Check the web site for course descriptions and prerequisites at:

http://education.hp.com/curr-nonstop.htm (Instructor-Led Training)
http://education.nonstop.compaq.com/us/cat/httoc.htm (Self-Study Training)

You can also call (800) 621-9198 in North America, to speak with one of our education consultants or register for courses.

Or, you can email us at: nonstop.training@Compaq.com

Exam Status

The NonStop Advanced Networking and Communications - Level 2 exam has completed beta testing and is now live. This exam is administered by Prometric Regional Service Centers in North America (other locations may have different delivery methods). Refer to the Prometric website: http://www.2test.com

Exam Details

Number of test items: 82
Time allotted to take test: 90 minutes
Passing Score: 61% - 50 items correct

You are not allowed to refer to any books or reference material during the NonStop Advanced Networking and Communications - Level 2 exam.
Audience

This exam is targeted for the following personnel, with a minimum of one-year experience on the HP NonStop S-Series platforms running the G-Series NonStop Kernel Operating System:

- Authorized Service and Support personnel (field support technicians), who perform installations, upgrades, troubleshooting and maintenance tasks.

- Global Customer Support Center (GCSC) personnel, who may have specialized technical expertise in the operating system (e.g., security features, hardware, subsystems) and serve as support for both field support technicians and customers.

- Analyst SEs or Pre-Sales Technical Support (PSTS) personnel, who perform pre-sales consulting and technical account support, including tasks such as assessment of customer needs, system sizing and configuration, installation consulting, and so forth.

- NonStop Kernel Software Developers, System Integrators and Consultant Partners, Authorized Service Channel Partners and Distributors, Customers authorized to service their own equipment.
What You’ll Be Tested On

Exam questions were written to evaluate your knowledge of the following objectives. The percentage of items dedicated to each major category is included in parenthesis.

1) S-Series Network Architecture (21%)

1.1 Describe the S-Series LAN connectivity

- Describe the software and hardware components of the SLSA subsystem
- Identify the access methods and protocols available for Ethernet connections
- Identify the access methods and protocols available for Token Ring connections
- Identify the access methods and protocols available for ATM connections
- Describe the features and benefits of conventional and Parallel Library TCP/IP
- Describe the features and benefits of NonStop IPX/SPX
- Describe the use of SNA over LAN connections

1.2 Describe the S-Series WAN connectivity

- Describe the software and hardware components of the WAN subsystem
- Describe the function of the AWAN device
- Describe the terminal types and protocols supported on an AWAN device
- Describe the function of the SWAN concentrator
- Identify the software and hardware components in the SWAN configuration
- Identify the interface types supported on the SWAN device
- Identify supported SWAN access methods and protocols
- Describe the various SNA software products and their use

1.3 Describe the S-Series intersystem connectivity

- Identify the S-Series intersystem hardware connection options
- Describe the advantages of each inter-system connection option
- Identify the components found in the FOX and ServerNet Cluster subsystems
- Describe the function and benefits of Expand
- Describe how best to achieve a fault tolerant intersystem connection
- Describe the use and function of the ESCON device for connecting to an IBM host

1.4 Discuss the application interface for the NonStop communications subsystems

- Identify the relationship between the Guardian file system and Expand
- Describe the application interfaces for the SNAX product family
- Identify the TCP/IP application interfaces for Guardian and OSS
1.5 Discuss the network management interfaces and tools

- Identify the key tools used to manage NonStop communication subsystems
- Describe the function of Distributed Systems Management
- Describe the use of the SCF command interface
- Describe the features of common management tools and applications
- Describe the function of SNMP and the NonStop SNMP product set

2) Network Planning (10%)

2.1 Identify the system and network connectivity requirements

- Determine the application profile
- Determine the number of users accessing the applications
- Determine the number and size of NonStop S-Series servers participating in the application environment
- Identify the host types connected to the network
- Identify the protocols and connection types available on each host
- Describe geographic distribution of hosts
- Identify application availability requirements
- Identify the current and strategic network technologies

2.2 Describe formulation of a network design

- Identify potential NonStop S-series protocol and connectivity combinations
- Identify the limitations and potential bottlenecks inherent to each connection type
- Describe the trade-offs of each potential connection type
- Define resource naming conventions
- Demonstrate the ability to create network diagrams/illustrations

2.3 Describe a network installation plan

- Identify the required NonStop S-Series software and hardware components
- Describe a NonStop network system configuration
- Identify NonStop hardware installation planning documentation
- Identify key elements of a network topology diagram
- Identify network configuration files
- Describe impact of change on the network configuration
- Describe a schedule for installation and integration of hosts

3) Network Configuration and Installation (28%)

3.1 Demonstrate appropriate use of configuration tools

- Describe the use of WanWizard Pro tool
- Describe the use of SCF templates (profile files)
- Describe the use of TSM to install ServerNet Cluster
- Describe the use of TSM to manage SWAN
- Describe various tools used to manage AWAN
3.2 Describe TSM configuration options
- Describe advanced TSM configuration

3.3 Describe Expand subsystem configuration
- Identify the configuration for Expand over ServerNet cluster
- Expand over multi-CPU
- Expand over ATM
- Expand over Expand-IP
- Expand over FOX
- Expand over WAN
- Expand over SNAX
- Expand over X.25

3.4 Describe TCP/IP subsystem configuration
- Identify the configuration of multi-process TCP/IP for a single LAN controller
- Identify the configuration of an alias IP address
- Describe TCP/IP configuration limitations
- Identify the configuration of Telnet servers

3.5 Describe WAN subsystem configuration
- Identify SWAN clip limitations
- Identify configuration requirements for WAN printing
- Identify AWAN limitations (without GAP software)
- Identify SWAN configuration parameters

3.6 Describe SNAX subsystem configuration
- Identify the configuration of SNAX over Token Ring
- Identify the configuration of SNAX over Ethernet
- Identify the configuration of SNAX over ESCON
- Identify the configuration of SNAX over WAN
- Describe SNAX product attributes
- Identify the configuration of multiple SSCPors
- Identify the configuration of PAM

3.7 Describe Parallel TCP/IP subsystem configuration
- Identify the configuration of Parallel TCP/IP
- Describe the differences between Parallel and conventional TCP/IP
- Identify the configuration of Ethernet failover

3.8 Describe ATM subsystem configuration
- Identify the configuration of the ATM subsystem
- Describe the difference between ATM-1 and ATM-2
3.9 Describe X.25 subsystem configuration
- Identify the configuration of the X.25 subsystem
- Identify the configuration of the X.25 loopback network
- Identify the configuration of TCP/IP over X.25

3.10 Describe SLSA subsystem configuration
- Identify the configuration of the SLSA subsystem
- Describe the reasons for changing an Accesslist

3.11 Describe OSI subsystem configuration
- Identify the configuration of the OSI subsystem

4) Network Troubleshooting (25%)

4.1 Describe Expand troubleshooting
- Verify processes using SCF
- Describe Expand network problems
- Describe multi-CPU path problem resolution
- Describe Expand-IP problem resolution
- Describe the Expand-ATM path problem

4.2 Describe ServerNet Cluster troubleshooting
- Identify the troubleshooting steps for SNETMON process
- Identify the troubleshooting steps for SANMAN process
- Describe the process to identify ServerNet Cluster alarms
- Describe methods of troubleshooting ServerNet Cluster switch problems

4.3 Describe SWAN and AWAN subsystem troubleshooting
- Identify the SCF command to find the current Status of the clip
- Identify the SCF command to configure the correct Track-ID
- Identify the method to load the factory default configuration
- Describe the use of the GUI or CLI tool

4.4 Describe WAN subsystem troubleshooting
- Identify processes in the WAN subsystem
- Identify Profile parameters associated with protocols
- Describe SNAX problem resolution
- Describe X.25 problem resolution

4.5 Describe LAN troubleshooting
- Describe the use of TCP/IP utilities
- Describe making and analyzing traces
- Describe the use of Defines and Param
- Describe the process of analyzing Token Ring problems
- Describe the process of analyzing Fast Ethernet problems
- Describe the process of analyzing Ethernet problems
4.6 Describe PAM subsystem troubleshooting
   • Identify processes associated with TRSA or OSI subsystems
   • Identify management interfaces used with the PAM process
   • Identify EMS messages associated with the PAM subsystem

4.7 Describe ATM subsystem troubleshooting
   • Identify the steps required to configure ATM connections
   • Identify the relationships between ATM SCF objects and ATM adapter
   • Discuss the ATM Line attributes
   • Identify EMS messages associated with the ATM subsystem

4.8 Describe tools, utilities, and commands used in troubleshooting
   • Identify how to determine the current object and version
   • Describe available tools to test the SWAN concentrator
   • Describe the use of WanWizard log to obtain error information
   • Describe the procedure to update the firmware in a SWAN concentrator
   • Describe how to obtain message information

5) Network Management (16%)

5.1 Describe network access administration
   • Describe management of telnet access to S-series system
   • Describe how to identify unauthorized network users
   • Describe how to control network access
   • Describe how to restrict application access
   • Describe how to manage SNMP traps and SET access

5.2 Describe network management tool usage
   • Describe how to manage SWAN
   • Describe how to manage AWAN
   • Describe automation of LAN and WAN subsystems
   • Describe how to use SCF to manage LAN and WAN subsystems
   • Describe how to use NSX or ASAP to manage an EXPAND network

5.3 Describe network performance and tuning techniques
   • Describe how to perform SWAN performance tuning
   • Describe Expand performance tuning
   • Describe role of network tuning

5.4 Describe network security options
   • Describe how to restrict a telnet service
   • Describe how to implement remote password
   • Describe how to restrict FTP access
5.5 Describe address allocation and management
- Identify the use of DNS for TCP/IP
- Identify the use of subnet and router address for TCP/IP
- Identify the use of Hostfile for TCP/IP
- Identify the use of NETID, port number, and host address for X.25
- Identify the use of optional MAC address
- Identify the method for TCP/IP port assignment

5.6 Describe Enterprise network management
- Identify the system requirements for enterprise network management
- Describe the SNMP agent configuration (for unique system)
- Describe the TCP/IP subagent configuration (for unique system)
- Describe the forwarding of EMS events to a network management platform
- Describe the function of the SNMP trap multiplexor (SWAN)
Related Training and Study References

The NonStop Systems Certification (Level 2) includes references to a variety of materials that provide information included on this certification exam. Completion of courses and review of materials is recommended, but not required, for success on this exam.

Recommended Minimum Courses

<table>
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<th>Course Title</th>
<th>Part Number</th>
<th>Type</th>
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<tr>
<td>NonStop S-Series Communications Products</td>
<td>U4166S</td>
<td>ILT</td>
<td>10 days</td>
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<tr>
<td>NonStop S-Series TCP/IP System Management</td>
<td>U4176S</td>
<td>ILT</td>
<td>5 days</td>
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Additional Highly Recommended Courses

Check web site course descriptions for prerequisites

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<th>Part Number</th>
<th>Type</th>
<th>Length</th>
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<tbody>
<tr>
<td>Data Communications Concepts</td>
<td>U4149S</td>
<td>ILT</td>
<td>5 days</td>
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<tr>
<td>NonStop S-Series Field Support Training</td>
<td>U4170S</td>
<td>ILT</td>
<td>10 days</td>
</tr>
<tr>
<td>NonStop S-Series ServerNet Cluster Workshop</td>
<td>U4174S</td>
<td>ILT</td>
<td>3 days</td>
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</table>

ILT = Instructor-Led Training

Check web site course descriptions for prerequisites at:


Additional Recommended Reference Materials for This Exam

References to the majority of questions found in this exam can be found in manuals contained in the Online TIM collections (This guide typically references the latest release available in the TIM Document Collection). TIM (Total Information Manager) is a single interface to all NonStop Systems documentation and support information.

External users must subscribe to the TIM CD collection. See your NonStop Representative for more information.

**NOTE:** TIM must be installed on your system before using the following default access settings.

The references below are based on information available as of April 2001. Information nested (~) and in quotation marks ("”) indicates subsections emphasized in the document.

- 6773 Common Communications ServerNet Adapter Manual (420079-001)
- ATM Adapter Installation and Support Guide (420013-001)
- ATM Configuration and Management Manual (422840-001)
  - Alter Line
  - Create and Start ATM Adapter
  - Create and Start ASM Process
  - ATM Manager Process
- Availability Guide for Application Design (124511)
- AWAN 3883/3884/3885 Access Server Configuration and Management Manual (424242-001)
- AWAN 3886 Server Installation and Configuration Guide (427428-001)
- ESCON Connect User Guide (422841-001) “Hardware Installation”
- Ethernet Adapter Installation and Support Guide (425684-001)
- Expand Configuration and Management Manual (425827-001)
  - Expand overview
  - Congestion Control
  - Configuring Expand-Over-IP Lines
  - Configuring Expand-Over-FOX Lines
  - Configuring Expand-Over Direct-Connect or Satellite Connect Lines
  - Subsystem Control Facility
- Expand Network and Troubleshooting Guide (425828-001)
  - Resolving Common Network Problems
  - $NCP Problems
  - LISTDEV Command
  - Expand over IP Problems
  - Expand over ATM Problems
  - Identifying Network Problems
  - Multi-CPU Path Problems
  - Common Multi-CPU Problems
- GO6.10 - Software Installation and Upgrade Guide (427479-001)
- G-Series Highlights and Migration Planning Guide (427402-001)
- Guardian Programmer’s Guide (421922-001)
- S-Series Cluster Switch Hardware Install and Support Guide (426921-001)
- S-Series Fastpath Guide (425760-001) “Troubleshooting and Expand over-IP Connection”
- S-Series Hardware Support Guide (427200-001) “Viewing Events”
- S-Series Planning and Configuration Guide (427199-001)
  - Dedicated LANs
  - Multiple TSM Workstations Managing Multiple Systems
- Introduction to Networking for Compaq NonStop™ S-Series Servers (426889-001)
- Introduction to NonStop™ Operations Management (125507)
- Introduction to SNA Capabilities of Tandem NonStop™ Systems (134597)
- LAN Configuration and Management Manual (425685-001) “Introduction to SLA subsystem”
• PAM Configuration and Management Manual (142480)
  ~ DSM Facilities
  ~ Distributed System Management Interface
  ~ PAM and TLAM Object Comparison
• OSI/AS and OSI/TS Supplement (107751) includes RFC-1006 Support
• OSI/AS SCF Reference Manual (424121-001) “SU Object”
• QIO Configuration and Management Manual (424717-001)
• SCF Reference Manual for G-Series Releases (135084)
• ServerNet Cluster Manual (425019-001)
  ~ Planning for Installation
  ~ ServerNet Cluster Description
  ~ ServerNet Cluster Description
• ServerNet Cluster Manual (427410-001)
  ~ Troubleshooting SANMAN
  ~ Troubleshooting SNETMON
  ~ Troubleshooting the Cluster Tab in the TSM Service Application
  ~ Using TSM Alarm
• ServerNet/FX Adapter Configuration and Management (422795-001) “Configuring the ServerNet Adapter Subsystem”
• SNAX/XF and SNAX/APN Configuration and Management Manual (425836-001)
• SNMP Configuration and Management Manual (142624)
  ~ MIBS Supported by the NonStop Agent
  ~ EMS Trap Subagent
  ~ The NonStop SNMP Environment
• SWAN Concentrator Installation and Support Guide (424815-001) "Updating the SWAN Kernel Firmware”
• SWAN Concentrator and WAN Subsystem Troubleshooting Guide (426992-001)
  ~ Finding the VPROC of the FIRMWARE
  ~ SCF Command
• Tandem Network Statistics Extended (134550)
• Tandem NonStop TCP Applications User Guide (117469) "FINGER, Displaying Network User Information"
• TCP/IP (Parallel Library) Configuration and Management Manual (427502-001) “Introduction”
• TCP/IP (Parallel Library) Migration Guide (427650-001)
• TCP/IP Configuration and Management Manual (140771) “SCF Interface to Tandem NonStop TCP/IP”
• TCP/IP and IPX/SPX Programming Manual (426001-001) "Library Routines"
• TELSERV Manual (427174-001)
• Token-Ring Adapter Installation and Support Guide (426955-001) “Overview of the TRSA”
• TSM Configuration Guide (427409-001) “TSM Version 9-0, Dial-In Scenario”
• TSM Online User Guide (427509-001) “Actions and Requires Applications”
• WAN Subsystem Configuration and Management Manual (426850-001)
• X25AM Configuration and Management Manual (424910-001)
• X25AM Management Programming Manual (065306) “ITI Application”