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 HP training courses, reference and study material 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

The Supporting the MSL5000 and Stand Alone Tape Devices exam is for HP Services field engineers, call center personnel, and other field personnel who provide installation and/or operational support assistance. No previous experience is required, but familiarity with the basics of storage, tape backups, SCSI, and UltraSCSI is desirable.

Examples of job roles:
- HP Services field engineers and call center personnel.

General areas of content include:
- Storage fundamentals and technologies.
- The StorageWorks product line.
- MSL5000/MSL6000 troubleshooting and replacement procedures.
- MSL5000/MSL6000 subsystem installation, configuration, and upgrade.

Certification requirements

The Supporting the MSL5000 and Stand Alone Tape Devices (HP1-237) exam is one of the core requirements to be certified as an Accredited Platform Specialist.

This level of certification is based on remedial maintenance for the purpose of restoring consumer and business class hardware to operational levels. The ideal candidate is anyone who provides remedial maintenance on HP products.
Prerequisites

- HP StorageWorks MSL5000/MSL6000 series library service and support WBT

Or

- HP StorageWorks MSL5000/MSL6000 series library service and support ILT

Exam details

This Supporting the MSL5000 and Stand Alone Tape Devices (HP1-237) exam is a beta exam. This means that you will see all the questions in the exam pool. During the final “live” exam, you will see only those items that remain after the beta test.

You will receive a score report with your results after beta testing is complete which you can use to identify areas of strength and learn about areas to improve upon for the live exam.

Please allow 3-5 months, after you have taken the beta exam, to receive your score report.

At the beginning of the exam, you will be asked to answer several survey questions. The survey has been designed to assist the exam development team define the final exam forms and set the passing score. Your honest responses will assist the exam team in properly tailoring this exam to the appropriate audience.

- **Number of items:** 218
- **Item types:** Multiple choice and drag-and-drop.
- **Time commitment:** 4 hours
- **Reference Material:** No on-line or hard copy reference material will be allowed at the testing site.

Comments on the exam

During the exam, participants can make specific comments about the items (i.e., accuracy, appropriateness to audience, etc). HP welcomes these comments as part of our continuous improvement process.
Exam content

The following testing objectives represent 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.

Supporting the MSL5000/MSL6000 and Standalone Tape Devices (HP1-237) Exam Content

1.0 Define and recognize the storage fundamentals and technologies required to support the HP MSL5000/MSL6000 library product.

Identify the different SCSI standards and how StorageWorks integrates these technologies.

- Describe the different types of SCSI standards. Include the differences, characteristics, capabilities, terminology, definitions and data communication methods.
  - SCSI I
  - SCSI II
  - SCSI III
  - SCSI options:
    - Fast
    - Wide
    - Ultra
    - Describe mix and match rules for putting different protocol devices on the same bus
  - Identify the different electrical signal configurations used on a SCSI bus:
    - Single ended
    - HVD/Differential
    - LVD

Recognize and describe the limitations, system requirements and configuration rules encountered when attaching devices to a SCSI bus.

- Describe the types, purpose and function of termination on a SCSI bus:
  - Active
  - Passive
- Describe the types, characteristics and limitations of SCSI cables.
- Describe the physical characteristics and purpose of the various SCSI connectors. State the limitations and possible system problems when configured incorrectly.
• 50-Pin/50-pin HD/68-Pin/VHDCI/SCA

Describe the purpose of hardware devices attached to a SCSI bus:
• HBA
• Hard disk drives
• Tape/Tape libraries

Interpret the commands and protocols associated with the SCSI standard when communicating with peripheral devices.

Explain how SCSI addressing is performed:
• Bus
• Target
• Logical Unit Numbers (LUNs)

State the steps to set up and configure the target devices on a SCSI bus:
• Setting Target IDs
• Configuring LUNs

Identify the peripheral devices redefined by the SCSI-3 standard, stating the common and unique commands associated with each type:
• Block devices
• Stream devices
• Medium-changer devices

Identify the Fibre Channel (FC) architecture, features and operation.

Describe the three Fibre Channel topologies. Include associated hardware and software, interconnection technology, characteristics, capabilities, terminology and definitions, and the effects each has on performance and capability.
• Point-to-Point
• FC-AL
• FC-SW / FC-SF
• Architecture of cable types/lengths:
  • Single Mode Fibre
  • Multimode Fibre
  • Copper

Recognize Fibre Channel in a customer environment and describe what not to do (APS Role).

Define the requirements, limitations and configuration rules for Fibre Channel interconnect hardware and selected switched fabric options.
• Configuration rules for cable types/lengths
• Connector types, for example GBICs
• Explain FC status indicator

Define the function, characteristics, and limitations of FC-associated StorageWorks hardware components.

• HBA
• GBIC
• GLM
• Hubs
• Switches
• Transceivers:
  • Short wave
  • Long wave

Identify and explain the various technologies implemented in HP backup tape solutions.

Identify HP backup tape solutions:

• DAT
• AIT
• DLT/SuperDLT
• LTO

Explain how proper tape handling is done.
2.0 Identify the StorageWorks product line to support customer needs.

Explain the features and benefits of HP StorageWorks subsystems and components. Include implementation methodologies, restrictions or limitations.

- Identify HP SCSI components:
  - SCSI adapters
  - FC adapters

- Describe the StorageWorks interconnect products and explain how and where to implement them.
  - Hubs
  - Switches
  - Media Converters
  - Fibre Channel Tape Controllers (FCTC):
    - Fibre Channel Tape Controllers (I and II)
    - MDR
    - NSR

- Describe where to find information about supported customer configurations (EBS Matrix).

3.0 Perform MSL5000/MSL6000 subsystem installation, configuration and upgrade procedures.

4.1 Hardware components.

- Describe the MSL5000 and MSL6000 family and their components.
  - Identify the MSL5000.
  - Identify the MSL6000.
  - Define possible multi-unit configurations.
  - Define the pass-through mechanism (PTM) and its integration.
  - Identify the E1200/E1200-160 Fibre Channel option.

- Identify the different supported tape drives.
  - Define where to install DLT/SDLT tape drives.
  - Define where to install LTO tape drives.
  - Describe supported configurations.

- List field replaceable units and their functions.

Demonstrate proper library configuration.

- Identify correct SCSI cabling and termination.

- List default configuration settings.
- Explain how to set up the SCSI IDs.
- Explain how to set up the library options.
- Explain how to set up the network parameters.
- Explain how to set up the PTM.
  - Demonstrate how to replace PTM components.
  - Describe proper PTM cabling.

Communication Setup and usage of MSLUtil and WebTLC.
- Identify the necessary cable and utility.
- Demonstrate the setup and configuration functions of the MSLUtil.
- Demonstrate the setup and configuration functions of WebTLC.

Demonstrate the ability to properly use HP Library and Tape Tools.
- Verify the host to drive/library connection.
- Execute the format utility.
- Execute the read/write test utility.
- Execute firmware upgrade or downgrade.
- Draft and email a support ticket.

Operations.
- Explain the power on and initialization sequence.
- Describe the Library status screen of the GUI on the front panel.
- Describe the tape cartridges import/export procedure of the GUI on the front panel.
- Identify and execute the different menu selections of the GUI on the front panel.
- Describe edit options area of the GUI on the front panel.
- Describe the GUI front panel utilities area.

Properly install the hardware options.
- Explain the necessary steps to install the optional NSR E-1200/E1200-160.
- Describe when to install the card-cage fan assembly.

4.0 Perform proper troubleshooting and replacement procedures for the MSL5000/MSL6000.

Given a problem scenario, identify the cause of tape-storage related problems.
- Identify utilities that should be used and common questions that should be asked when determining a customer storage problem.
  - List common symptoms for tape-storage related problems.
• List the common visual and audible symptoms for tape-related problems.
• List the common visual and audible symptoms for MSL5000/MSL6000 library-related problems.
• Determine if a given problem is hardware or firmware or software related.
• Collect status LEDs and fault symptom codes.

Describe the meaning of common errors and diagnostic messages and as a result identify the failed components for a given tape or library problem.
• Interpret MSL and tape drive status LEDs.
• Power supply LED.
• Tape-drive and drive-shoe status LED.
• SCSI terminator power LED.
• Front panel library status LED.
• Network activity LED.
• NSR E-1200 (embedded) activity LED.
• Interpret the MSL fault symptom codes (FSC).
• Understand the error recovery procedures.
• Use the front panel built-in diagnostic.
• Understand the sequence and output of the POST.
• Run and understand the MSLUtil diagnostic utility interface.

Given a problem scenario, choose the best method to repair or replace the defective subsystem or components.

• Perform correct Field Replaceable Units (FRU) replacement.
• Remove and replace MS5000/MSL6000 electrical components.
• Remove and replace MS5000/MSL6000 mechanical components.

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.

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<tr>
<th>Title</th>
<th>Course Number</th>
<th>How to Enroll</th>
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<tr>
<td>HP StorageWorks MSL5000/ML6000 series library service and support ILT</td>
<td>eLMS 9846</td>
<td><a href="http://www.hp.com/go/training">http://www.hp.com/go/training</a></td>
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Web-based training

Self-paced training and technical documentation may provide appropriate learning alternatives to instructor-led training for more experienced candidates.

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<th>Title</th>
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<td>HP StorageWorks MSL5000/MSL6000 series library service and support WBT (eLMS 4954)</td>
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Documentation (Internal only)

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<td>Various titles</td>
<td></td>
<td>An internal website has been established to house all of the learning product documents. <a href="http://storage.inet.cpqcorp.net/Techdocs/hpLIP/Greeley/MSL.htm">http://storage.inet.cpqcorp.net/Techdocs/hpLIP/Greeley/MSL.htm</a></td>
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Other reference material

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<tr>
<td>StorageWorks Ultrium 460 Tape Drive Performance Troubleshooting</td>
<td>elms 699</td>
<td><a href="http://vsslpro.compaq.com/plm">http://vsslpro.compaq.com/plm</a></td>
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<td>StorageWorks Standalone Tape Drive Technologies</td>
<td>elms 700</td>
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<td>Super-Drive Performance Tuning</td>
<td>eLMS 9327</td>
<td><a href="http://vsslpro.compaq.com/plm">http://vsslpro.compaq.com/plm</a></td>
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<td>Performance Tuning Tools</td>
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<tr>
<td>Cybrary - Tape Devices</td>
<td>(Internal only) <a href="http://cybrary.inet.cpqcorp.net/HW/STOR/TAPESS/directory.html">http://cybrary.inet.cpqcorp.net/HW/STOR/TAPESS/directory.html</a></td>
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**Conclusion**

HP wishes you success in the HP Certified Professional Program and in passing the exam for which you are preparing.