**Purpose of the Exam Prep Guide**

The intent of this guide is to set expectations about the content and the context of the exam and to help candidates prepare for the exam. In this guide, you will find recommended training courses, reference and study material to help you achieve a successful passing score.

Studies conducted by HP and Prometric show that a combination of course attendance and self-study maximizes the likelihood of passing the exam on the first attempt.

**Audience**

This exam is targeted for the following personnel, with a minimum of one to three years’ experience on the HP NonStop S-Series platforms running the G-Series NonStop Kernel Operating System. Examples of job roles:

- 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, Application Designers and Developers, Authorized Service Channel Partners and Distributors, Customers authorized to service their own equipment.

General areas of content include: NonStop Web Enabling Considerations, Products, Programming, Installation and Configuration, and Tools.
Certification Requirements

The NonStop Web Enabling Exam HP0-765 is an elective for certification as an Accredited System Engineer (ASE) in the NonStop S-series Systems track. It is also an elective for the NonStop Kernel Certified Systems Engineer (CSE) candidate within the Operating Systems designation.

ASE Prerequisites

Successful completion of the Accredited Platform Integrator (API) – Level 1 is a prerequisite for ASE (Level 2) certification. Two mandatory exams and two electives totaling four exams are required for ASE certification. For further ASE track information, visit the website at http://education.hp.com/curr-nonstop.htm (Instructor-Led Training) or http://education.nonstop.compaq.com/us/cat/httoc.htm (Self-Study Training).

Level 2 mandatory exams are:
- NonStop Kernel Advanced Exam 760 (either ASE track)
- NonStop Advanced Application Design Exam 786 (Application Design track only)
- NonStop Advanced Networking and Communications Exam 761 (Operations Management track only)

Level 2 electives are selected based on the participant’s certification track.

Note that a minimum of one to three years’ experience or more is highly recommended for ASE certification. “Hands on” experience with the NonStop S-series system is essential.

Exam Details

NonStop Web Enabling is a live exam. You will receive a score report with your results after testing is complete. You can use the report to identify areas of strength and learn about areas to improve, if necessary.

Test Information

- **Number of test items:** 61
- **Item type:** multiple choice
- **Time commitment:** 75 minutes
- **Passing Score:** 41
- **Percent Correct:** 67
- **Reference material:** No online or hard copy reference material will be allowed at the testing site.
Exam Content

The following outline represents the specific areas of content covered in the exam. Use this outline to guide your study and to check your readiness for the exam. The exam measures your understanding of these areas. The approximate percentage of exam questions dedicated to each major content area is included in parenthesis. The higher the percentage, the more questions will be on the exam.

1) NonStop Web Enabling Considerations (20%)
   1.1 Describe the platform benefits of a NonStop web server
      • Describe the single system image for growing websites
      • Identify the primary benefit of a NonStop web server
      • Describe the intrinsic value of data integrity in a NonStop web server environment
      • Identify the open standard on a NonStop web server
      • Describe security issues on a NonStop web server
      • Describe the importance of manageability on a NonStop web server
      • Describe the benefit of flexibility on a NonStop web server
      • Describe the benefit of scalability on a NonStop web server
   1.2 Identify the role of Java in a NonStop web server environment
      • Describe the emerging role of Java technology
      • Identify the unique benefit of the NonStop Transaction Server for JAVA (TSJ)
      • Describe Java implementation for fault tolerance
      • Identify the NonStop Transaction Server (TSJ) fault tolerance attributes derived from the NonStop platform
      • Describe Java implementation for scalability
      • Identify the NonStop Transaction Server (TSJ) scalability attributes derived from the NonStop platform
   1.3 Discuss the phased approach to web enabling applications
      • Describe the benefit of a phased approach to web enabling to a NonStop web server
   1.4 Explain how a NonStop web environment is implemented
   1.5 Describe NonStop web contribution to business goals

2) Products (35%)
   2.1 Identify industry standards
      • Describe the functions of a web server
      • Describe the CGI functionality in a web server
      • Describe the benefits and options of SSL (Secure Socket Layer) (how to support it)
      • Describe the usage of HTTP
      • Describe the purpose of XML
      • Identify the features and use of SOAP (Simple Object Access Protocol)
      • Describe the difference between Java and JavaScript
• Describe the difference between Servlets and Applets
• Describe key Java concepts and features
• Describe the difference between JSP and Servlets
• Describe the purpose XSL (eXtensible Stylesheet Language)
• Identify the key components of J2EE

2.2 Identify the purpose of NonStop products and components
• Describe the usage of NonStop web enabling products
  – iTP WebServer
  – ATP
  – CGI/Pway CGI
  – Servlets/JSP
• Pathway/iTS
• Java
• EAS (Enterprise Application Server)
• SOAP/XML
• Tuxedo/JOLT
• JDBC
• JPathsend
• Jenscribe
• Jpathway
• XML/SQL (XS)
• JDBC Type 3

2.3 Describe the attributes of NonStop products and components
• Explain the functions of iTP WebServer and related components
• Describe the functions of Java-related components (JDBC, JEnscribe, JPathway)
• Describe the functions of SOAP/XML and components
• Define the architecture of iTP Webserver and related components
• Explain the architecture of Java and related components
• Define the architecture of SOAP/XML and related components
• Describe the functions and components of Pathway/iTS

3) Programming (25%)

3.1 Discuss the use of C/C++ as a web development language for CGO/Pathway CGI
• Identify the usage of the CGI library (libcgi.a)
• Discuss the usage of mime-types in CGI programming
• Identify the usage of the XML4NSK library to CGI application development
• Identify SQL issues involved with Pathway CGI compiling
• Describe the generation of a http header using the web server

3.2 Discuss the use of Java as a web development language for Servlets and JSPs
• Discuss the compiling and runtime issues with using Java version 1.x as opposed to Java 2.0
• Describe the usage of JDBC in Java web development
• Identify the uses of Java Native Interface (JNI) in web programming
• Discuss the usage of Jpathsend in Java program architecture for web development
• Discuss the uses of ddl2java
• Identify the usage of the XML4NSK library for Java web development
• Describe the usage of RMI in web enabling

3.3 Discuss the use of Javascript as a web development language for Active Transaction Pages (ATP)
  • Describe the usage of the TS/MP interface (Pathsend) for Javascript
  • Describe the usage of the Tuxedo (tpcall) interface for Javascript
  • Discuss data formatting issues for Javascript in a web environment
  • Describe the usage of SQL in Javascript
  • Describe when to use ATP (as opposed to Servlets and JSP)

3.4 Identify the use of Cobol as a web development language
  • Identify the usage of the Cobol CGI routines for Cobol CGI development
  • Discuss data formatting issues for Cobol in a web environment

4) Installation and Configuration (10%)
  4.1 Identify installation prerequisites (install order, product dependencies)
  4.2 Identify installation best practices (user setup, default/custom folders, OSS custom profiles)
  4.3 Identify sources of installation information (Readme, softdocs, manuals, support notes)
  4.4 Identify default installation locations (where configuration files are, samples)
  4.5 Identify installation tools (Shell scripts, pax, IPsetup, COPYOSS, FTP)
  4.6 Identify alternative configuration options for iTP WebServer
    • Describe file security settings
    • Describe directives
      – Filemap
      – Region
      – Accept/AcceptSecureTransport
      – Other directives (see manual)
    • Describe security options
      – Hardware
      – Software
    • Describe log management
  4.7 Identify problem resolution techniques (log file locations, types of logs)

5) Tools (10%)
  5.1 Describe NonStop tools and facilities
    • Modify Makefiles to compile/generate/link application
- Describe functionality of WebViewpoint (object mgr, event view)
- Locate events using WebViewpoint
- Describe when to use JDBC type 3 driver (e.g. workstation development)
- Describe when to use Inspect/Visual Inspect
- Identify the location of error and logging messages
- Describe the SCUP (Screen Cobol Utility Program) code generation process as it relates to Pathway/ITS
- List reasons for using off-platform tools such as Tandem Development Suite or Enterprise Toolkit for Microsoft Visual Studio

5.2 Describe functionality of ATP tools for prototyping
- Describe when to use:
  - SQL query tool
  - DDL viewer
  - Catalog viewer
  - Forms generator

5.3 Describe tools included with the Java Development Kit (JDK)
- Describe when to use:
  - java (exe)
  - javac
  - rmiregistry
  - jar
  - javah
  - jdb (Java Debugger)
Recommended Training and Study References

This section lists training courses and documents that can help you acquire a majority of the knowledge and skills needed to pass the exam. You must also gain the practical experience outlined in this guide.

You are not required to take the courses listed in this section. However, HP strongly recommends that you attend the classes, participate in class labs, and thoroughly review all course material and documents before taking the exam, even if you believe you have sufficient on-the-job experience.

Instructor-Led Training

Use the information in this guide and the practical experience you have gained to determine your need for the instructor-led training.

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

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<th>Course Title</th>
<th>Part Number</th>
<th>Type</th>
<th>Length</th>
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<tbody>
<tr>
<td>ITP WebServer Workshop</td>
<td>U4160S</td>
<td>ILT</td>
<td>4 days</td>
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<tr>
<td>Open System Services (OSS) for Guardian Developers, or</td>
<td>U4159S</td>
<td>ILT</td>
<td>4 days</td>
</tr>
<tr>
<td>Open System Services (OSS) Operations and Management</td>
<td>U4188S</td>
<td>ILT</td>
<td>5 days</td>
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<tr>
<td>Web Foundations for NonStop Systems</td>
<td>U3959S</td>
<td>ILT</td>
<td>5 days</td>
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<tr>
<td>Java Enterprise Connectivity: Java Database Connectivity (JDBC)</td>
<td>CBTEG436</td>
<td>SST</td>
<td>As needed</td>
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Additional Highly Recommended Courses

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<th>Length</th>
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<tbody>
<tr>
<td>ODBC Server Product (TUT CD #1)</td>
<td>131233</td>
<td>TUT</td>
<td>As needed</td>
</tr>
<tr>
<td>ODBC Server Product (TUT CD #31)</td>
<td>520449-001</td>
<td>TUT</td>
<td>As needed</td>
</tr>
<tr>
<td>Pathway Application Programming Education Series</td>
<td>86273</td>
<td>SST</td>
<td>35 hours</td>
</tr>
<tr>
<td>Pathway System Management</td>
<td>U4194S</td>
<td>ILT</td>
<td>3 days</td>
</tr>
</tbody>
</table>

CBT = Computer-Based Training
ILT = Instructor-Led Training
SST = Self-Study Training
TUT = Technical Update Training

Other Recommended Resources

Also recommended are the TUT CD presentations related to web enabling architecture and technologies. They may include, but are not limited to, TUT #19, 22, 23, 25, 28, 29 and 30.
Courses Descriptions

Check web site course descriptions for prerequisites at: [http://education.nonstop.compaq.com/us/cat/httoc.htm](http://education.nonstop.compaq.com/us/cat/httoc.htm)

You can also call (800) 621-9198 in North America, to speak with an education consultant or register for courses. If you are outside of the U.S., call +1 (408) 285-9508 or contact your local education and training resource.

Or, you can send an email to [nonstop.training@hp.com](mailto:nonstop.training@hp.com)

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 (Total Information Manager) collections (This guide typically references the latest release available in the TIM document collection). TIM is a single interface to all NonStop documentation and support information.

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

**NOTE:** TIM must be installed on your system before using the following default access settings. [http://www.hp.com/go/ntl](http://www.hp.com/go/ntl)

Documentation

The references below are based on TIM information available in 2001. However, you may find the information on later versions of the documentation. Information nested (~) indicates subsections emphasized in the document.

- AccessLog\iTP Active Transaction Pages (iTP ATP) Programmer's Guide (426849-001)
  - ATP Objects, Properties, and Methods
    - atp.socket Object
    - atp.transaction Object
    - atp.sql Object
    - atp.execute (path)
- G-Series Highlights and Migration Planning Guide (522221-001)
- iTP Secure WebServer System Administrator's Guide (134268)
  - Configuring for CGI Programs
  - Mime Types
  - 3. Planning the iTP Secure WebServer PATHMON Environment
  - Protecting the Key Database File
- iTP Secure WebServer System Administrator's Guide (134268)
  - 4. Configuring for Secure Transport
  - Keyadmin Utility Configuration
  - Managing Client Authentication
  - Support for International 128-Bit SSL Sessions Using VeriSign Global Server ID
• iTP Secure WebServer System Administrator's Guide (134268)
  - 10. Using Java Servlets With the iTP WebServer
  - Servelets in the iTP Secure WebServer Environment

• iTP Secure WebServer System Administration Guide (425144-001)
  - Appendix A - Configuration Directives
  - Filemap
  - AcceptSecureTransport
  - AcceptExtendedLog

• iTP Secure Webserver Administrator's Guide: (425144-001)
  - Integrating the WebSafe2 Internet Security Processor (WISP)
  - Generating the Public/Private Key Pair and Obtaining the Certificate

• iTP Secure WebServer System Administration Guide (425144-001)
  - Introduction to the iTP Secure Webserver
  - Distributor Process
  - Features and Standards Supported by iTP Secure Webserver
  - iTP Secure WebServer httpd

• iTP Secure WebServer System Administration Guide (425144-001)
  - D. Security Concepts
  - Secure Sockets Layer (SSL)

• iTP Secure WebServer System Administration Guide (425144-001)
  - Configuring the iTP WebServer
  - Configuring Your Server
  - Managing Server Contents
  - Using the rollover and rollstarth Scripts to Rotate Log Files

• iTP Secure WebServer System Administration Guide (425144-001)
  - Installing the iTP WebServer
  - Installing and Configuring the iTP Secure WebServer

• iTP Secure WebServer System Administration Guide (425144-001)
  - 8. Using Common Gateway Interface (GCI) Programs
  - Table 8-1. Environment Variables
  - Table 8-3. Environment Variable Access Methods
  - Logging Error Information
  - CGI Support in the iTP Secure WebServer Environment
  - Customizing the Standard File Environment
  - Pathway CGI Server classes

• iTP Secure WebServer System Administrator's Guide (425144-001)
  - 9. Using Java Servlets With the iTP Secure WebServer
  - Obtaining Specific CGI Environment Variable Values
  - HttpServlets
  - Context Management for Servlets
  - Using the Java Native Interface (JNI)
  - Classes that Facilitate Servlet Usage in an iTP Secure WebServer Environment
- iTP Active Transaction Pages (iTP ATP) Programmer’s Guide (426849-001)
  - Installing and Running ATP
  - Required Software
  - Installation
- iTP Active Transaction Pages (iTPATP) Programmer’s Guide (426849-001)
  - Introduction
  - Server-Side JavaScript for NonStop Systems
- iTP Webserver Administrator’s Guide (522659-001)
  - 7. Configuring the iTP WebServer
  - Mapping Requests to Contents
- iTP Secure Webserver System Administrator’s Guide (522659-001)
  - Introduction to iTP Secure Webserver
  - Pathway CGI Server
  - Generic Common Gateway Interface (CGI) Server
- iTP Secure WebServer System Administrator’s Guide (522659-001)
  - Using NonStop Servlets for JavaServer Pages With The iTP Secure WebServer
  - Overview
  - Region
- iTP Active Transaction Pages Programming Guide (426849-001)
  - A. SQL Query Tool and Catalog Explorer
  - Read-Only Access
  - Starting the iTP Secure WebServer Using the start Script
- iTP Active Transaction Pages Programming Guide (426849-001)
  - B. DDL Dictionary Viewer (dview)
- iTP Active Transaction Pages Programming Guide (426849-001)
  - C. HTML Forms Generator
- iTP Secure WebServer System Administrator’s Guide (427022-001)
  - B. Error Messages
- iTP Secure WebServer System Administrator’s Guide (427022-001)
  - Managing the iTP Secure WebServer Using Scripts
- iTP WebServer Administrator’s Guide (429506-001)
  - 2. Installing the iTP WebServer
  - You Can No Longer Use Restarth
- iTP Secure WebServer System Administrator’s Guide (429506-001)
  - Introduction to the iTP Secure Webserver
  - iTP Secure WebServer Architecture
- iTP Secure WebServer System Administrator’s Guide (429506-001)
  - Using NonStop Servlets for JavaServer Pages With The iTP Secure WebServer
- Setupjava
- Error Messages
- Installing NonStop Servlets for JavaServer (NSJSP)
- Installing NonStop Servlets for JavaServer Pages NSJSP
- International Character Set Support
- Multithreading - Spawning Java Threads
- The Main Configuration Files

- Jolt 1.1.2 for NonStop TUXEDO (refer to "Independent Product User Documentation - 14-DEC-2001 by Product")
  - Introducing Jolt
  - What is Jolt?

- NonStop EJB Installation Guide (429387-001)
  - Troubleshooting the Installation

- NonStop Pathway/iTS Web Client Programming Manual (520270-001)
  - Introduction to Pathway/iTS Web Clients
  - Configure the User Profile Server Class
  - Introduction to Pathway/iTS Web Clients
  - Router Process

- NonStop Pathway/iTS Web Client Programming Manual (520270-001)
  - 6. Java Import Package Reference
  - Method setCharSet

- NonStop Pathway/iTS Web Client Programming Manual (520270-001)
  - User-Written User Conversion Procedures for Web Clients

- NonStop Server for JAVA 1.5 (422097-001)
  - Accessing NonStop SQL/MP Database
  - NonStop SQL/MP Support for JDBC
  - SQL/MP Driver
  - Prepared Statement

- NonStop Server for JAVA 1.5 (422097-001)
  - Accessing Pathway Servers

- NonStop Server for JAVA 1.5 (422097-001)
  - Introducing NonStop Server for Java
  - Overview

- NonStop Server for Java (NSJ) Programmer's Guide (426947-001)
  - Accessing NonStop SQL/MP Databases
  - Connecting a Program to a Database
  - Creating Classes for Requests and Replies
  - Reading a Reply
  - Sending a Request
  - SQLMPBlob
  - JDBC Driver Types

- NonStop Server for Java (NSJ) Programmer's Guide (426947-001)
  - Accessing Pathway Servers
- Pathway Support

- NonStop Server for Java (NSJ) Programmer's Guide (426947-001)
  - Compaq Implementation Specifics
  - Java Abstract Window Toolkit (AWT)
  - Writing Thread-Safe Native Modes
  - IEEE Floating-Point Implementation

- NonStop Server for Java (NSJ) Programmer's Guide (426947-001)
  - Installation and Configuration
  - Building Libraries into the JVM
  - Running Java tools
  - Setting Environment Variables

- NonStop Server for Java Tools (426948-001)
  - NonStop Server for Java™ Tools Reference Pages

- NonStop SOAP User's Manual (520501-001)
  - Introduction to NonStop SOAP
  - Common Services for SOAP Servers
  - Features and Functions of NonStop SOAP

- NonStop Tuxedo 6.5.3. (refer to "Independent Product User Documentation - 14-DEC-2001 by Product")
  - Getting Started
  - Product Overview
  - Major Roles
  - JOLT for NonStop Tuxedo

- Open System Services Shell and Utilities Reference Manual (520226-001)
  - Chapter 6, User Commands (m – o)
  - Makefile

- SCUP Reference Manual, (520269-001)
  - A. SCUP Messages
  - Recovery

- SOAP4NSK User's Manual (429413-001)
  - Introduction to SOAP4NSK

- Web Viewpoint Users Guide, (425001)
  - Example 1: “Submitting a Query

- Web Viewpoint Users Guide, (425001)
  - Introduction to Web Viewpoint

Other References


A phased approach
- Add a user-friendly HTML interface to existing applications
- Availability
- Executive view of Internet enabling
- Importance of a single system image for growing websites
- Internet enabled systems configurations
- Key attributes of NonStop Himalaya servers for e-business services
- Manageability
- Options for Internet enabling NonStop Himalaya server applications
- The NonStop Himalaya server in an Internet-enabled enterprise
- The role of technology in the Java solution

- http://h71033.www7.hp.com/object/dataigwp.html "Data Integrity for NonStop Servers"
- NonStop System Hardware
- NonStop system processors: Lockstepped microprocessors
- Software design error

- http://searchdatabase.techtarget.com/sDefinition/0,,sid13_gci213846,00.html "Purpose of CGI"
- http://searchsecurity.techtarget.com/sDefinition/0,,sid14_gci343029,00.html "SSL"
- http://developer.java.sun.com/developer/onlineTraining/JSPIntro/contents.html "Java servlets" "JSP"
- http://searchwebservices.techtarget.com/sDefinition/0,,sid26_gci211580,0.html "applet"
- http://www.macromedia.com/software/coldfusion/whitepapers/pdf/cfmx_J2ee_wp.pdf "J2EE architecture" (4-7)
- http://searchnetworking.techtarget.com/gDefinition/0,294236,sid7_gci214004,00.html "HTTP"
- http://whatis.techtarget.com/definition/0,,sid9_gci887243,00.html "Function of XML"
- http://searchwebservices.techtarget.com/sDefinition/0,,sid26_gci214295,00.html "SOAP protocol description"
- http://searchwebservices.techtarget.com/sDefinition/0,,sid26_gci12286,00.html "HTML purpose"
- http://searchwebservices.techtarget.com/sDefinition/0,,sid26_gci13606,00.html "Primary functions of a web server"
• [http://www.jmarshall.com/easy/cgi/cgi_footnotes.html#getvspost](http://www.jmarshall.com/easy/cgi/cgi_footnotes.html#getvspost)
• iTP Webserver Workshop class notes, Module 14 - Pathway CGI Programming with Cobol (522608-001)
• NonStop JORB/MP 1.3 "Administration Guide" (refer to "Independent Product User Documentation - 14-DEC-2001 by Product")

**Conclusion**

HP wishes you success in the NonStop Systems Certification and in passing this exam. The exam results will provide valuable feedback to guide you in assessing your areas of strength or weakness. Successful completion of the exam confirms your competency in NonStop Web Enabling skills. However, continued training, job experience and completion of the targeted ASE certification will further increase your level of expertise and your ability to effectively support NonStop systems and solutions.