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FLEXLINE™

ONLINE STORAGE SYSTEMS

PRECONFIGURATION AND MAINTENANCE SET-UP INSTRUCTIONS

For 200 Series and 300 Series storage systems

PRODUCT TYPE
SOLUTIONS

Preconfiguration and Maintenance Set-up Instructions

for FlexLine™ 200 Series and 300 Series storage systems

Information Control

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Contents

1: Preconfiguration and Remote Support 1
Preconfiguration Procedure 1
Prerequisites 1
Procedure 2
Step 1: Obtain the following information from the customer 2
Step 2: Establish serial port connection 2
Step 3: Establish Ethernet port connection 4
Step 4: Establish host port connection 5
Technical Support Requirements 6
Recommended Operation and Maintenance Practices 6
Controller and Technical Support Access 6

2: Event Notification 9
Introduction 9
Before You Begin 9
Process Steps 11

3: Media Scan 13
Enabling Media Scan 13
Enable Media Scan at the Storage System Level 13
Prerequisites 14
Enable Media scan at the LUN level 15
Recommended Scan Settings (if systems optimal) 15

-

Summary of Changes

EC	Date	Edition	Description
	March 2003	Sixth	This original MS Word document has been converted to the StorageTek FrameMaker template. Added information on modem attachment and technical support (remote) access.
	November 2003	Seventh	Added Event Notification procedures so that the controllers have the ability to call home when a critical event occurs. Also added information on how to enable and use Media Scan.
	May 2004	Eighth	Deleted Disk Event Monitor (DEM) setup information due to the decision to create and post a separate DEM Installation Guide, which is posted on the DEM web page at http://intwww.stortek.com/02/DEM.html
	Oct 2004	Ninth	Updated document to reflect new FlexLine terminology.
131139	May 2005	Tenth (Rev J)	Updated to reflect the new FLX380 Control Module.

Preconfiguration and Remote Support

1

This document provides instructions for preconfiguring your FlexLine™ 200 Series and 300 Series storage systems, and setting it up for maintenance monitoring. Chapter one covers preconfiguration and modem set-up; chapter two covers how to set up event notification; and chapter three covers how to set up media scans.

Preconfiguration Procedure

StorageTek recommends preconfiguration of your storage system prior to attaching to the host. One of the following “tools” should be used.

- SANtricity Storage Manager Field Tool version 8.0 for early D-Series
- SMclient version 8.3, 8.4 (or higher) for Windows (field tool) software application for either D-Series or B-Series solutions
- SMclient version 9.x for Windows (field tool) for all 200/300 Series

The following instructions are for the 200/300 Series storage systems. Use this procedure **prior to attaching hosts** to help make sure that your installation goes smoothly.

Preconfiguration helps the host recognize the back-end storage more readily. It minimizes the amount of reboots, and helps ensure that you don’t interrupt the customer’s business operations, thereby quickly returning the storage system back to an operational state.

The latest software version of SMclient includes full Field Tool functionality, provided you have the latest appropriate controller firmware level installed.

Use the following procedure prior to attaching to the customer host to ensure that your target IDs, IP address, and storage are properly assigned. This procedure also allows you to provide vital customer host-configuration information.

Prerequisites

Make sure that you have:

- Laptop running Windows NT Service Pack 4 or higher with ethernet card and open DB9 serial port (you may use open DB25, however, this requires a DB25-DB9 converter). The D173 requires a R-11 to R-45 serial adapter.
- Diagnostic serial cable 24100134
- DB9 serial connector adapter 10402019 (D173 adapter p/n is 24100205)
- Ethernet crossover cable 24100163
- STDSwin serial port program loaded on the laptop
- The latest level of Field Tool or SMclient loaded on the laptop.

Note: An Ethernet hub is recommended to enable attachment and communications to both controllers at the same time.

Procedure

Use this procedure to ensure that you can communicate with the storage system, and that you are ready to configure your storage system. This includes:

- identifying the configuration that is planned
- verifying the correct code levels
- verifying that previous configuration information has been removed
- verifying the ability to manage the storage system.

Step 1: Obtain the following information from the customer

1. Number and size of RAID groups to be configured
2. Size and group of LUNs to be configured
3. IP addresses and subnet mask for both controllers if they are to be connected to customer network.

Step 2: Establish serial port connection

1. Power on the storage system if not powered on.
2. Connect laptop to Controller A serial connection using the diagnostic serial cable and serial adapter DB9 plug (RJ11 plug for D173).
3. Start STDSwin interface tool, and set COM port properties to defaults: Port: **COM1**, Baud: **38400** , Bits: **8**, Stop Bits: **1**, Parity: **NONE**
4. Press ctrl-break to establish your connection (You may have to press Ctrl-Break several times). Try a lower baud rate if necessary.
5. Press <space> bar to set baud rate. Baud rate 38400
6. Press Ctrl-Break then Esc to enter the shell. Press within 5 seconds: <ESC> for SHELL, <BREAK> for baud rate
7. Enter password (infiniti)

```
LSI Logic Series 4 SCSI RAID
Controller
Copyright 2000, LSI Logic Inc.

LSI 4th Generation Controller
Serial number:  1T94410070
Network name:  9176ctl2
```

a. Enter password to access shell

b. Default password is infiniti

8. Enter `netCfgSet` to setup the ethernet.
9. Set the Network Init Flags to 01 as follows.

   Enter command `netCfgSet`

==== NETWORK CONFIGURATION: ALL INTERFACES ====

Network Init Flags : 0x01 Note: Menus are slightly different in newer solutions.

```
01 (Enables ethernet interface)
Network Mgmt Timeout : 30
Network Route #1 : dest=0.0.0.0
RAIDMGR Server #1 : 0.0.0.0
LSI Logic Series 4 SCSI RAID Controller
Copyright 2000, LSI Logic Inc.
LSI 4th Generation Controller
Serial number: 1T94410070
Network name: 9176ctl2
Network Manager #1 : 0.0.0.0
Startup Script :
Shell Password :
```

10. Set the IP addresses and subnet mask. Use the customer provided information if connecting to their network. Use 10.0.0.1 for controller A and 10.0.0.2 for controller B with subnet masks of 255.255.255.0 if not connecting to customer network.

Note: The FLX380 has two RJ45 ports per controller and two controllers per storage system for a total of four RJ45 or ethernet ports that can be configured. On each controller one ethernet port is configured for the customer's network, and the other port may be configured for SDP.

==== NETWORK CONFIGURATION: Ethernet ====

```
My MAC Address : 00:a0:b8:06:64:d1
My Host Name : 9176ctl1
My IP Address : 201.10.100.30
        (Enter Controller's Static IP Address)
Server Host Name :
Server IP Address :
Gateway IP Address : 0.0.0.0
        (Needed if connecting through a router to client or SNMP)
Subnet Mask : 255.255.255.0
User Name : guest
User Password :
NFS Root Path :
NFS Group ID Number : 0
NFS User ID Number : 0
value = 0 = 0x0
```

11. Move serial cable to Controller B and repeat Step 3 through Step 10.
12. Shut down serial port program and remove serial cable.
13. Cycle power on the controller.

Step 3: Establish Ethernet port connection

1. On the laptop, open: My computer >> Control Panel >> Network >> Protocols.
2. Select TCP/IP protocol and select Properties.
3. Under the IP address tab, note the current settings prior to changing them.
4. Select Specify an IP address and set the IP address to 1 greater than the highest controller address set in the previous section. (example: If not to be connected to the customer network use 10.0.0.3)
5. Set the subnet mask to match the settings in the previous section.
6. Set default gateway to blank.
7. Close the network window (this does not normally require a reboot, but if it is requested, do it now).
8. Connect Ethernet crossover cable between the laptop and controller A.

Note: A standard Ethernet cable cannot be used unless a hub is provided between the laptop and the storage system.

An Ethernet hub is recommended to enable attachment and communications to both controllers at the same time.

9. Start the SANtricity Storage Manager Field Tool or SMclient program.
10. Edit >> Add Devices.
11. Type in the “Host IP_address” of controller you are attached to.
12. Highlight the host in the right pane and select Manage Device.
13. Select Storage Array >> Profile (from the toolbar).
14. Gather information on each controller firmware, NVSRAM settings, and if connecting to Solaris, get the controller preferred SCSI IDs (if direct attached; N/A if fabric).
15. Download Firmware and Nvsram as needed (only needed if connected via a hub).

    Note: You cannot download firmware if connected to only one controller (attached using a crossover cable). Also you can only create a volume/volume group for the one controller that you are attached to.

16. Configure the RAID groups and LUNs as directed by the customer in: “Step 1: Obtain the following information from the customer.”.
17. Close the Field Tool or SMclient application.
18. On the laptop, open My Computer >> Control Panel >> Network >> Protocols
19. Select TCP/IP protocol and select Properties.
20. Under the IP address tab, restore the settings as noted in step 3-3.

Step 4: Establish host port connection

1. If attaching to Solaris, verify the **sd.conf** file corresponds to the target ID of each controller prior to installing software and connecting the storage system. Note that the target of the controller **must** contain LUN 31 if using the agent (this allows you to manage the array through the fibre).
2. Install software on host, connect the disks, and reboot.

Technical Support Requirements

The following provides best practices as well as information to obtain your storage system's controller information and provide it to a technical support group.

Recommended Operation and Maintenance Practices

Trained personnel should work on 200/300 Series storage systems that are configured for remote access. Service personnel should also:

- Periodically save copies of: NVSRAM dump, Profile, and Save Configuration -- to be available as pre-failure data.
- Have available (locally) replacement ESM modules and Drives.
- Have the required escalation data in hand at the time of escalation; i.e. Profile, MEL, Host O/S version, HBA model & driver version, Storage Manager GUI version, and RDAC version.
- Maintain a current SAN configuration diagram, available for the escalation.
- NEVER clear the event log (the log is a fixed size and it wraps).
- **As appropriate, contact Tier 3 before performing any service action** (many actions perceived as benign by service personnel have had a negative impact).
- **Drive Replacement**: Drive modules in these units must be replaced using a spare drive **from parts inventory that is clearly sealed, or labeled with the red DACSTOR label**.

  CAUTION: Swapping drives between arrays has led to configuration and data integrity issues.

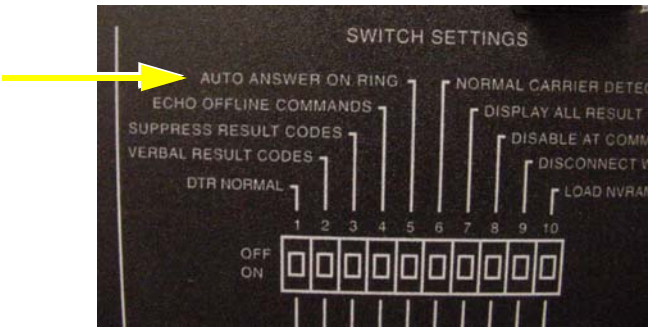
- **ESM Module Replacement**: ESM modules must be replaced using modules with the **same firmware levels**. Mismatched firmware levels has led to data and configuration integrity issues.
  - Make sure the ESM card pairs are of the same fibre speed and the LEDs indicate the 2 ESM cards are communicating properly.
  - Refer to the latest ESM replacement procedure on mpss.stortek.com

Controller and Technical Support Access

At some point of time, Technical Support may request to dial in to a modem at the customer site to help diagnose a problem. This will require you to obtain permission to use a customer phone line, which you will attach to a modem.

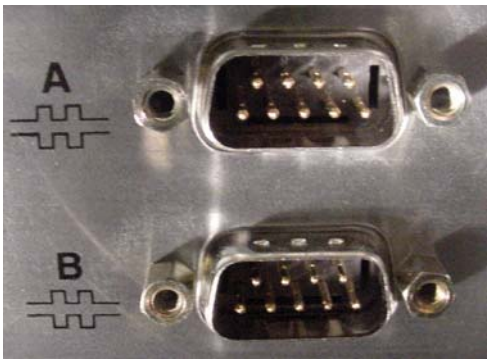
Note: Sometimes a Data Director, MARS box, or some other remote monitoring device is attached after the modem to allow technical support to look at many different controllers at once.

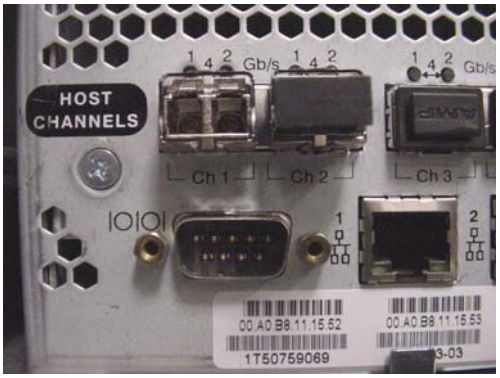
Note: In most cases the customer supplies the phone line socket, and you may have to supply the RJ11 phone cord and modem, which should be set to auto answer. See photograph below.



You must also ensure a default minimum baud rate of 9600, and that the phone cord will reach the modem.

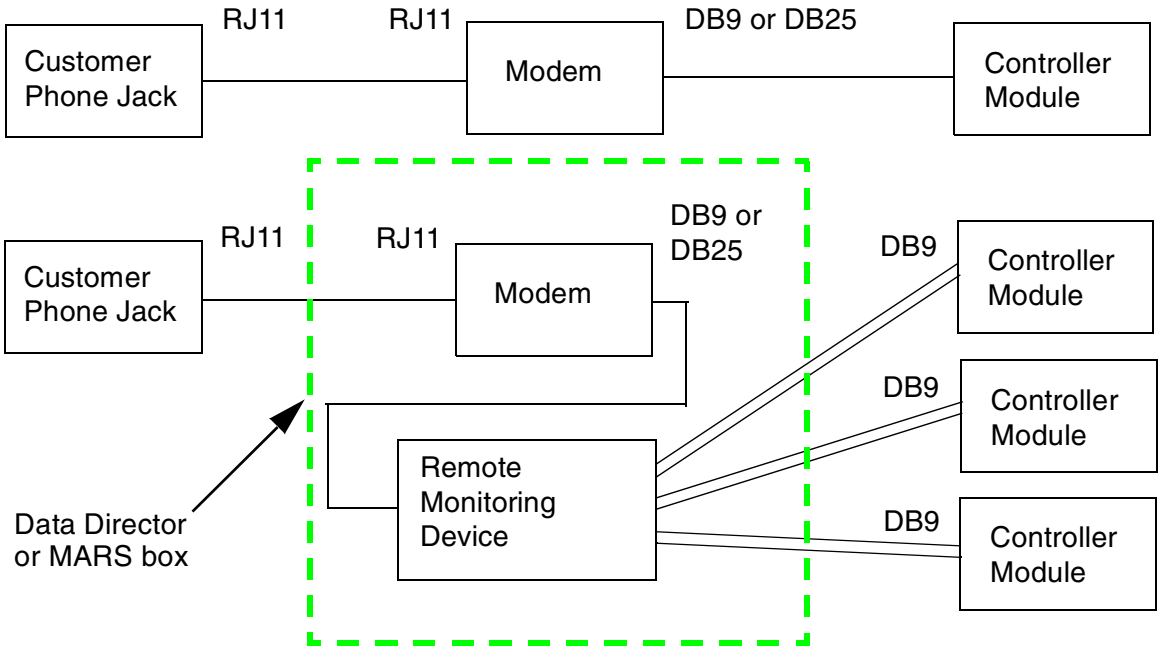
The modem is then connected (24x7, or when requested) to the DB9 serial port on the back of the controller (using a DB9 to DB9 or possibly a DB25 to DB9 cable). See the examples of various controller connection ports below.





See the Figure 1 to help construct these diagnostic attachments.

Figure 1. Tech Support Modem Access Diagrams



You may also make this connection to your own laptop using a DB-9 cable to look at controller information. This will allow you to directly communicate with the controllers. See “Procedure” on page 2.

For information on how to set-up event notifications, see Chapter 2.

For information about how to enable Media Scan on your 200/300 Series storage systems, see Chapter 3.

For further assistance, contact Technical Support.

Event Notification

2

This chapter provides information to set-up the event notification.

Introduction

The following event notification process is for customers with maintenance contracts. The process provides information on how to set up the Disk Event Monitor (DEM) 'Call Home' e-mail feature, which notifies technical support personnel at headquarters whenever critical events occur within the storage system. It is required that your controller firmware be at 5.x or higher, and that your software is at SM 8.x, 9.x, or higher.

Note: Upgrading controller firmware will delete some settings. Be prepared to reconfigure your storage system for event notification in this case. Also changes to your management station or host server could also effect your event notification setup. For the latest information, refer to the DEM web page, which is located at:

`http://intwww.stortek.com/02/DEM.html`

Overview

Event notifications start when the controller senses a problem that requires attention. The controller then notifies the management station, who obtains the data and assembles the email to send out. It uses any email addresses that have been entered, enabling it to attach a profile to an event along with the userdata.txt file. The management station then takes this information and emails it over the network.

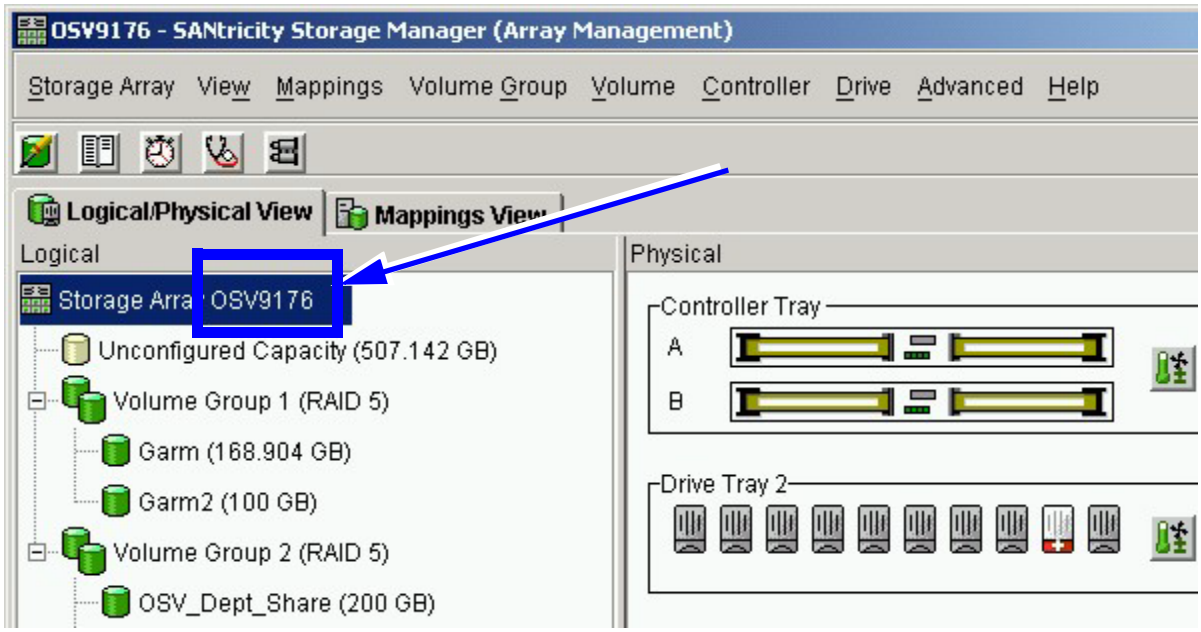
Before You Begin

Before starting this process, ensure that you have a fully functional storage system, your host is attached to the network with SANtricity Storage Manager installed, and email is enabled and allowed to take place.

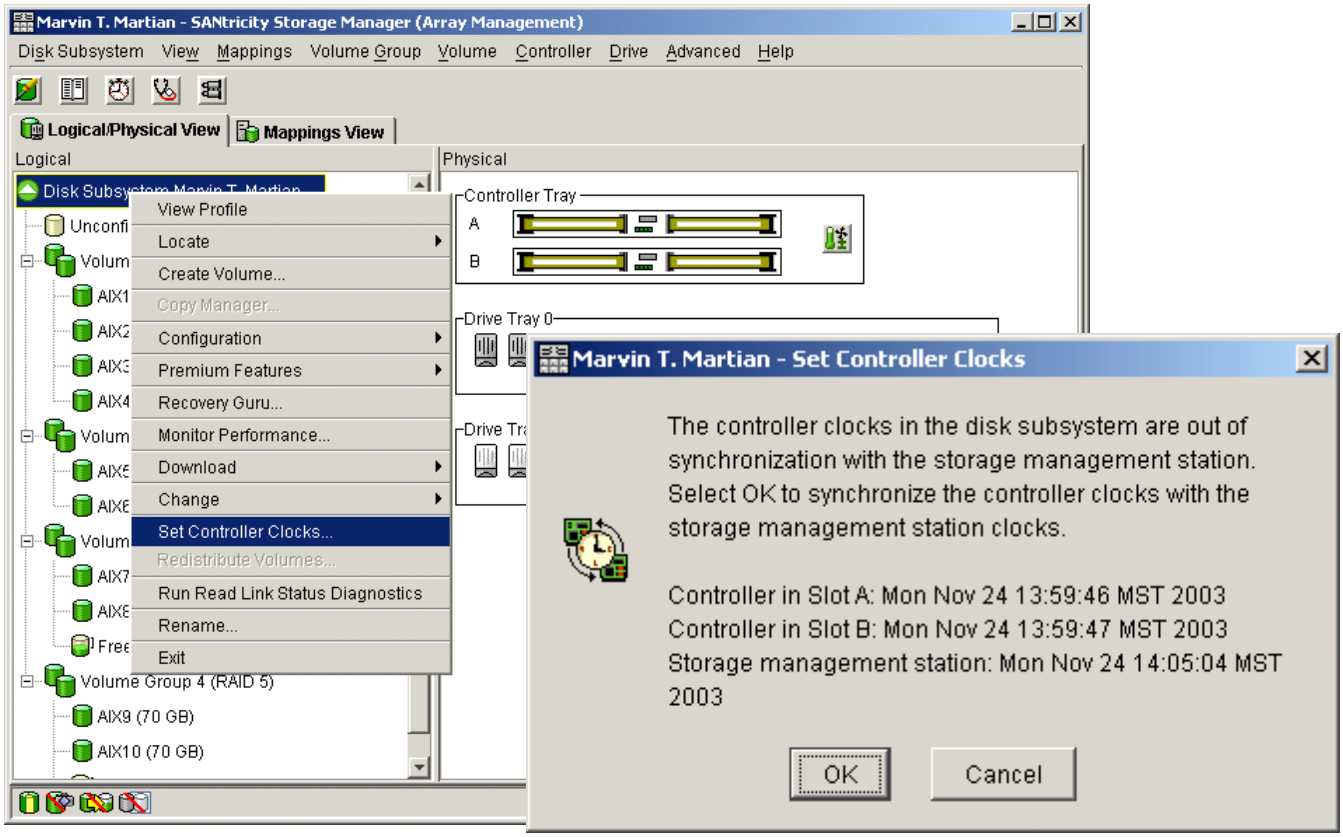
Using this process also requires that storage system names be unique at your particular site. The first step, therefore, is to name or rename your storage system — ensuring that the Array Name matches the name used on your storage manager GUI. See Array Name (in blue box) in Figure 2 below.

Note: Any name is okay, however, do not use special characters such as <, >, !, @, |, \, /, “, etc. Hyphens, underscores, and spaces are okay.

Figure 2. Storage Array Name



Next, you must synchronize clocks. Use your GUI's clock synchronization function to set/ensure that the management station and controller clocks are synchronized prior to using the Disk Event Monitor. See GUI screens below.



Process Steps

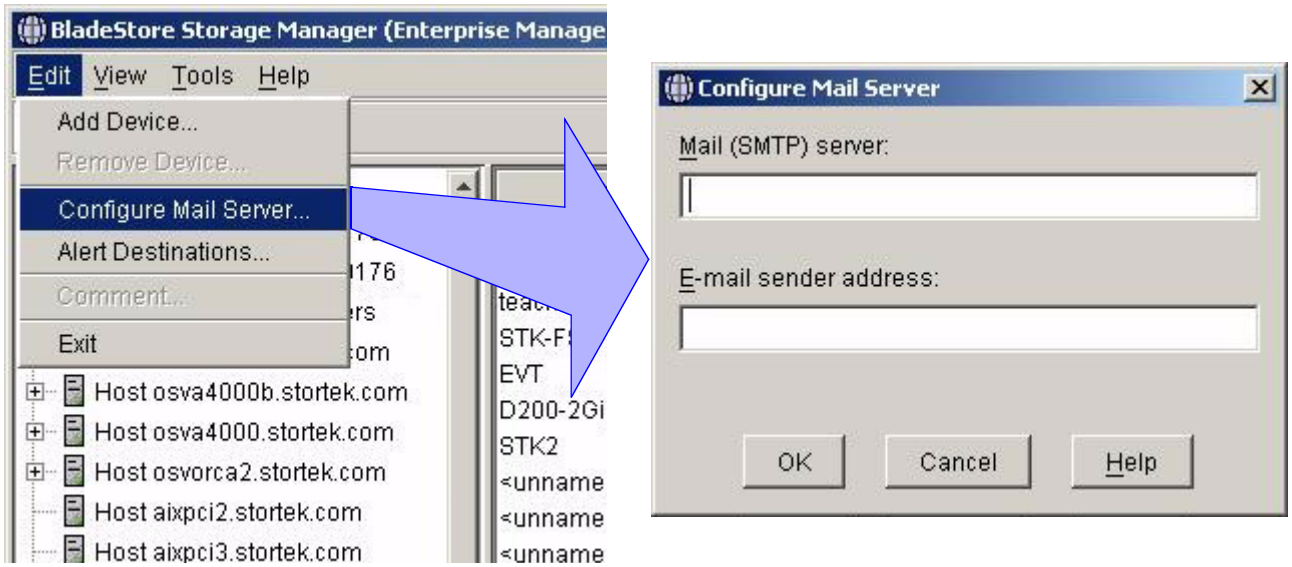
1. Start SANtricity Storage Manager on your management station.
2. Click on Edit >> Configure Mail Server (as shown below).

   A popup window will appear, where you will need to add:

   - the customer's outgoing mail server information
   - the sender's email address that will send the notification (this indicates who the event notification is from).

   Note: It is recommended that you use a valid and frequently monitored email account to receive your event notification email.

Figure 3. Configure Mail Server - Popup Window



3. In "Mail (SMTP) server" address, place the outgoing mail server name.

   Note: You will have to get this from your customer system administrator, who may or may not allow you to send email out.

4. In "E-mail sender address," place the name of the person(s) responsible for the array. Include the full address, e.g.: **JohnB@company.com**

   Note: This should be a valid email address, which tells who the email is from, typically the administrative contact at the customer site.

5. Click on "OK" to accept and close.
6. Next highlight the array (storage system) that is to have the notification enabled, and then right click to get the drop down menu. Select "Alert Destinations". See Figure 4 on page 12.

Warning: Do not do alert notifications on the Management Station host, as this will report all disks that are attached to it.

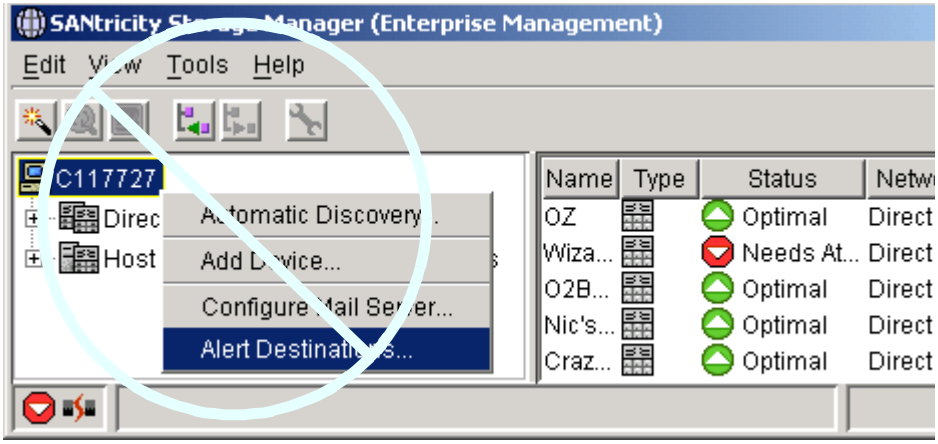
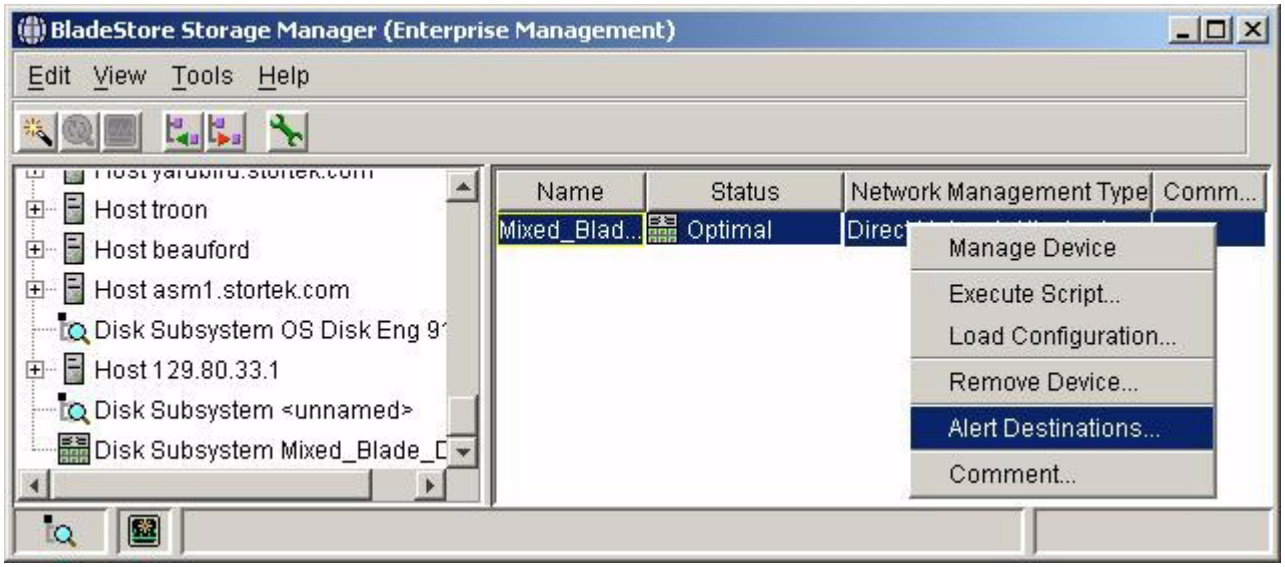


Figure 4. Disk Subsystem Alert Destinations



7. In the "E-mail address" place StorageTek's DEM email address. It is **dem@invisiblestorage.com**

Click the "add" button, and enter additional e-mail addresses as you deem appropriate. More information is provided in The Device Event Monitoring Installation and Configuration Guide, p/n 96159. It will help you set up the userdata.txt file and complete your event notification process steps (for your specific host OS). The manual can be found on the DEM web page at:

http://intwww.stortek.com/02/DEM.html

It is also on the product CD (inside the Docs folder or in a special DEM folder inside the Software folder).

Media Scan

3

The following information is provided to help CSEs install and use media scan to assist with discovering potential problems in their FlexLine™ 200 Series and 300 Series storage systems (or earlier disk systems).

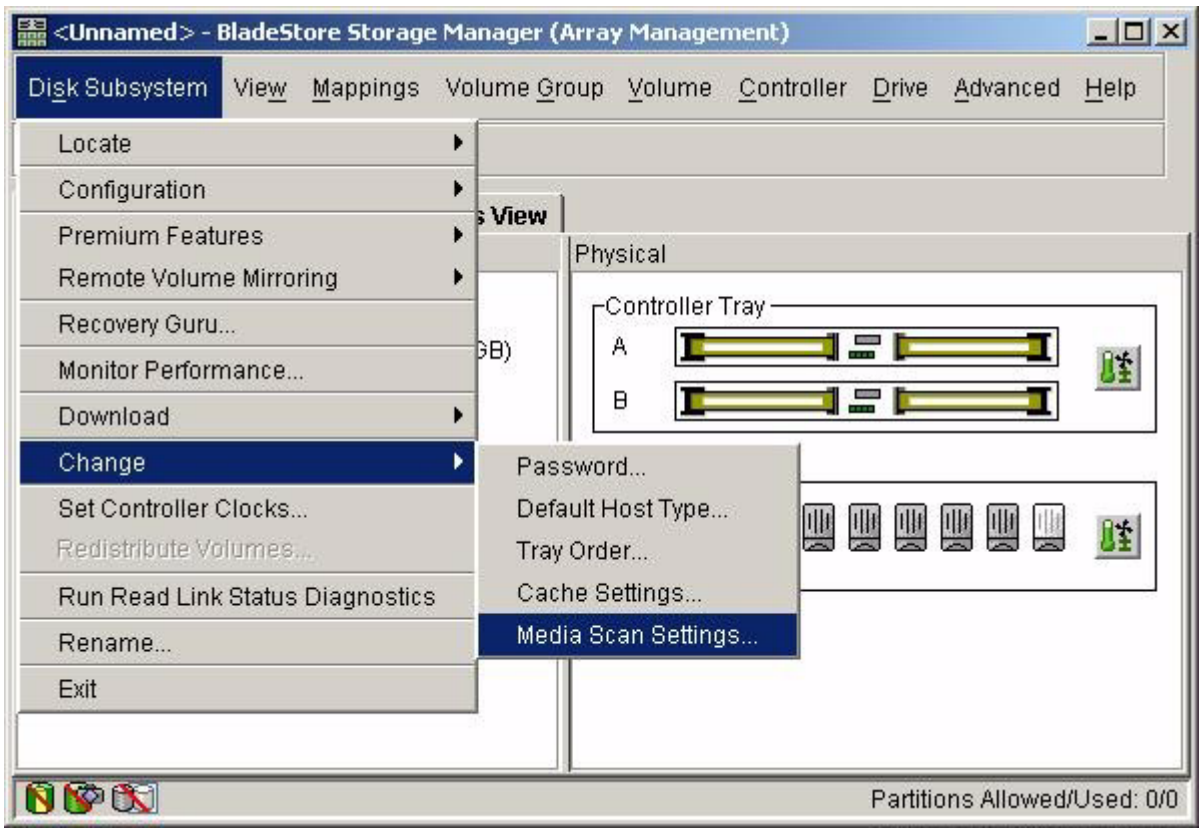
Enabling Media Scan

The following pages explain how to enable media scan using the SANtricity Storage Manager GUI. The process requires two separate steps to enable media scan. The first step is to enable this functionality at the storage system level, as shown below.

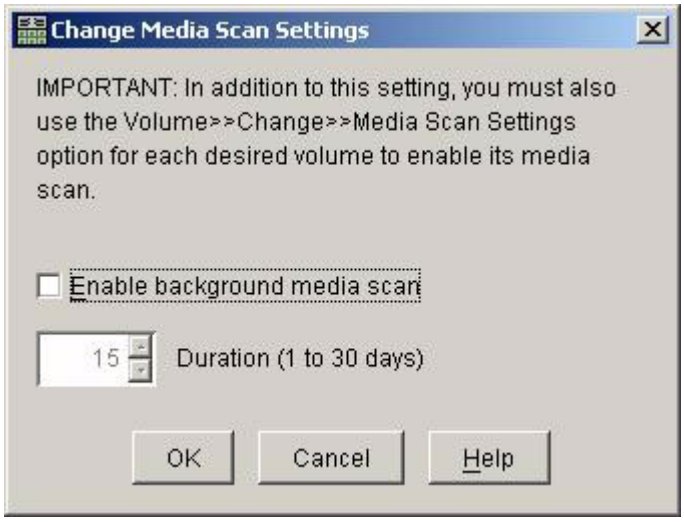
Note: For BladeStore best practices, refer to the BladeStore Presales Technical Reference manual, p/n 96103.

Enable Media Scan at the Storage System Level

Use the Menu path as shown below, and select Media Scan Settings.

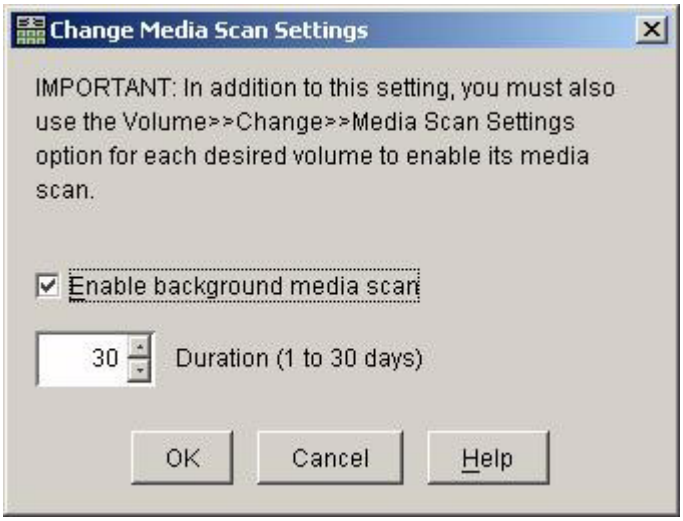


This will launch the following pop-up screen.



If recommended by technical support, check the **Enable background media scan** box, and select how often you want to run a media scan.

A 30 day duration is typically set for BladeStore, which gives you a media scan about once a month.



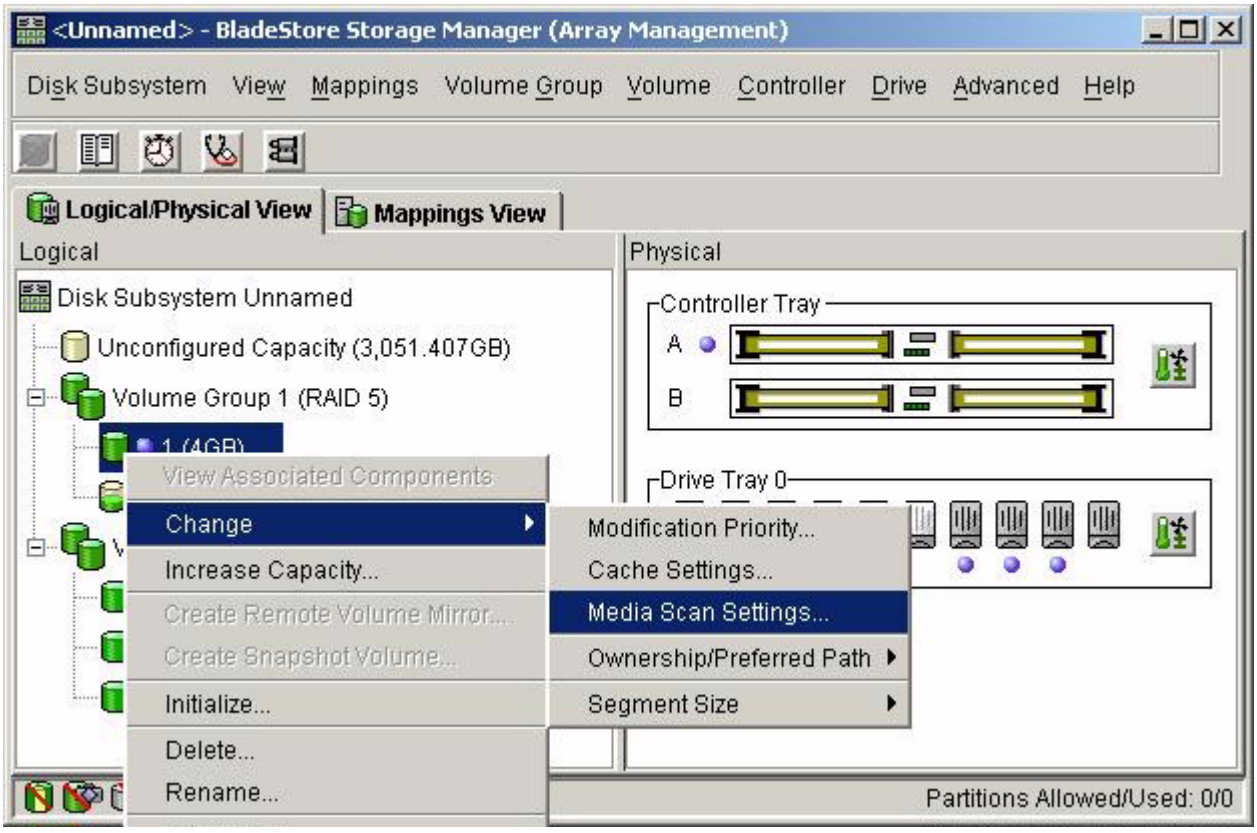
A 15 day duration is typical for all other FlexLine storage systems, however, if a customer is having performance issues that are contending with the media scan task, then the interval should be increased to 30 days.

Prerequisites

Storage systems need controller firmware level 5.30.15 or above for SM 8.30 users, 5.40.13 or above for SM 8.40 users, or 06100500 or above for SM 9.1 users. BladeStore requires 5.46.02 or above. B220 and B280 require 5.41 or above. Contact technical support if you need help upgrading.

Enable Media scan at the LUN level

Next you need to enable media scan at each LUN level (see the top of the Change Media Scan Settings window). To do this you first need to select one volume, and then use the menu pull-down path, as shown below.



You can then enable a media scan for one, two, or more volumes. Use the Ctrl key and click on more volumes (or Select All) to select whatever volumes you wish to do a media scan on. See software screen examples on the next page.

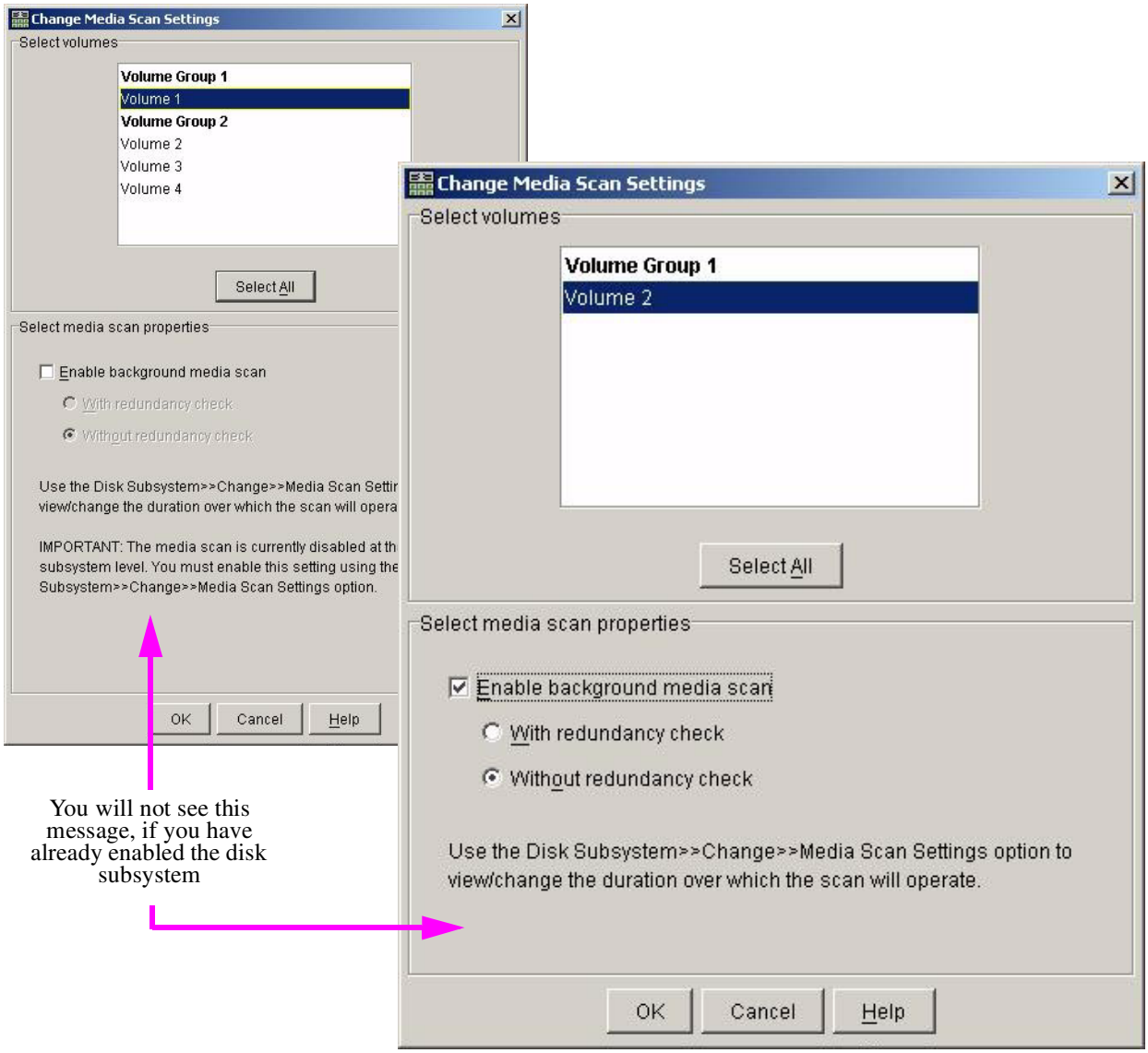
Note: If you suspect a problem, media scan settings may be modified to do more frequent scans (e.g. FLX280 media scan settings could be set for every 7 days for one particular volume group (or single volume)).

You may also select the **With redundancy check** button (shown below) for a single volume to help diagnose a problem and isolate a problem to one particular drive or blade.

Recommended Scan Settings (if systems optimal)

Capacity-centric media scans should be set for a 30 day duration, without redundancy check. See screen captures below.

Access-centric media scans should be set for a 15 day duration, again without redundancy check.



Once you have indicated the volume(s) to scan, select the recommended settings for your 200/300 Series storage systems:

- **Enable background media scan**
- **Without redundancy check**.

Then select the OK button to enable the media scan process. If a disk problem occurs, the media scan will report errors found on the disk, as well as provide an indication of potential disk faults—before they happen.

Note: You may want to turn media scan off when you are building a volume or during a reconstruction and copyback.

Caution: Media Scans may be disabled when a controller is replaced or resets. Be prepared to re-enable media scans if this happens.

NEED MORE INFORMATION?

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