



FEATURE REVIEW DOCUMENT SAN/iQ USER INTERFACE

SAN/iQ 6.6 – User Interface Improvements

OVERVIEW

LeftHand Networks is proud to announce the release of a new user interface (UI) based on over a years worth of Usability feedback from customers and new development by the UI team at LeftHand Networks. Delivered with SAN/iQ 6.6, the new user interface is a major step forward in the ease-of-use category of the LeftHand Networks SAN system. Already considered one of the easiest SANs to deploy and operate, this new user interface further solidifies the LeftHand goal to make Open iSCSI SANs easy to use for all SAN buyers.

USABILITY FEATURES & ENHANCEMENTS IN SAN/iQ 6.6

New Navigation Design

The new user interface employs a "Tree view" paradigm for managing SAN/iQ objects in the user environment. This allows for better organization and scaling of the SAN objects and enhances the relative ease-of-use of the system. On a single pane of glass, the Administrator can easily view all the storage elements of the SAN at a glance. The system can scale to 100s or even 1000s of nodes without significant screen scrolling or wrapping.

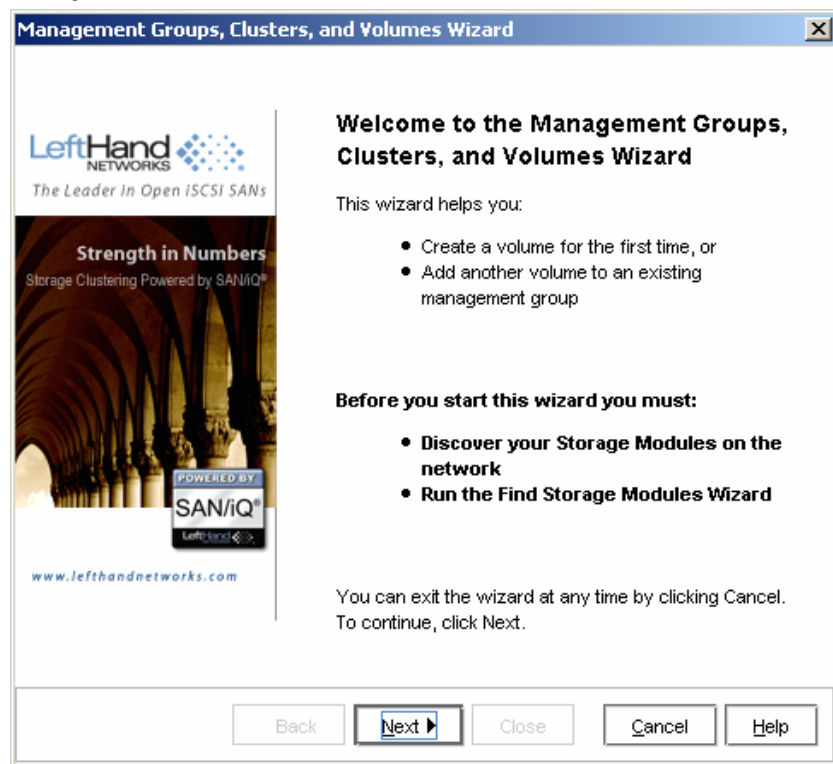
The screenshot displays the 'LeftHand Networks Centralized Management Console' interface. On the left, a tree view shows the hierarchy: 'Getting Started' (expanded), 'Available Storage Modules (5)' (containing NSM.6, NSM.7, NSM.8, NSM.9), 'Mgmt_Group_0' (expanded), 'Cluster_0' (expanded), 'Storage Modules (5)' (containing NSM.1, NSM.2, NSM.3, NSM.4, NSM.5), and 'Volumes (3)' (containing Volume_0 (1) with sub-item Volume_0_SS_1, Volume_1 (1) with sub-item Volume_1_SS_Sch_1.1, and Volume_2 (1) with sub-item Volume_2_SS_1). The main area features a 'Getting Started Launch Pad' with a 'Welcome' message and three wizards: 1. Find Storage Modules Wizard, 2. Management Groups, Clusters, and Volumes Wizard, and 3. Access Volume Wizard. Below the wizards is an alert section showing '0 Alerts Remaining' and a table with columns for '#', 'Date/Time', 'Host Name (IP)', and 'Alert Message'. The interface includes a menu bar (File, Find, Tasks, Help) and a status bar (Getting Started, Alert Tasks).



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Enhanced Wizard Functionality

The Create Volume wizard has been expanded to include Creation of Management Groups, Clusters and Volumes. This allows the Administrator to easily provision storage from a single Wizard interface. The system guides the Administrator through the necessary steps to allocate storage to a host server. The new Wizard can even be repeated to create multiple storage objects, as well as linked directly to the Access Volume Wizard to easily allocate new or existing volumes to host servers.





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Enhanced Alert and SAN Monitoring

SAN Alerts are now easily viewed on the front panel of the user interface. This allows the Administrator to quickly view and diagnose issues with the SAN.

The screenshot displays the LeftHand Networks Centralized Management Console. The interface is divided into several sections:

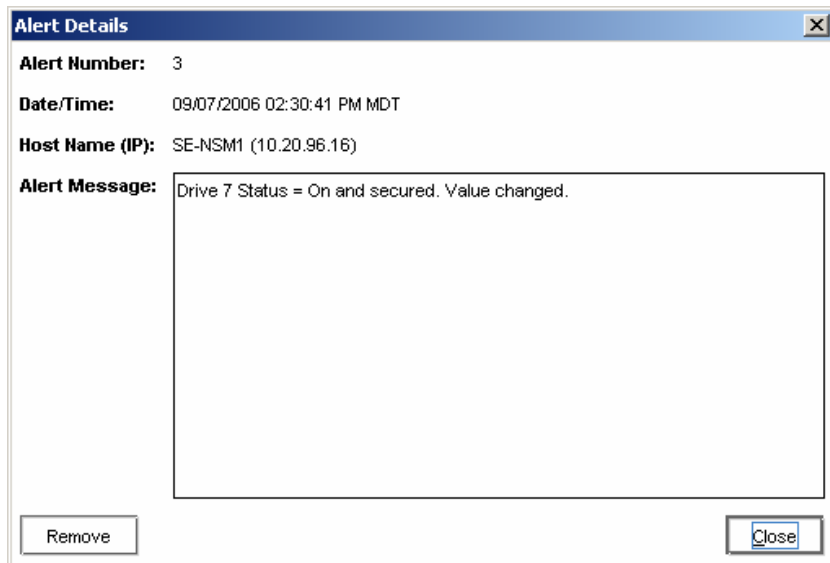
- Left Panel:** A tree view showing the network hierarchy, including 'Available Storage Modules (8)', 'Mgmt_Group_0', 'Cluster_2', 'Storage Modules (1)', 'NSM.2', 'Volumes (1)', 'Volume_0 (2)', 'Volume_0_SS_2', 'Volume_0_SS_1', 'Mgmt_Group_1', 'Cluster_0', 'Storage Modules (1)', and 'Volumes (1)'.
- Right Panel:** A 'Getting Started Launch Pad' with a welcome message and three wizards:
 - 1. Find Storage Modules Wizard:** Helps locate Storage Modules and identify them to the Centralized Management Console.
 - 2. Management Groups, Clusters, and Volumes Wizard:** Allows virtualizing the storage network and ensuring data integrity and availability.
 - 3. Access Volume Wizard:** Helps define permissions for volumes and network topography.
- Bottom Panel:** A section titled '9 Alerts Remaining' containing a table of alerts. A red circle highlights this section.

#	Date/Time	Host Name (IP)	Alert Message
1	09/07/2006 02:24...	SE-NSM1 (10.20....	Management Group: 'SE_MG1'; Storage Server: 'SE-NSM1' Status = stora...
2	09/07/2006 02:30...	SE-NSM1 (10.20....	Drive 7 Status = Off and secured. Value changed.
3	09/07/2006 02:30...	SE-NSM1 (10.20....	Drive 7 Status = On and secured. Value changed.
4	09/07/2006 02:33...	SE-NSM1 (10.20....	Drive 7 Health Status = marginal. Value does not equal normal
5	09/07/2006 02:48...	SE-NSM1 (10.20....	Drive 7 Health Status = marginal. Value does not equal normal

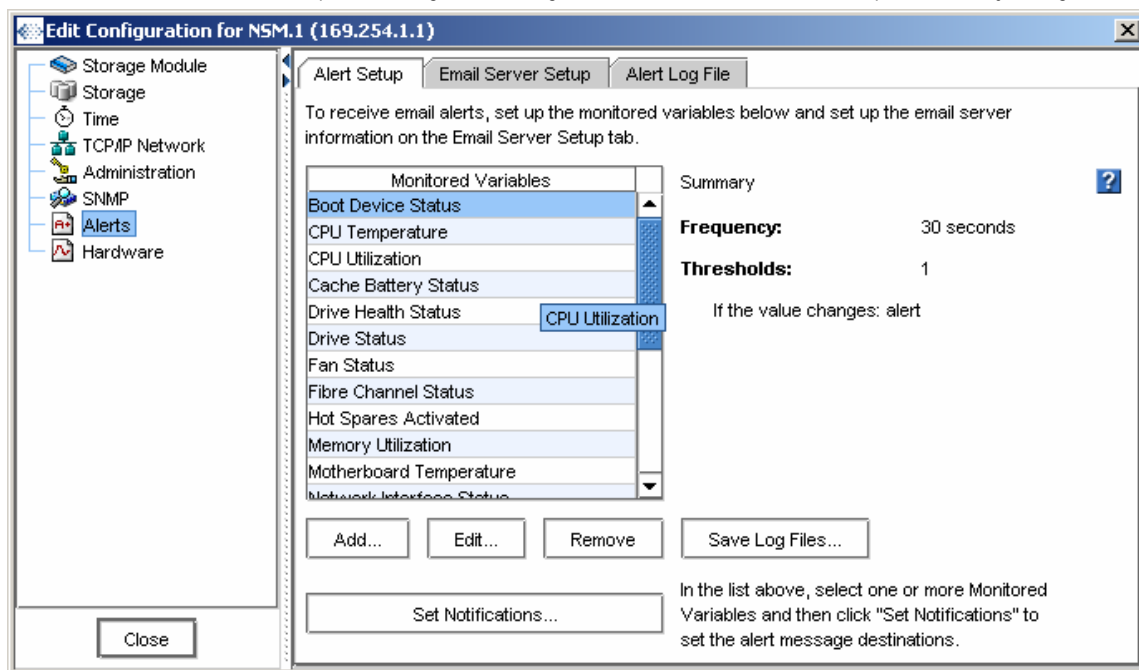


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The Administrator is able to drill-down and get alert detail.



Likewise, the individual Alert Setup and Management dialogs have been streamlined to allow quick and easy configuration of Monitoring of the system.





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Enhanced Menu System Navigation

New Task Menus have been added to numerous screens to allow users to accomplish tasks in a variety of ways that suit their understanding of the SAN. This will reduce the learning curve for new users and users that do not frequently use the SAN user interface. Also, new operations have been added to the context sensitive objects on the Tree for things like adding NSMs to management groups and clusters.

The screenshot displays the LeftHand Networks Centralized Management Console interface. On the left is a tree view showing the hierarchy: Getting Started, Available Storage Modules (5) (NSM.10-NSM.9), Mgmt_Group_0, Cluster_0, Storage Modules (5) (NSM.1-NSM.5), and Volumes (3) (Volume_0 (1), Volume_1 (1), Volume_2 (1)). The 'Volume_0 (1)' item is selected. The main pane shows details for 'Volume_0' in the 'Details' tab. The details include: Name: Volume_0, Cluster: Cluster_0, Created by Script: No, Type: Primary, Created: 09/07/2006 10:22:23 AM MDT, Description: (None), Status: Normal. Below this are sections for 'Replication & Size' (Replication Level: 2-Way, Replication Priority: Availability, Auto Grow: Enabled, Size: 100 GB, Hard Threshold: 100 GB, Soft Threshold: 100 GB) and 'Target Information' (iSCSI Name: iqn.2003-10.com.simiq.lefthandnetworks:Mgmt_Group_0:28:Volume_0). A context menu is open over the 'Volume_0 (1)' item in the tree, listing tasks: New Scheduled Snapshot..., New Snapshot..., New Scheduled Remote Snapshot..., New Remote Snapshot..., Add to Volume List..., Edit Volume..., Delete Volume..., and Help. The menu is circled in red.



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Improved Object Detail Views

Moving to a Tree interface has freed up screen real estate to be able to present more information about the various storage objects in the Detail Pane. Having the relevant information about the object at the users' finger tips will ease the management of the SAN for the Administrator. For instance, the new Volume Details Pane includes the relevant information about the volume that the Administrator would like to know at a glance.

The screenshot displays the 'LeftHand Networks Centralized Management Console' interface. On the left is a tree view showing a hierarchy: Getting Started, Available Storage Modules (5) (NSM.6-10), Mgmt_Group_0, Cluster_0, Storage Modules (5) (NSM.1-5), and Volumes (3) (Volume_0, Volume_1, Volume_2). The 'Volume_0 (1)' item is selected. The main pane shows tabs for Details, Snapshots, Schedules, iSCSI Sessions, Remote Snapshot, and Volume List Memberships. The 'Details' tab is active, showing the following information for Volume_0:

- Volume:**
 - Name: Volume_0
 - Cluster: Cluster_0
 - Created by Script: No
 - Type: Primary
 - Created: 09/07/2006 10:22:23 AM MDT
 - Description: (None)
 - Status: Normal
- Replication & Size:**
 - Replication Level: 2-Way
 - Replication Priority: Availability
 - Auto Grow: Enabled
 - Size: 100 GB
 - Hard Threshold: 100 GB
 - Soft Threshold: 100 GB
- Target Information:**
 - iSCSI Name:

Below the details pane, there is a 'Volume Tasks' dropdown menu and an alert section showing '0 Alerts Remaining' with a table header: #, Date/Time, Host Name (IP), Alert Message.



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Support for Right-Click Operations

Consistent with most Tree type interfaces, all text dialogs now support the Right-click, Cut/Copy/Paste/Delete function. This is especially helpful when creating/modifying new Authentication Groups on the system and one would like to quickly copy and paste the Initiator Node Name into the Authentication Group dialog.

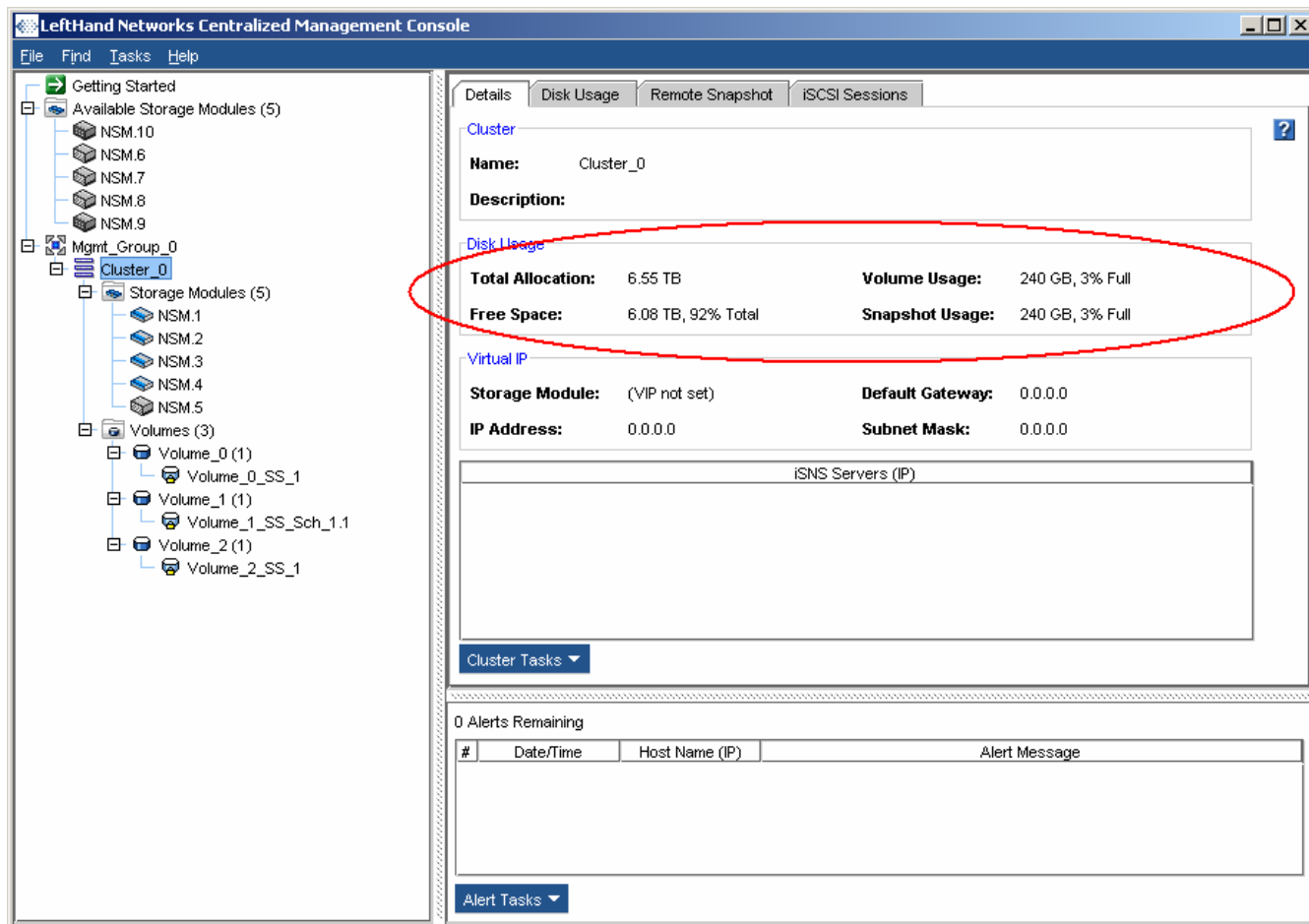
The screenshot shows the 'New Authentication Group' dialog box. The 'iSCSI' tab is selected, and the 'Allow access via iSCSI' checkbox is checked. Under the 'Authentication' section, the 'CHAP not required' radio button is selected. The 'Initiator Node Name' text field is highlighted with a red circle, and a context menu is open over it, showing options: Cut, Copy, Paste, Delete, and Select All. Below the dialog box are 'OK' and 'Cancel' buttons.



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Improved Disk Space Reporting

The Cluster Details Pane now has storage capacity information. The Administrator can easily and quickly view how large his SAN is and how much is Free or In Use by Volumes and Snapshots.

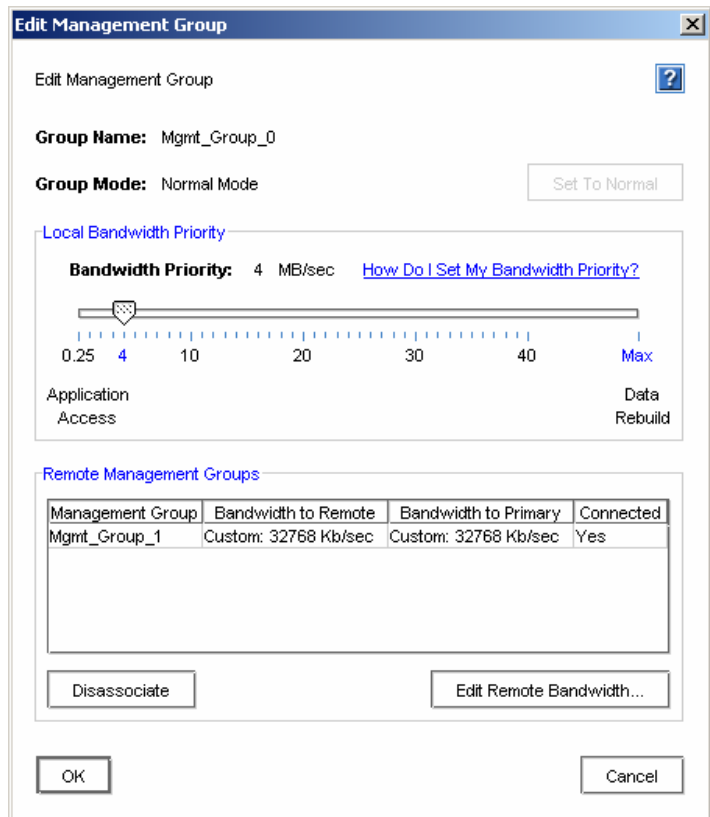




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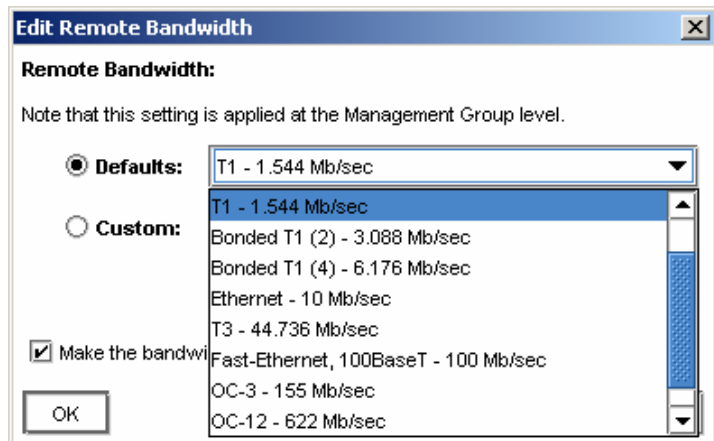
Improved Bandwidth Prioritization

Local, or Intra-SAN bandwidth settings, are now viewed as Prioritization of traffic for Application Server Access or Data Rebuilds. Also, instead of asking the Administrator to make a determination on how much bandwidth should be allocated as a raw bits/sec number, there is now a slider bar of acceptable values and a default value.



Improved Remote Bandwidth Selections

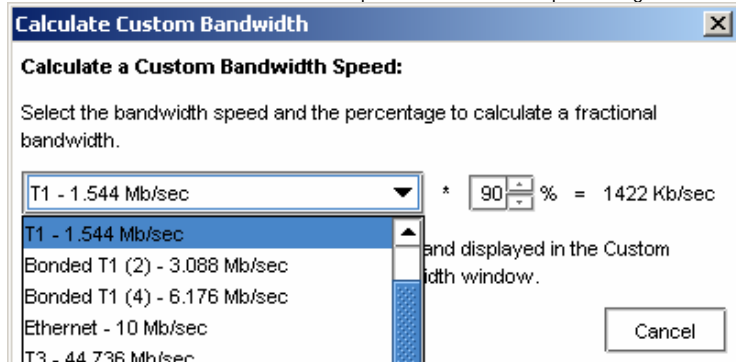
Remote Copy is typically used over WAN links, so the Remote Management Group bandwidth setting has been improved so that the Administrator can select a bandwidth based on common WAN link types.



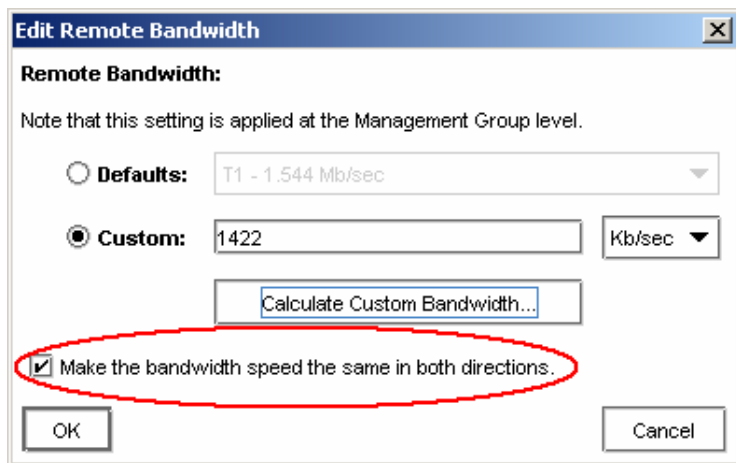


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Likewise, one can customize the link speed to be a certain percentage of one of these links, or simply specify a custom bandwidth setting.



Finally, the new default setting for the Edit Remote Bandwidth dialog is to modify the bandwidth setting on both primary and remote management group pairs.





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Integrated Upgrade Availability Checks

The new user interface checks for upgrades to systems under its management when the UI is started. Also, the upgrade availability check can be done manually using the Help menu option.

The following upgrades are available:

Item	Type	Current Version	Upgrade Version
Centralized Managemen...	Graphical User Interfa...	6.6.26.0831	--No Upgrade--
NSM.9 (169.254.1.9)	DL380	6.5.00.0015.26	--No Upgrade--
NSM.1 (169.254.1.1)	NSM160	6.5.00.2615.26	--No Upgrade--
NSM.10 (169.254.1.10)	DL380	6.5.00.0015.26	--No Upgrade--
NSM.2 (169.254.1.2)	NSM160	6.5.00.2615.26	--No Upgrade--
NSM.3 (169.254.1.3)	NSM160	6.5.00.2615.26	--No Upgrade--
NSM.4 (169.254.1.4)	NSM160	6.5.00.2615.26	--No Upgrade--
NSM.5 (169.254.1.5)	NSM260	6.5.00.2615.26	--No Upgrade--
NSM.6 (169.254.1.6)	NSM260	6.5.00.2615.26	--No Upgrade--
NSM.7 (169.254.1.7)	NSM260	6.5.00.2615.26	--No Upgrade--
NSM.8 (169.254.1.8)	NSM260	6.5.00.2615.26	--No Upgrade--

Close



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Better Volume and Snapshot Sizing Guidance

The Volume Creation dialog now supports auto-populating the Hard and Soft Threshold values to the same as what the Administrator specifies for the Volume Size.

New Volume

New Volume ?

Type: Primary Remote

Volume Name: Volume_100

Description:

Cluster: Cluster_2

Replication Level: None

Replication Priority: Availability Redundancy

Available Space: 1.308 TB

Size: 100 GB

Hard Threshold: 100 GB


Soft Threshold: 100 GB

Auto Grow: Enabled Disabled

OK Cancel

When Thin Provisioning a Volume or Snapshot, the Creation dialog now institutes best practice recommendations for Volume and Snapshot Threshold Management.

Confirm Threshold Settings

 As a best practice for Auto Grow, the hard threshold should be greater than the soft threshold by at least 256 MB. Either increase the hard threshold, or decrease the soft threshold.

Are you sure you want to apply your current threshold settings?

Apply Cancel



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CONCLUSION

Available with SAN/iQ 6.6, the new user interface significantly enhances the ease-of-use of the LeftHand Networks SAN. Existing and new SAN users will benefit from the enhancements introduced with the new UI in a variety of ways, including:

- Scalability of Nodes in the SAN
- Alert Setup and SAN Monitoring Improvements
- Support for Right-click Menu Operations
- Improved Disk Space Reporting
- Improved Bandwidth Management
- Integrated Upgrade Availability Checks

To obtain the SAN/iQ 6.6 software, contact the LeftHand Networks Support organization at support@lefthandnetworks.com or <http://www.lefthandnetworks.com/support/contact.php>.