intel Itanium microprocessor that implements the Itanium architecture. H-series RVUs support Integrity NonStop NS-series servers and provide application-level binary compatibility and full data compatibility with all previous HP NonStop systems (except those applications that are converted to native MIPS RISC instructions or that contain calls to certain PRIV procedures, both of which must be recompiled). This new architecture creates major changes in compiling applications, in hardware, and in site preparation.

Operational Differences Between Systems Running H-Series and G-Series

H-series RVUs differ from G-series RVUs in these aspects:

- In power failures, H-series (TNS/E) systems provide no memory hold-up. Ride through is available only with a site uninterruptible power supply (UPS) or an in-cabinet UPS for all affected cabinets.
- TAPEBOOT is not supported on TNS/E systems. You cannot make a system image tape (SIT).
- On TNS/E systems, compilers and linkers have new names. Therefore, automated scripts require changing.
- The subvolume for public libraries is `SYSnn` in G-series RVUs. In H-series RVUs, it is `ZDLLnnn`.
- REPLACEBOOT applies only to TNS and TNS/R, not TNS/E.
- In G-series RVUs, the DSM/SCM installation default is not to manage HP NonStop Open System Services (OSS) files. In H-series RVUs, the default is Manage OSS Files.
- In H-series RVUs, the default maximum size for default Kernel-Managed Swap Facility (KMSF) files is 512 MB.
- In H-series RVUs, you must change automated debugging and dump mechanisms because of new debuggers and debugger commands.
- In H-series RVUs, the OSS environment does not support TNS execution. You must migrate OSS programs to TNS/E native mode to run on a TNS/E system.
- TSM does not support Integrity NonStop NS-series hardware. You must use the HP NonStop Open System Management (OSM) Interface to manage your Integrity NonStop NS-series system.
- In H-series, the processes for system and processor load are different. You can load a system or processor from either a Fibre Channel disk or a SCSI disk. The System Load dialog box in the OSM Low-Level Link, used for both system and processor load, has changed to present the new load options.

For more information, see [System Startup](#) on page 5-5 and:

- For initial system load (starting the server) and creating an alternate system disk, see the *NonStop NS-Series Hardware Installation Manual*.
- For subsequent starting and stopping (or powering on and off) of the system, see the *NonStop NS-Series Operations Guide*.
- For details on using the System Load dialog box in the OSM Low-Level Link and specifying alternate system disks in the OSM Service Connection, see the OSM online help.

- SIT Load and Tape Dump and not supported in the OSM Low-Level Link for H-series. Integrity NonStop NS-series processors must be loaded from disk, and processor dumps can be configured in HP Tandem Failure Data System (TFDS) or taken manually through TACL commands.
- The OSM Low-Level Link is updated to add a new System Load dialog box specifically for H-series. You can save up to four alternate system load configurations in the OSM Service Connection by using the Save as System Load Configuration action on SCSI and Fibre Channel disks.
- Both NonStop S-series and Integrity NonStop NS-series servers have the ability to continue to operate from a power source for some time after the main system power has been removed. In NonStop S-series systems, this power source consists of batteries internal to the enclosure, while in the more modular Integrity NonStop NS-series systems, it consists of a UPS to which various components are connected.

The actual time the operating system can wait before shutdown is calculated at the time of the power failure. In NonStop S-series systems, the operating system uses the smaller of the calculated time value and the `POWERFAIL_DELAY_TIME` value to determine how long it waits before starting to shut down system operations. In Integrity NonStop NS-series systems, the operating system uses the value that the operator specifies as the `POWERFAIL_DELAY_TIME` value.

For Integrity NonStop NS-series systems, you can specify the key word `RIDETHRUONLY` as a value for this attribute. `RIDETHRUONLY` allows the operating system to wait indefinitely.

Application Differences Between the H-Series and G-Series RVUs

Differences between H-series and G-series RVUs are due mainly to architectural differences between TNS/R and TNS/E hardware platforms. The Integrity NonStop NS-series system uses a different instruction set at the hardware level. Therefore, new compilers and tools have been designed to create application code files that execute on the TNS/E platform.

Differences in the G-series and H-series development environments include:

- TNS/R native object files cannot be executed on a TNS/E platform. All TNS/R native programs must be recompiled using a TNS/E native compiler.
- TNS/E native object files cannot be executed on a TNS/R platform.
- The H-series OSS environment does not support TNS execution. OSS programs must be migrated to TNS/E native mode to run on an H-series system.
- TNS/E native development tools (compilers, linkers, utilities) have new names, although their functionality is nearly identical.

- Different command-line and system-level debugging tools are provided in H-series RVUs.
- All H-series libraries supplied by HP are dynamic-link libraries (DLLs). Shared runtime libraries (SRLs) are not supported. H-series RVUs provide more extensive support for DLLs than G-series RVUs.
- All TNS/E native code is position-independent code (PIC).
- In the TNS/E environment, CEXTDECS files use the `int` data type for 32-bit values. In TNS and TNS/R environments, CEXTDECS uses the `long` data type for 32-bit values.
- As of H06.03, the TNS/E linker (ELD) does not have the LIBCOBEY feature of the TNS/R linker and, therefore, H-series build scripts must identify all libraries required for linking. The H06.03 SUT includes the LIBCTXT file, which performs a similar function for TNS/E linking. LIBCTXT and `libc.txt` contain a list of ELD linker directives that identify the equivalent set of C library TNS/E native code DLLs for TNS/E native mode C programs.

The HP Tandem Development Suite (TDS) is not available in H-series RVUs. (A PC-based development environment is provided by the HP Enterprise Toolkit—NonStop Edition (ETK), which is fully supported and enhanced in H-series.)

Both the G-series and the H-series RVUs support TNS execution modes (interpreted and accelerated) and native execution mode. Consequently, these migration paths are possible:

- TNS mode on a G-series system to TNS mode on a system running H-series
- TNS mode on a G-series system to native mode on an H-series system (TNS/E native mode)
- Native mode on a G-series system (TNS/R native mode) to native mode on an H-series system (TNS/E native mode)

For detailed descriptions of the migration paths for your applications, see the *H-Series Application Migration Guide*.

Networking Differences Between the H-Series and G-Series RVUs

The main difference between the NonStop S-series server and the Integrity NonStop server is that some of the networking technology of the NonStop S-series server has been ported to the Integrity NonStop server, but the hardware for it is accessible only by connecting to the NonStop S-series server I/O enclosure. In the Integrity NonStop server I/O adapter module enclosure (IOAM), only the Gigabit Ethernet 4-port ServerNet adapter (G4SA) is supported.

The G4SA is the only networking adapter that can be installed in an IOAM enclosure and is installed in slots 1 through 5. There are two IOAMs in an IOAM enclosure. Other

networking hardware products are still available by connecting an Integrity NonStop server by using fiber-optic ServerNet links from a processor-switch on an Integrity NonStop server to a NonStop S-series I/O enclosure that has IOMF2 components installed. ServerNet wide area network (SWAN) and Asynchronous wide area network (AWAN) use HP NonStop TCP/IP to connect to the Integrity NonStop server through the G4SA.

The other difference is that the KSeg2 memory space in the QIO subsystem is larger at 256 MB on the Integrity NonStop server than the 128 MB available on the NonStop S-series server. You can configure KSeg2 memory to enhance performance of the NonStop TCP/IP_{v6} product. For more information about configuring Kseg2, see the *TCP/IP_{v6} Configuration and Management Manual* and the *QIO Configuration and Management Manual*.

You can access most of the networking hardware of the NonStop S-series server from the Integrity NonStop server by connecting to a NonStop S-series I/O enclosure. Most of the networking software products available in G-series RVUs are also available in the H-series RVUs. For networking products available on the Integrity NonStop server, see the *Introduction to Networking for HP Integrity NonStop NS-Series Servers*.

Major New Features for H06.03

The H06.03 RVU is based on G06.25 functionality. NonStop S-series I/O is supported in H06.03. For G06.25 feature highlights, see the *G06.25 Release Version Update Compendium*.

These products or features are not supported in H06.03:

- TNS/R compilers and linkers, including:
 - Native PIC Object File Library (S7135)
 - ELF Headers DLL (S7146)
 - C++ Run-Time Library V2 (T0179)
 - SQL/MP Comp Agent (T0246)
 - SQL/MP for TNR/C (T0252)
 - LD Native PIC Linker (T0429)
 - C++ Standard Library, ISO 98 (T2767)
 - TOOLS.H++ Source 7.0 (T5893)
 - nld (T6017)
 - Standard Functions Run-Time Library (T7923)
 - NMC Migration Tool (T7935)
 - NMCOBOL (T8107)
 - NMCOBOL RTL (T8108)
 - NMCGEN (T8304)
 - Native CRE/RTL (T8431)
 - TNS/R C++ Compiler (T9225)
 - pTAL (T9248)
 - TNS/R C Compiler (T9577)
 - noft (T9626)

- HP NonStop IPX/SPX PTrace and SCF product modules

Note. NonStop IPX/SPX PTrace and SCF product modules are available on H-Series RVUs only for configuring and tracing the NonStop IPX/SPX product configured on a remote NonStop S-series system through the Expand interface. The NonStop IPX/SPX product is not included in H-series RVUs.

[Table 1-1](#) summarizes the main changes in H06.03.

Table 1-1. Summary of the H06.03 RVU (page 1 of 2)

| Sections and Categories | Major New Features | Migration Alerts | Fallback Alerts |
|-------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|--------------------------------------|
| Section 2, Operating System | <ul style="list-style-type: none"> ● DCT Limits ● NonStop Operating System Software ● OSS Compiler Utilities ● Standard POSIX Threads | | |
| Section 3, Application Development Products | <ul style="list-style-type: none"> ● AXCEL Binder, PCI, and APE ● DLLs on TNS/E ● NonStop CRE/RTL ● TACL ● TNS Object Code Accelerator ● TNS Object Code Interpreter ● TNS Compilers and Utilities ● TNS/E Compilers and Linkers ● TNS/E Platform Debuggers | <p style="text-align: center;">X</p> | <p style="text-align: center;">X</p> |
| Section 4, Database and Transaction Processing Products | <ul style="list-style-type: none"> ● DDL ● FUP ● NonStop ODBC/MX ● NonStop RDF ● NonStop SQL/MX ● SMF ● TMF | <p style="text-align: center;">X</p> | |

Table 1-1. Summary of the H06.03 RVU (page 2 of 2)

| Sections and Categories | Major New Features | Migration Alerts | Fallback Alerts |
|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------|
| Section 5, Installation and Configuration Products | <ul style="list-style-type: none"> ● CONFTEXT ● DSM/SCM ● Firmware Updates ● Halted State Services Millicode ● Maintenance Entity ● SCF ● Standard Millicode ● System Startup | <p>X</p> <p>X</p> | |
| Section 6, Manageability Products | <ul style="list-style-type: none"> ● KMSF ● MeasTCM ● Measure ● OSM ● PSTATE ● Safeguard ● TFDS ● WHOHAS | <p>X</p> | |
| Section 7, Hardware Products | <ul style="list-style-type: none"> ● Integrity NonStop NS16000 Server ● Disk Drives ● Tape Storage ● Storage I/O Products | | |
| Section 8, Networking Products | <ul style="list-style-type: none"> ● QIO ● SANMAN and SNETMON ● Service Processor I/O Library ● TCP/IP, TCP/IPv6, and Socket Library ● TNet Services | <p>X</p> | |

For descriptions of new features, see the appropriate sections.

SUT-Based Products Migrating to H-Series

- 6100 ADCCP
- 6100 ATP
- 6100 BSC Multi-Point Supervisor
- 6100 BSC Multi-Point Tributary
- 6100 BSC Point-to-Point
- 6100 Burroughs Multi-Point Supervisor-PDG

- 6100 Generalized Full-Duplex Protocol
- Add-On For MX Tables To SR90/91
- AM3270 Access Method
- ATM
- ATP6100 WANPRINT for S-series
- Backup/Restore
- BINDER
- C++ RTL V2 (native)
- COBOL Run-Time Library
- COBOL85 Compiler
- COBOL85 Run time
- CSS Point-to-Point Swift
- CSS610X/General (Japan only)
- DDL
- DP2
- DSAP/DCOM
- DSM/SCM
- DSM/TC Media Catalog
- EM3270 Access Method
- EMS
- EMS Analyzer
- EMS Faststart
- Enable
- Enform Optimizer
- Enform Plus
- Envoy
- EnvoyACP/XF
- ESS NonStop Software
- Exchange - Remote Job Entry
- Expand
- Expand Networking System
- Expand-over-ServerNet
- FastSort
- FORTRAN Run-Time Library
- FORTRAN/NonStop Systems
- FUP
- General Device Support Extended
- Gigabit Ethernet
- Guardian Performance Analyzer/GPA
- I18N Single & Multibyte Language SPT
- iTP WebServer
- IXF-Host Software
- MBCS utilities
- Measure
- Native C compiler
- Native C++ compiler
- Native COBOL compiler

- Native COBOL Run Time - S-series
- Native CRE/RTL - Common Run-Time Library (T8431)
- NetBatch
- NetBatch—Plus
- noft
- NonStop operating system bundle
- NonStop NET/MASTER
- NonStop SQL Datacompress
- NonStop SQL/MP
- NonStop SQL (MX Engine/Tables)
- NonStop SQL/MP Restricted Dev. Pkg
- NonStop SQL/PQ
- NonStop TS/MP base product
- Virtual Home Terminal
- NS DCE Cell Directory SRV(CDS)
- NS DCE Core Services (Export)
- NS DCE Core Services (USA only)
- NS DCE Security Server
- ODBC/MX
- OSS, Run-Time
- OSS, Development
- OSI/AS
- OSI/FTAM Stand-Alone Option
- OSI/MHS GPI for SD80
- OSI/MHS Switching Services
- OSI/TS
- OSM
- OSS
- OSS NFS
- OSS Native C Compiler
- OSS Native C++ Compiler
- OSS Remote Execution Server
- Pathmaker
- Pathway With TS/MP
- PCFormat
- Performance Management Bundle (Host)
- PS Text Edit
- Safeguard
- SCF
- SeeView
- SMF Storage Management Foundation
- SNAX End Node Bundle
- SNAX/APC
- SNAX/APN
- SNAX/APN Bundle
- SNAX/APN End Node
- SNAX/HIGH Level Support

- SNAX/XF
- SNMP Manager Services
- SPI
- Spooler Plus
- SS7 - 6763 CCSA operating software
- SS7 - 6763 CCSA operating software
- SWAN 2 software & tools
- TACL
- TAL
- Tandem Capacity Model-Host Component
- Tandem Capacity Model-PC Component
- Tandem CSC (becomes NonStop Tape Library Control Intf. in H-series)
- Tandem Performance Data Collector
- Tandem Reload Analyzer
- TCP/IP - Conventional
- TCP/IP LAN Print Spooler
- TCP/IPv6
- TELSERV
- TMF (T8697 ARLIB replaced by T2781 ARLIB2)
- TN6530S System License (Sun/3)
- Token Ring
- TR3271 Access Method
- ViewPoint
- ViewSys
- WAN Wizard Pro
- X.25 WAN Print Spooler
- X25AM X.25 Access Method
- X6530 Terminal Emulator
- XNS LAN Print Spooler

In addition, see [IPs That Become SUT Products on H-Series](#) on page 1-15.

SUT-Based Products Not Migrating to H-Series

These SUT-based products are not migrating to H-series:

- 6100 TINET Multi-Pt Supervisor-PDG (9078)
- 6100 UTS-40 Multi-Pt Supervisor (9503)
- 6100 UTS-40 Multi-Pt Tributary (9504)
- 6100 VIP Multi-Point Supervisor (9501)
- AM6520 Access Method (9063)
- Basic Operations Management package SA01
- C++ Run Time Library (Native) (T9227)
- C OSS (T8377)
- COBOL OSS Driver (T8498)
- CPREP OSS (T8378)
- CSSASYNC/READ Continuous (9074)
- Dataloader/MP (SE40) - SE41V1

- Distributed Name Service (DNS) (9635)
- DNS - Domain Name Server (T6021)
- DSM/SNAView (9644)
- ENFORM - replaced by Enform Plus
- ES Connect (SD44)
- Finder
- FOX Gateway
- Gxx Value Add SW Bundle (Alliance) Bundle (CSA996)
- Inventory Collector (IC)
- MIGSCF
- Multi-Access Methods & File Server (T9375)
- NonStop IPX/SPX (SD90)
- Novell LAN Print Spooler (SD91)
- NSDS Directory System Agent (DSA) (SD75)
- NSDS Directory User Agent (DUA) (SD76)
- NSDS Viewer (SD77)
- NSX
- OMF
- Optical Storage Subsystem Software (SF03)
- Optical Storage Facility Software (9123)
- OSF Software, 5410 (SF01)
- OSI/MHS Admin Utility Version 1.0 (SD84)
- OSI/MHS Core Switching Svcs Pkg (SD45)
- OSI/MHS Gateway Prog Interface (GPI) (SD47)
- OSI/MHS GPI for SD82 (SD83)
- OSI/MHS GPI Package (SD46)
- OSI/MHS Restricted Switching Serv (SD82)
- Pathway/TS (SA59)
- POET - Host (SJ32)
- POET - Windows Client (SJ33)
- PS MAIL 3270 (9132)
- PS MAIL-TTY (9130)
- SMB Fileserver (MLSRV) (SD93)
- SMB LAN Print Spooler (SD35)
- SNAX6600 (9068)
- SMTP - Transfer Gateway
- Spooler

Note. Spooler is included on H-series until all Spooler functionality is included in Spooler Plus. When that occurs, Spooler will no longer be available in later H-series RVUs.

- SWARC
- Tandem Data Build (SE06)
- Tandem DDE Gateway (SJ06)
- Tandem NBT Netbios for TCP (SD21)
- Tandem-NBX Netbios for IPX (SD92)
- TCP/IP Parallel Library - Replaced by TCP/IPv6
- Tandem ActionView.400 CAF/Alert (SD54)

- Tandem ActionView.400 Config Mgt (CMF) (SD52)
- Tandem ActionView.400 Sys Perf Mon (SPM) (SD53)
- Tandem ActionView.400 PC Client (SD43)
- TIM Kit for PC and compatible (SH80) - replaced by NonStop Technical Library
- TRANSFER (9160, SA60)
- TRANSFER 6530 PSMail (9131)
- TRANSFER/PS Mail
 - Danish Support (L111)
 - Dutch Support (L104)
 - Finnish Support (L110)
 - French Support (L105)
 - German Support (L103)
 - Hebrew Support (L115)
 - Norwegian Support (L112)
 - Spanish Support (L108)
 - Swedish Support (L109)
- TSM - replaced by OSM
- UNIX DWF (SB60A-D)
- X.400 Server Package (OSI/MHS) (SD49)

IPs Available at H06.03

These Independent Products (IPs) are available at H06.03:

- ASAP Application Extension (HSE31V2)
- ASAP CA TNG Adapter (HSE32V1)
- ASAP Core Software (HSE30V2)
- ASAP Hybrid Extension for Linux
- ASAP Hybrid for NS Server (HSE33V1)
- Atalla Resource Manager (ARM-H)
- Atalla Boxcar (ABXCR-1)
- Atalla Key Service Application (HKSA)
- Automatic Process Balancer (HSA33V1)
- BEA Weblogic 8.1 SP3 (HSE12V3)
- C/C++ TNS/E Native Cross-compiler (HSB13V1)
- COBOL TNS/E Cross-compiler (HSB11V1)
- Dataloader/MP (HSE41V1)
- Enhanced TN3270 Server (HSD07V1)
- epTAL Cross-compiler (HSB14V1)
- ETK - NonStop Edition (HSB93V3)
- FTPC32 (HSJ53V1)
- iTP Active Trans. Pgs 2.1 w/ XML Support (HSJ72V3)
- LLE for NonStop Tuxedo (R8.0) (HSR74V1)
- NonStop AutoSync (HSA46V1)
- NonStop AutoTMF (HSA45V1)
- NonStop JDBC Type 4 Driver
- NonStop JDBC Type 4 Driver (SJ82V1)

- NonStop ODBC Server Release 2 (HSJ08V1)
- NonStop Tuxedo (R8.0) (HSR71V1)
- NonStop Corba 2.6.1 (HSE65V3)
- NonStop dba/m 7.1 (HSM80V1)
- NonStop Server for Java 4.2 (HSJ96V4A)
- NonStop Server for Java Message Services (HSE53V1)
- NonStop Serverlets for Java Server Pages (HSJ88V3)
- OmniMessaging V4 (HYMOMvV)
- OpenView NonStop Server Management (HOV01V1)
- OpenView NonStop Server Performance Management (HOV02V1)
- Operations Management Bundle (HSA29V2)
- OSS Client for NonStop Tuxedo (R8.0) (HSR73V1)
- Pathway/XM (HSR57V2/HSR58V2)
- Pathway/XM Analyst (HSR79V1)
- Real Time Information Director (RTID) (HSR30V1, new product, available post H06.03)
- Performance Management Bundle Wkstn (HSA31V4)
- Performance Management/Data Browser (HSJ48V4)
- Performance Management/DiskPro (HSJ50V2)
- Performance Management/Insight (HSJ49V4)
- Performance Management/Open Data Base (HSJ47V4)
- Performance Manager/Pathway View (HSJ38V1)
- Pocket ViewPoint (HSJ71V1)
- RDF/IMPX (HSA44V1)
- RDF/ZLT (HSA88V1)
- RSC/MP Alliance Bundle (HSM39A)
- RSC/MP Demo (HOST and WIN32) (HSM69V1)
- RSC/MP for HP-UX(i) (HSM51V1)
- RSC/MP Host (Update 4 or later) (HSM58V1)
- RSC/MP HP UX Client (HSM63V1)
- RSC/MP IBM AIX Client (HSM64V1)
- RSC/MP SCO Client for Unixware Release 7 (HSM62V1)
- RSC/MP SUN Solaris Client (HSM65V1)
- RSC/MP WIN32 Client (HSM67V1)
- RSC/MP Windows Server TSE Client (HSM55V1)
- Silo Media Manager (HSF10V2), becomes Library Media Manager
- System Performance Analyzer (HSJ37V1)
- Visual Inspect (SB40V3)
- Web Viewpoint (HSJ70V5)
- Web Viewpoint Plug-in (HSJ69V1)
- WS OSS Client for NS Tuxedo (R8.0) (HSR73V1)

IPs Not Migrating to H-Series

These IPs are not migrating to H-Series:

- COBOL add-on for TDS (SB45Vn)
- iTP Secure WebServer (Domestic, 48-bit encryption)
- NonStop CORBA 2.3 (SE65V1/SE66V1)
- NonStop CORBA 2.6 (SE65V2/SE66V2)
- NonStop DOM 2.0 Runtime & SDK (SE61Vn, SE60vn)
- NonStop Enterprise Application Server (SE70Vn, SE71Vn, SE72Vn, SE73Vn, SE74Vn, SE75Vn)
- NonStop JDBC (SJ87V1)
- NonStop JORB 2.0 Runtime & SDK (SE64Vn, SE62Vn)
- NonStop Server for Java 4 (SE96V4)
- NonStop Server Toolkit for WLS 7.0 SP1 & 8.1 SP2 (SE12Vn)
- NonStop SOAP for Java
- NonStop TUXEDO 6.5 V3 Administrator (SN42Vn)
- NonStop TUXEDO 6.5 V3 LLE (SN43Vn, SN44Vn)
- NonStop TUXEDO 6.5 V3 Host Connect (SN45Vn)
- NonStop TUXEDO 6.5 V3 WS OSS Client (SN49Vn)
- NonStop TUXEDO 6.5 V3 (SR62Vn, SR63Vn)
- pTAL Compiler for TDS V2 (SB44Vn)
- SequeLink for NonStop SQL/MX (A replacement product for this product will be available post H06.03)
- Tandem Development Suite (SB43V2)
- Tape Media Manager - Veritas Netbackup (SF17V1)

These IPs are not migrating to H-Series and have no successor products:

- DAL Data Access Lang Server (SJ02Vn)
- Internet shopping software (SJ97Vn)
- JOLT for NonStop TUXEDO 6.5 (SR64Vn)
- NonStop JTS/OTS (SE63V1)
- RSC/MP 16-bit Windows Client (SM68Vn)
- RSC/MP Integrity Unix (S4000) Client (SM60Vn)
- RSC/MP Lite (SM59Vn)
- RSC/MP NCR Client (SM61Vn)
- RSC/MP OS/2 32-bit Client (SM66Vn)
- RSC/MP TRU64 Client (SM56Vn)
- ServerNet Nomadic Disk Manager (SD01V1)
- SNAX/CPI-C (SD39V1)

IPs That Become SUT Products on H-Series

These products, which are IPs on G-series RVUs (and will remain IPs on G-series), become SUT-based products on H-series RVUs:

| Product Name | G-series Product ID | T-Numbers |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| iTP Secure WebServer, Strong, Domestic, 128 Bit | SJ98V5 becomes HSJ98 | <ul style="list-style-type: none"> ● T7951 ● T8997 |
| iTP Secure Webserver, Strong International, 128 Bit | SJ95V6 becomes HSJ95 | <ul style="list-style-type: none"> ● T7951 ● T8997 |
| HP NonStop Pathway/iTS with HP NonStop TS/MP* | SR76V1 | <ul style="list-style-type: none"> ● T0524 ● T0526 ● T0527 ● T0528 ● T0529 ● T0570 ● T0577 |
| NonStop XML Parser | SX20V5 | <ul style="list-style-type: none"> ● T0535 (not moving to H-series) ● T0563 |
| HP NonStop Simple Object Access Protocol (SOAP) | SX21V3 becomes HSX21 | <ul style="list-style-type: none"> ● T0535 (not moving to H-series) ● T0563 ● T0601 ● T0603 ● T1100 (not moving to H-series) |
| NonStop XSLT Translator | SX22V2 | <ul style="list-style-type: none"> ● T0592 (not moving to H-series) ● T0601 |
| NonStop SOAP Client | SX24V1 | <ul style="list-style-type: none"> ● T0624 |
| NonStop Fast XML Parser | SX25V1 | <ul style="list-style-type: none"> ● T0625 |
| <p>* NonStop Pathway/iTS with TS/MP (SR76V1) in S-series becomes NonStop Pathway with TS/MP in NS-series. It includes iTS Gateway (T0524), SCOBOL Java Package (T0526), iTS Connection Router (T0527), iTS SCOBOL (T0528), iTS Client Object Manager (T0529), XML4Pathway/iTS (T0570), Pathway iTS License (T0577), TS/MP License (T5812, already on the SUT), and Pathway/TS License (T5813, already on the SUT).</p> | | |

Preparation, Planning, and Migration

Before you begin migrating applications, contact your HP representative to analyze your applications and identify specific modules and program components that require changes for migration to a TNS/E system.

For the physical, electrical, and environmental specifications used by HP professional service providers for site preparation, see the *NonStop NS-Series Site Preparation Guide* in the HP NonStop Technical Library (NTL).

For descriptions of Integrity NonStop NS-series hardware and the ServerNet SAN and how to plan and configure the site in preparation for installation of the system, see the *NonStop NS-Series Planning Guide*.

For changes in H-series installation, see the *H06.03 Software Installation and Upgrade Guide*.

Also, for the changes that are required to migrate a program from a G-series system to an H-series system, see the *H-Series Application Migration Guide*, which covers these migration paths:

- Migrating G-series TNS programs to the TNS environment on an H-series system
- Migrating G-series (TNS/R) native programs to the TNS/E native environment on an H-series system

2 Operating System

The H06.03 RVU contains these operating system changes:

- [DCT Limits](#)
- [NonStop Operating System Software](#)
- [OSS Compiler Utilities](#)
- [Standard POSIX Threads](#)

DCT Limits

In H-series RVUs, the default limit on the number of entries in the destination control table (DCT) is 65,536. The default limit in G-series RVUs remains 32,767.

For information on how to determine whether an application requires changes to function correctly when presented with a DCT index that exceeds the limit, see Support Note S03123A.

NonStop Operating System Software

Major areas of change in the NonStop operating system (T9050) include:

- Process control
- Debug services
- Interrupt environment
- Signals and traps
- Initialization
- G-threads and history APIs
- Memory management changes to adapt to the memory architecture of the TNS/E system and Itanium processors
- Support for dynamic-link library (DLL)
- Message system

New products:

- NonStop OS Disk/Tape Boots (T2773)
- OS Builder (T0431)

These products also have changes:

- NonStop OS Utilities (T9070), reload and memory dump
- Integrity NonStop NS-series servers header files
- NonStop OS (T9050), Configuration Services (T6586), and Maintenance IOP (T8171) now support the processor switch maintenance entity.

- TAPEBOOT is not supported on the TNS/E platform.

OSS Compiler Utilities

The OSS compiler utilities, `ar`, `nm`, `strings`, and `strip`, are enhanced to provide support for the TNS/E environment. There is no change in the command-line options, and each utility internally identifies the object type passed to it and creates an archive file in the corresponding format.

Standard POSIX Threads

The Standard POSIX Threads product delivers a DLL with the TNS/E platform. Also, TNS/E C++ Standard POSIX Threads applications that use exceptions no longer need to bind with `sptcpp.o`.

Application Development Products

The H06.03 RVU contains new features for these application development products:

- [AXCEL Binder, PCI, and APE](#)
- [DLLs on TNS/E](#)
- [NonStop CRE/RTL](#)
- [TACL](#)
- [TNS Object Code Accelerator](#)
- [TNS Object Code Interpreter](#)
- [TNS Compilers and Utilities](#)
- [TNS/E Compilers and Linkers](#)
- [TNS/E Platform Debuggers](#)
 - [Visual Inspect Version 3.0](#)
 - [Native Inspect](#)
 - [Inspect](#)

AXCEL Binder, PCI, and APE

AXCEL (T9276), Binder (T9621), PCI (S7001), and Accelerated Program Examiner (APE, T9292) are modified to accept the TNS object file that has an Itanium instruction region augmenting it as an input file.

Enhancements to AXCEL are:

- Accelerates a TNS object file that has an Itanium instruction region augmented to it by the Object Code Accelerator (OCA). AXCEL retains the Itanium instruction region, if present in a TNS object file.
- Dynamically evaluates the secondary extent size of an object file to enable proper accommodation of the Itanium instruction region in the file if the object code is accelerated later.

Enhancements to Binder are:

- Ignores the Itanium instruction region if present in TNS object files as it does for the Accelerator region.
- Strips the Itanium instruction region from TNS object files if present in the same way it does the Accelerator region by the STRIP command.
- Shows changes and sets the attributes of the Itanium instruction region in the same way it does for the Accelerator region.

Changes to Binder commands include:

- The CHANGE command is updated to allow the TNS/E flag to be set and reset.

- A new CHANGE command option, MISALIGN, is added for setting and viewing a new TNS program attribute in existing or newly created programs.
- The SHOW INFO..FROM command is updated to show the state of the TNS/E flag.
- A new SHOW command option, MISALIGN, is added for setting and viewing a new TNS program attribute in existing or newly created programs.
- The SHOW SET..FROM command is updated to show the state of the TNS/E flag.
- A new SET command option, MISALIGN, is added for setting and viewing a new TNS program attribute in existing or newly created programs.
- The SET command is updated to show the state of the TNS/E flag.

APE displays source and object code in accelerated files. APE is updated to display the new object file header structure.

DLLs on TNS/E

On the TNS/E platform, TNS/R public shared run-time libraries (SRLs) are replaced by public DLLs. Support is added for the installation of public DLLs other than those supplied by HP.

The Public Library Installation Tool (PLINSTL - T2812) provides functionality for managing public DLLs on TNS/E similar to that provided by NSKCOM, LTILT, and VTILT on the TNS/R platform.

DSM/SCM manages and controls the distribution, installation, and activation of public DLLs on TNS/E similar to the way DSM/SCM handles public SRLs on TNS/R, but uses the public-library installation tool instead of NSKCOM.

Unlike NSKCOM, the Public Library Installation Tool does not read input from an IN file or an OBEY command file. Information comes from command-line parameters or public DLL registry files.

NonStop CRE/RTL

On G-series, you can use either the NSK CRE/RTL (T1269) heap manager module or the Native CRE/RTL (T8431) heap manager module (the default). On systems running H-series, only the NSK CRE/RTL heap manager module is available.

TACL

- TACL is enhanced to support file code 800, the file code for TNS/E object files.
- New TOSVERSION value.
- COPYDUMP is not supported on H-series systems.

- New versions of RCVDUMP and RELOAD.

The RCVDUMP program (super-group or super ID only) has two new parameters for H-series systems only, SLICE <sliceId> and PARALLEL.

- The <sliceId> parameter indicates the NonStop Blade Element containing the processor element (PE) that has to be dumped.

Note. In software interfaces and messages, you might see:

- The term *slice*, which is equivalent to the term *NonStop Blade Element (NSBE)*. In a future RVU, *slice* will be replaced with *NonStop Blade Element*, *Blade Element*, or *NSBE*.
 - The term *processor complex*, which is equivalent to the term *NonStop Blade Complex (NSBC)*. In a future RVU, *processor complex* will be replaced with *NonStop Blade Complex*, *Blade Complex*, or *NSBC*.
-

- The PARALLEL option specifies that the dump is asymmetric (one PE is dumped while the other PEs in that logical processor continue normal operations).

RELOAD has a new option (for H-series systems only) called OMITSLICE. The RELOAD program (super-group only) now also includes the option NOPRIME, which is supported on both G-series and H-series systems.

For RCVDUMP and RELOAD syntax summaries, see Appendix A of the *TACL Reference Manual*.

For new RCVDUMP and RELOAD error messages, see Appendix B of the *TACL Reference Manual*.

- These TACL built-in functions have been updated:
 - #NEWPROCESS allows 800 coded (TNS/E) file to run.
 - #FILEINFO gives information for 800 coded (TNS/E) file.
 - #DEVICEINFO built-in function mapping has been changed to FILE_GETINFOLISTBYNAME_.

TNS Object Code Accelerator

The TNS Object Code Accelerator (OCA, T0448) is a program optimization tool that processes a TNS object file and produces an accelerated file for a TNS/E system. OCA enables you to run and improve the performance of programs that run on TNS/E systems. The OCA optimizes TNS program files (compiled and bound object files) to take advantage of TNS/E architecture.

Migration

You must preprocess the TNS programs by using OCA before running them on a TNS/E system.

TNS Object Code Interpreter

The TNS Object Code Interpreter (OCI, T0564) processes a TNS object file and emulates TNS instructions on a TNS/E system without preprocessing the object file.

TNS Compilers and Utilities

TNS compilers and utilities are available only for the Guardian environment. They are not available for the OSS environment.

The TNS compilers and utilities include:

- C/C++
 - C Compiler - OSS (T8377)
 - C PREP - OSS (T8378)
 - C Compiler (T9255)
 - CFRONT (T9541)
 - C PREP (T9542)
 - C Run-Time Library (T8373)
- COBOL85
 - COBOL85 (T9257)
 - COBOL85 RTL (T9267)
 - COBOL OSS Driver (T8498)
- TAL
 - TAL (T9250)
 - TAL Checker (T0450)
 - TAL Syntax Checker (T0427)
- CISC Compiler Backend - CSG (S7002)
- SCA Broker/Server - SQL Comp Agent (T0246)
- Utilities
 - EDIT (T9601)
 - TFORM (T9605)
 - TEDIT (T9606)
- FORTRAN
 - FORTRAN (T9252)
 - FORTRAN RTL (T9262)

TNS/E Compilers and Linkers

These products provide TNS/E targeted compilation, linking, and libraries for C, C++, pTAL, and COBOL:

| T Number | Product |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| T0356* | TNS/E COBOL |
| T0357* | TNS/E COBOL Run-Time Library |
| T0608* | e1d (TNS/E native linker that links one or more native object files to produce executable or linkable native object file. Modifies process attributes and strips nonessential information.) |
| T0549* | TNS/E C/C++ Compiler |
| T8164 | Native C89 Utility |
| T0561* | TNS/E PTAL Compiler |
| T2823* | enoft (The TNS/E version of noft, enoft provides a functional superset of noft capabilities for TNS/E object files.) |
| T2830 | C++ Common Headers |
| T2831* | C++ Common DLL |
| T2832* | C++ Version 2 RTL DLL |
| T2833* | C++ Version 3 DLL |
| T2834 | Tools.H++ V7 Headers |
| T2835 | Tools.H++ 7.0 DLL |
| T8473 | Tools.H++ Library |
| T8432 | Native C RTL |
| T9661 | MC Run-Time Library |
| T1269 | NSK CRE/RTL |
| T8645 | Standard Headers |
| T9003 | EXTDECS |
| T9229 | Native RT Kernel |
| T0248 | XDR Streams |
| * Products new in H-series | |

TNS/E Platform Debuggers

The TNS/E platform supports three debuggers:

- [Visual Inspect Version 3.0](#)
- [Native Inspect](#)
- [Inspect](#)

Visual Inspect Version 3.0

- Provides a graphical user interface on a Microsoft Windows platform
- Supports all debugging targets on the TNS/E platform (TNS, TNS/E, and all snapshot files)
- Supports all programming languages on the TNS/E platform (C/C++, TAL, pTAL, COBOL85, and TNS/E COBOL)

Note. At H06.03, TNS/E COBOL is supported only by Visual Inspect, not by the other two debuggers.

- New features for the TNS/E platform:
 - Display of SPI and EMS buffers
 - Support for unsigned long long data type and for 64-bit pointers
 - Enhanced ability to initiate and control privileged debugging sessions
 - Viewing instructions
 - Annotation of instructions that were moved during optimization
 - Stepping program execution by instructions
 - Setting instruction breakpoints
 - Setting conditional data breakpoints
 - Creating a Watch item from a register display
 - Creating a Watch item from an address in memory
 - Displaying, formatting, and modifying the contents of memory at an arbitrary address
 - Ability to specify the DLLs that are to be loaded with symbols
 - Support for displaying non-ASCII characters, including extended ASCII and Unicode, in source text and string values
 - Switching between Native Inspect and Visual Inspect while preserving debugging state information

- Client/server compatibility for 2.4 clients interoperating with T9756H01 servers and for 3.0 clients with older servers

Migration

If you use Visual Inspect, you must continue to restart the Inspect Monitor process (\$IMON) every time you restart the NonStop system.

Native Inspect

- Provides new command-line symbolic debugger based on open-source GDB and HP-UX WDB debuggers
- Has command syntax similar to that of GDB-based debuggers, but markedly different from that of Inspect or Debug
- Replaces Debug as the system debugger
- Can be used to debug TNS/E native processes
- Supports analysis of snapshot files
- Provides scripting capability with the Tool Command Language (TCL)

Inspect

- Familiar command interface is unchanged from previous platforms
- Can be used to debug emulated TNS processes and snapshots on the TNS/E platform
- Can be used to debug Screen COBOL processes on the TNS/E platform
- Cannot be used to debug TNS/E native processes or snapshots

4

Database and Transaction Processing Products

The H06.03 RVU contains new features for these database and transaction processing products:

- [DDL](#)
- [FUP](#)
- [NonStop ODBC/MX](#)
- [NonStop RDF](#)
- [NonStop SQL/MX](#)
- [SMF](#)
- [TMF](#)

DDL

Data Definition Language (DDL) has been enhanced to have a new data type, binary 64 unsigned, which produces `unsigned long long` data types that are supported by the TNS/E C compiler.

FUP

The File Utility Program (FUP) has been enhanced. FUP commands `LICENSE` and `REVOKE` now support file code 800, the file code for TNS/E object files.

NonStop ODBC/MX

There are no functional changes between the G-series and H-series product version of HP NonStop ODBC/MX and NSM/web. Any NonStop S-series system running ODBC/MX must be on G06.23 or a later RVU. It is strongly recommended that systems be running ODBC/MX Release 2.0 before upgrading to H06.03.

NonStop RDF

Migration

The version of the HP NonStop Remote Database Facility (RDF, T0346) on H06.03 is compatible only with the ABB and later SPRs of RDF on S-series systems. See the T0346 softdoc for details.

NonStop SQL/MX

There are no functional changes between the G-series and H-series product version of HP NonStop SQL/MX Release 2.0. For installation and programming considerations, see the *SQL Supplement for H-Series RVUs*. Note that SQL/MX on systems running H-series is based on SQL/MX Release 2.0 with ABA SPRs. Interoperability between systems running G-series and those running H-series is not supported by SQL/MX on H06.03.

SMF

SMF source code uses a target system toggle, `_TNS_R_TARGET`. Changes have been made to include a TNS/E target system.

TMF

The H06.03 RVU contains the product version of the HP NonStop Transaction Management Facility (TMF) that shipped with the G06.25 RVUs. There are no new functions in this release of TMF.

The products T8697 (previous version of ARLIB) and T8923 (TIFSERVE) are not included as part of H-series RVUs. T8697 is being replaced by T2781 (ARLIB2).

5

Installation and Configuration Products

The H06.03 RVU contains new features for these installation and configuration products:

- [CONFTEXT](#)
- [DSM/SCM](#)
- [Firmware Updates](#)
- [Halted State Services Millicode](#)
- [Maintenance Entity](#)
- [SCF](#)
- [Standard Millicode](#)
- [System Startup](#)

CONFTEXT

There are changes in the CONFTEXT file, used by DSM/SCM, to support the new DLLs for systems running H-series:

- New processor type

A new value is needed for the hardware processor type:

```
SYSTEM_PROCESSOR_TYPE NSE-A;
```

For information on changing the processor type, see the *H06.03 Software Installation and Upgrade Guide*.

- New entries

These entries are needed for implicit DLLs:

- `SYSTEM_IMPLICIT_INIT_FILES TANDEM^IMPLICIT^INIT^FILES;`
- `SYSTEM_IMPLICIT_CORE_FILES TANDEM^IMPLICIT^CORE^FILES;`
- `SYSTEM_IMPLICIT_FS_FILES TANDEM^IMPLICIT^FS^FILES;`
- `SYSTEM_IMPLICIT_MCP_FILES TANDEM^IMPLICIT^MCP^FILES;`
- `SYSTEM_IMPLICIT_ETC_FILES TANDEM^IMPLICIT^ETC^FILES;`

This entry is not needed in the CONFTEXT file:

- `FILES_TO_COPY_TO_NEW_SYSTEM TANDEM^FILES^TO^COPY;`

DSM/SCM

The DSM/SCM H01 product version update (PVU) is supported for Integrity NonStop NS-series systems only. A new type of system, TNS/E, for Integrity NonStop NS-series systems has been added to the planner interface screens.

By default, DSM/SCM H01 PVU is configured to manage OSS files. If you do not have OSS configured and running, you must change the configuration so that OSS files are not managed. If DSM/SCM is set to manage OSS files but OSS is not running, the Apply stops in a restartable state.

CNFGINFO now supports new system generation options for DLLs. Creating a system image tape (SIT) is not supported.

The G01/H01 product version of the Planner Interface (client) is backward compatible with NonStop S-series DSM/SCM hosts. However, after TNS/E targets have been set up and managed by a DSM/SCM host running this product version of DSM/SCM, previous product versions of the Planner Interface become incompatible with that host.

In addition, this version of DSM/SCM contains these enhancements that are part of the G06.25 RVU:

- DSM/SCM now enables you to retain non-SUT products (including Independent Products and third-party products) by listing them in a dialog box so that they can be selected and retained in the product version list (PVL) along with the new software. You can select non-SUT products while a "Copy To" of a SUT is performed from the Input Software Archive to New Revision. All selected products are retained in the new revision. For examples and details, see the *DSM/SCM User's Guide*.
- DSM/SCM now supports Safeguard aliases, allowing a Safeguard alias to log on to its interfaces (including the Planner Interface and Maintenance Interfaces). Previously, only Guardian user IDs could be used to log on to DSM/SCM interfaces.

The new version of DSM/SCM uses four new tables (two Host and two Target tables) to store the Planner, DB Admin, and Operator security information. These new tables are created when you install the new version of DSM/SCM even if you do not use the new feature. There is also a change in the way the user ID is displayed in the logon screen of the Planner Interface and CNFGINFO. The user ID no longer always appears in uppercase letters. Instead, it appears in the format in which the user enters it.

Migration

- Check that the Manage OSS Files option box is set correctly for each logical target. For TNS/E host systems, after INITENV, for the initial DEFAULT target, the Maintain>Target Maintenance>Modify display in the Planner Interface displays the Manage OSS Files option selected. If the target system is not to use OSS, you must clear the option check box before beginning a Build request. If the option is selected, OSS is included by the Build request. However, because OSS is not running on the target, the Apply stops in a restartable state and displays EMS message 5012.

- To manage an H-series target from a G-series host system, you must install the G01/H01 client version and then install the T6031AAP DSM/SCM SPR on the G-series system.
- You must also install the latest SWID PVU at the same time.
- The latest DSM/SCM client version is available only on the SUT unless you have ordered new system consoles.

For details, see the *DSM/SCM User's Guide* and the *H06.03 Software Installation and Upgrade Guide*.

Firmware Updates

Migration

- Guided procedures for processor firmware update

Similar to G-series firmware updates, you must update firmware before performing a system load on the H-series. In the OSM Service Connection, use the Firmware Update action, located under the Processor Complex action, to launch a guided procedure to update the halted-state services (HSS) firmware, which includes HSS proper, Primitive state code (pState), SCSI firmware, and bootstrap. Attributes under the Slice Firmware object indicates whether the firmware on each Blade Element is downrev and must be updated:

- PAL and SAL firmware
- Primitive state firmware
- Halted-state services firmware
- Disk boot firmware
- ISP 1040 firmware (controller firmware for legacy I/O)
- Baseboard management controller firmware

For more information on using OSM to update firmware, see the guided procedure online help and the *H06.03 Software Installation and Upgrade Guide*.

Note. In software interfaces and messages, you might see:

- The term *slice*, which is equivalent to the term *NonStop Blade Element (NSBE)*. In a future RVU, *slice* will be replaced with *NonStop Blade Element*, *Blade Element*, or *NSBE*.
 - The term *processor complex*, which is equivalent to the term *NonStop Blade Complex (NSBC)*. In a future RVU, *processor complex* will be replaced with *NonStop Blade Complex*, *Blade Complex*, or *NSBC*.
-

- G4SA and FCSA firmware

Before connecting a G-series system to an H-series system, you must first update the firmware for both the G-series G4SA and FCSA. Firmware for both the G4SA and FCSA adapters used for G-series systems is not initially compatible with

H-series systems. For firmware details, see the *H06.03 Software Installation and Upgrade Guide*.

Halted State Services Millicode

The halted-state services (HSS) millicode (T0287) on the Integrity NonStop NS-series system replaces the NonStop S-series processor boot millicode. It provides low-level exception handling, support for NonStop system boot, processor reload, interfaces for debugging a down processor using the processor-switch maintenance entity, and support for memory dump.

Maintenance Entity

Processor Switch Maintenance Entity

The processor switch maintenance entity provides maintenance and diagnostic functionality for TNS/E systems. The associated microprocessor firmware resides in all processor switch maintenance entities found in the system.

A TNS/E system comprises a pair of processor switch modules (one per fabric). The processor switch modules connect via the ServerNet product to logical TNS/E processors 0-15. Each processor switch module includes processor switch maintenance entity firmware and provides systemwide maintenance functionality.

Maintenance Entity for IOAM

The maintenance entity for the I/O adapter module (IOAM) supports the connection to processor switches, making Fibre Channel ServerNet adapter (FCSA) and Gigabit Ethernet 4-port ServerNet adapter (G4SA) functionality available on a TNS/E platform. The service processor (SP) supports connection of legacy IOMF enclosures to a processor switch, providing the TNS/E platform with connectivity to S-series legacy input/output controllers (IOCs) and storage.

SCF

- For Integrity NonStop NS-series disk drive enclosures, the Fibre Channel Storage Monitor process:
 - Monitors environmental limits
 - Tracks and reports hardware changes
 - Issues control commands to the environmental monitoring unit (EMU)

You can use the Subsystem Control Facility (SCF) STATUS and INFO commands to display different types of information about the FCS Monitor process:

- The STATUS command displays dynamic state information about FCSMON.
- The INFO PROCESS command displays attributes of the FCSMON process.

- On Integrity NonStop NS-series servers, you can specify RIDETHRUONLY instead of specifying a specific value. Specifying RIDETHRUONLY causes the operating system to wait indefinitely.

For more details, see the *SCF Reference Manual for the Kernel Subsystem*.

For information on the SCSI-FC protocol supported over Fibre Channel by the FCSA, see *Open SCSI for Fibre Channel Controller Integrator's Manual for NonStop NS-Series Servers*.

Standard Millicode

Standard Millicode (T0288) for Integrity NonStop NS-series servers is the layer of software between the NonStop system and the hardware. Standard Millicode includes exception and interrupt handling, support for scheduling, synchronization, process ownership, environmental sense and control (ESC) support, privilege transitions, some TNS emulation routines, and various NonStop system callable procedures for manipulating processor-specific hardware.

System Startup

The system startup process on H-series is similar to the process on G-series, except that you can load Integrity NonStop NS-series server from alternative system disks if configured. In OSM, the name of the dialog box has changed from System Startup dialog box to System Load dialog box. For more information about loading the system, see the *NonStop NS-Series Operations Guide*.

By default, one \$SYSTEM is already configured, but you can configure up to four additional system disks. \$SYSTEM must be the primary name for all system disks. You cannot create a system disk for an Integrity NonStop NS-series server on a NonStop S-series server. You must use a unique alternate name for each system disk. The system disks that you are not currently running on are displayed in SCF and OSM under their alternate names. After you load from a system disk, that disk becomes \$SYSTEM. For more information about creating an alternate system disk, see the *NonStop NS-Series Hardware Installation Guide* and *DSM/SCM User's Guide*.

After you create an alternate system disk, you must save it as an alternate system load configuration in the OSM Service Connection before you can load from it. You can use the Save as System Load Configuration action on either SCSI or Fibre Channel disks. The alternative system disks are displayed in the Attributes tab under the System object in the OSM Service Connection and are also displayed in the OSM Low-Level Link System Load dialog box in the Configuration drop-down menu. For more information, see OSM online help.

6

Manageability Products

The H06.03 RVU contains new features for these manageability products:

- [KMSF](#)
- [MeasTCM](#)
- [Measure](#)
- [OSM](#)
- [PSTATE](#)
- [Safeguard](#)
- [TFDS](#)
- [WHOHAS](#)

KMSF

Integrity NonStop NS-series servers require more swap space than do NonStop S-series servers. The default is 512 MB for each processor. Depending on your hardware and software configuration, more swap space might be needed. Using KMSF, monitor the actual virtual memory consumption. For more information about monitoring and adding swap space, see the *Kernel-Managed Swap Facility (KMSF) Manual*.

MeasTCM

MeasTCM (T6042 H01) has been enhanced to support the new Measure external record formats. Some of the 32-bit MeasTCM counters are converted to 64-bit counters to support the new Measure external record format.

Measure

The G06.23 RVU introduced new APIs and counters to facilitate scalability, but the default remained the legacy values. On systems running H-series, the ZMS-style interface becomes the default interface for MEASCOM, and Measure (T9086) contains these enhancements:

- 32-bit accumulating counters are now 64-bit values.
- The counter ID limit is increased to 256 KB.
- Max PINs are expanded to 10 KB.
- The PROCESSH sampling rate is increased to approximately 500 samples per second and can now be controlled by the user. The H-series version of Measure has been enhanced to support PROCESSH measurements of DLLs. The DLL enhancements enable you to use Measure PROCESSH to gather performance measurements on DLLs.

You can no longer use third-party products or customer applications to directly access Measure internal counter records, such as XRGLOBAL and XRPROC. You must convert them before using APIs provided by Measure.

The default style for MEASCOM reports is now the ZMS style instead of the legacy format. To change this option, use the SET REPORT STYLE command. However, the default for programmatic access to the records always remains the legacy format, unless customer applications explicitly ask for the ZMS style.

Measure data files created on H-series RVUs can be read on G-series RVUs by using the MEASFH process of the corresponding H-series Measure.

Migration

You must explicitly configure the DLL (or any object file, by specifying the object file name) to obtain PROCESSH measurements on a procedural level for that object file (DLL or non-DLL). No explicit configuration is needed to obtain PROCESSH file-level measurements. File-level measurements are reported for all object files (DLLs or non-DLLs) for a process under PROCESSH measurement.

OSM

The OSM Service Connection has been enhanced to support the Integrity NonStop NS-series system. The enhancements include:

- Processor switch (from the OSM tree pane, select **System > Fabric Group > Internal ServerNet Fabric**). Each processor switch has these subcomponents:
 - One ServerNet switch board
 - One maintenance PIC (for LAN connectivity)
 - One crosslink PIC for connectivity between processor switch on each fabric
 - One PIC for HP NonStop ServerNet Cluster connectivity
 - Up to 10 ServerNet PICs (4 connect to processors, 6 connect to IOAM or IOMF2s). Each of these PICs has 4 ports.
 - Two power supplies
 - Two fans
- Disk drive enclosures, each containing:
 - Up to 14 disk drives
 - Two FC-AL I/O modules
 - Two power supplies
 - Two blowers
 - One EMU
- Disk drive enclosure replacement procedures

- Disk drive enclosure daisy chaining
- EMU firmware update
- Blade Complex, which includes these subcomponents:
 - Logical processor (4)
 - Processor components
 - Blade Element (up to 3)
 - Slice firmware
- Processor firmware update guided procedure (for HSS, PAL/SAL, Diskboot, ISP1040, Primitive, BMC firmware)
- Processor complex replacement procedures (for Blade Element and LSU)
- Ability to create and save customized resource views with the Multi-Resource Actions dialog box.
- Power fail support

OSM Low-Level Link enhancements include:

- A new System Load dialog box specifically for H-series. You can save up to four alternate system load configurations in the OSM Service Connection by using the Save as System Load Configuration action on SCSI and Fibre Channel disks.
- Support for processor dump, which enables you to exclude one Blade Element from processor load for the purpose of dumping the PE before reloading.
- Power On System action
- Reset action for FCSA and G4SA adapters
- Power cycling of processors
- OSM Low-Level Link communicates with Integrity NonStop NS-series servers through the maintenance entity (ME) firmware on each processor switch.

PSTATE

PSTATE takes a snapshot of a running process. It displays information about all the code and swap files associated with the process, a procedure stack trace, and information about all the files opened by the process.

Safeguard

Safeguard runs as a native process. Support for object files has been extended to file code 800, the file code for TNS/E object files. There is no new functionality.

TFDS

HP Tandem Failure Data System (TFDS) is available on the TNS/E platform and provides hardware, software, and subsystem failure analysis and automated processor reload and dump capabilities.

Differences between First Failure Data Capture (FFDC) on G06.*nn* RVUs and what is available on the Integrity NonStop NS-series server include:

- TFDS now supports processor failures due to hardware problems in addition to software problems.
- NSAA allows a halted processor to be reloaded immediately and dumped after the reload is complete without significant impact to that processor.
- Different files are collected as part of the processor dump function.
- Some TFDSCOM commands have been added, some have changed, and some have been eliminated.
- Some TFDS configuration options have been added, some have changed, and some have been eliminated.
- Some API options are no longer available.
- The published DDL structures are fewer than on NonStop S-series servers.
- The legacy API remains a run-time library, but the new Trigger API is a source module.
- EMS templates are adapted for Integrity NonStop NS-series systems for new tokens and new messages.
- Some TFDS commands and configuration options are not applicable to H-series. For more information, see the *TFDS manual* and the *NonStop NS-Series Operations Guide*.

WHOHAS

WHOHAS looks for openers of a specified object, such as a disc file, communications device, or process. WHOHAS reports the openers of the device. For disc files, WHOHAS also reports which users use the file as a swap file and which processes execute code from the file.

7 Hardware Products

The H06.03 RVU contains new features for these hardware products:

- [Integrity NonStop NS16000 Server](#)
- [Disk Drives](#)
- [Tape Storage](#)
- [Storage I/O Products](#)

Integrity NonStop NS16000 Server

The HP Integrity NonStop NS16000 server offers higher levels of scalability using the NonStop advanced architecture (NSAA).

The basic building block of the NSAA computer engine is the NonStop Blade Complex, which consists of two or three CPU modules called *NonStop Blade Elements*. Each Blade Element houses two or four microprocessors called *processor elements* (PEs). A logical processor consists of one processor element from each Blade Element.

All input and output to and from each Blade Element goes through a logical synchronization unit (LSU). The LSU interfaces with the ServerNet fabrics and contains logic that compares all output operations of a logical processor, ensuring that all Blade Elements agree on the result before the data is passed to the ServerNet fabrics.

H06.03 supports duplex and triplex systems. Enclosures that house specific hardware components include:

- NonStop Blade Element
- Processor switch
- Logical synchronization unit (LSU)
- I/O adapter module (IOAM)
- Disk drive enclosure
- Maintenance switch (Ethernet)
- Modular Fibre Channel (FC) to SCSI router tape

Note. The modular FC to SCSI router tape connects the HP Ultrium Linear Tape open (LTO) tape drive to the Integrity NonStop NS-series system.

For details, see the *NonStop NS-Series Planning Guide*.

Disk Drives

The NonStop NS-series server supports three types of disk drives:

- Dual-Ported Fibre Channel disk drives

Fibre Channel disk drives are installed in modular disk drive enclosures.

- Internal SCSI disk drives

Internal SCSI disk drives are installed in NonStop S-series I/O enclosures.

- Enterprise Storage System (ESS) Disks

The ESS is any of several models of HP StorageWorks disk arrays. These arrays are a collection of magnetic disks, their controllers, and the disk cache in one or more stand-alone cabinets. ESS disk drives are maintained and serviced only by qualified HP-trained service providers who have completed courses in ESS management.

Tape Storage

Tape storage on the Integrity NonStop NS-series system supplies both Fibre Channel and SCSI connectivity for new and existing tape drives and libraries. New products include:

- Fibre Channel to SCSI router (M8201)
- LTO Gen 3 Fibre Channel rack-mount tape drive (M8501)
- LTO Gen 3 Fibre Channel tabletop tape drive (M8502)
- LTO Gen 3 Fibre Channel library tape drive (M8503)

Both the M8501 and M8502 drives include a 15-slot automatic cartridge loader (ACL). Support for existing 9840 and 9840C library drives, Gen 2 LTO SCSI library drives, Digital Audio Tape 72 (DAT 72) SCSI drives, Super digital linear tape (Super DLT) SCSI library drives, and L700 STK tape libraries are included at H06.03.

Software products updated to support hardware include:

- Open SCSI IOP (T8995)
- Tape Process (T0021)
- Storage SCF PM (T1082)
- Storage SM (T1083)
- OSM Service Connection Suite (T0682)

There is a new SCF command syntax to add a Fibre Channel tape drive.

Inclusion of the SCSI connected drives and the M8201 Fibre Channel to SCSI router enables you to migrate existing S-series attached tape devices, such as DAT 72, SDLT, Gen 2 LTO, and 9840/9840C to the Integrity NonStop NS-series server.

The Library Media Manager is required to operate the L700 libraries and is shipped as an Independent Product.

Support for Fibre Channel connected tape devices is always enabled.

Storage I/O Products

These storage I/O products have been enhanced to support the TNS/E platform:

- Tape Process (T0021)
- FCSA Firmware (T0630)
- ESS license (T0631)
- Storage SCF PM (T1082)

- Storage SM (T1083)
- SCSI Lock Manager (T1074)
- SCSI IFM (T1075)
- SCSI Module Driver (T1076)
- Storage Fibre Channel Monitor (T1176)
- DBIO (T5869)
- XIO (T8374)
- ServerNet Connection Services (T8456)
- Open SCSI IOP (T8995)
- I/O Drivers (T9753)

Note. Storage Fibre Channel Monitor (T1176) is a new product that enables the attachment of disk drive enclosures to TNS/E. Storage SM (T1083) has been enhanced to enable the configuration of disk drive enclosures.

8

Networking Products

The H06.03 RVU contains new features for these networking products:

- [QIO](#)
- [SANMAN and SNETMON](#)
- [Service Processor I/O Library](#)
- [TCP/IP, TCP/IPv6, and Socket Library](#)
- [TNet Services](#)

QIO

- Query I/O (QIO) has incremented SMLIBH_VERSION. The version of *smlibh* and *dsmlib* has been incremented from 30 to 33, requiring recompilation of all QIO clients.
- The maximum available QIO segment size in Kseg2 has been increased to 256 MB.

SANMAN and SNETMON

To avoid operator confusion, these two SCF SANMAN (T0502) displays, rather than calling out a processor switch or modular ServerNet expansion board (MSEB), have been made more generic:

- SCF INFO CONN \$ZZSMN
- SCF STATUS CONN \$ZZSMN

Previously, these displays called out an MSEB for NonStop S-series.

Similarly, three SANMAN EMS events that previously called out an MSEB explicitly for S-series have been modified to report a more generic text message rather than calling out a processor switch or an MSEB.

Migration

Before you can connect an Integrity NonStop NS-series server to an existing NonStop ServerNet Cluster with S-series nodes, you must upgrade all S-series nodes to SNETMON SPR T0294AAP if these nodes are not already running the minimum required T0294AAP SPR or a subsequent SPR. Failure to install the minimum T0294AAP SPR on the S-series nodes prevents those nodes from successfully discovering Integrity NonStop NS-series server nodes, and vice-versa, thereby preventing the establishment of Expand-over-ServerNet lines between NonStop S-series and Integrity NonStop NS-series server nodes.

T0294AAP can be installed online and does not require a system load.

Service Processor I/O Library

The service processor I/O library is a collection of functions that provide a number of low-level and operating system independent services for NonStop systems. The library comprises a server-side component and various client-side components that request SP or processor switch maintenance entity services using service processor I/O library function calls. The service processor I/O library is enhanced to support TNS/E functions.

TCP/IP, TCP/IPv6, and Socket Library

These products contain no new functionality for the H06.03 RVU. Parallel Library TCP/IP is not migrated to the TNS/E platform. The Parallel Library TCP/IP features and functions have been incorporated into the HP NonStop TCP/IPv6 product, which supports IPv4 and IPv6.

IPv6 is available on the Integrity NonStop server in the NonStop TCP/IPv6 product. You can run the NonStop TCP/IPv6 subsystem in INET mode (IPv4 communications only), INET6 mode (IPv6 communications only), or DUAL mode (both IPv4 and IPv6 communications). Because of the powerful, parallel TCP/IP architecture of the NonStop TCP/IPv6 product, consider using it even if you want only IPv4 communications. In this case, simply configure the NonStop TCP/IPv6 subsystem in INET mode. For more information about IPv6 on the Integrity NonStop server, see the *TCP/IPv6 Configuration and Management Manual*.

Note. The HP naming conventions for the G4SA, TCP/IP, LISTNER, and TELSERV processes and some network components have changed for the H06.03 RVU. For more information, see the *LAN Configuration and Management Manual* or the *WAN Configuration and Management Manual*.

TNet Services

The TNet Services product (T8460) provides APIs and services to the NonStop system for managing the processor's interface to the ServerNet SAN.