

# Message Server S7000 (SAN) Configuration Guide

Release 4.1.9-GA February 2010 Part Number 010-00787

This manual supports appliances running the Messaging Operating System (MOS) 4.1.9 or later until replaced by a newer edition.

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## Preface

This guide documents configuration procedures for the Message Server SAN appliance.

For a complete list and description of the Mirapoint product line, contact your local reseller, or visit Mirapoint online at:

http://www.mirapoint.com

This book contains the following chapters:

- Chapter 1, Setting Up and Configuring a SAN—provides information on the set up and configuration of Message Server (abbreviation for the product name) with a SAN server.
- Appendix A, Backing Up and Restoring an S7000—provides information about the backing up and restoring data on your Message Server (abbreviation for the product name).
- Appendix B, Troubleshooting—describes the various potential failures and solutions.

## About Mirapoint Documentation

Documentation for all Mirapoint products is available through the Information Library on the Mirapoint Support website:

#### https://support.mirapoint.com/

The Information Library provides the hardware and software documentation for all supported Mirapoint releases and appliances, and the Support Knowledge Base. The Support site is accessible to all customers with a valid Support Contract. If your company has a valid contract but you need a Support login ID, email support@mirapoint.com.

## **Getting Technical Support**

If you experience problems with your appliance, contact the company from which you purchased your Mirapoint appliance.

If you purchased your appliance directly from Mirapoint, contact Mirapoint Technical Support by email, telephone, or via the Mirapoint Support website:

#### Email: support@mirapoint.com (China) support@mirapoint.com.cn

Telephone:

- \* (USA) 1-877-MIRAPOINT (1-877-647-2764)
- \* (Outside the USA) +1 408-720-3800
- ★ (UK) +44 (0) 1628-535699
- **♦** (China) +400 707-1086
- ♦ (Australia) +1 800-633784

Website: https://support.mirapoint.com/

When contacting Technical Support, be prepared with the following information about your appliance:

 Table 1
 Appliance Information for Technical Support

Information	MOS CLI command (Message Server, RazorGate)	AOS UI Location (RazorSafe)
Software release	Version	In the Status tab, select System Info.
Host ID	License Hostid	In the Status tab, select System Info.
Serial number	Model Get Serial	In the Status tab, select System Info.
Hardware model	Model Get Chassis	In the Status tab, select System Info.

## Typographic Conventions

Table 2 describes what the different fonts and typefaces indicate in this manual.

Table 2 Typographic Conventions in This Manual

Typeface	Use	Example
Bold	User interface elements	From the File menu, select Save As
Italic	Definitions, emphasis, or titles	A <i>folder</i> is a container that stores email messages. Specify <i>at least two</i> DNS servers. For more information, see the <i>Mirapoint</i> <i>Message Server Administrator's Guide</i> .
Courier	Screen display text, command names, or text to type *	Enter your IP address: Use the License Hostid command. At the prompt, type Version.
Courier Italic	Variables for which you substitute when you type	your_IP_address
* Command-line interface (CLI) commands are case- <i>in</i> sensitive. For readability, commands in this manual are shown in mixed case (for example, License Hostid).		

## Iconic Conventions

Table 3 describes what the different icons in this manual indicate.

Table 3Iconic Conventions in This Manual

lcon	Use
*	Best practices information (Mirapoint recommendations)
\$	Note information that <i>should</i> be read
•	Critical information
~	License information
	Potential of causing bodily harm (hardware only)





## Setting Up and Configuring a SAN

This chapter provides information on the set up and configuration of Message Server (abbreviation for the product name) with a SAN server, which involves:

- Understanding Terminology
- Verifying Requirements on page 10
- Configuring for SAN on page 13
- (Optional) Adding More Storage Space on page 15
- (Optional) Attaching a Replacement Appliance on page 17
- (Optional) Configuring N+1 Failover on page 19

For additional information about properly setting up and configuring the SAN and Message Server refer to:

- The documentation provided with your SAN hardware
- Your SAN manufacturer
- The Mirapoint Administration Protocol Reference

## Understanding Terminology

The following terms are used throughout this chapter:

Cluster Multiple controllers attached to the SAN fabric.

Fabric The combination of the switch and Fibre Channel connectors together.

- Head A Mirapoint Message Server with processor, memory, and system software supporting user mailboxes and inbound/outbound SMTP.
- LUN (Logical Unit Number) A grouping of one or more disks or disk partitions into one span of disk storage space.
- N+1 A failover configuration where multiple systems use a single standby head for take-over. N equals the number of active systems, while +1 represents the standby system.
  Using Mirapoint Message Servers, N can be any number up to nine (9) although four (4) is the typical recommended maximum.
- **Node** The controller (or I/O server) that manages file systems and volumes. The node mediates between RAID storage and the SAN fabric.

- Switch A selector device with Fibre Channel connectors that supports multipoint to multipoint communication, device name lookup, security, and redundancy.
- **WWPN**(WorldWide Port Name) The unique serial number burned into Fibre Channel adapters that identifies that network port from all others.

## Verifying Requirements

Verifying SAN setup and configuration requirements involves the following:

- Installation Prerequisites on page 10
- Fibre Switch Settings on page 11
- SAN Prerequisites on page 11
- SAN LUN on page 11

For backup requirements and configuration details, see Appendix A, Backing Up and Restoring an S7000.

#### Installation Prerequisites

Complete the following setup before configuring the abbreviation for the product name for SAN:

- Install and configure your SAN hardware before configuring the abbreviation for the product name. Refer to your SAN documentation for specific procedures.
  - Clustered SANs should typically be set to active/active mode of operation.
  - Enable LUN security on your SAN. Refer to Enabling LUN Security on page 12 for details.



LUN security is not controlled or altered by Mirapoint hardware or software.

- Rack-Mounting the Appliance—refer to the *Rack Installation Instructions*.
- Connecting Cables—refer to the *Mirapoint M7000*, *RG7000 and S7000 Hardware Getting Started Guide*.
- Complete the basic Mirapoint software setup including installing all of the licenses (see your *Mirapoint M7000, RG7000 and S7000 Hardware Getting Started Guide*).



The N+1 license can't be installed until you have completed the SAN configuration and rebooted the abbreviation for the product name.

### Fibre Switch Settings

The Mirapoint hardware and software *do not* control or alter any of the fibre switch settings.

Mirapoint recommends using a dedicated switch connected to your Mirapoint Message Servers. Enabling LUN security is not necessary when a dedicated fibre switch is configured.

When connecting the abbreviation for the product name through a fibre switch, set the following to fabric mode:

- The fibre switch
- The switch-to-SAN ports
- The switch-to-abbreviation for the product name ports

### Sharing a Fibre Switch Box

It is possible, through the use of fibre switch "zoning", to share a fibre switch box with your Mirapoint Message Servers. Refer to the documentation provided with your fibre switch or contact your fibre switch vendor for "zoning" set up procedures.

If you use a shared fibre switch with zoning configured, install and enable some type of LUN security or LUN masking (see Enabling LUN Security on page 12 for more details).

#### **SAN** Prerequisites

SAN equipment must be a Mirapoint-approved storage device running approved firmware releases. Check with the Mirapoint Support website or Mirapoint Technical Support for compatibility details.

Mirapoint appliances *do not* use storage on the SAN that appears to be in use by other servers; however, the reverse might not be true. Other servers might assume all storage in their zone is available to configure, and might attempt to write over the space allocated to the Mirapoint message store.

Mirapoint hardware and software *do not* control or alter any SAN port-level settings.

### SAN LUN

A LUN in the SAN paradigm represents virtual partitions or volumes of a RAID set.

Using your SAN administration tools, configure the SAN LUNs within the following parameters:

- LUN size can be from 35 GB through 8 TB.
- Maximum message store size is 8 TB.
- Each attached message server can have a total of five LUNs.

For more SAN storage sizing information, consult your authorized Mirapoint sales representative or reseller.

#### About LUN Zero

MOS 4 recognizes LUN IDs greater than zero. If present, LUN0 is ignored by the Mirapoint appliance MOS.

#### Enabling LUN Security

LUN security, known as port security on some SAN servers, restricts what the SAN presents to the abbreviation for the product name, limiting the LUNs to only those available for the Mirapoint software to configure.

To enable LUN security:

1. On the abbreviation for the product name, get the port WWPNs by typing the command:

**Storage Get Portwwn** 0x1000000c9678044 0x1000000c967e3e6

OK Completed

- 2. On your SAN, associate both of the abbreviation for the product name port WWPNs with the virtual devices you created for use by this abbreviation for the product name.
- 3. Type reboot to complete the enabling process.

When the appliance is finished rebooting, you can proceed with configuring your abbreviation for the product name for SAN.

## Installation Overview

The abbreviation for the product name can be configured as a stand-alone or as a member of an N+1 failover cluster. The N+1 failover cluster configuration allows normal system operations to continue in the event the primary appliance fails. Regardless of configuration, message storage always resides on the SAN server.

The following is the order in which to complete the various installation procedures:

- 1. (All) Configure the SAN for use with your Mirapoint Message Server(s)
- 2. (N+1) Apply N+1 license
- 3. (N+1 Standby Appliance) Create a failover cluster
- 4. (N+1 Active Appliances) Attach Mirapoint Message Server to the previously created cluster.
- 5. (N+1 Standby Appliance) Rescan the cluster to refresh the cluster membership and complete the failover configuration.

## Configuring for SAN

Both stand-alone and failover cluster configurations require that you first complete the SAN configuration steps in this section. For more information on setting up a failover, see Configuring N+1 Failover on page 19.

In this section, the term LUN applies to the hardware address assigned to a virtual disk as exported by your SAN for use by the abbreviation for the product name. Refer to your SAN installation and configuration documentation for more information.

To complete your basic abbreviation for the product name SAN configuration:

- 1. Complete Installation Prerequisites on page 10.
- 2. On the abbreviation for the product name, get the LUN IDs by typing the Storage Listsan command.



In order to see new LUN IDs created between abbreviation for the product name reboots, another reboot is necessary.

- 3. Choose the hardware address of the LUN you want to configure. When you choose a LUN, consider the following:
  - Must be an unused logical device, marked "masked clear", but not LUN zero.
  - Must be an unused LUN with adequate storage for your Mirapoint message store to avoid having to add storage space later.
  - \* Must have at least 35GB available storage space and no more than 8 TB.

For more SAN storage sizing information, consult your authorized Mirapoint sales representative or reseller.

- 4. Configure the chosen LUN.
  - Configuring a LUN marked "masked clear" using the Storage Configsan X.X.X.X Init command, where X.X.X.X is the logical-ID number associated with the LUN to be installed. For example:

Storage Configsan 2.0.0.1 Init

b. LUN security should prevent the Mirapoint software from seeing LUN IDs assigned to other servers (refer to Enabling LUN Security on page 12 for details); however, if all LUNs present to the abbreviation for the product name marked "masked unknown", choose the LUN that is not in use and provides adequate storage.



Verify with your SAN administrator that the "masked unknown" LUN you are targeting is really available before using it. Failure to verify availability can result in data loss.

To overwrite the existing data and configure the LUN for your abbreviation for the product name, use the Storage Configsan X.X.X.X Initforce command, where X.X.X.X is the logical-ID number associated with the

LUN to be installed. For example:

Storage Configsan 2.0.0.1 Initforce

The system automatically reboots after executing either of these commands.

5. After the abbreviation for the product name reboots and completes the migration, verify that the LUN is properly configured by typing the Storage Listsan command again.

The list of LUNs displays and reflects the changes to LUN state information.

The logical-ID on the SAN is dynamically generated during the device discovery, and can change upon reboot if the SAN configuration has been altered. For example, assume the hostname is **san.example.com**:

#### Storage Listsan

```
2.0.0.0 NETAPP 1MB masked clear "" ""
2.0.0.1 NETAPP 200000MB bound system san.example.com
2.0.0.2 NETAPP 35840MB masked clear "" ""
OK Completed
```

After a LUN is properly installed, the LUN changes from "masked" to "bound" and from "clear" to "system".



The hostname display is limited to a maximum of 16 characters. If the hostname exceeds the maximum character length, it automatically gets truncated.

### Troubleshooting

If an initialization attempt fails, the LUN might be left in a "system" or "in use" state where the abbreviation for the product name refuses to overwrite it.

Run storage configsan x.x.x.x initforce.

If initforce fails, the old cached information is not getting properly flushed. Run **storage listsan**.

- \* If the LUN is clear, run storage configsan x.x.x.x init.
- \* If the LUN is not clear, run storage configsan x.x.x.x initforce again.

#### Using Multipath

Multipath enables Mirapoint appliances to have continuous use of all LUNs because alternative paths are made available without the need to reboot.

When multipath is running, to check the status of the data path use the ListPaths command. The ListPaths command returns information about the multipath ID, the multipath mode, the physical devices in the multipath device, the active path, and the multipath status ("Optimal", "Partial", "Degraded" or "Failed").

For example:

```
Storage ListPaths "" "" ""
2.0.0.1 Failover "2.0.0.1 2.0.1.1 3.0.0.1 3.0.1.1" "3.0.0.1" "Optimal"
2.0.0.2 Failover "2.0.0.2 2.0.1.2 3.0.0.2 3.0.1.2" "3.0.0.2" "Optimal"
OK Completed
```

Where pattern must be either \* or "" to match all paths.

Use the ListPathStates command after checking the status of the data path to determine which path failed. The ListPathStates command returns information about the path ID and status ("Optimal", "Failed" or "Undefined").

For example:

```
Storage ListPathStates 2.0.0.1 "" "" ""
2.0.0.1 "Optimal"
2.0.1.1 "Failed"
3.0.0.1 "Optimal"
3.0.1.1 "Optimal"
OK Completed
```

Where pattern must be either \* or "" to match all paths.

## Adding More Storage Space

The expandlun command adds space to the first LUN and the grow command partitions the mail store into additional LUNs. If you expand your first LUN, you must expand it before you use the grow command. You cannot use the expandlun command after the message store has been grown.

### Expanding a LUN on a SAN Server

The expandlun command expands only the "bound system" LUN that has been configured using the Storage Configsan X.X.X.X Init command and cannot be used with a multiple LUN configuration.



Using the expandlun command automatically interrupts mail service and takes the message server offline.

Adding space to the LUN is handled by the SAN storage device, not the Mirapoint message server.

To expand a LUN on a SAN server:

1. Get the LUN ID by typing the Storage Listsan command.

The SAN logical-ID is dynamically generated. For example:

#### Storage Listsan

```
2.0.0.0 NETAPP 1MB masked clear "" ""
2.0.0.1 NETAPP 35840MB bound system san.example.com
OK Completed
```

- 2. On the SAN, add extra space (minimum 20 GB) to the LUN.
- 3. On the Mirapoint appliance, use the expandlun command on the bound system LUN. For example:

Storage Configsan 2.0.0.1 expandlun

Where 2.0.0.1 is the *logical-ID* number associated with the initial system LUN chosen for expansion.

Any available space on the LUN is found and configured.

For example:

Storage Listsan

```
2.0.0.0 NETAPP 1MB masked clear "" ""
2.0.0.1 NETAPP 56320MB bound system san.example.com
OK Completed
```

### Growing the Message Store on the SAN Server

The grow command allows your abbreviation for the product name to use multiple LUNs.



Using the grow command might automatically interrupt mail service and take the message server offline.

Repeat the following process until you have configured a sufficient number of new LUNs to provide storage for the message store.



Once the grow command is used, you cannot use the expandlun command.

To grow your message store on the SAN server:

- 1. Add a new LUN on your SAN.
  - Mirapoint software rejects logical devices smaller than 20 GB or larger than 8 TB in size.
  - a. Map the new LUN to your abbreviation for the product name.
  - b. Reboot the abbreviation for the product name.
- 2. Display a list of currently available SAN LUNs for the Mirapoint software to configure using the Storage Listsan command.

For example:

Storage Listsan

```
2.0.0.0 NETAPP 1MB masked clear "" ""
2.0.0.1 NETAPP 200000MB bound system san.example.com
2.0.0.2 NETAPP 1047676MB masked clear "" ""
OK Completed
```

- LUN security—When active, only LUNs available for the Mirapoint software to configure display.
- "bound system"—LUN already configured and in use by the Mirapoint software.
- "masked clear"—LUN is empty and ready for the Mirapoint software to use for expansion.
- "masked unknown"—Some data exists on the LUN, so the Mirapoint software will not write over the data unless you use the Storage Configsan Growforce command.

If the output still does not display a list of configured LUNs, contact your SAN administrator for assistance.

3. Choose a LUN marked "masked clear" then enter the Storage Configsan X.X.X.X grow command, where X.X.X.X is the chosen LUN ID.

Your abbreviation for the product name might automatically reboot.

4. Verify that the LUN is properly grown using the Storage Listsan command.

For example:

Storage Listsan

2.0.0.0 NETAPP 1MB masked clear "" "" 2.0.0.1 NETAPP 200000MB bound system san.example.com 2.0.0.2 NETAPP 1047676MB bound inuse san.example.com OK Completed

It is possible that LUNs present to the Mirapoint marked "masked unknown" or "masked system".

For example:

Storage Listsan

```
2.0.0.0 NETAPP 1MB masked clear "" ""
2.0.0.1 NETAPP 200000MB bound system san.example.com
2.0.0.2 NETAPP 1047676MB masked system "" ""
OK Completed
```

 Use the Storage Configsan Growforce command to overwrite the existing "masked unknown" or "masked system" data and configure the LUN for use by the Mirapoint Message Server.

For example:

Storage Configsan 2.0.0.2 Growforce



LUN security should prevent the Mirapoint software from seeing logical devices assigned to other servers, but before using this command, you should verify with your SAN administrator the availability of any "masked unknown" LUNs.

The system displays a status message indicating that the grow operation has started. The mail store stays online during the expansion process.

- 5. Check the admin logs for expansion status.
- 6. Verify that the LUN is properly grown using the Storage Listsan command.

For example:

Storage Listsan

```
2.0.0.0 NETAPP 1MB masked clear "" ""
2.0.0.1 NETAPP 200000MB bound system san.example.com
2.0.0.2 NETAPP 1047676MB bound inuse san.example.com
OK Completed
```

A grown LUN changes usage status from "masked clear" to "bound inuse."

## Attaching a Replacement Appliance

If an active appliance fails in a manner that requires a replacement or system recovery, to return that appliance to the SAN configuration, you must re-attach the appliance to its original LUN.



When using a replacement appliance to re-attach to an existing LUN, to avoid mail loss caused by enabled SMTP, re-attach using a different ip/hostname than the old appliance. Alternatively, boot up the replacement appliance off-network.

The re-attached appliance automatically assumes the ip/hostname from the original LUN after the reboot.

To attach a replacement or recovered appliance:



The following procedure assumes that you have already completed the system recovery process and installed the same MOS release as the SAN LUN.

1. On a replacement abbreviation for the product name, get the port WWPN by typing the command:

Storage Get Portwwn

0x1000000c9678044 0x1000000c967e3e6 OK Completed

2. On your SAN, when replacing an appliance, depending on your configuration, present either:

Standalone appliance-the working LUNs and LUN Zero

N+1 appliance—all cluster LUNs



Specific "presenting" procedures depend on the SAN you are using. Refer to your SAN documentation for details.

- **3**. **Reboot** the abbreviation for the product name to refresh the list of available LUN IDs.
- 4. Display the LUN IDs by typing the Storage Listsan command.

The SAN logical-IDs are dynamically generated.

For example:

Storage Listsan

```
2.0.0.0 NETAPP 1MB masked clear """"
2.0.0.1 NETAPP 35840MB masked system san.example.com ""
2.0.0.2 NETAPP 200000MB masked clear """"
OK completed.
```

5. Depending on your configuration, find and attach to the LUN the marked:

Standalone appliance—"masked system"

N+1 appliance—"masked standby"

To attach:

Type the following reattach command:

Storage Listsan 2.0.0.1 reattach

Where 2.0.0.1 is the "masked system" logical-ID number to which you

want to attach.

The abbreviation for the product name automatically reboots.

6. After the abbreviation for the product name reboots, verify that the LUN has been properly configured by typing the Storage Listsan command again.

Depending on your configuration, the attached LUN changes usage status from:

Standalone appliance—"masked system" to "bound system"

N+1 appliance—"masked standby"to "bound standby"

A recovered or replaced abbreviation for the product name automatically takes the network setting from the attached LUN, including the ip/hostname.

 If your reattached abbreviation for the product name is part of an N+1 failover cluster, you must verify the recognition of each cluster member using the Cluster Scan command on the standby appliance.

## Configuring N+1 Failover

N+1 failover supports many active appliances working with one standby appliance. An active appliance should already be configured and operating with the SAN storage before adding it to a failover cluster configuration. N+1 failover can be configured in one of the following two ways:

- 1. Install a number of new Mirapoint appliances in an N+1 failover cluster configuration. (9 +1 maximum)
- 2. Convert existing stand-alone Mirapoint appliances and add additional Mirapoint appliances to an N+1 cluster.

Procedures in the following sections apply to the first-time installation of N+1 failover.

### N+1 Failover Requirements

When configuring N+1 failover:

• Mixed environments are not supported and untested.

All appliances must be of the same hardware type (for example, all S7000 or abbreviation for the product name) with the same optional hardware (for example, GigE Gigabit Ethernet) and the same MOS release. All appliances must also have the same number of network cards.



Mixing different hardware can cause either the loss of network configuration or port swapping.

- All appliances must be running MOS 4.1.9 or later for multipath usage.
- All appliances must be licensed for SAN, N+1 failover.
- All appliances must be correctly cabled; each must have access to the same set of logical devices.



The maximum abbreviation for the product name N+1 Failover configuration is 9 (active message servers) + 1, (standby message server), which equates to 20 WWPNs that must be mapped to each LUN in the cluster.

• The standby appliance must be designated before creating the active appliances. The standby appliance cannot have any services or user accounts configured, except for the administrator's account.

### N+1 Failover Recommendations

Mirapoint additionally recommends the following conditions be met for N+1 failover clusters:

• All appliances should be on the same network and subnet (netmask); otherwise, network monitoring might not work properly.

For example, when a standby and active appliance are configured on different subnets, the standby appliance might report that it cannot reach the active appliance's monitoring address.

• All appliances must use the same MOS release (minimum MOS 4.1.9).

### Configuring N+1 Failover Cluster

The procedure in this section applies whether you are installing new Mirapoint appliances or setting up an existing Mirapoint appliance for the first time in a failover cluster.

When installing new Mirapoint appliances to work in the cluster, complete the basic installation and configuration as described in the hardware installation manual for each Mirapoint appliance.

You must configure the standby appliance first, thus creating a cluster, before configuring any active appliances. Refer to Setting Up an N+1 Standby Appliance on page 21 for procedures.

All Mirapoint appliances must be independently configured in a SAN, and also configured so that each appliance can see the complete set of LUNs used for the N+1 failover cluster.

Figure 1 on page 21 illustrates four Mirapoint appliances configured as active appliances and one configured as a standby appliance. Each appliance is assigned to its own LUN or set of LUNs, but all LUNs are visible to the entire cluster.







When an active appliance fails, the standby appliance takes over for that appliance and assumes the host identity and SAN storage LUN for that active appliance.

Figure 2 on page 21 illustrates active appliance number four failing. The standby appliance (number one) assumes the identity and SAN storage LUN (LUN four) for failed appliance number four. The LUN used by the standby appliance before the take over occurred (LUN one) is still seen by the cluster, but the LUN is idle.

When a failed appliance is a replacement appliance that requires system recovery, it must be manually attached to the standby LUN and the cluster must be rebuilt. Using the cluster scan command enables the newly attached standby appliance to see all of the active appliances in the cluster.





### Setting Up an N+1 Standby Appliance

The standby message server must have a dedicated LUN and be set up as a fully-functioning Message Server.

To set up the standby appliance:

- 1. Complete the hardware installation and SAN configuration for a failover cluster as described in the Mirapoint hardware manual.
- 2. Ensure that the standby appliance meets all requirements in Configuring N+1 Failover Cluster on page 20.

- 3. Telnet into the CLI of the intended N+1 standby appliance.
- 4. Apply the N+1 cluster license on the standby appliance.

License Apply licenseKey

It is not necessary to reboot the standby appliance after this step.

5. Display the list of SAN LUNs available to the standby appliance:

#### Storage Listsan

```
2.0.0.0 NETAPP 1MB masked unknown """"
2.0.0.1 NETAPP 200000MB masked system active1.example.com ""
2.0.0.2 NETAPP 250000MB masked inuse active1.example.com ""
2.0.0.3 NETAPP 35840MB bound system standby.example.com ""
2.0.0.4 NETAPP 200000MB masked system active2.example.com ""
2.0.0.5 NETAPP 200000MB masked system active3.example.com ""
2.0.0.6 NETAPP 200000MB masked system active4.example.com ""
```

6. Create the N+1 cluster and add the standby appliance.

#### Cluster Add cluster1

In the above command, *cluster1* is an arbitrary 1-16 character unique name for a given cluster.

7. Verify that the cluster was created on the standby appliance:

#### Storage Listsan

```
2.0.0.0 NETAPP 1MB masked unknown """
2.0.0.1 NETAPP 200000MB masked system active1.example.com ""
2.0.0.2 NETAPP 250000MB masked inuse active1.example.com ""
2.0.0.3 NETAPP 35840MB bound standby standby.example.com cluster1
2.0.0.4 NETAPP 200000MB masked system active2.example.com ""
2.0.0.5 NETAPP 200000MB masked system active3.example.com ""
2.0.0.6 NETAPP 200000MB masked system active4.example.com ""
```

Now follow the procedure to set up the active appliances.

### Setting Up an N+1 Active Appliance

To set up each active appliance, in any order:

- 1. Complete the hardware installation and SAN configuration for a failover cluster as described in the Mirapoint hardware manual.
- 2. Ensure that this active appliance meets all requirements in Configuring N+1 Failover on page 19.
- 3. Telnet into the CLI of the intended N+1 active appliance.
- 4. Apply the N+1 cluster license on the active appliance.

#### License Apply licenseKey

It is not necessary to reboot the active appliance after this step.

5. Associate this active appliance with the cluster created by Setting Up an N+1 Standby Appliance on page 21. Enter the following command, where *cluster1* is the name established in step 6 of Setting Up an N+1 Standby Appliance:

Cluster Attach cluster1

6. If you are not attaching all of your active appliances at the same time, after you attach an active appliance, connect to the standby appliance with Telnet and ask it to scan the network for active appliances attached to its cluster name and monitor console output to verify recognition of each cluster member:

#### Cluster Scan

After scanning is complete, you can display all active appliances in this cluster with the Cluster Listmember command. For example:

cluster listmember <clustername>

active1.example.com standby.example.com OK Completed



If you are attaching all of your active appliances at the same time, you can scan the network after all of the active appliances are attached rather than scanning with each active appliance one at a time.

7. Verify the active appliance is added to the cluster. For example:

Storage Listsan

```
2.0.0.0 NETAPP 1MB masked unknown """"
2.0.0.1 NETAPP 200000MB bound system active1.example.com cluster1
2.0.0.2 NETAPP 250000MB bound inuse active1.example.com cluster1
2.0.0.3 NETAPP 35840MB masked system standby.example.com cluster1
2.0.0.4 NETAPP 200000MB masked system active2.example.com cluster1
2.0.0.5 NETAPP 200000MB masked system active3.example.com cluster1
2.0.0.6 NETAPP 200000MB masked system active4.example.com cluster1
2.0.0.6 NETAPP 200000MB masked system active4.example.com cluster1
2.0.0.6 NETAPP 200000MB masked system active4.example.com cluster1
```

Your abbreviation for the product name appliances are now configured to operate in an N+1 failover cluster.

### Adding More Storage Space to Clustered Appliances

Adding more space to an appliance in a cluster configuration requires that you first detach the target appliance before proceeding. The expandlun command adds space to the first LUN and the grow command partitions the mail store into additional LUNs. If you expand your first LUN, you must expand it before you use the grow command. You cannot use the expandlun command after the message store has been grown.

### Expanding a LUN on a Clustered Appliance

The expandlun command expands only the "bound system" LUN that has been configured using the Storage Configsan X.X.X.X Init command and cannot be used with a multiple LUN configuration.



Using the expandlun command automatically reboots the appliance.

Adding space to the LUN is handled by the SAN storage device, not the Mirapoint message server.

To expand a LUN on a clustered appliance:

1. On the active appliance that needs expanding, get the LUN ID using the CLI command Storage Listsan.

The SAN logical-ID is dynamically generated. For example:

Storage Listsan

2.0.0.0 NETAPP 1MB masked clear "" ""
2.0.0.1 NETAPP 35840MB bound system san.example.com cluster1
OK Completed

- 2. Add extra space (minimum 20 GB) to the LUN on the SAN (refer to the procedures provided by your SAN manufacturer).
- 3. Detach the active appliance that needs expanding from the cluster using the CLI command Cluster Detach.
- 4. On the detached appliance, add extra space using the CLI command Storage Configsan x.x.x.x expandlun. For example:

Storage Configsan 2.0.0.1 expandlun

Where 2.0.0.1 is the *logical-ID* number associated with the initial system LUN chosen for expansion.

Any available space on the LUN is found and configured. For example:

Storage Listsan

```
2.0.0.0 NETAPP 1MB masked clear "" ""
2.0.0.1 NETAPP 56320MB bound system san.example.com cluster1
OK Completed
```

- 5. Re-attach the expanded appliance to the cluster using the CLI command Cluster Attach *clustername*.
- 6. Associate the standby appliance with the re-attached appliance using the CLI command Cluster Scan on the standby appliance.

### Growing the Message Store on a Clustered Appliance

The grow command allows your abbreviation for the product name to use multiple LUNs.

Using the grow command might automatically interrupt mail service and take the message server offline. In some instances when required by the services running on the appliance needing to grow, the grow command might automatically force a reboot.

Repeat the following process until you have configured a sufficient number of new LUNs to provide storage for the message store.



Once the grow command is used, you cannot use the expandlun command.

To grow your message store on a clustered appliance:

- 1. Add a new LUN on your SAN (refer to the procedures provided by your SAN manufacturer).
  - Mirapoint software rejects logical devices:
    - Smaller than 20 GB
    - Exceed the 8 TB maximum storage limit
- 2. Map the new LUN to all of the appliances in the cluster (active and standby).
- 3. Detach all of the active appliances from the cluster using the CLI command Cluster Detach.
- 4. Reboot all of the appliances (active and standby).
- 5. Verify that all appliances can see the LUN using the CLI command Storage Listsan.
- 6. On all active appliances except the appliance that needs to grow, re-attach the appliances to the cluster using the CLI command Cluster Attach *clustername*.
- 7. Associate the standby appliance with the re-attached appliance using the CLI command Cluster Scan on the standby appliance.
- 8. On the detached appliance that needs to grow, add extra space using the CLI command Storage Configsan x.x.x.x Grow.

The appliance might automatically reboot.

- 9. Re-attach the detached grown appliance to the cluster using the CLI command Cluster Attach *clustername*.
- 10. Associate the standby appliance with the re-attached appliance using the CLI command Cluster Scan on the standby appliance.
- 11. Verify that the LUN is properly grown using the Storage Listsan command. For example:

Storage Listsan

2.0.0.0 NETAPP 1MB masked clear "" ""
2.0.0.1 NETAPP 200000MB bound system san.example.com cluster1
2.0.0.2 NETAPP 1MB masked clear "" ""
2.0.0.3 NETAPP 35840MB masked system standby.example.com cluster1
OK Completed

The system displays a status message indicating that the grow operation has started. The mail store stays online during the expansion process.

- 12. Check the admin logs for expansion status.
- 13. Verify that the LUN is properly grown using the Storage Listsan command. For example:

#### Storage Listsan

2.0.0.0 NETAPP 1MB masked clear "" ""
2.0.0.1 NETAPP 200000MB bound system san.example.com cluster1
2.0.0.2 NETAPP 1047676MB bound inuse san.example.com cluster1
2.0.0.3 NETAPP 35840MB masked system standby.example.com cluster1
OK Completed

A grown LUN changes usage status from "masked clear" to "bound inuse."

#### Troubleshooting

It is possible that LUNs present to the Mirapoint marked "masked unknown" or "masked system". For example:

#### Storage Listsan

2.0.0.0 NETAPP 1MB masked clear "" ""
2.0.0.1 NETAPP 200000MB bound system san.example.com cluster1
2.0.0.2 NETAPP 1047676MB masked unknown
OK Completed

 Use the Storage Configsan Growforce command to overwrite the existing "masked unknown" or "masked system" data and configure the LUN for use by the Mirapoint Message Server. For example:

Storage Configsan 2.0.0.2 Growforce

LUN security should prevent the Mirapoint software from seeing logical devices assigned to other servers, but you should verify with your SAN administrator the availability of any LUN in the "masked unknown" state before using this command.

### Upgrading the MOS on Clustered Appliances

Upgrading the MOS (Mirapoint Operating System) of appliances in an N+1 failover cluster configuration requires removing all appliances from the cluster, applying the upgrade to each, then rebuilding the cluster. Every appliance in the cluster must be running the same MOS release.

To install the MOS upgrade:

- 1. Use a telnet client to connect to the administration command-line interface on port 23 of one of the active cluster appliances and log in as an administrator.
- 2. Detach the active appliance from the cluster and install the MOS upgrade using the CLI commands:

Cluster Detach

Update Install ftp://ftp.mirapoint.com/pub/updates/Rx\_x\_GA

Where *Rx\_x\_GA* is the upgrade installation referred to in the instructions provided in the *System Software Release Notes*.

- 3. Working on one active appliance at a time, on all active appliances, repeat Steps 1–2.
- 4. After all active appliances have been detached from the cluster and upgraded, on the standby appliance:
  - a. Log in as an administrator.
  - b. Detach the standby appliance from the cluster using the CLI command:

Cluster Delete

c. Install the MOS upgrade using the CLI command:

Update Install ftp://ftp.mirapoint.com/pub/updates/Rx\_x\_GA

Where *Rx\_x\_GA* is the upgrade installation referred to in the instructions provided in the *System Software Release Notes*.

- 5. Make sure all of the appliances and the standby appliance have rebooted after the MOS upgrade installations.
- 6. Rebuild the cluster.
  - a. On the standby appliance, create a cluster using the CLI command Cluster Add *clustername*.
  - b. On each active appliance, attach to the cluster using the CLI command Cluster Attach *clustername*.
  - c. On the standby appliance, use the CLI command Cluster Scan to associate the standby appliance with all of the active appliances in the cluster.
  - d. Check the console output to confirm that all the nodes are found.



## Backing Up and Restoring an S7000

This appendix provides information about the backing up and restoring data on your Message Server (S7000).

## Backing up an S7000

All Mirapoint data (configuration and message store) resides on the SAN server in the storage volumes (LUNs) created for S7000 usage. Network Data Management Protocol (NDMP) can be used to backup the SAN using Mirapoint or using procedures supplied by your SAN vendor.

When you perform a backup of SAN data, you are producing a snapshot image of your data at a moment in time. This snapshot image contains all the \$7000 information required for appliance restoration.

The Mirapoint data on the SAN server can be backed up by using SAN replication software to produce a snapshot image of the primary storage volume. The snapshot image is stored and managed on the SAN server.

SAN replication software backup methods differ according to vendor, so contact your SAN vendor for more information.

Selective Restore provides an alternate method for restoring an individual user's mailbox, or a list of several mailboxes from the SAN Snapshot. Selective Restore is a separately licensed function limited to Mirapoint SAN use only. For additional details, consult with your Mirapoint Sales Representative.

Figure 3 and Figure 4 on page 30, and Figure 5 on page 31 provide an overview of the backup topology for four possible S7000 SAN backup configurations.

A

Figure 3 Backup Configuration for a Single S7000



Figure 4 Backup Configuration for Multiple S7000





Figure 5 Backup Configuration for S7000 (N+1 Failover Cluster)

### The "Cloud" Icon

Each "cloud" icon represents the storage network connectivity between the SAN server and the peripheral device, whether that device is the S7000, a backup server, or tape library. It can represent a fibre switch or any other connection method supported by your SAN server vendor.

#### SAN Server Console

The SAN server console, typically supplied by your SAN server vendor, is the approved administration interface for your SAN server. This console may run special-purpose software that can configure the built-in primary storage volume replication software.

### **Backup Server**

A **backup server** is any peripheral device (with software approved by your SAN server vendor for use with your SAN server) that can move a snapshot image from the SAN server to some storage media (such as magnetic tape). It can also restore that image from the storage media back to the SAN server.

### **Primary Volume**

This represents all logical devices (volumes/LUNs) configured and assigned for use by an S7000. Each S7000 has a **primary volume**.

### Snapshot

The replication software produces an exact copy of the primary volume at the moment in time the replication is started. The **snapshot** image is assigned its own logical devices (LUNs) on the SAN server. When restoring from a backup snapshot image, the SAN sever LUN (volume) must have enough available space to accommodate the storage volume that gets restored by the backup snapshot image on tape.

You can use software on a backup server to move a snapshot image from the SAN server to whichever backup media you have designated (such as move to tape).

#### Volume Pair

A volume pair consists of one primary volume and its corresponding snapshot image. Volume pairs are used by the SAN replication software to provide for a local backup of storage volumes. A local backup occurs on the SAN server. A primary volume can have multiple snapshot images, but only one is used in any given volume pair at any point. For more information on volume pairs and their usage, refer to documentation provided with your SAN replication software.

#### Tape Library

A tape library, also referred to as a robot or autochanger, can be incorporated into your backup topology only via NDMP.

When the tape library is network-attached to the SAN server, the backup server controls the backup and moves the data to the tape library. The backup server software must support this type of connectivity and have the ability to discover, attach to, and move data to the tape library (see, Figure 3 and Figure 4 on page 30 and Figure 5 on page 31).

You cannot use a tape library or tape drive locally attached to a \$7000 appliance.

#### **Backup Server Requirements**

A new snapshot image of the primary volume is created each time replication is performed. It is possible for a newly created snapshot image and previously created snapshot images to remain on the SAN server simultaneously, or the server can replace an existing snapshot image. In the case of multiple snapshot images of one primary volume, the backup server must be able to determine which one to back up.

When backing up the S7000 storage from the SAN server, Mirapoint requires the backup server to be able to:

- Dynamically probe for new storage volumes created by the SAN server (snapshot images).
- Attach to storage volumes in a read-only fashion, and not alter the data in any way.
- Move to tape or to some external storage medium the complete and unaltered contents of the storage volume.

Since all components of the storage volume assigned to and used by the S7000 are copied in their entirety, the backup server must be capable of moving the snapshot image back to the SAN server as it appeared at the time it was moved to storage media.

### SAN Replication Software Requirements

Mirapoint requires that the SAN replication software make an exact copy of the primary storage volume with no alterations. The backup server should attach to the snapshot image in a read-only fashion during the backup process.

## Restoring S7000 Data

Follow your SAN vendor-specified method for restoring the data to one or more LUNs, then use the **CLI > Storage configsan reattach** command to associate the restored LUN with a newly installed servers.

The data being restored:

- Must be exactly as extracted, with no extraneous data added to or written over the image that is being restored.
- Must be restored to logical units that are in the same configuration and of the same storage size as those that existed at the time of the backup. The LUN numbers for the logical units may be different, but there must be the same number of units with the same storage capacity as the units that existed at the time of the snapshot image.

B

## Troubleshooting

This chapter provides following troubleshooting assistance for the Message Server (abbreviation for the product name):

- Getting Technical Support on page 5
- Storage Area Network (SAN) Problems

Additional troubleshooting help is available to all customers with a valid Support Contract on the Mirapoint Support website at:

http://support.mirapoint.com

If your problem continues, contact Mirapoint Technical Support (see Getting Technical Support on page 5).

## Storage Area Network (SAN) Problems

The following section provides debugging information for the Message Server appliance only.

Refer to manuals provided with your SAN server for troubleshooting, setup, and maintenance information for the SAN equipment.

Table 4 summarizes the error messages you could receive on an abbreviation for the product name appliance.

#### Table 4 SAN Error Messages

Problem	SAN Error Message
1	Cannot Configure Existing Cluster for SAN
2	Cannot Find Any LUNs
3	Failed to Reattach
4	Logical ID Not Found
5	No LUN Information Provided
6	Not MOS Install Disc
7	Only LUNs in the First 32 Positions of Listsan Are Supported
8	Please Try Again Later, Resource Temporarily Unavailable

B

#### Table 4 SAN Error Messages (Continued)

Problem	SAN Error Message
9	SAN Attached Storage License Not Found
10	System Already Has Maximum Number of LUNs
11	System Error, Out of Memory
12	Supported LUN IDs Are > 0 and <= 255
13	Unable to Get Host ID

Problem 1: Cannot Configure Existing Cluster for SAN

The error message "Cannot configure existing cluster for SAN" is received.

This indicates that the failover license was installed too early in the process.

Action: Delete the failover license from the primary appliance. Reboot the appliance. The failover license should be installed after the SAN configuration is done. Refer to the CLI help for more information on the various commands.

Problem 2: Cannot Find Any LUNs

The error message "Cannot find any LUNs" is received after you enter the CLI **Storage Configsan** command with the- **Reattach** flags.

This could indicate either that the appliance is not properly connected to the SAN equipment, or that there could be a software problem.

Action: First, check the cable connections between the appliance and either the fibre switch or the SAN equipment. If all connections are correct and properly seated, reboot the appliance. If the problem does not clear, contact Mirapoint Technical Support (see Getting Technical Support on page 5).

Problem 3: Failed to Reattach

The error message "Failed to reattach" is received.

This indicates that some internal error has occurred.

Action: Contact Mirapoint Technical Support (see Getting Technical Support on page 5).

#### Problem 4: Logical ID Not Found

The error message "Logical ID not found" is received.

This indicates that the logical ID input was typed incorrectly.

Action: Check the Storage Listsan output, re-enter the correct logical ID information.

#### Problem 5: No LUN Information Provided

After entering the Storage Listsan command, no LUN information is displayed.

This indicates that the SAN network is not configured properly, or it could be caused by an HP SAN not set to the "Open System" mode.

Action: Check the configuration of the SAN network. Make sure each server can see a LUN numbered zero. Refer to Verifying Requirements on page 10 for more information.

Problem 6: Not MOS Install Disc

The error message "Not MOS install Disc" is received.

This indicates that the disc in the drive is not an MOS install disc required by the appliance.

Action: Remove the disc and replace it with the MOS install disc.

Problem 7: Only LUNs in the First 32 Positions of Listsan Are Supported

The error message "Only LUNs in the first 32 positions of Listsan are supported" is received after you attempt to configure a LUN not found on the list of viewable LUNs generated after entering the **Storage Listsan** command.

Mirapoint tests to make sure that an install succeeds on the first 32 LUNs that can be seen in the output of the **Storage Listsan** command.

Action: Select and configure a LUN from the list provided from the Storage Listsan command.

Problem 8: Please Try Again Later, Resource Temporarily Unavailable

The error message "Please try again later resource temporarily unavailable" is received.

This indicates that the appliance resources are in use executing a SAN command. Only one SAN command can be initiated at one time (for example, you cannot issue a Listsan command until the appliance has completed a **Configsan** command).

Action: Wait until the appliance completes the current command, then re-enter another SAN command.

Problem 9: SAN Attached Storage License Not Found

The error message "SAN attached storage license not found" is received.

This error is received if any SAN command is executed without the SAN license installed.

Action: Install the SAN license.

Problem 10: System Already Has Maximum Number of LUNs

The error message "System already has maximum number of LUNs" is received after you attempt to expand or add LUNS to the Mirapoint appliance.

This indicates that the maximum number of LUNS that can be configured on a Mirapoint SAN appliance has been reached, and the system cannot be expanded any further. The Mirapoint SAN appliance allows a maximum of four LUNS to be attached plus LUN zero. The maximum number of LUNS may be increased in future software releases.

В

#### Problem 11: System Error, Out of Memory

The error message "System error: out of memory" is received.

This indicates that some internal error has occurred.

Action: Contact Mirapoint Technical Support (see Getting Technical Support on page 5).

#### Problem 12: Supported LUN IDs Are > 0 and <= 255

The error message "Supported LUN IDs are > 0 and <= 255" is received after you attempt to configure a LUN as described in Chapter 1, Setting Up and Configuring a SAN.

A LUN ID is the last component in the four-part logical ID. LUN 0 must be present before a Mirapoint SAN appliance can see non-zero LUNs. Mirapoint disallows installs on LUN 0.

Action: Follow the steps described in Configuring for SAN on page 13.

#### Problem 13: Unable to Get Host ID

The error message "Unable to get hostid" is received.

This indicates that some internal error has occurred.

Action: Contact Mirapoint Technical Support (see Getting Technical Support on page 5).

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