Exam Audience
The Supporting the MSL5000/MSL6000 and Stand Alone Tape Devices exam is for HP Services field engineers, call center personnel, field personnel, and channel partners 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.

Exam Specifications
- Number of items: 62
- Passing Criteria: 68%
- Time allocated: 1 hour and 30 minutes

Exam Preparation
- Prerequisites
  - HP StorageWorks MSL5000/MSL6000 Series Library Service and Support WBT, or
  - HP StorageWorks MSL5000/MSL6000 Series Library Service and Support ILT (HP employees only)
  - MSL APS Channel Training Class (Channel Partners only)
- Key Topics
  1.0 Storage fundamentals and technologies that support the HP MSL5000/MSL6000 library product.
    - SCSI standards and how StorageWorks integrates them
    - Electrical signal configurations used on a SCSI bus
    - Limitations, system requirements and configuration rules when attaching devices to a SCSI bus
    - Types, purpose and function of termination on a SCSI bus
    - Types, characteristics and limitations of SCSI cables
    - Characteristics of SCSI connectors, including limitations and possible system problems when configured incorrectly
- Hardware devices attached to a SCSI bus
- Commands and protocols associated with the SCSI when communicating with peripheral devices
- SCSI addressing, including Bus, Target, Logical Unit Numbers (LUNs)
- Setting up and configuring the target devices on a SCSI bus
- Peripheral devices redefined by the SCSI-3 standard
- Fibre Channel architecture, features and operation
- Fibre Channel topologies, including associated hardware and software, interconnection technology, characteristics, capabilities, terminology and definitions, and effects on performance
- Requirements, limitations and configuration rules for Fibre Channel interconnect hardware and selected switched fabric options, including configuration rules for cable types/lengths, connector types, Fibre Channel status indicator
- Function, characteristics, and limitations of Fibre Channel-associated StorageWorks hardware components
- Various technologies implemented in HP backup tape solutions
- HP backup tape solutions and tape handling

2.0 StorageWorks product line to support customer needs.
- Features and benefits of HP StorageWorks subsystems and components, including implementation methodologies, restrictions or limitations
- StorageWorks interconnect products: how and where to implement them, including: hubs, switches, media converters, Fibre Channel Tape Controllers
- Where to find information about supported customer configurations (EBS Matrix)

3.0 Perform MSL5000/MSL6000 subsystem installation, configuration and upgrade procedures.
- MSL5000 and MSL6000 family and their components
- Possible multi-unit configurations
- Pass-through mechanism (PTM) and its integration
- E1200/E1200-160 Fibre Channel option
- Supported tape drives and configurations
- Field replaceable units and their functions
- Correct library configuration and SCSI cabling and termination.
• Set up of SCSI IDs, library options, network parameters, PTM, including how to replace PTM components and correct PTM cabling
• Communication setup and use of MSLUtil and WebTLC
• Use of HP Library and Tape Tools, including verifying host to drive/library connection, executing the format and read/write test utilities, firmware upgrades or downgrades, and drafting and emailing a support ticket
• Library power-on and initialization sequence
• GUI on the front panel
• Installing hardware options, including optional NSR E-1200/E1200-160, and the card-cage fan assembly

4.0 Troubleshooting and replacement procedures for the MSL5000/MSL6000.
• Causes of tape-storage related problems and common symptoms
• Use of utilities
• Questions to ask to determine customer storage problems
• Determining if a problem is hardware, firmware or software related
• Common errors and diagnostic messages, including identifying failed components, interpreting various
• MSL fault symptom codes (FSC) and error recovery procedures
• Use of front panel built-in diagnostic
• Sequence and output of the POST
• MSLUtil diagnostic utility interface
• Repair or replacement of defective subsystem or components, electrical and mechanical components and field replaceable units

Available Study Materials
This section lists training courses and documents to help you acquire a majority of the knowledge and skills needed to pass the exam. You are not required to take the courses listed in this section; however, HP strongly recommends 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.
Supporting the MSL5000/6000 and Stand Alone Tape Devices Exam (HP2-237) Datasheet

Instructor-led training

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

<table>
<thead>
<tr>
<th>Title</th>
<th>Course Number</th>
<th>How to Enroll</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP StorageWorks MSL5000/MSL6000 series library service and support ILT</td>
<td>9846 (HP employees only)</td>
<td><a href="http://tslearner.den.hp.com/main_app.asp">http://tslearner.den.hp.com/main_app.asp</a></td>
</tr>
<tr>
<td>MSL APS Channel Training Class</td>
<td>12013 (Channel Partners only)</td>
<td><a href="http://www.hp.com/go/training">http://www.hp.com/go/training</a></td>
</tr>
</tbody>
</table>

Web-based training

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

<table>
<thead>
<tr>
<th>Title</th>
<th>How to Order/Obtain</th>
<th>How to Order/Obtain</th>
</tr>
</thead>
<tbody>
<tr>
<td>STORAGE HP StorageWorks MSL5000/MSL6000 series library service and support WBT</td>
<td>4954</td>
<td><a href="http://www.hp.com/go/onlinelearning">www.hp.com/go/onlinelearning</a></td>
</tr>
</tbody>
</table>

Other reference material

<table>
<thead>
<tr>
<th>Title</th>
<th>Number</th>
<th>Source</th>
</tr>
</thead>
</table>

Sample Exam Items

The sample exam items give you a preview of test items. These items WILL NOT be on the exam; however, they are representative of actual items and should help you become familiar with the format and complexity of the test items.
1. Which Fibre Channel cable do you use to connect an MSL library with an NSR E1200-160 Network Storage Router installed, to a 2Gb/s Fibre Channel switch?
   A. SC (Subscriber Connector) on both sides and multi mode cable
   B. LC (Lucent Connector) on both sides and single mode cable
   C. LC on both sides and multi mode cable
   D. SC on both sides and single mode cable

2. Which SCSI bus is used for the MSL5000 library?
   A. Ultra
   B. Ultra2
   C. Ultra 3
   D. Ultra320

3. Which tape drive technology is supported on the MSL6000 library?
   A. Ultrium 460
   B. Ultrium 215
   C. SDLT320
   D. SDLT220

4. The robotics controller Ethernet IP address can be configured _____.
   A. using the control panel MENU>OPTIONS menu
   B. through the serial port using a terminal emulation program
   C. using the WEBTLC interface
   D. by selecting pre-defined sets of IP addresses and subnet masks for each individual robotics controller in a multi-unit configuration

5. Which test is available in the HP Library and Tape Tools software for communication with a host?
   A. Read/Write
   B. Connectivity
   C. Media Validation
   D. Device Analysis

6. Which tasks can you perform in the Edit SCSI options area of the menu screen of an MSL library? Select TWO.
   A. Flash a drive from SCSI.
   B. Clean a drive.
   C. Define SCSI-2 and SCSI-3 mode for the loader.
   D. Change the barcode label length.
E. Prevent or allow access to the mail slot.

7. The password for the MSL5000 Tape Library Remote Management Interface can be changed using _____.
   A. the Remote Management Interface
   B. the library Operator Control Panel
   C. a telnet session
   D. the MSLUtil software

8. Which precautions must you take before replacing a part (not hot-pluggable) in an MSL library? Select TWO.
   A. Take appropriate electrostatic discharge (ESD) precautions.
   B. Shutdown the backup application.
   C. Shutdown the backup server.
   D. Power off the Fibre Channel switch if there is a Fibre Channel connection.
   E. Disconnect the AC power cord from the power supply units.

9. You are replacing a drive online. What must you do after unloading a cartridge and deactivating the drive from the front panel GUI?
   A. Shutdown the library from the front panel GUI.
   B. Disconnect the related SCSI cable.
   C. Remove the left magazine.
   D. Verify the power LED is off on the drive you want to replace.

10. Which statement about replacing the library controller board in a 10U MSL library is correct?
    A. The library controller board can be installed in each slot of the card cage.
    B. The library controller board can be installed only in the right most slot of the upper card cage.
    C. The replacement library controller can be installed in the right most slot of the lower card cage for failover.
    D. The replacement library controller can be installed in any slot of the upper card cage for failover.

11. In an MSL5000 multi-unit configuration, the master library _____.
    A. has the highest SCSI target ID of all library robotics controllers.
    B. is installed in the top most mechanical position
    C. has a cable connected to the lower port of the pass-through mechanism (PTM)
12. What should you do before replacing the library controller board in an MSL library?

A. Obtain adequate assistance to lift and stabilize the library during the replacement procedure.
B. Ensure the thermal upgrade kit is installed on a 5026 model.
C. Power off the Fibre Channel switch if one is connected.
D. Note the library options and SCSI settings.

ANSWERS:

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>C</td>
<td>4.</td>
<td>A</td>
</tr>
<tr>
<td>2.</td>
<td>B</td>
<td>5.</td>
<td>B</td>
</tr>
<tr>
<td>11.</td>
<td>C</td>
<td>12.</td>
<td>D</td>
</tr>
</tbody>
</table>