ESL and MSL Tape Libraries - Installation, Management, Tips & Techniques

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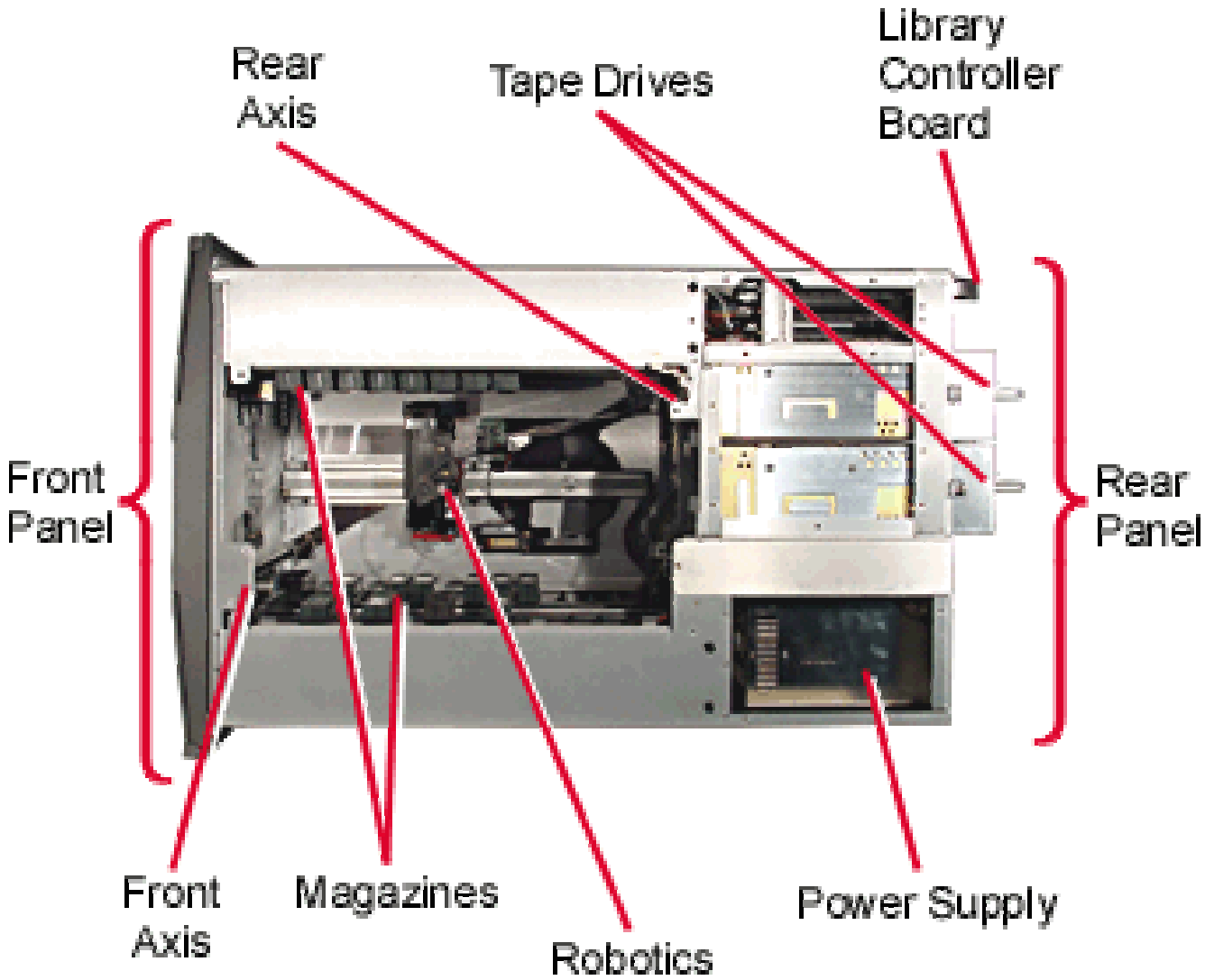
HP WORLD 2003
Solutions and Technology Conference & Expo

Overview

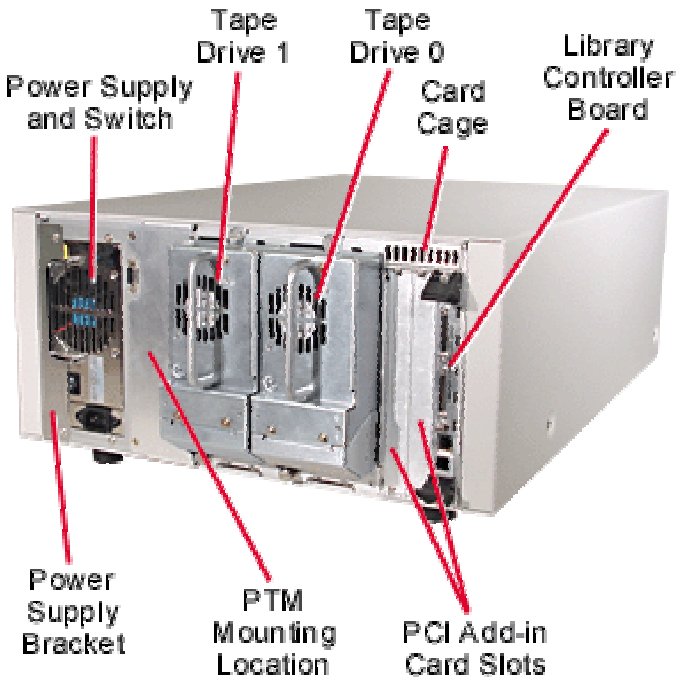
- Introduction
- MSL libraries
  - Components
  - Cabling
  - Pass-through
  - Management
- ESL libraries
  - Components
  - Cabling
  - Pass-through
  - Management

HP StorageWorks MSL5000

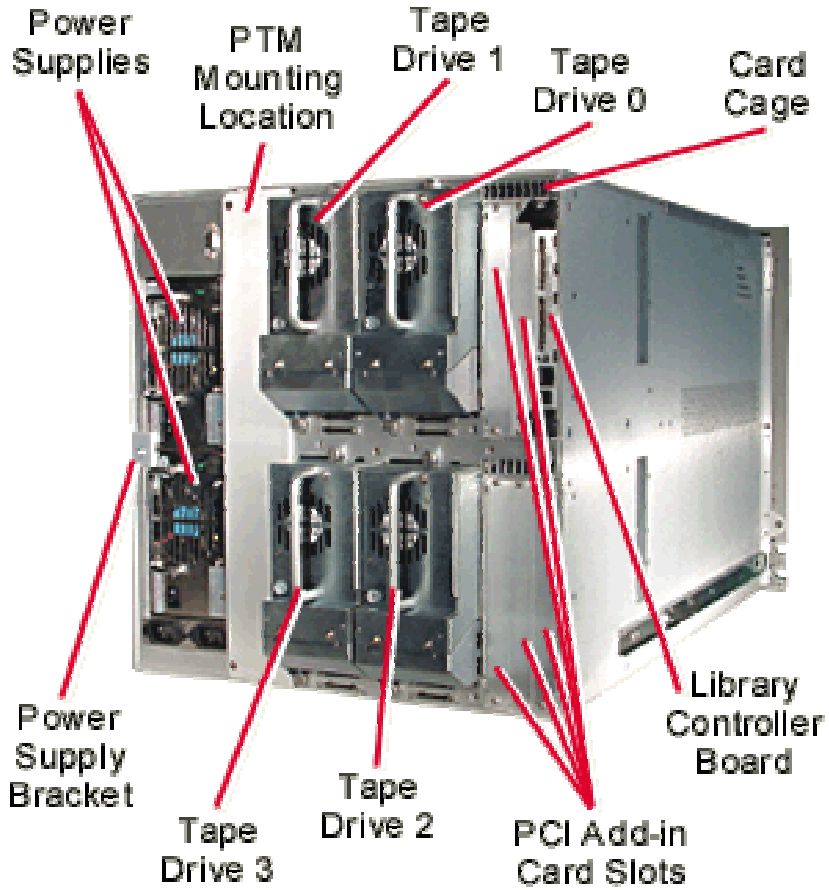
MSL5000 top view



MSL5000 rear view

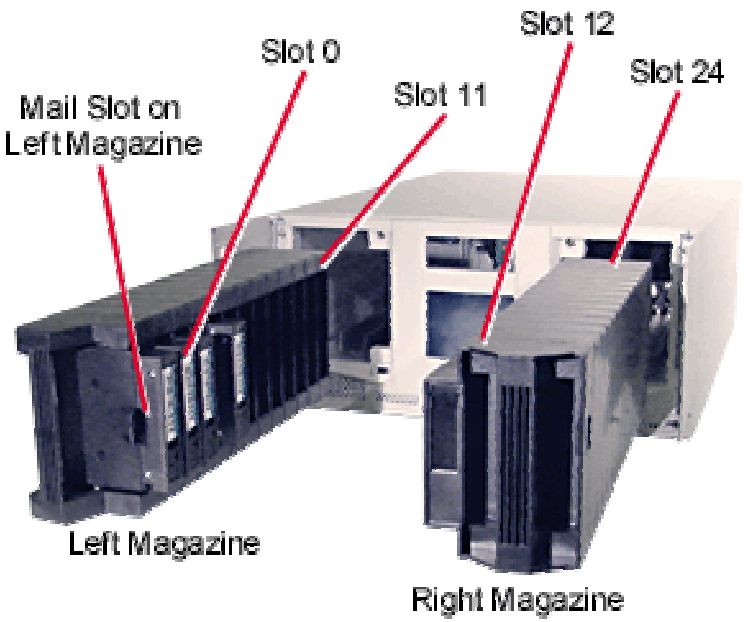


MSL5030

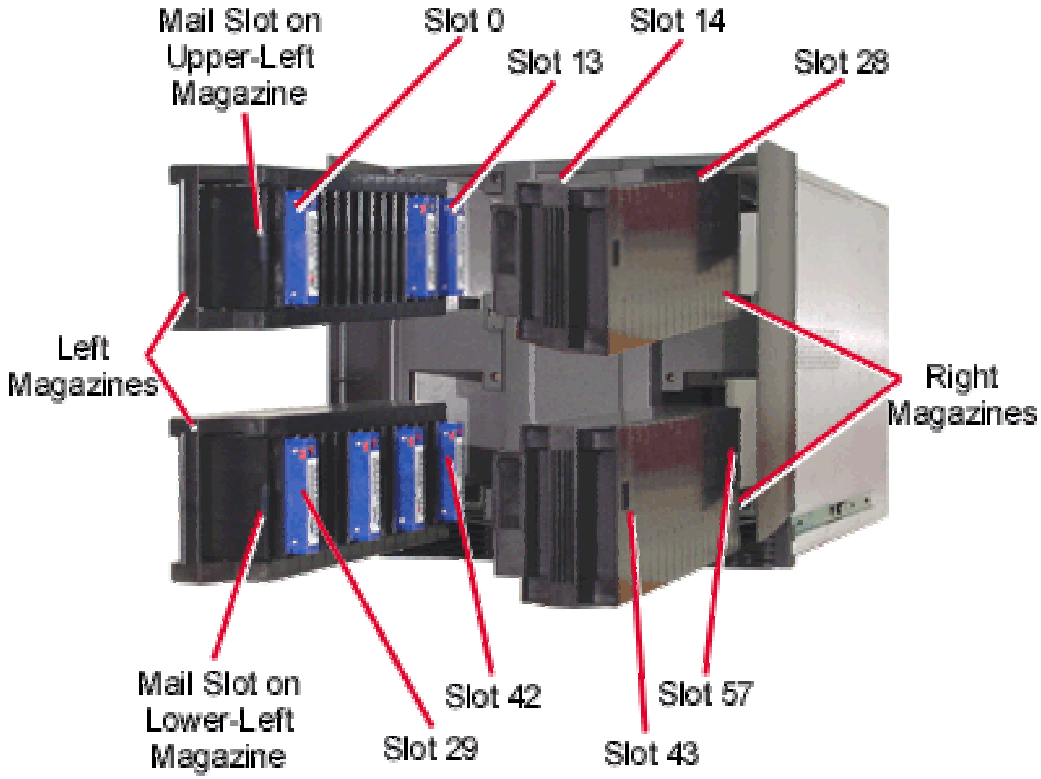


MSL5060

MSL5000 magazines

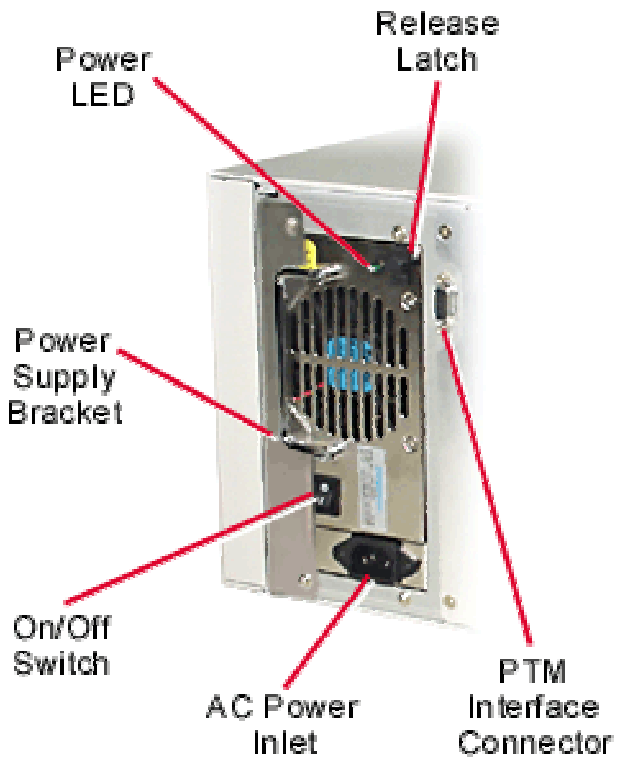


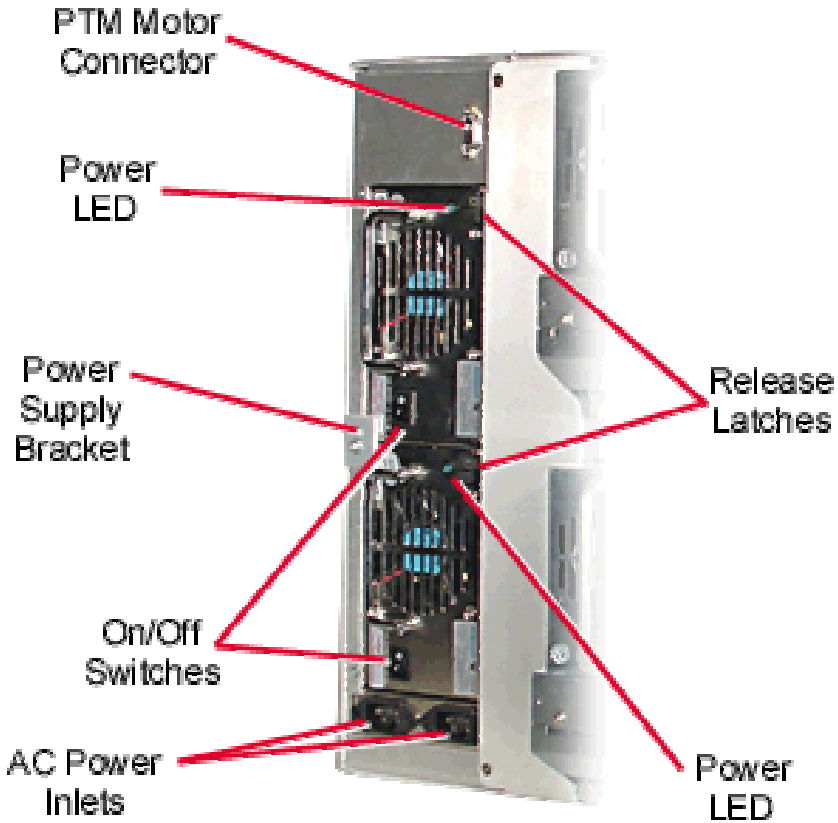
MSL5026



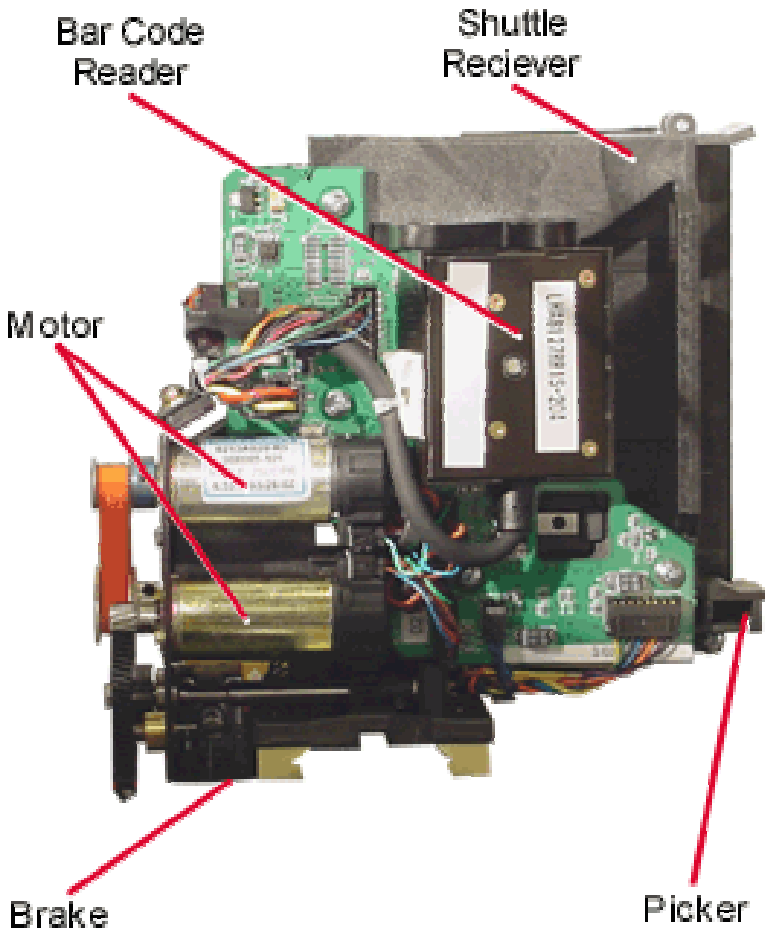
MSL5060

MSL5000 power supply

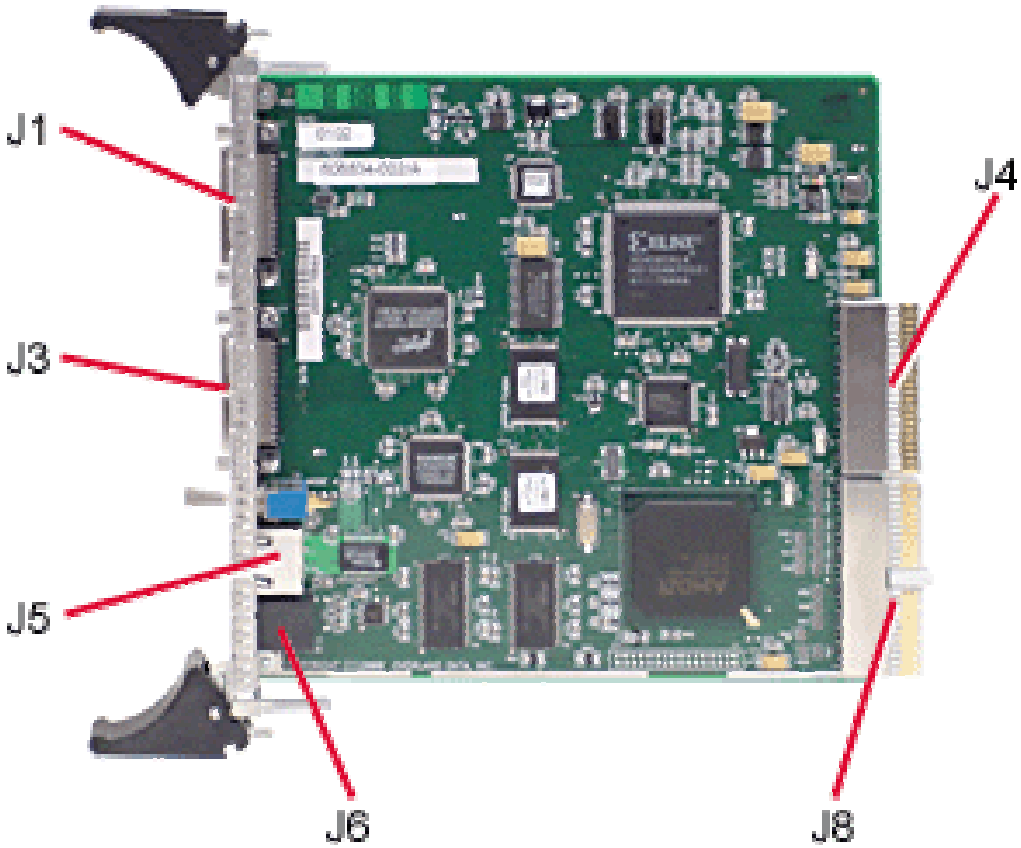




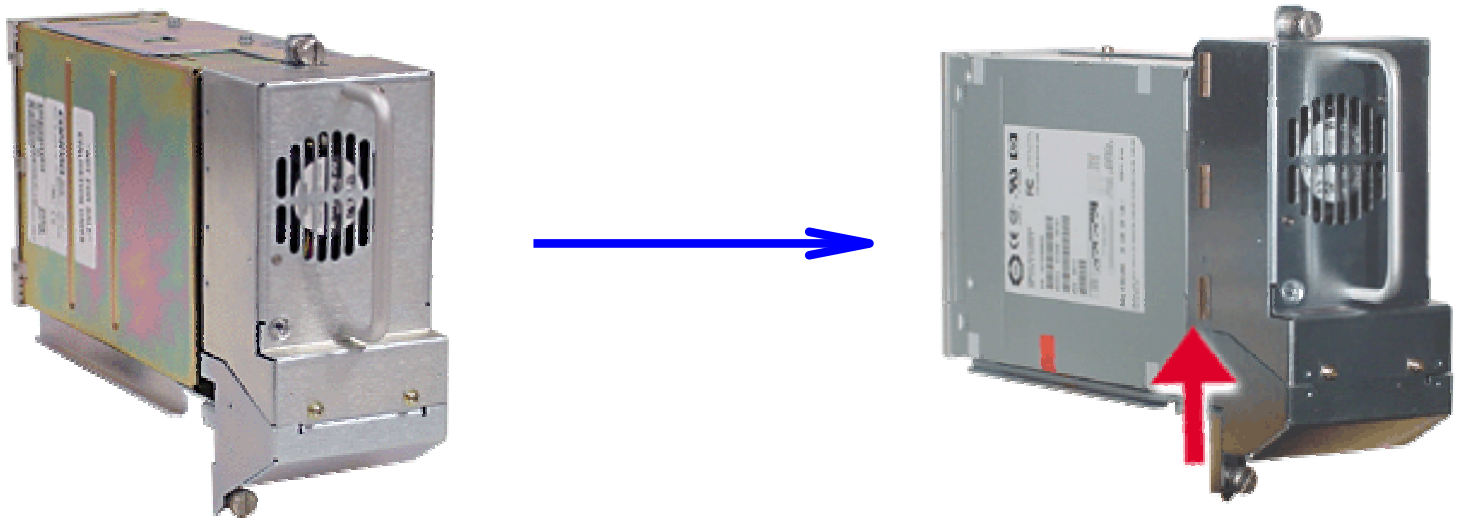
MSL5000 shuttle assembly (robotics)



MSL5000 controller board



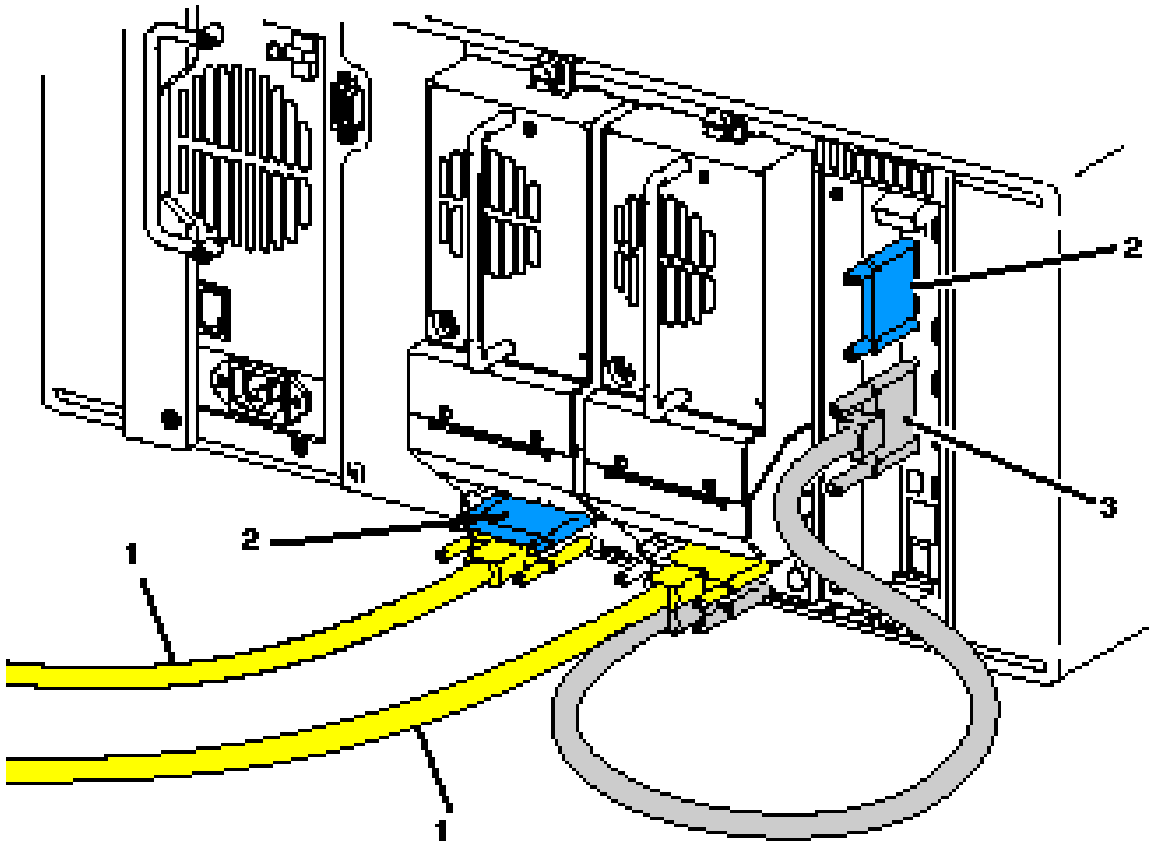
Drive upgrades



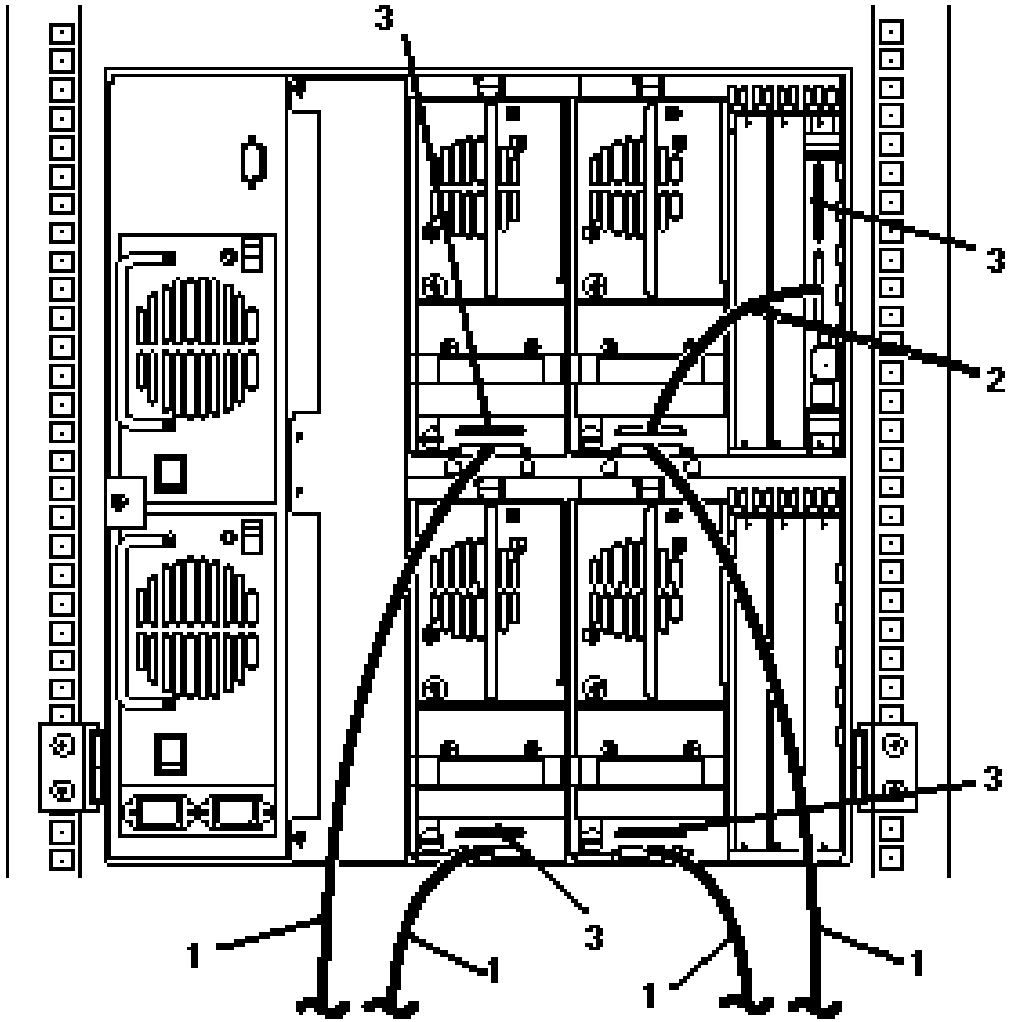
- Verify newer type of drive supported for library
- Update library firmware
- Replace drive

MSL6000 Cabling

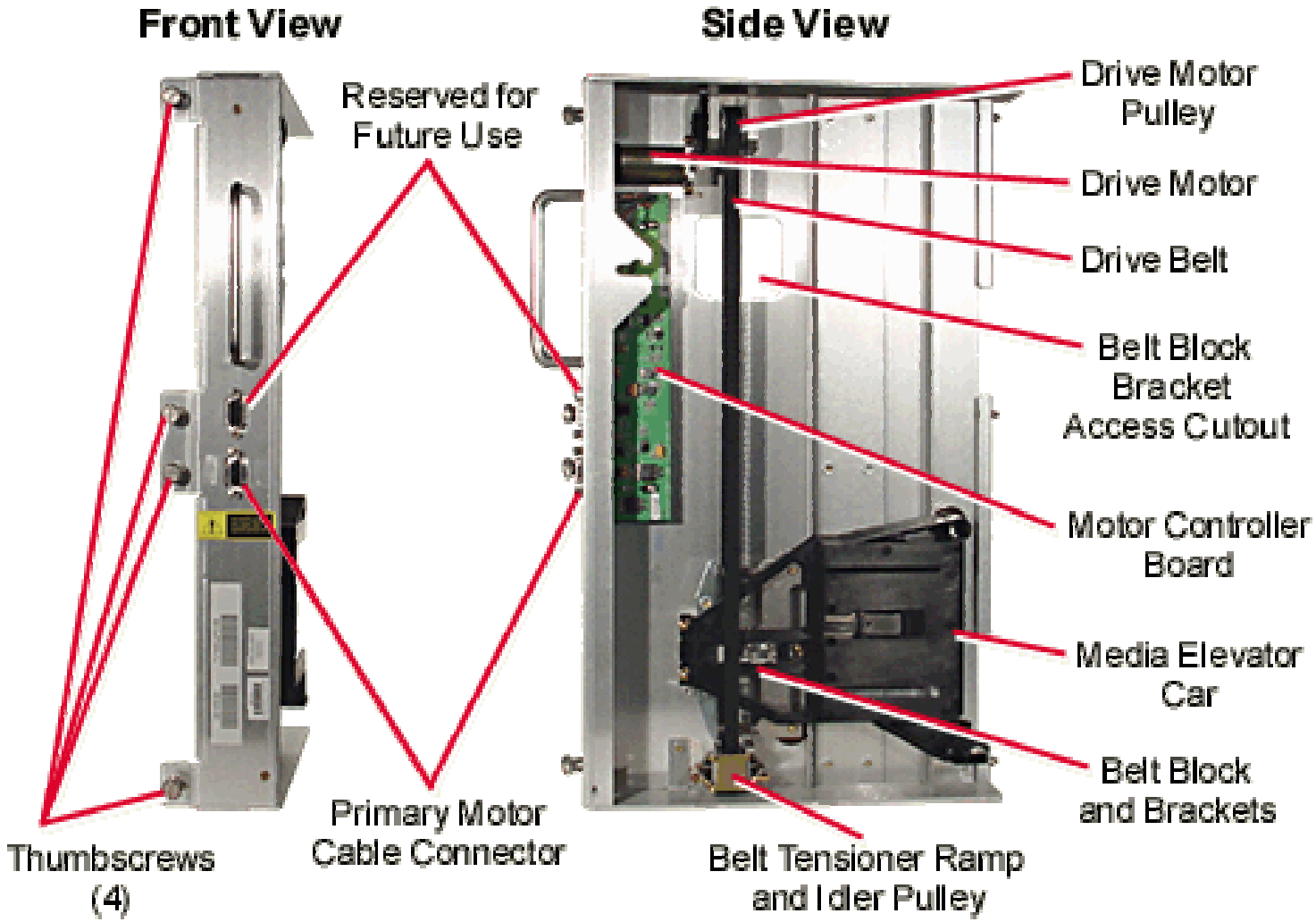
MSL6030 SCSI Cabling



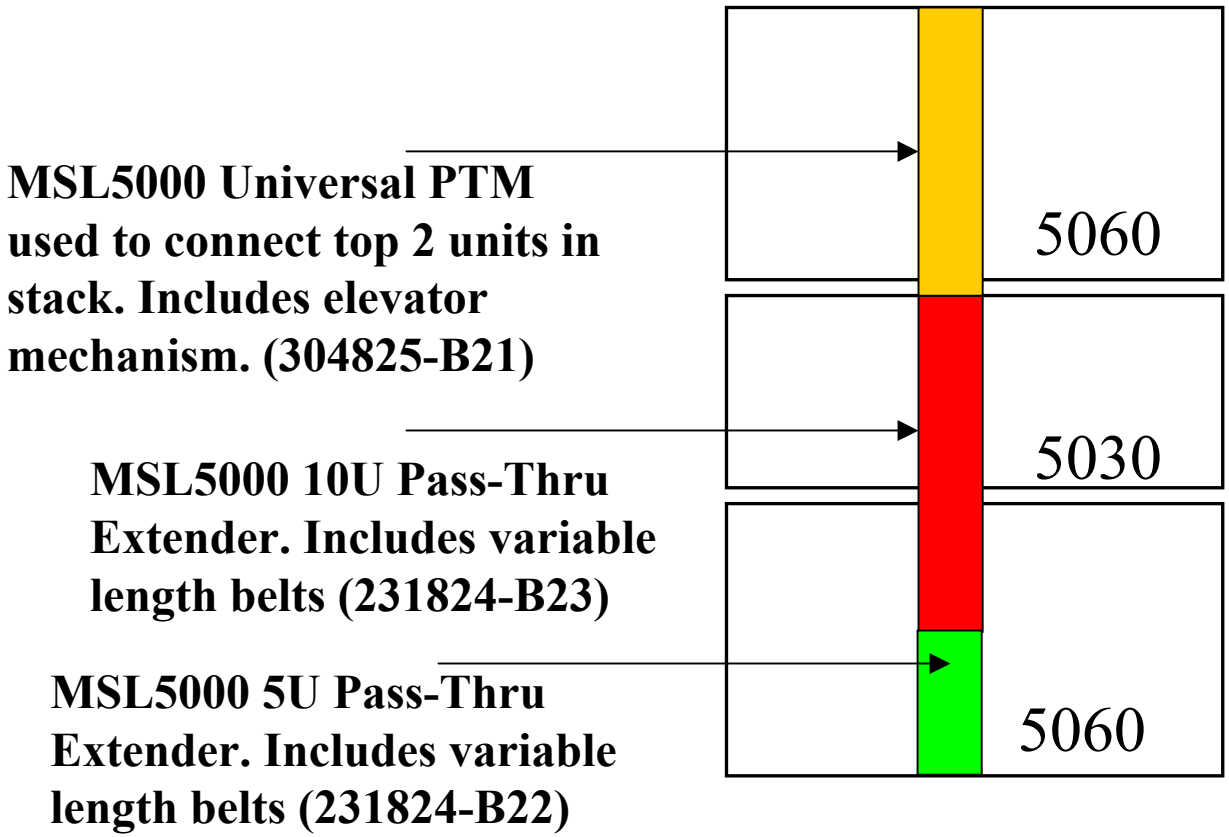
MSL6060 SCSI Cabling



Pass-through mechanism



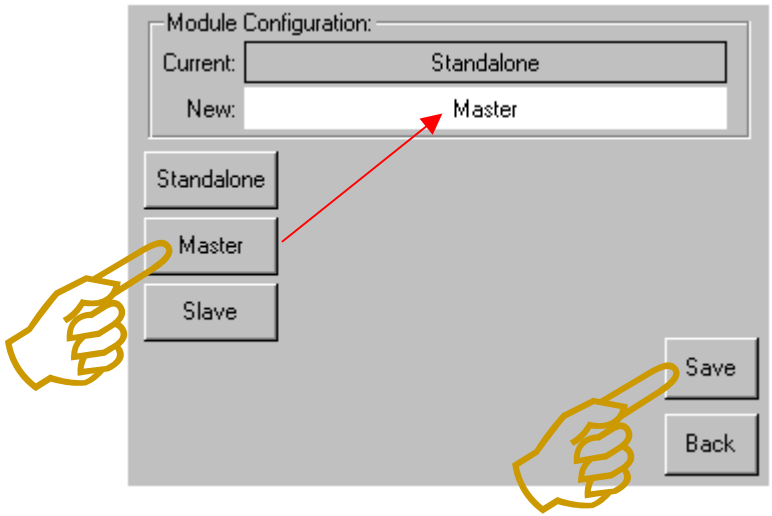
Pass thru module components

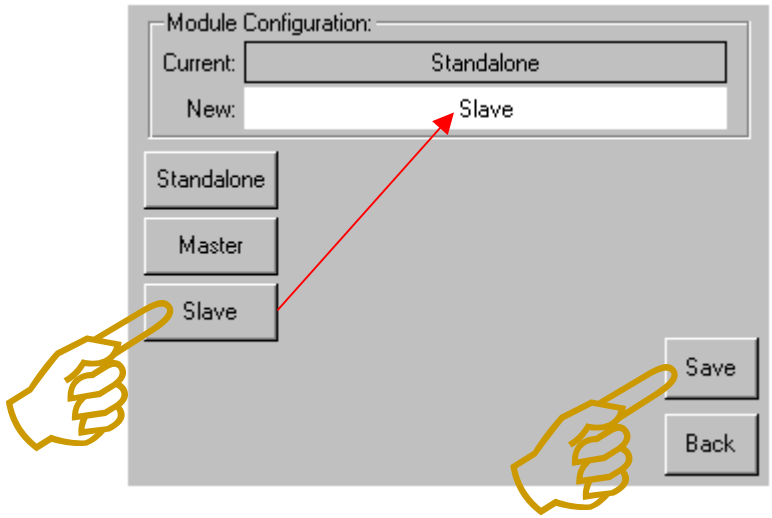


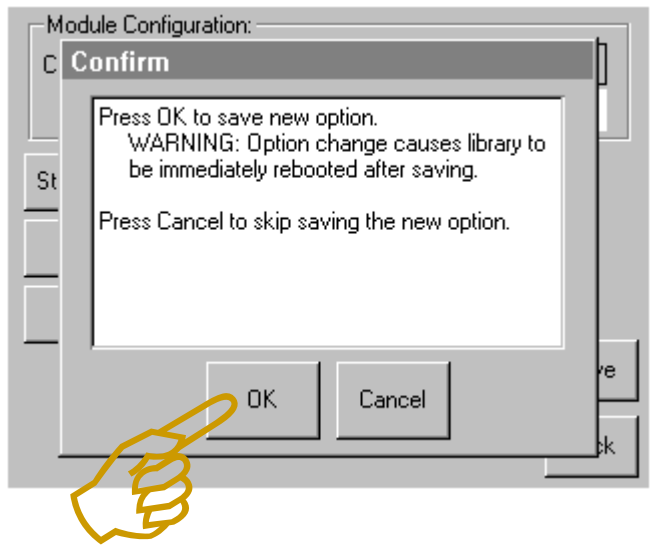
MSL5000 module expansion

- verify minimum firmware (2.28) in all modules
- install router (may require 1U rack space) for private LAN
- remove expansion unit covers from modules
- install msl5000 modules in rack
- extend the expansion unit if necessary – from 10U base up to maximum of 40U
- configure master and slave modules

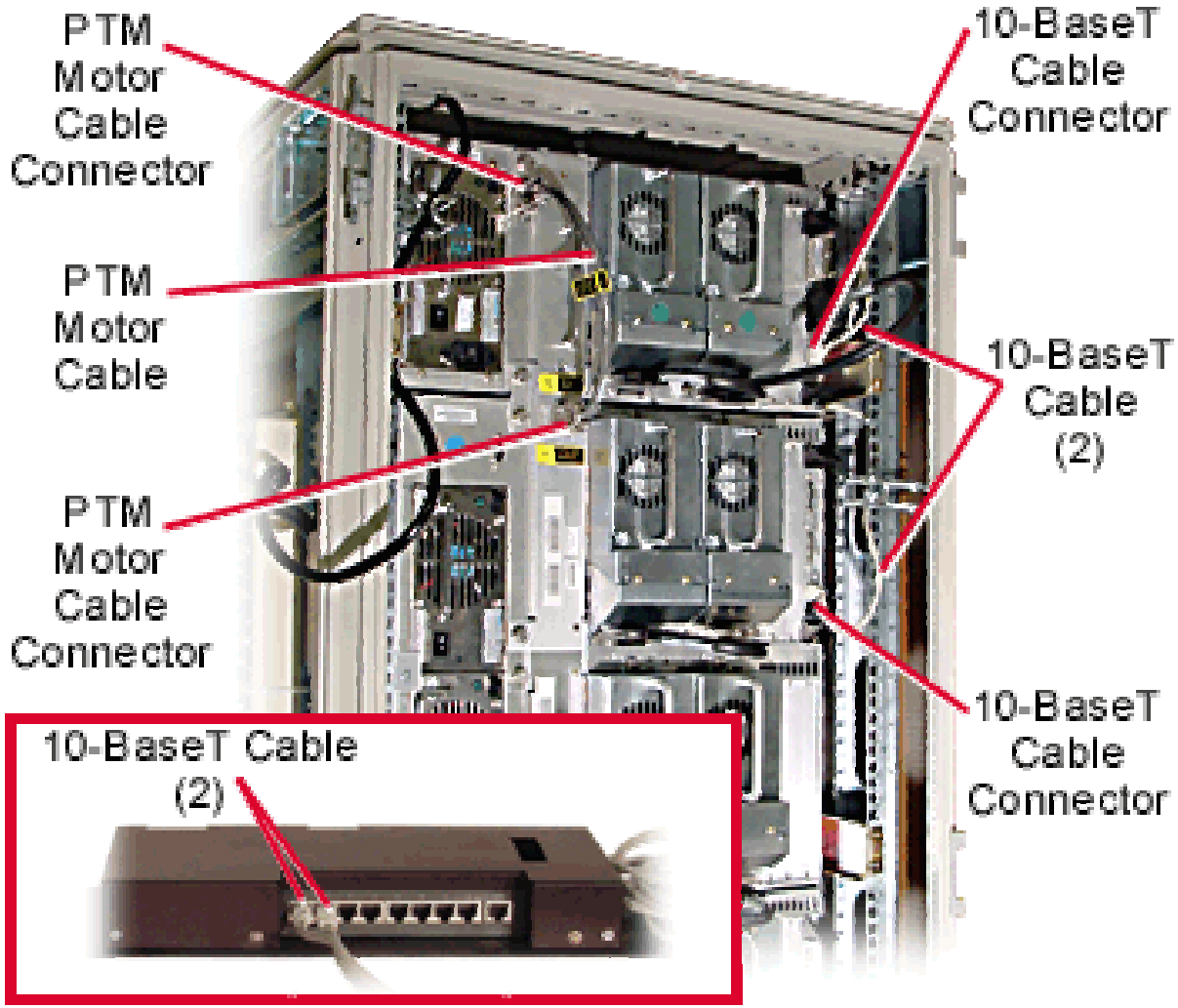
MSL5000 master/slave config



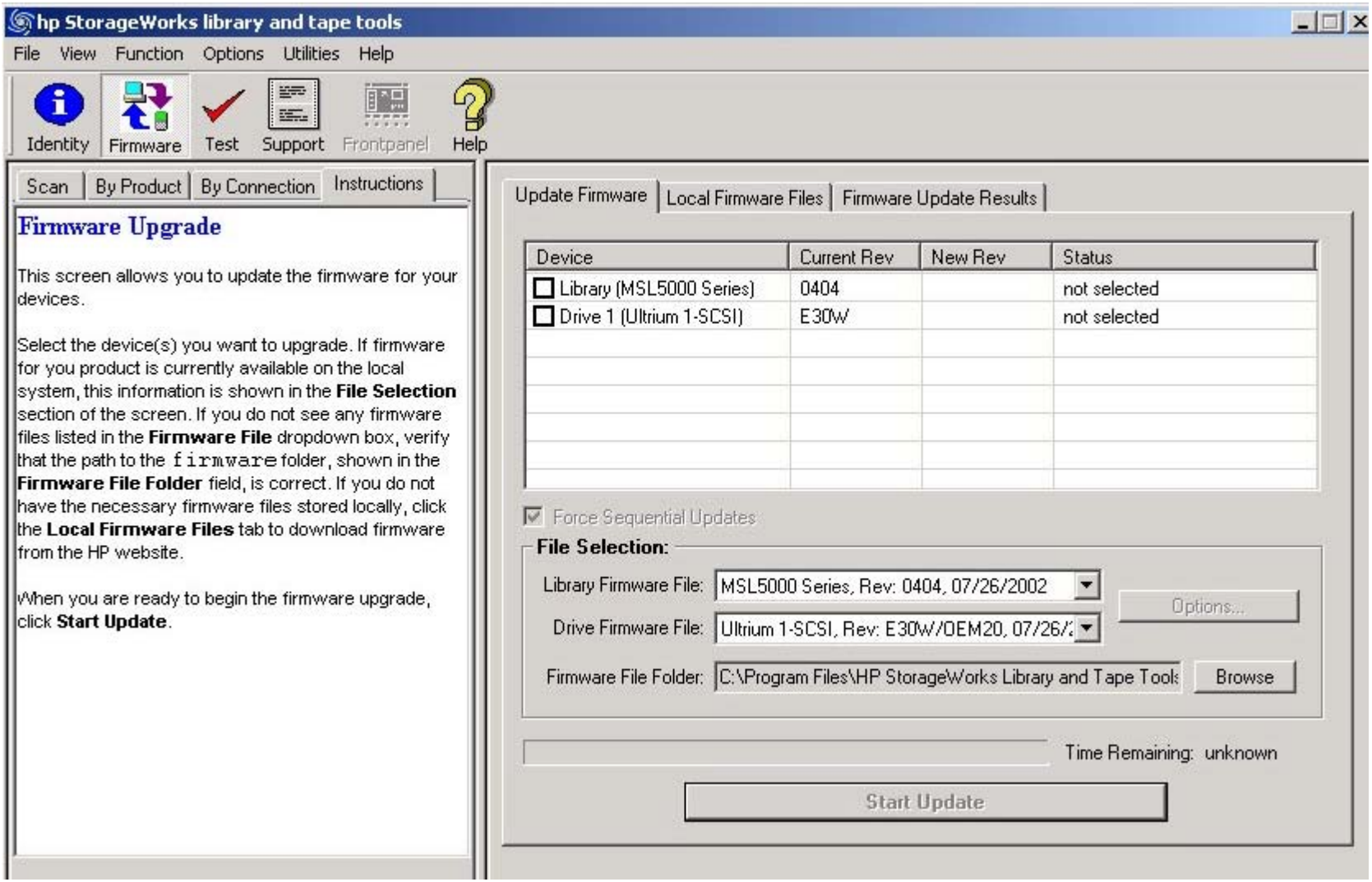




Pass-through mechanism cabling

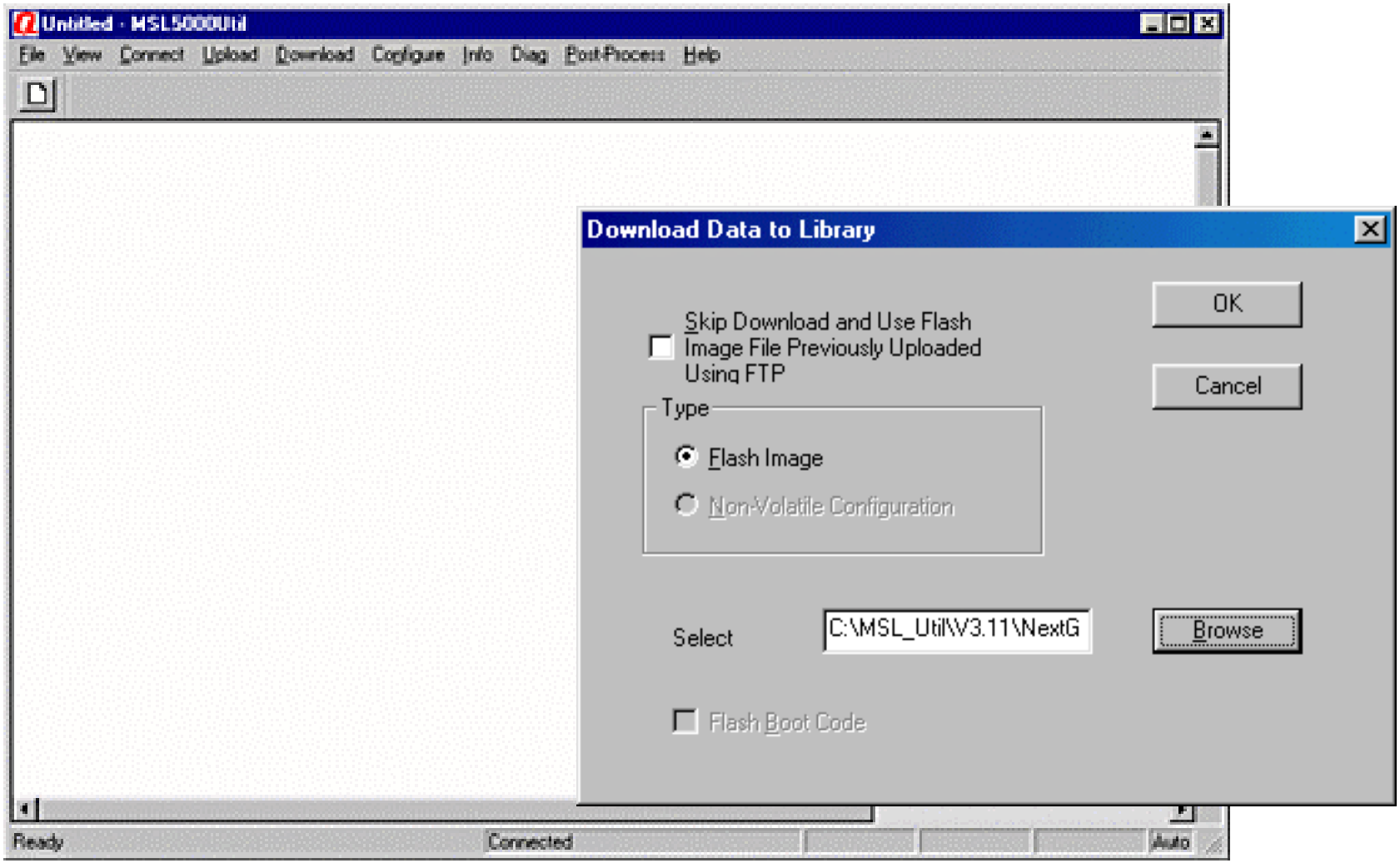


Firmware updates – via Library & Tape Tools (preferred option)



Firmware updates – remote management interface

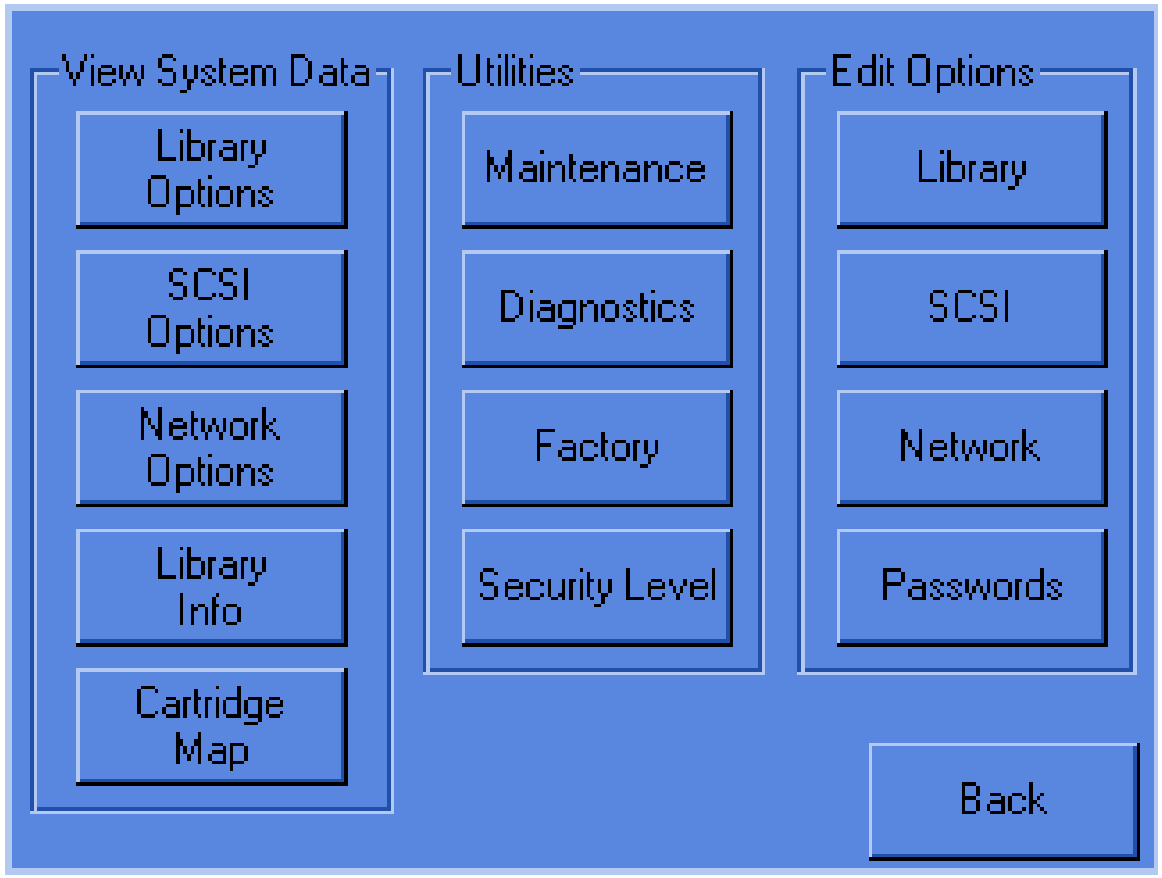
Firmware updates – MSL5000Util



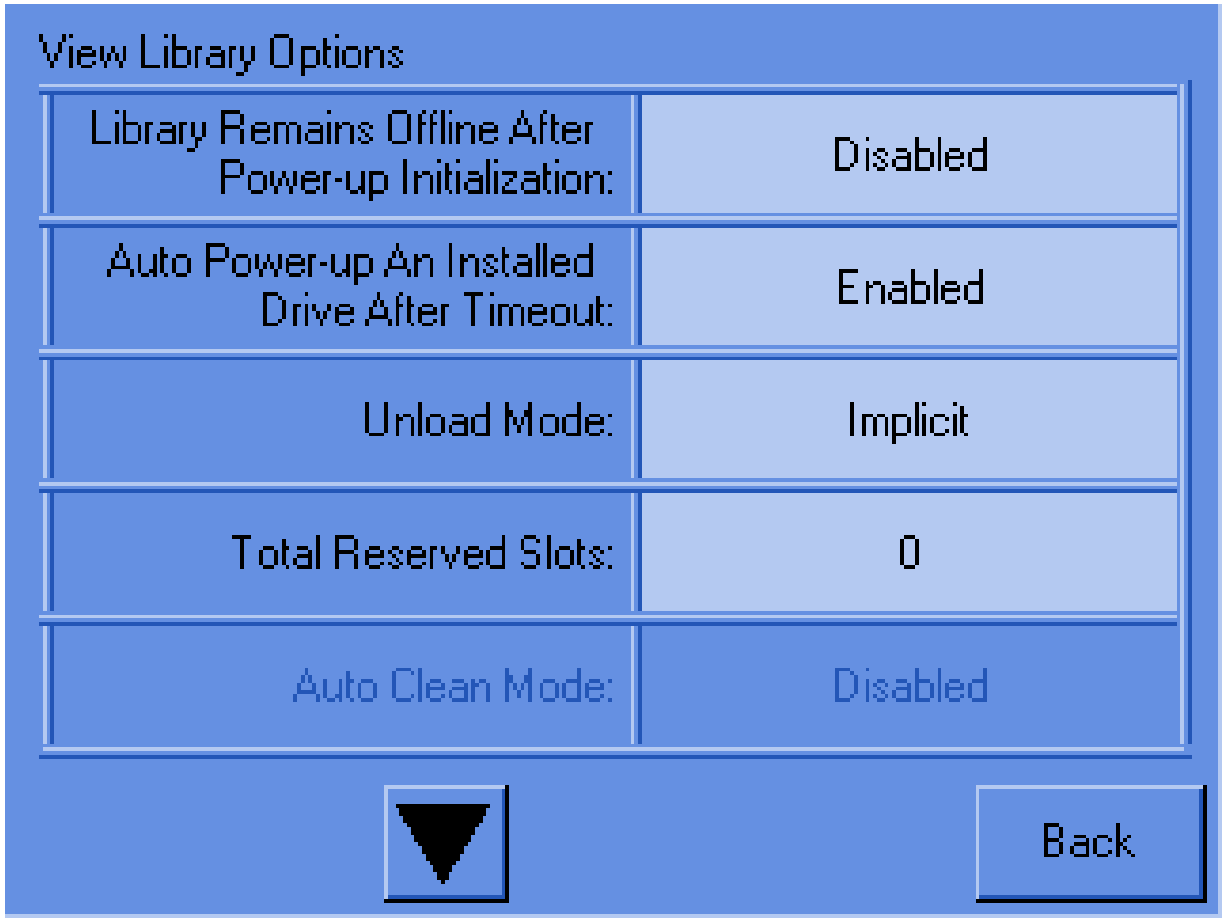
MSL Web Management

Management GUI – main menu

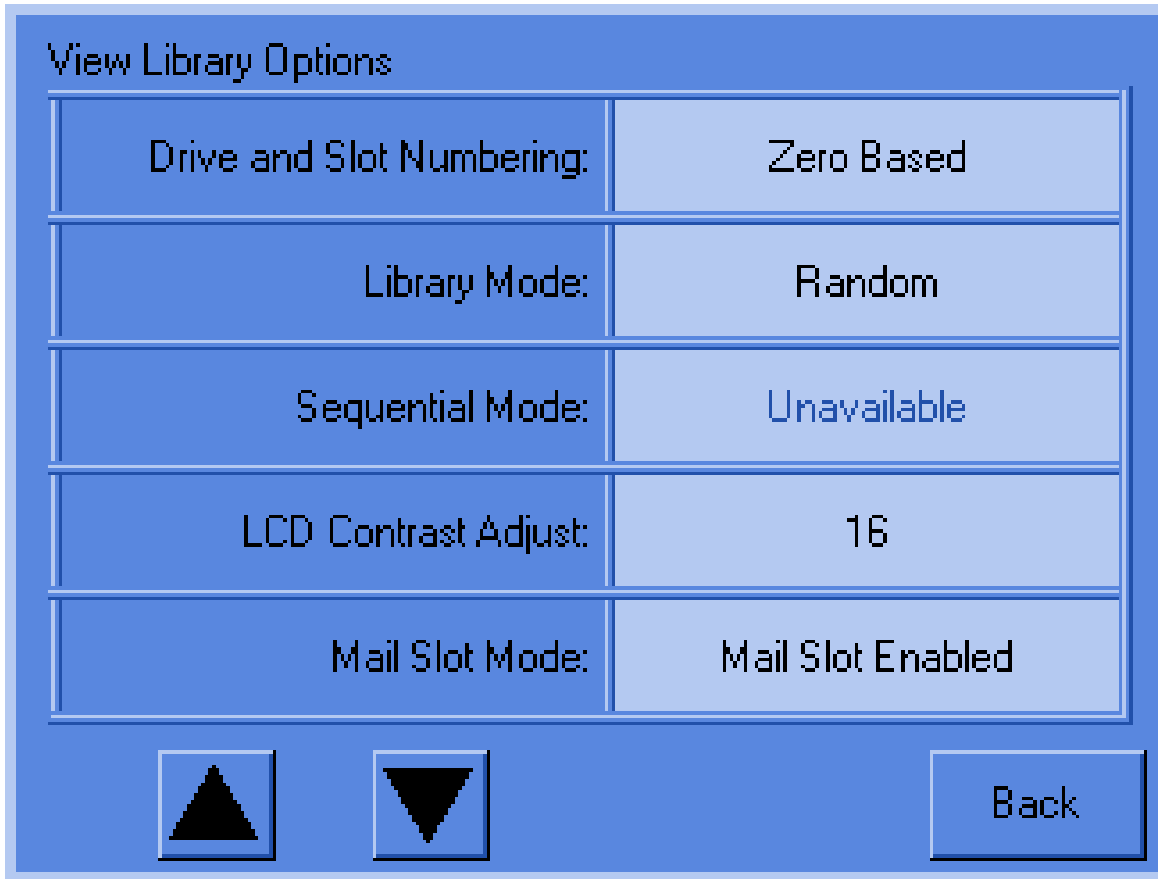
Management GUI – Menu screen



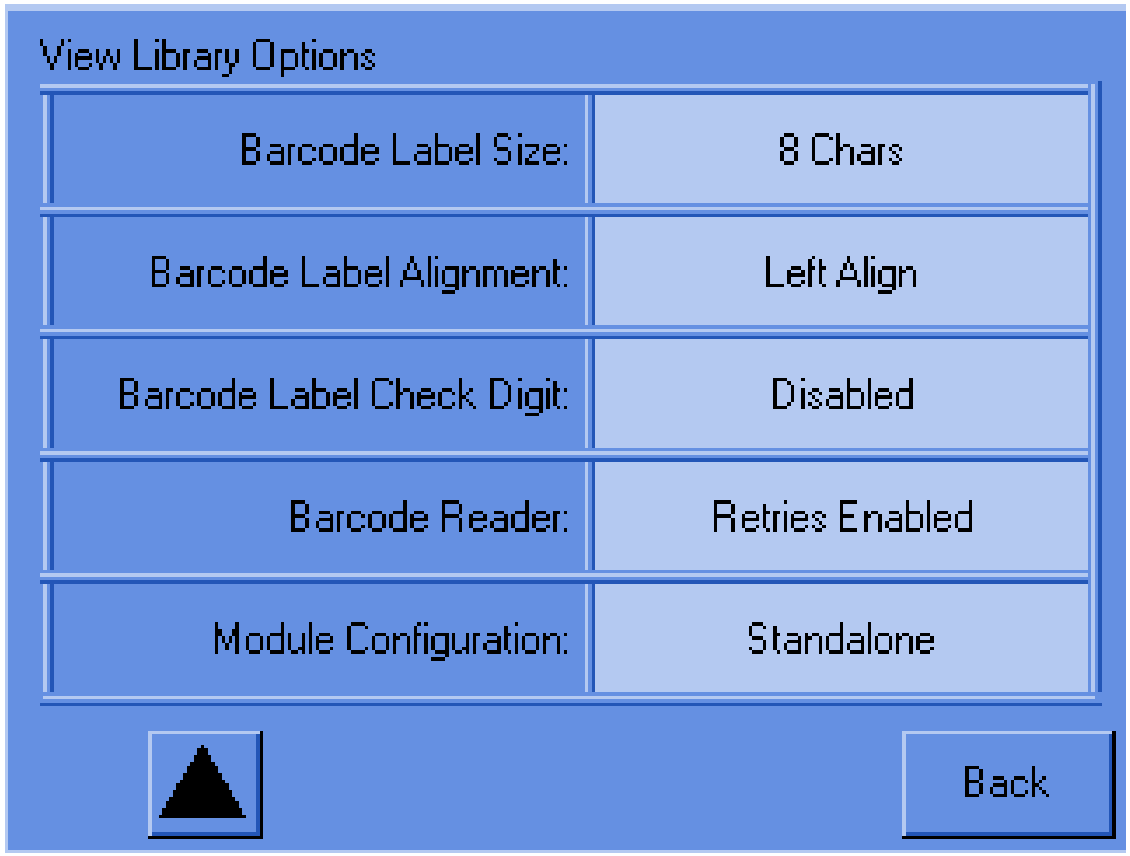
Management GUI – Library Options (1)



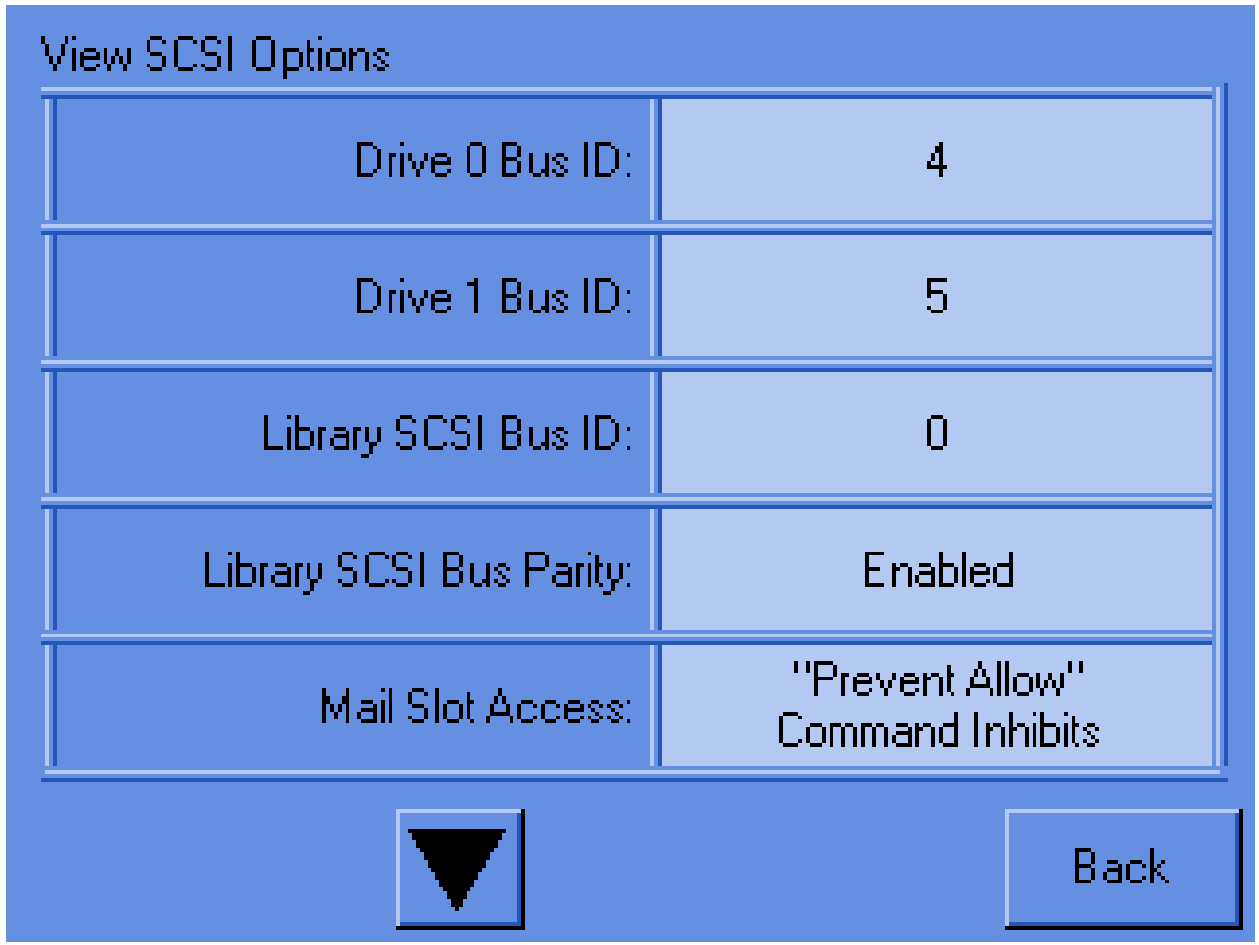
Management GUI – Library Options (2)



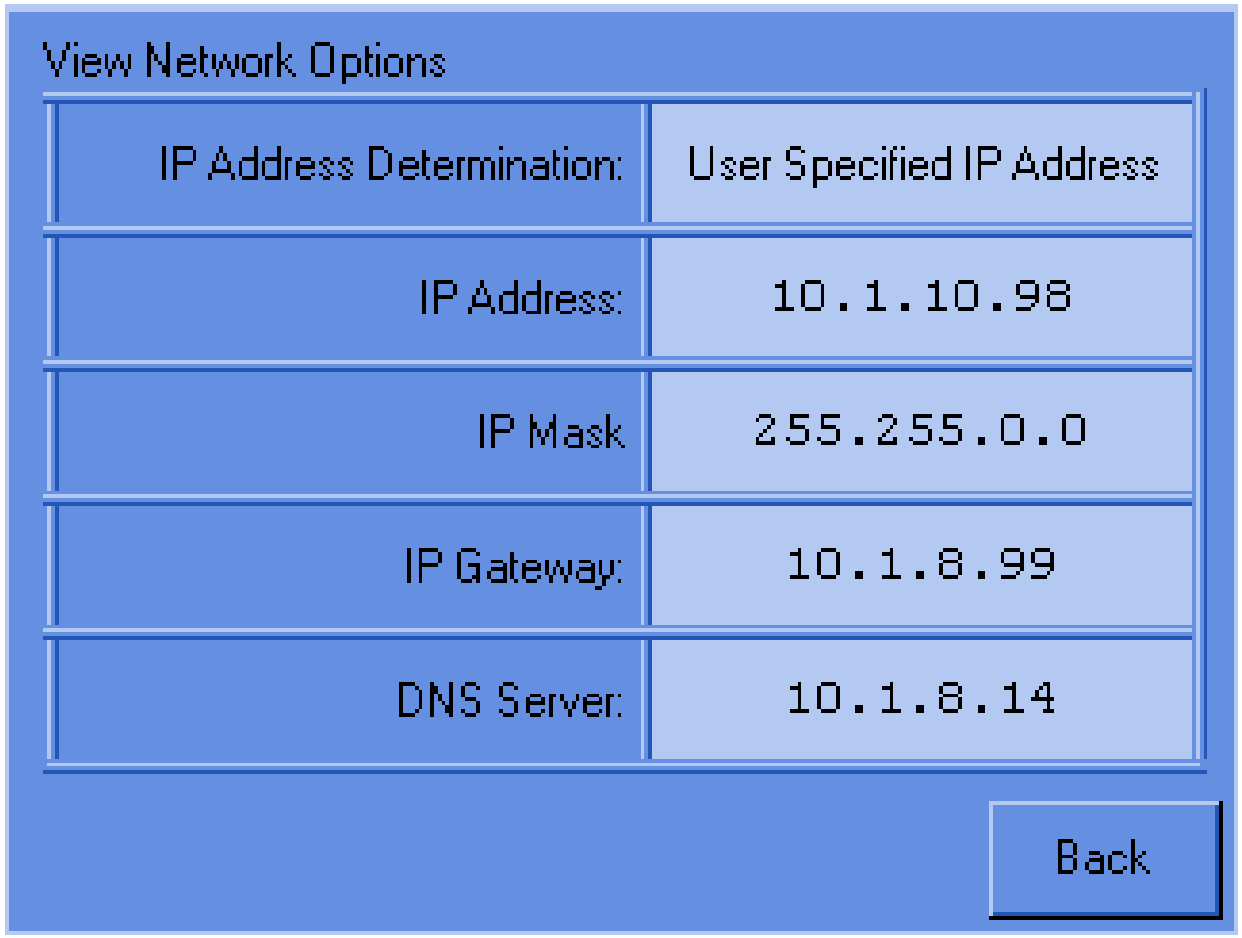
Management GUI – Library Options (3)



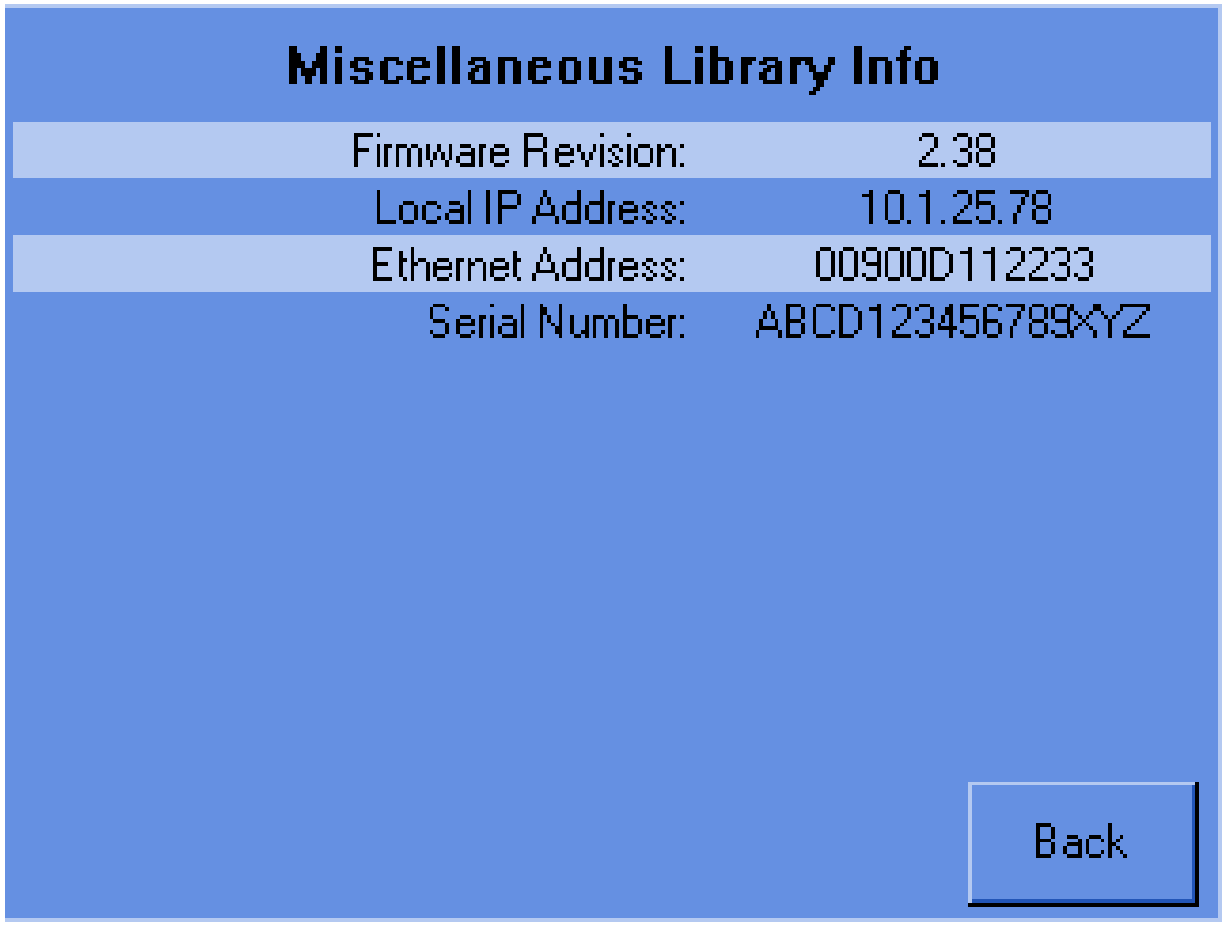
Management GUI – SCSI Options



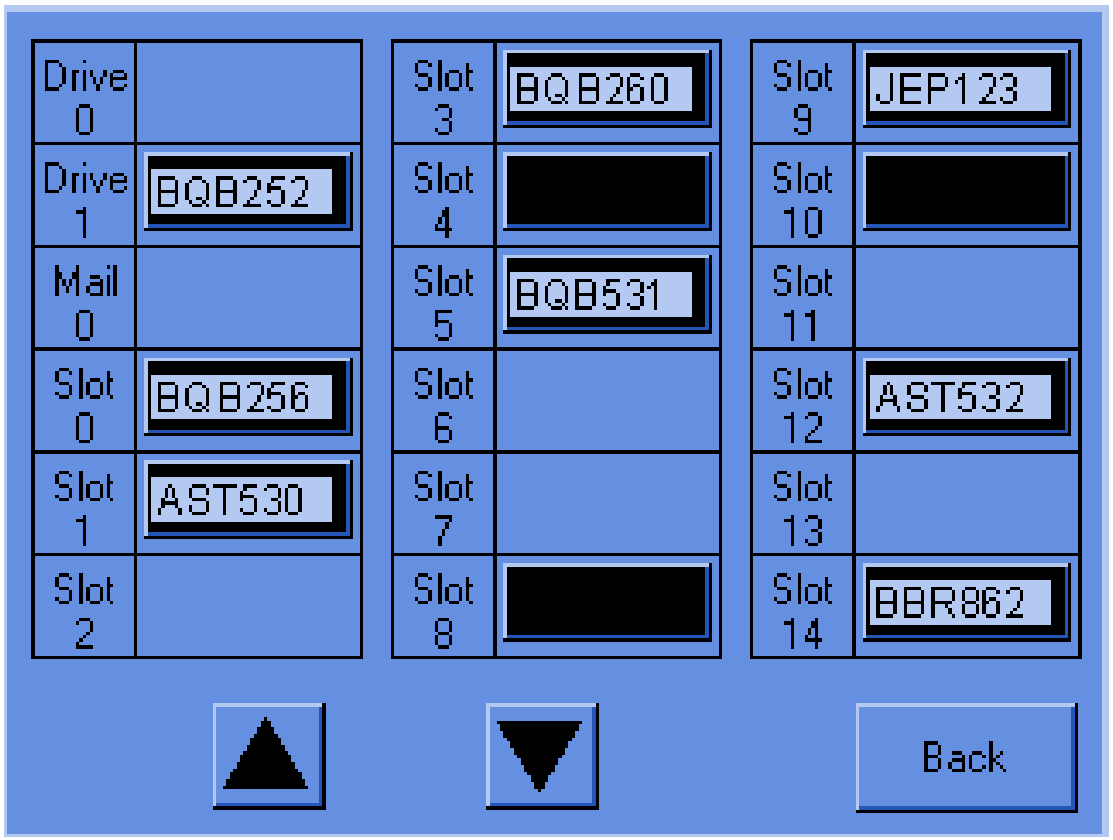
Management GUI – Network Options



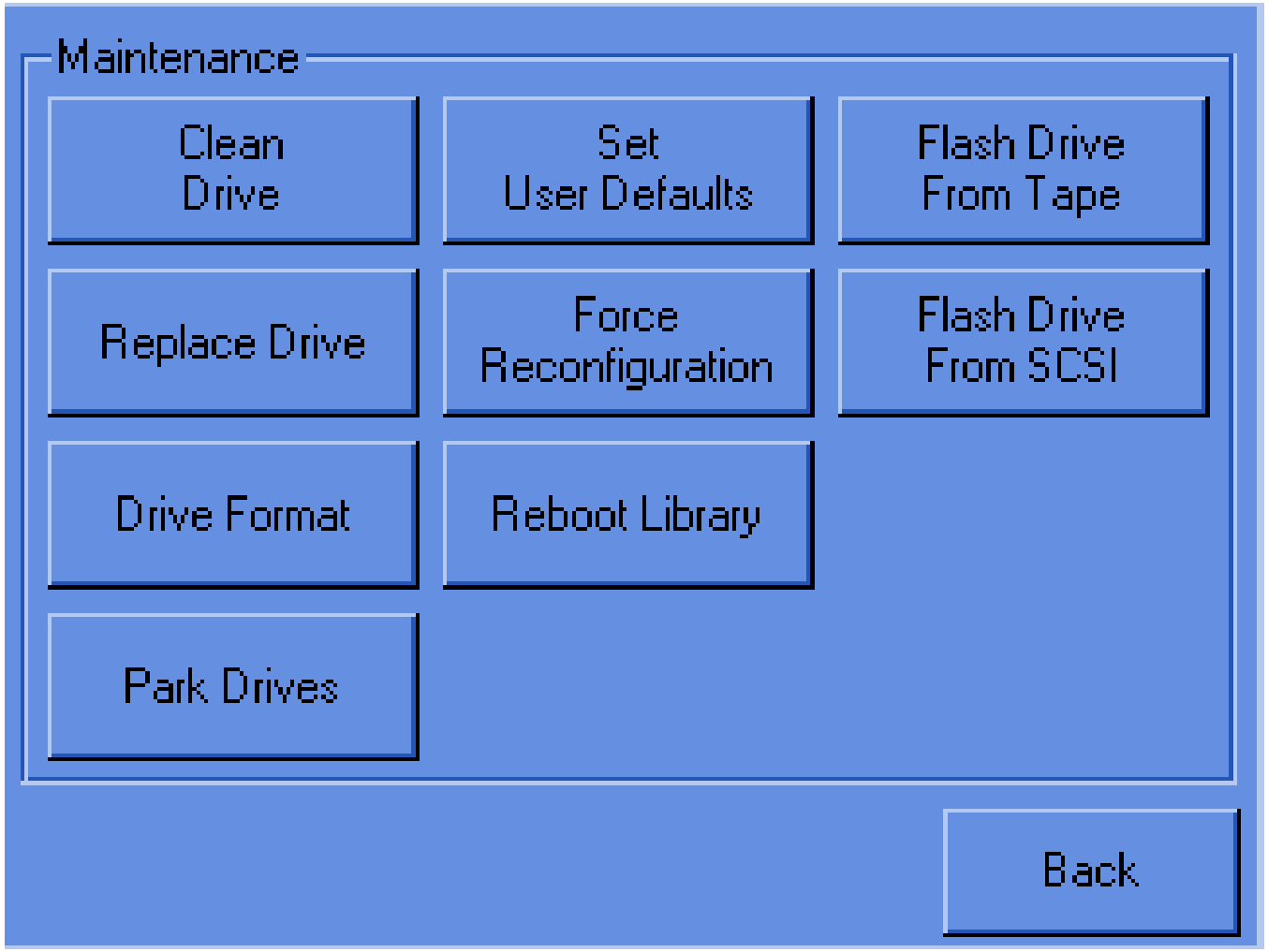
Management GUI – Library Info



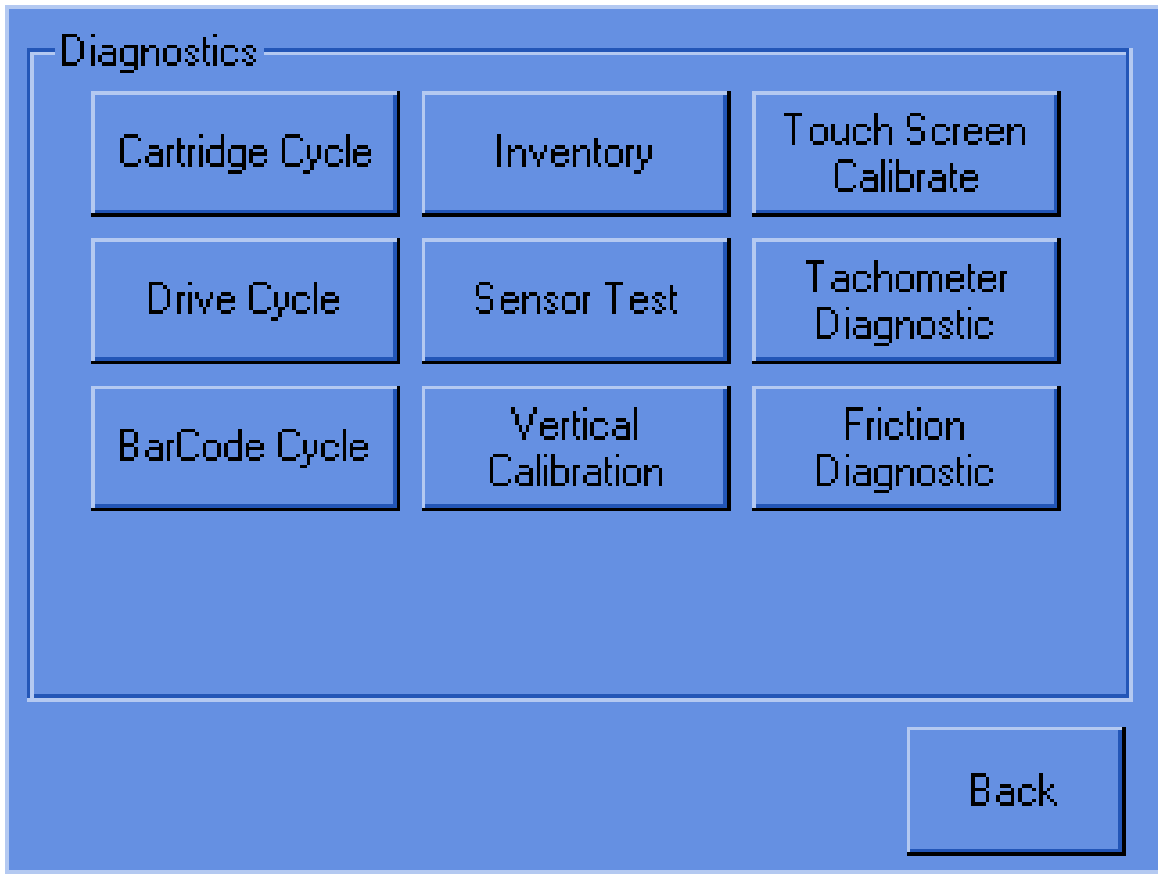
Management GUI – Cartridge Map



Management GUI – Utilities, Maintenance

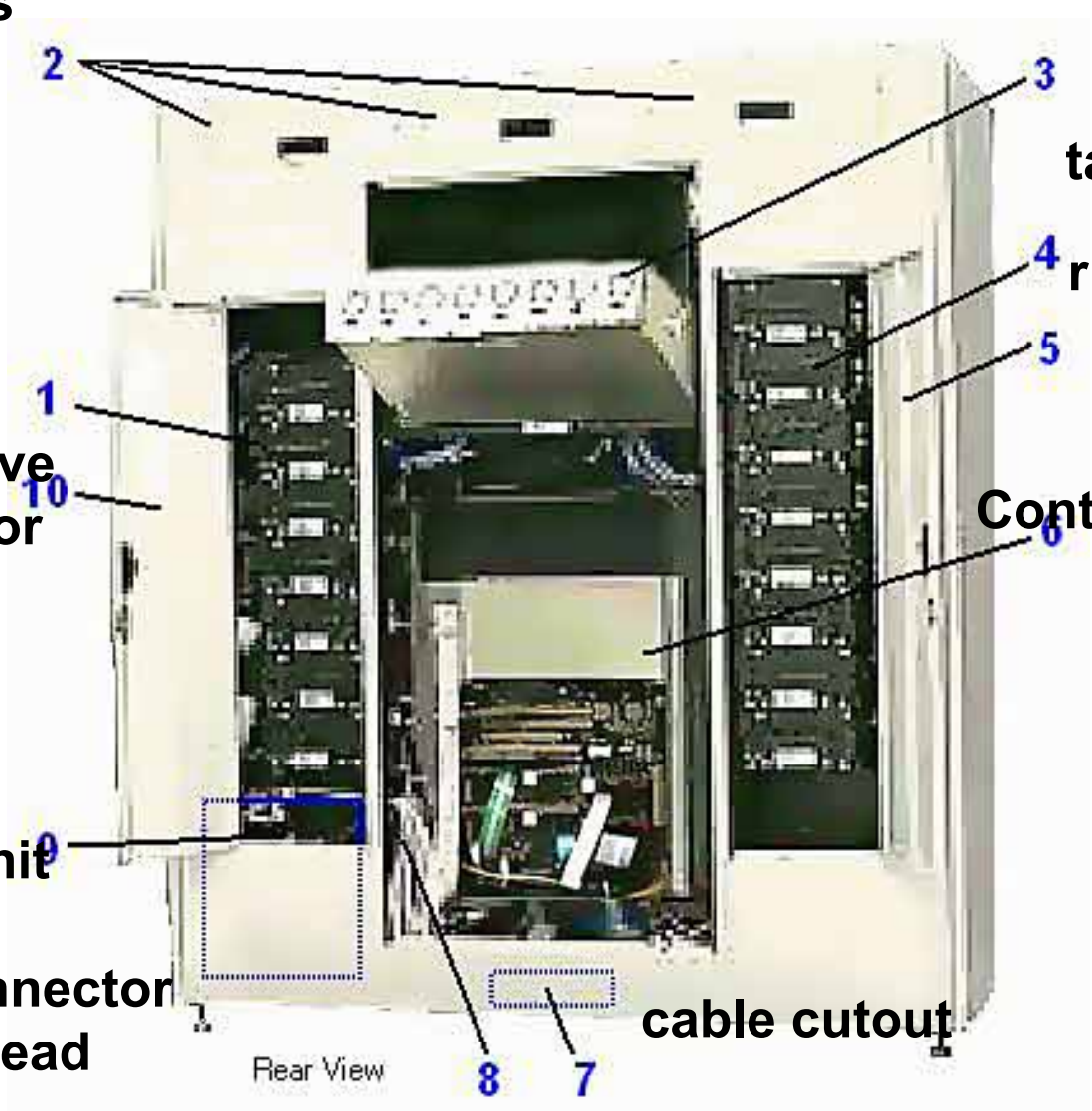


Management GUI – Utilities, Diagnostics screen

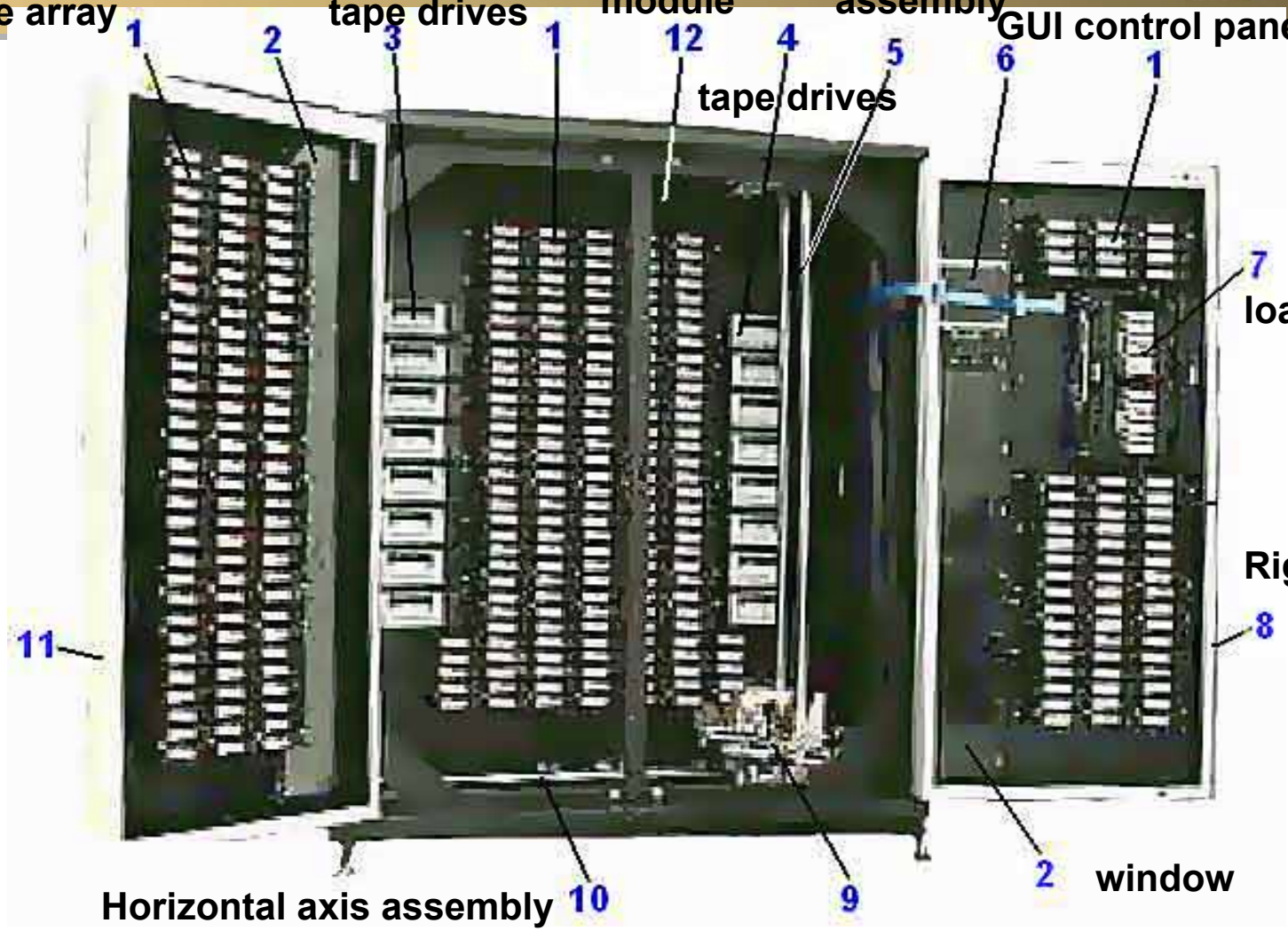


ESL9000 front view

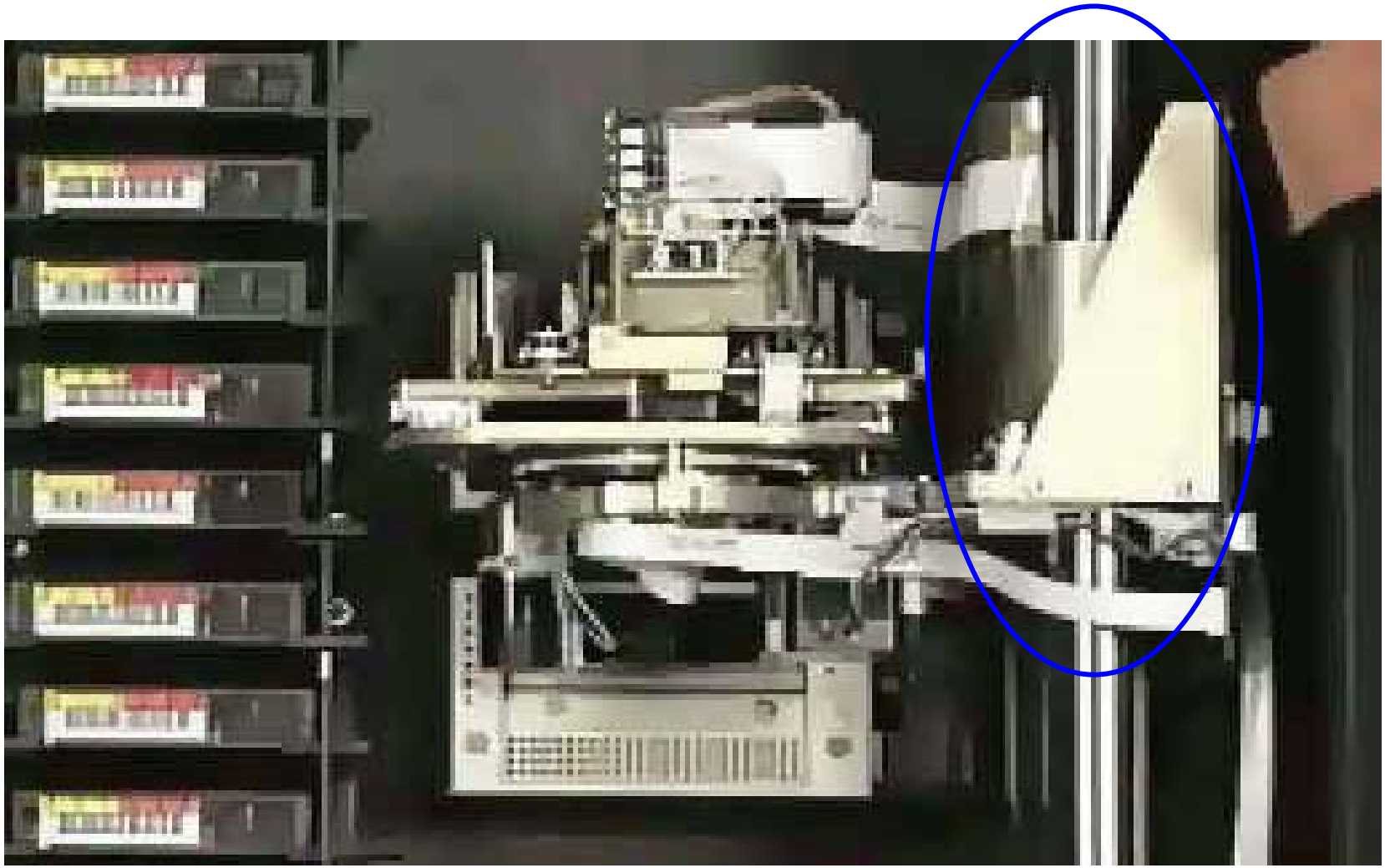
ESL9000 rear view



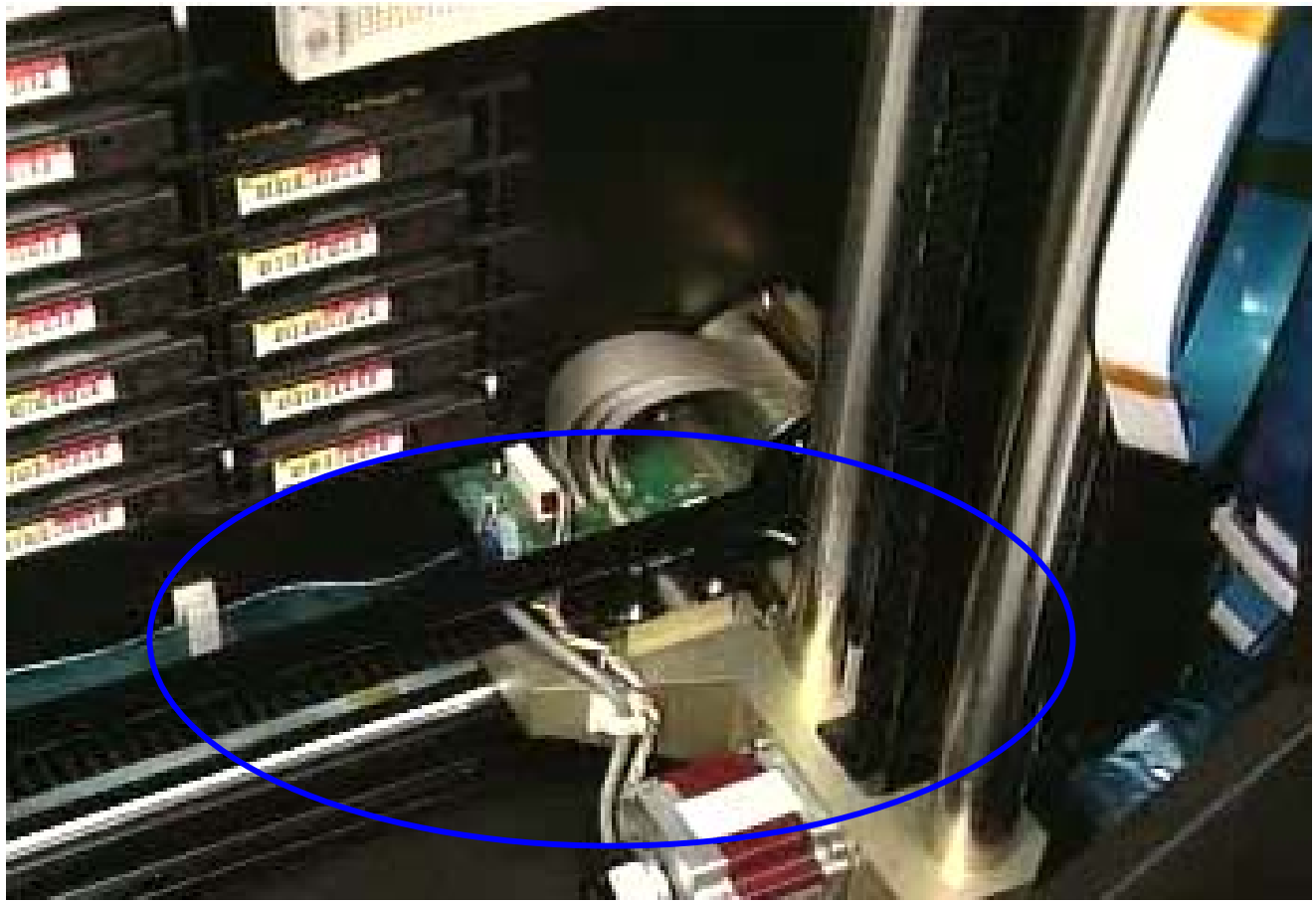
ESL9000 internal view



ESL9000 vertical axis assembly

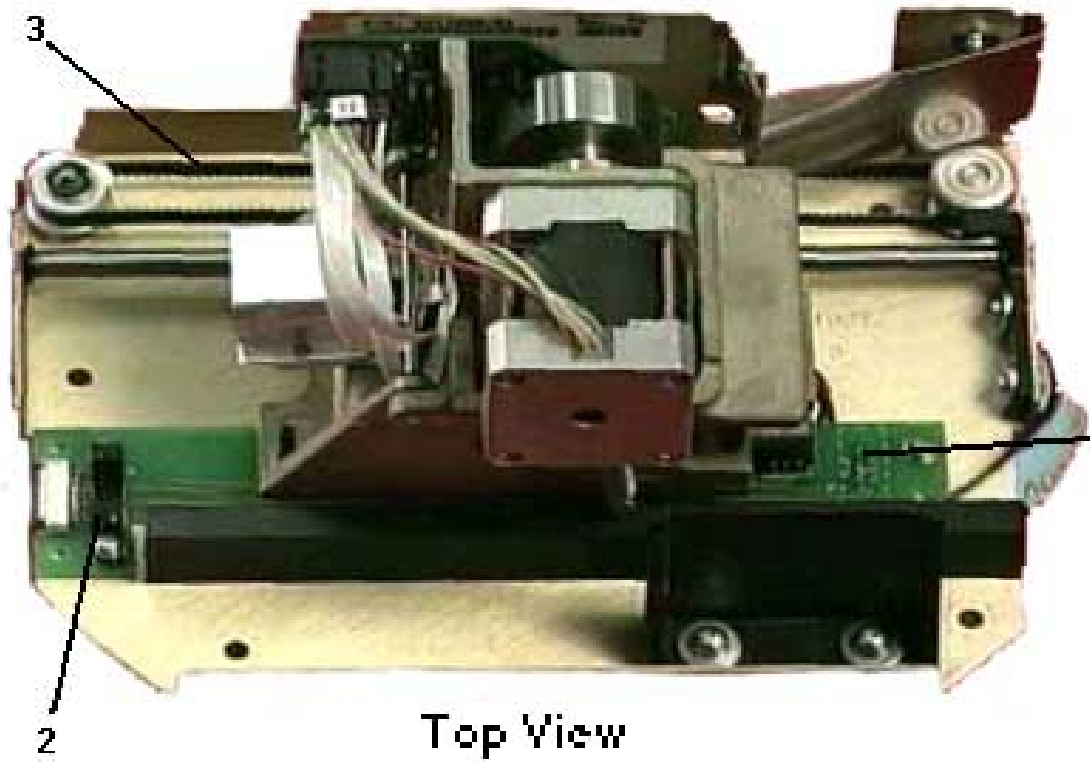


ESL9000 horizontal axis assembly



ESL9000 extension axis assembly

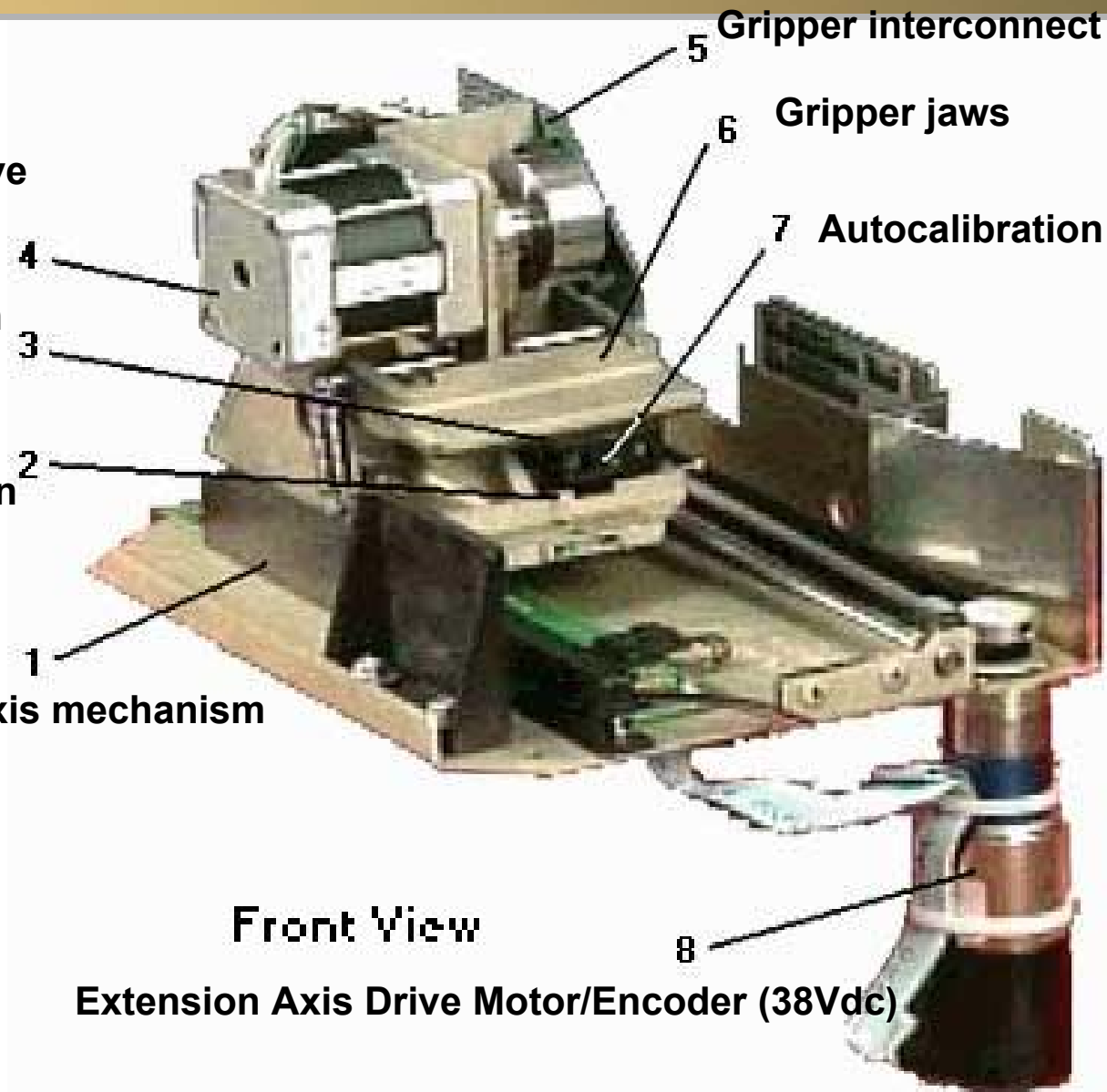
Extension axis drive belt



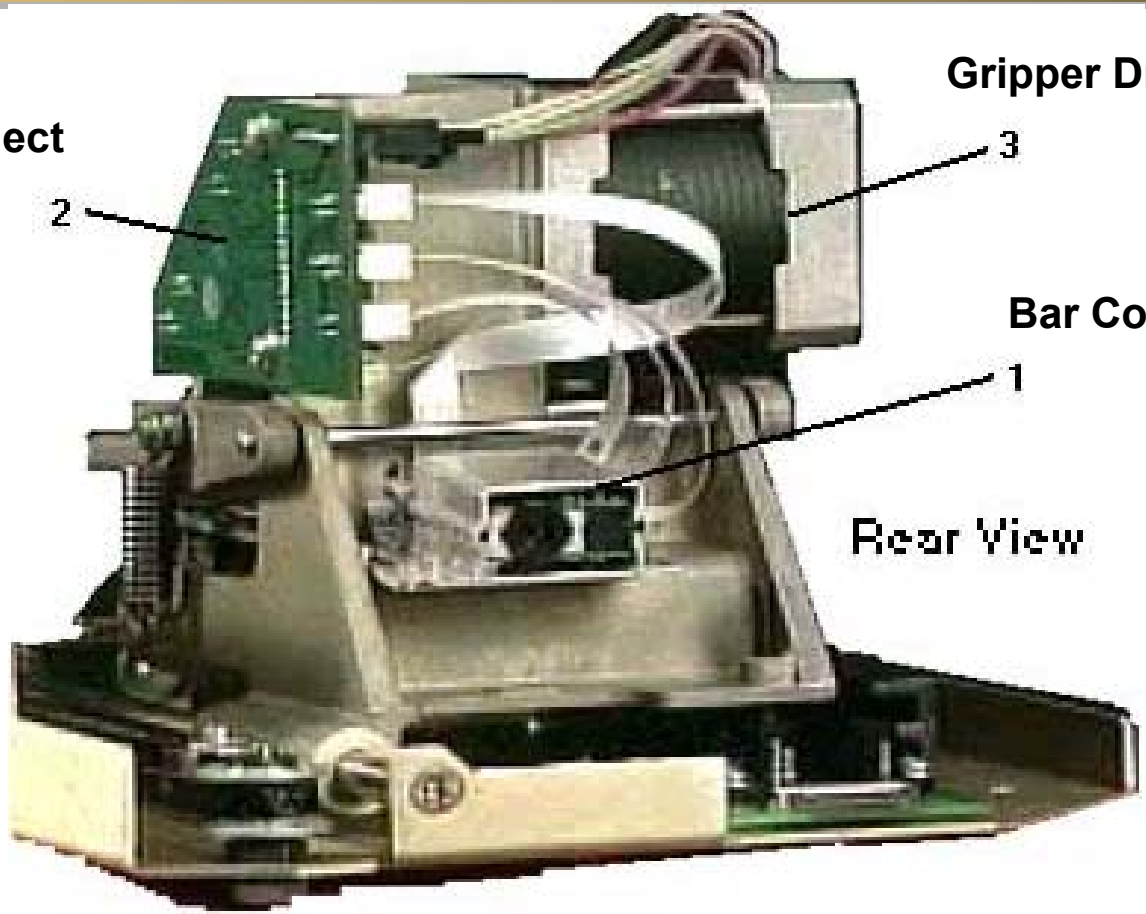
Extension axis interconnect

Extension axis home sensor

ESL9000 extension axis assembly

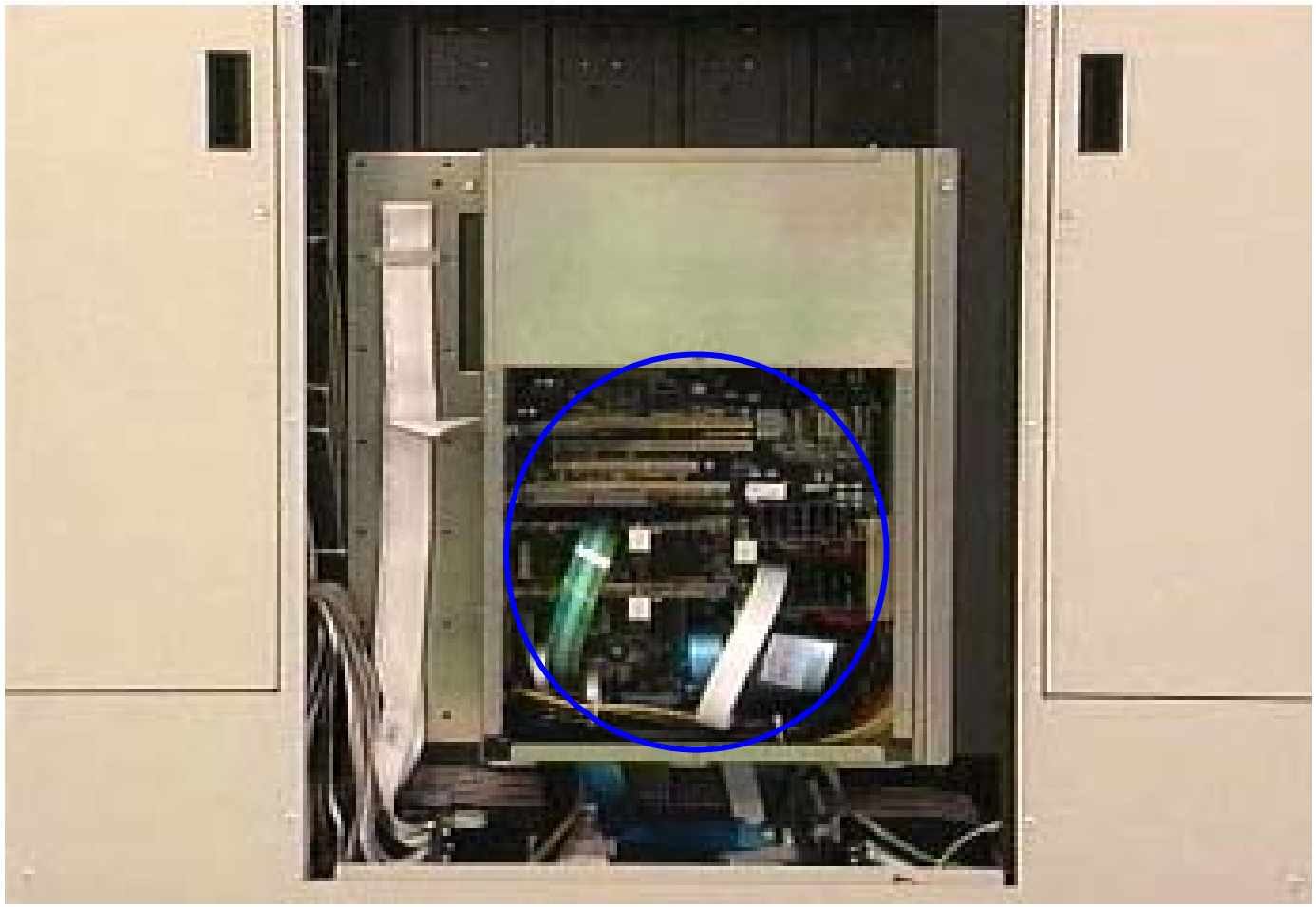


ESL9000 extension axis assembly

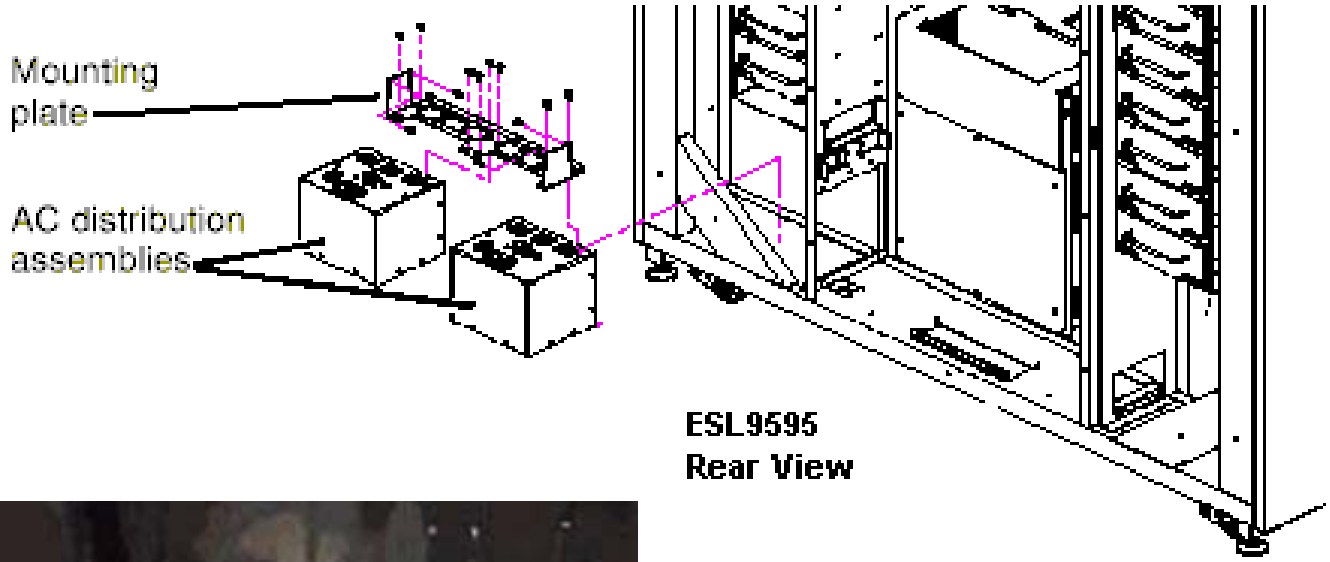


ESL9000 rotary stepper motor

ESL9000 control electronics bay



ESL9000 ac power distribution unit



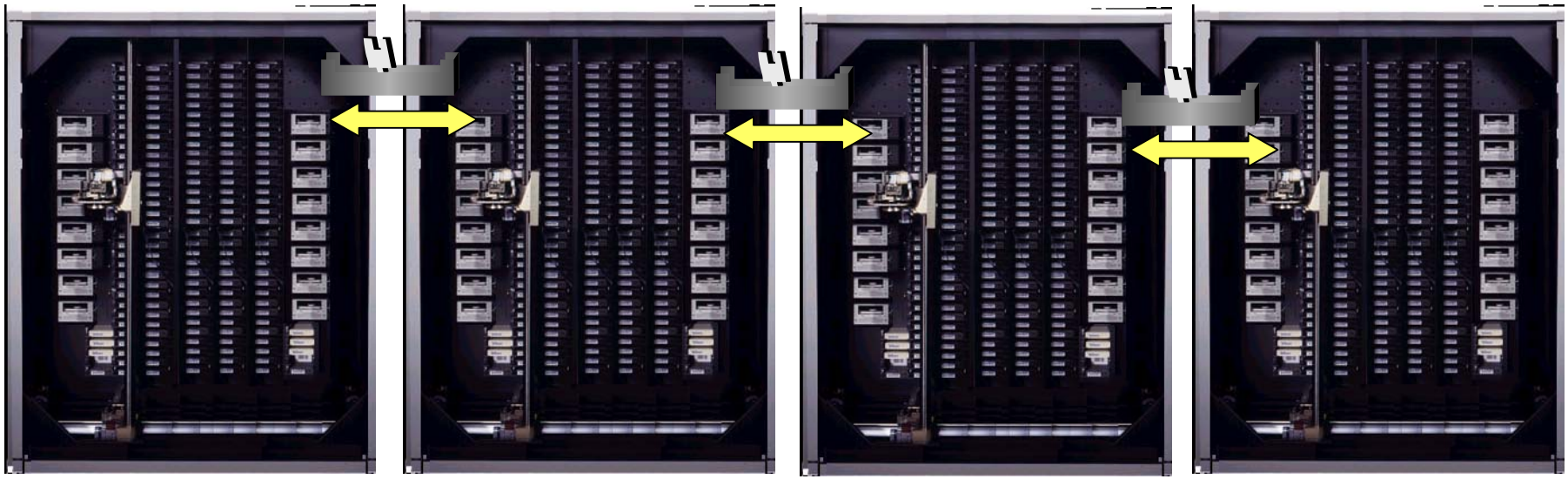
ESL9000 dc power supply units

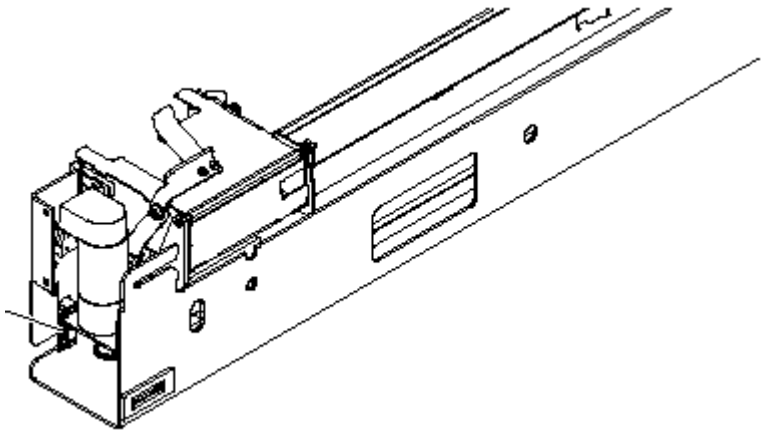
- Hot-pluggable
- 2N redundant

ESL9000 fans

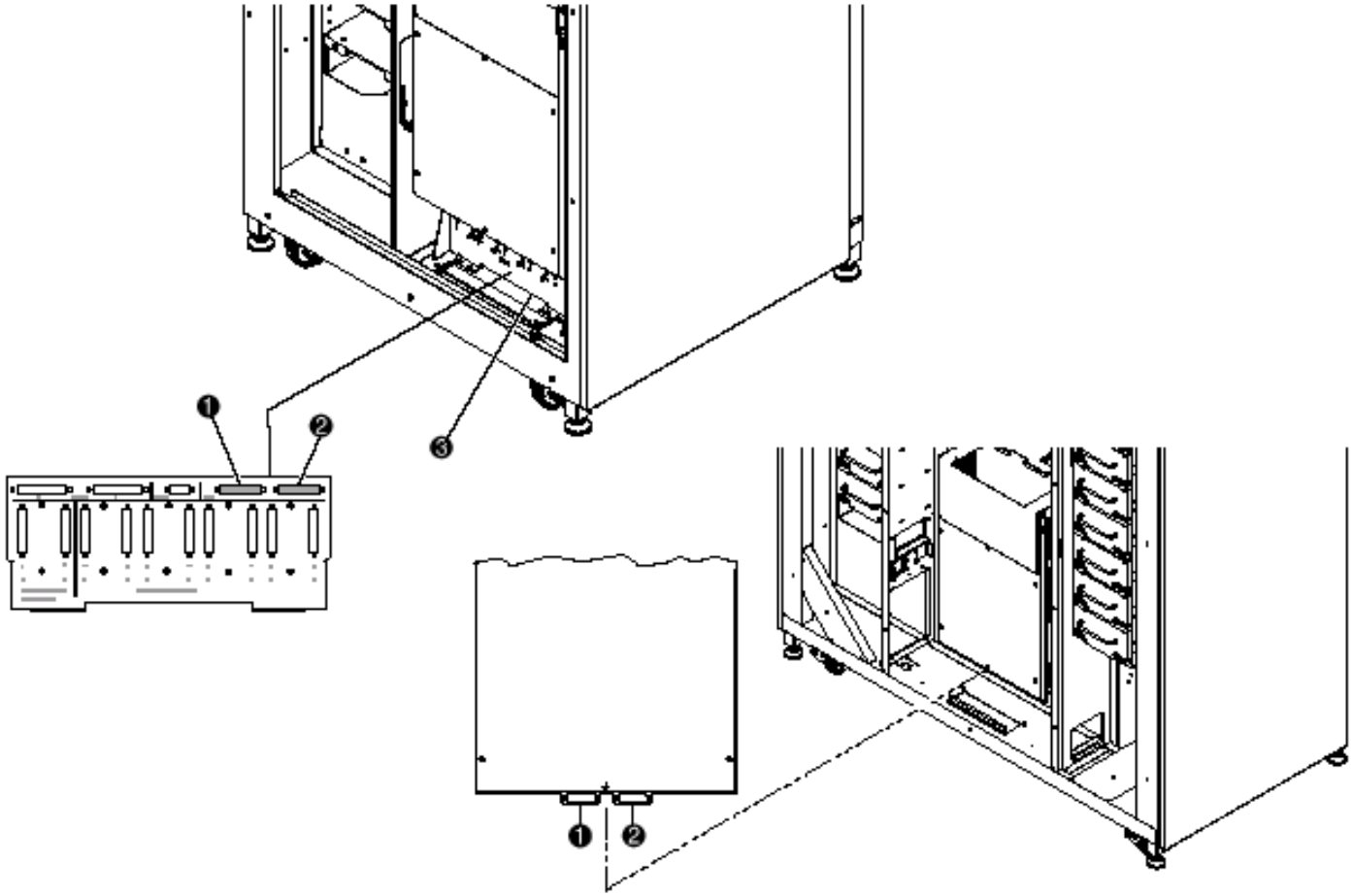
- Hot-pluggable, redundant
- Three exterior LEDs

ESL9000 multi-scaling





ESL9000 multi-scaling cabling



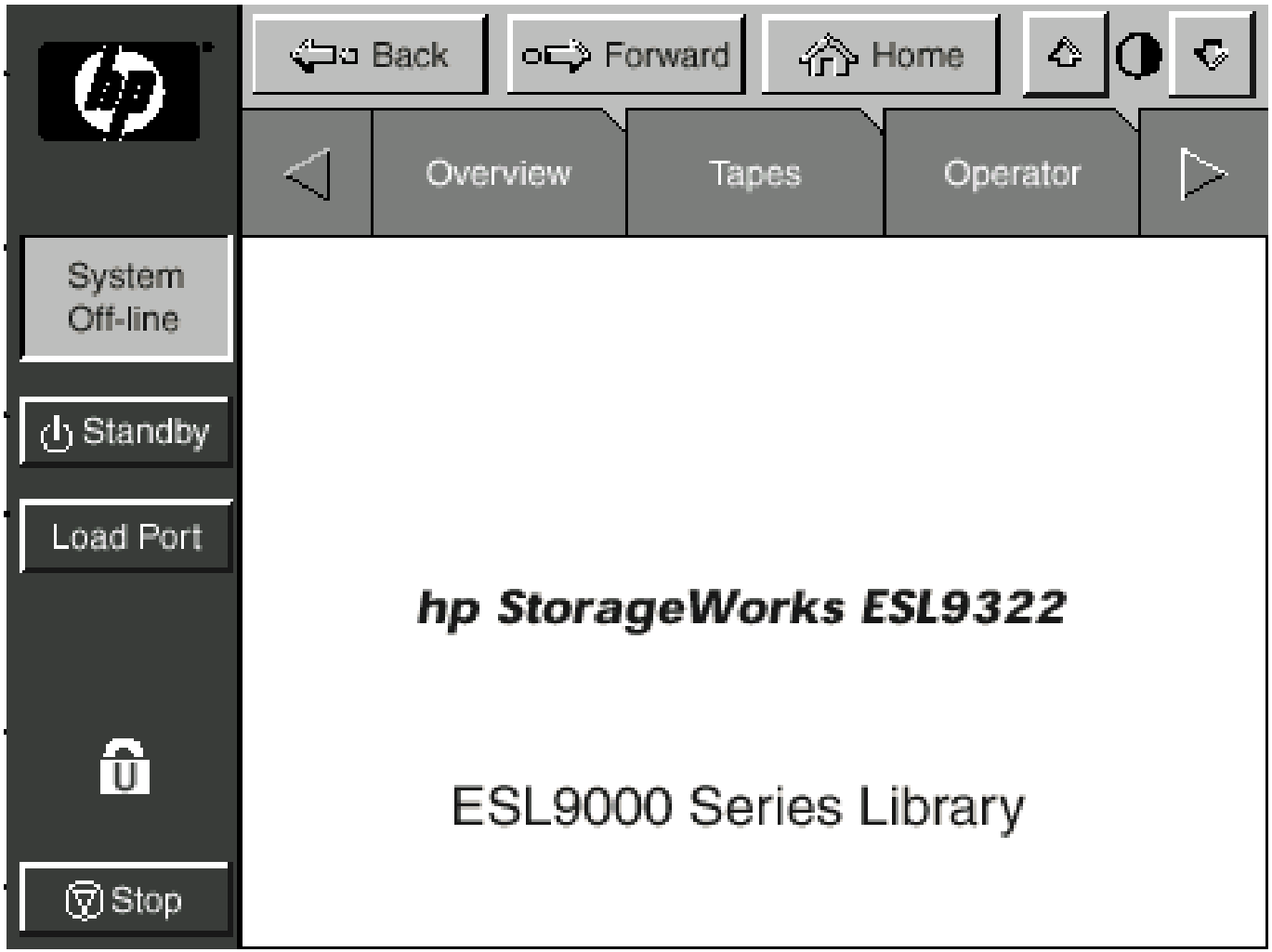
❶ Left QSPI connector
❷ Right QSPI connector
❸ SCSI bulkhead

Connect right QSPI connector of left library to left QSPI connector of right library

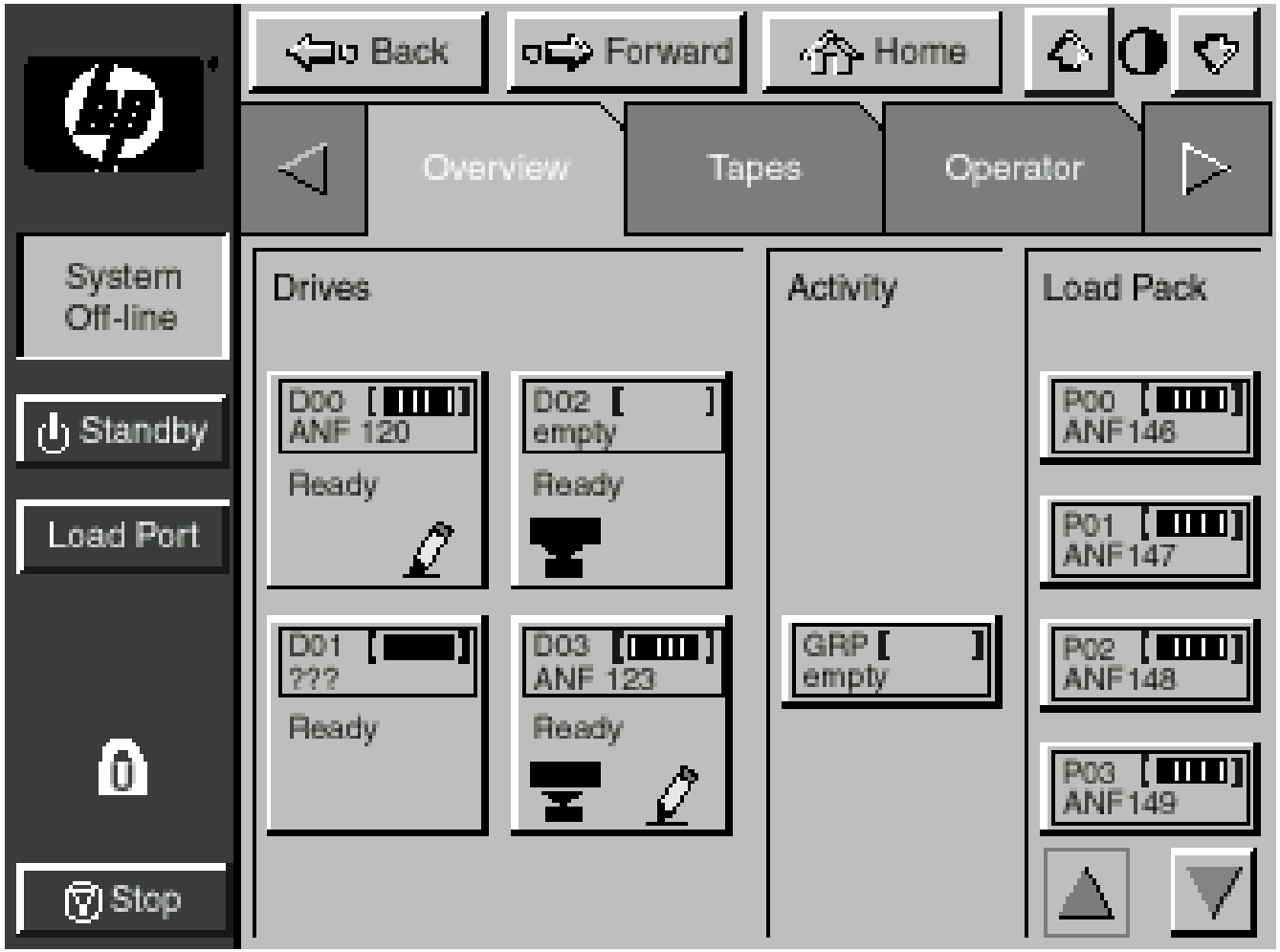
ESL9000 drive upgrade

- Verify newer type of drive supported for library
- Update firmware
- Replace or insert drive

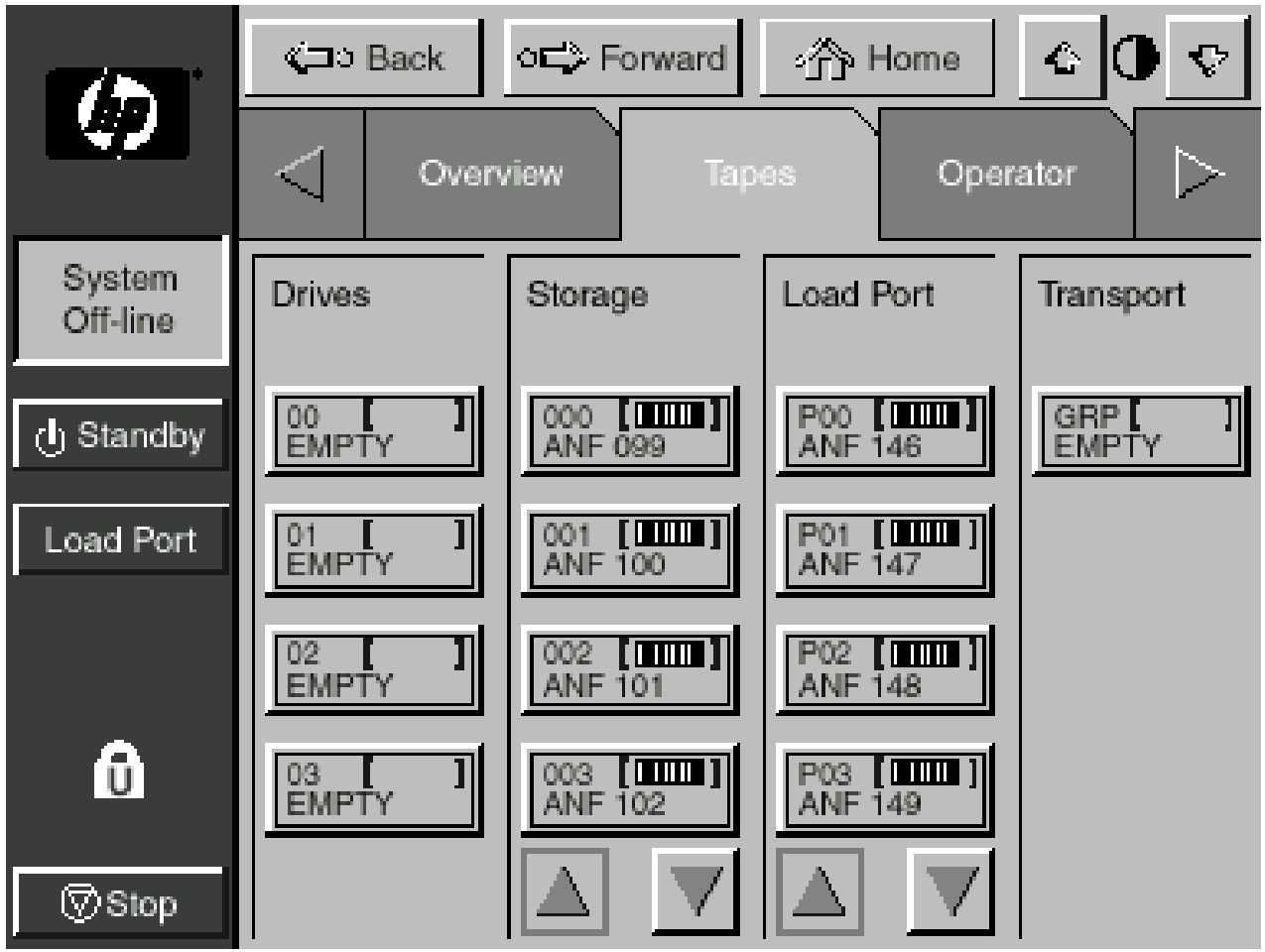
ESL9000 GUI


Back
Forward
Home
Overview
Tapes
Operator
System Off-line
Standby
Load Port
Stop
hp StorageWorks ESL9322
ESL9000 Series Library

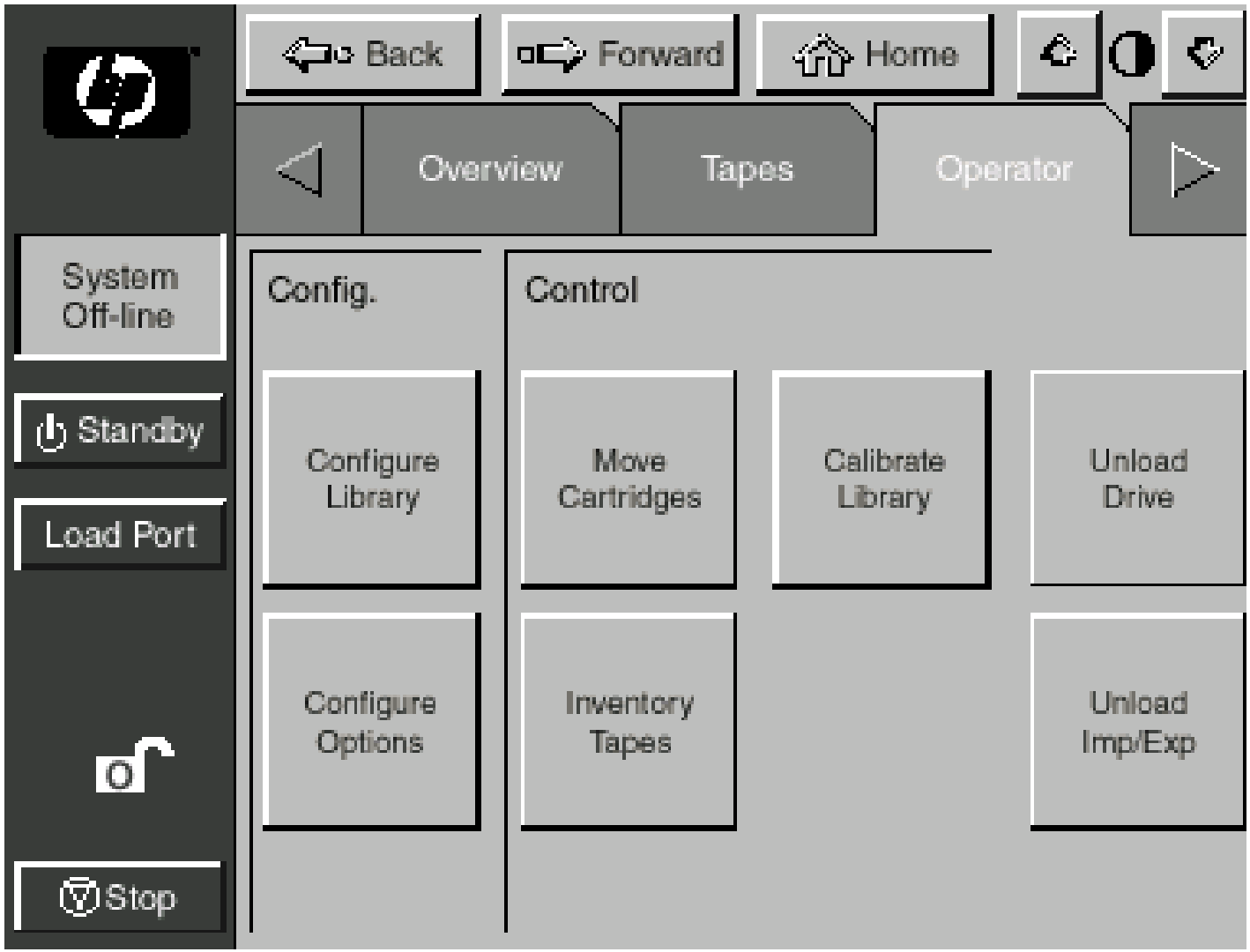
ESL9000 GUI – Overview tab



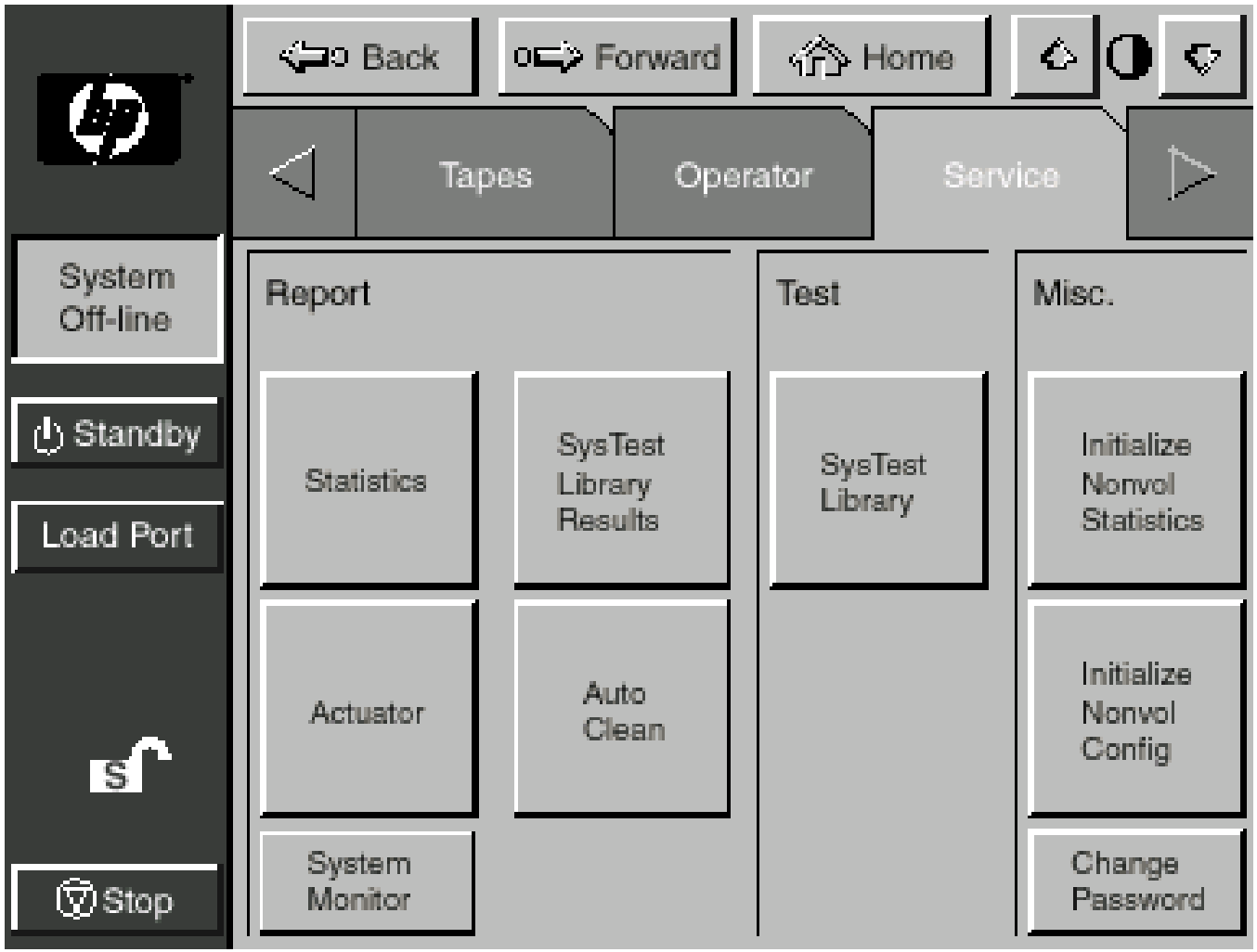
ESL9000 GUI – Tapes tab



ESL9000 GUI– Operator tab



ESL9000 GUI– Service tab



ESL Libraries: Working Smarter in SANs

Jeff Bain

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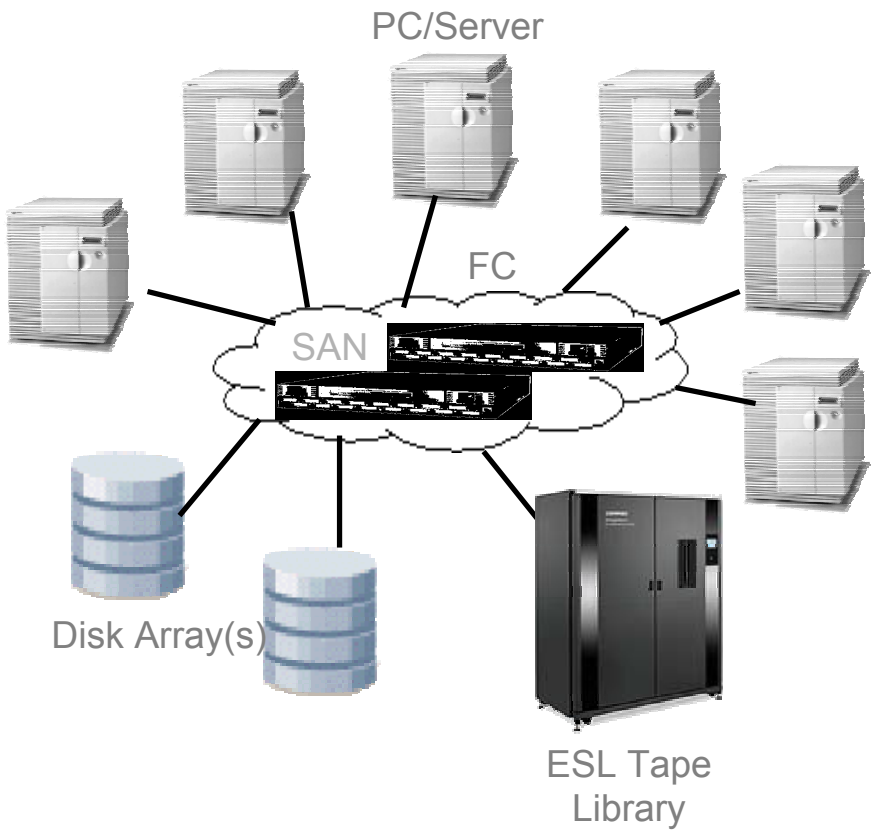
HP WORLD 2003
Solutions and Technology Conference & Expo

Overview

- Evolution of the SAN
  - What's an Ideal SAN?
  - What's a Typical SAN Today?
  - Why doesn't everyone have an Ideal SAN?
  - What are the pitfalls of a Typical SAN?
- Some Solutions
  - What does HP offer in these areas?
- Evolution of Network Storage
  - HP's Extended Tape Library Architecture
- Summary and Q&A

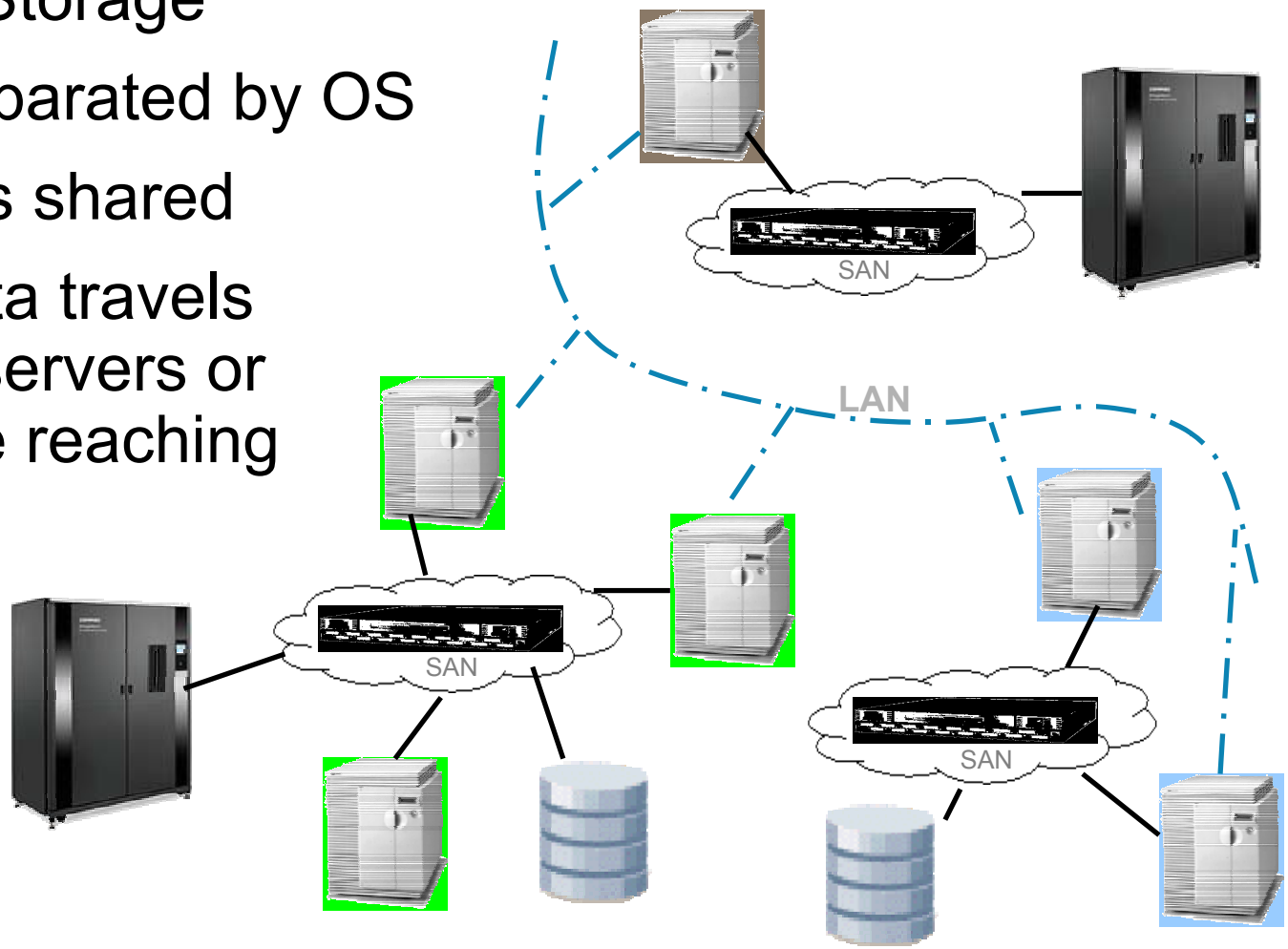
What's an Ideal SAN?

- Multiple servers connected
- All devices shared
- Protocol interoperability
- No bottlenecks
- Easily scaleable
- Direct array-to-tape data transfer possible
- Reliable and stable
- Highly available
- Manageable



What's a Typical SAN Today?

- Islands of Storage
- Servers separated by OS
- Some disks shared
- Backup data travels through a servers or LAN before reaching tape



Why doesn't everyone have an Ideal SAN?

- Long downtime required to move from historical connections to ideal SAN
- Interoperability problems with switches, OSs, peripherals prevent ideal connection
- If it ain't (fatally) broken, don't fix it: Stability is good…

What are the pitfalls of a Typical SAN?

- Bottlenecks
  - Due to data transfer through servers and LAN, plus overloaded backup server(s),
- Application downtime
  - As data is transferred from individual servers or SAN islands, most applications have to be shut down
- Disconnected manageability
  - Due to multiple independent SAN islands, and lack of integration in devices and infrastructure

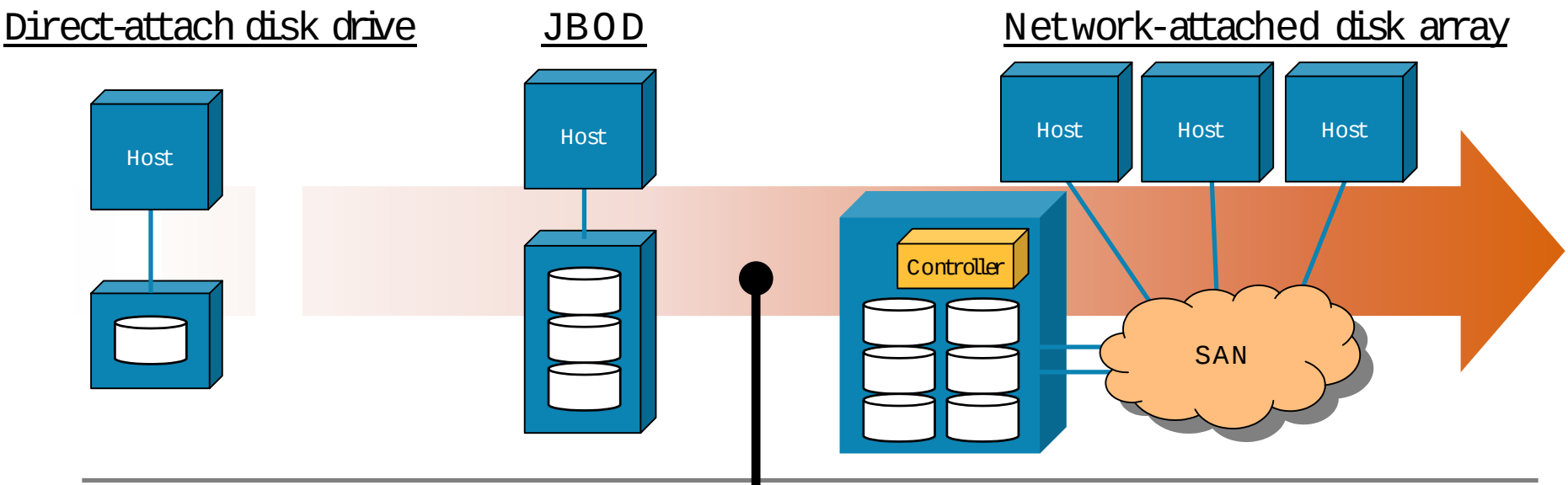
Some Solutions

- For interoperability problems:
  - Shield drives from disruptive SAN events
  - Control host/HBA-to-drive access granularly
- For bottlenecks and downtime problems:
  - Move data directly from disk arrays to tape libraries
    - Eliminates necessity of moving data through servers or LAN
    - Needs a disk + tape + software solution
- For disconnected manageability problems:
  - Manage individual devices and SANs centrally
    - Select applications that manage whole systems, not just piece-parts

What does HP offer in these areas?

- For interoperability problems:
  - Shield drives from disruptive SAN events
    - Controller-based Architecture (see next slide)
  - Control host/HBA-to-drive access centrally
    - HP StorageWorks Secure Manager
- For bottlenecks and downtime problems:
  - Move data directly from disk arrays to tape libraries
    - HP StorageWorks Direct Backup Engine
    - HP Rapid Backup Solution
- For disconnected manageability problems:
  - Manage individual devices and SANs centrally
    - HP StorageWorks Command View
    - HP OpenView Storage Area Manager

Evolution of Network Storage



Attributes of well-designed network storage:

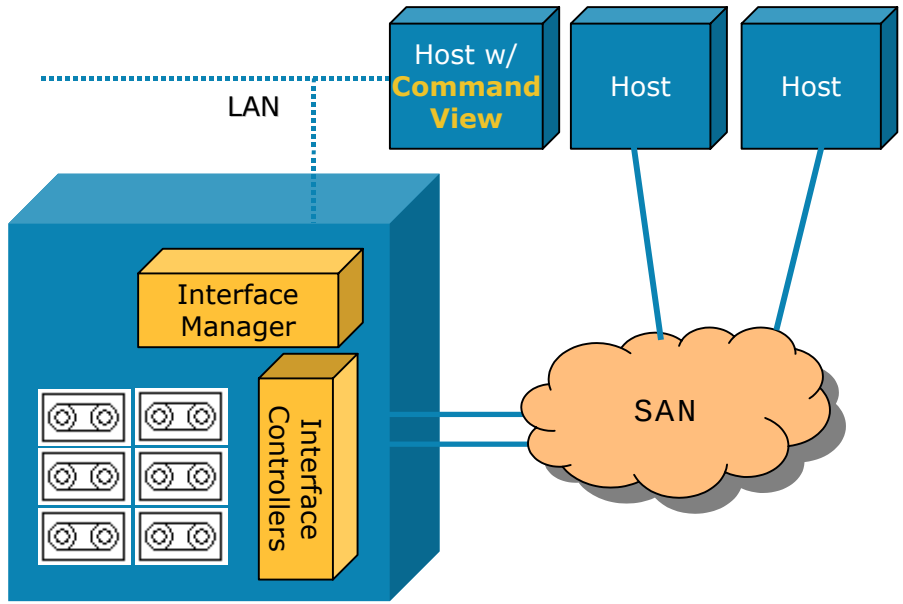
- Consolidated
- Scalable
- Reliable
- Secure
- Shareable
- Manageable

Today's tape libraries

- Native-FC tape libraries provide JBOD equivalent capability
- Additional capability available with router-based tape libraries
- Need more security, reliability, shareability and manageability

HP's Extended Tape Library Architecture

- Interface Controllers
  - interoperability and reliability
  - embedded intelligent features
- Interface Manager
  - ease of use and control
  - self-aware config policies
- Command View software
  - unified manageability without disrupting the SAN
- Direct Backup Engine
  - speed and uptime
- Secure Manager
  - complete security



- Related:
  - HP Rapid Backup Solution
  - HP OpenView Storage Area Manager

Summary and Q&A

- Ideal SANs offer:
  - Interoperability, reliability, availability, manageability
  - Security, speed, and control
- Typical SANs suffer from:
  - Disruptive events, bottlenecks, application downtime, disconnected (piece-parts) manageability
- Solutions:
  - Controller-based architecture, serverless backup, unified management
- HP Solutions:
  - Controller-based Architectures, Secure Manager, Direct Backup Engine, Command View, OpenView Storage Area Manger
- Storage has evolved from direct attach to grouped Just-a-Bunch-Of-Devices to intelligent controller-based system
- HP's Extended Tape Library Architecture represents the move to intelligent controller-based systems for the ESL family of tape libraries

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