

Quantum®

User's Guide

Quantum DXi V-Series

with DXi 2.3.4 Software



Quantum DXi V-Series User's Guide, 6-67612-07 Rev B, January 2018, Product of USA.

This document is for DXi 2.3.4 Software.

Quantum Corporation provides this publication "as is" without warranty of any kind, either express or implied, including but not limited to the implied warranties of merchantability or fitness for a particular purpose. Quantum Corporation may revise this publication from time to time without notice.

COPYRIGHT STATEMENT

© 2018 Quantum Corporation. All rights reserved.

Your right to copy this manual is limited by copyright law. Making copies or adaptations without prior written authorization of Quantum Corporation is prohibited by law and constitutes a punishable violation of the law.

TRADEMARK STATEMENT

Quantum, the Quantum Logo, Backup. Recovery. Archive. It's What We Do., Be Certain, Be Quantum Certain, DLT, the DLT Logo, DLTSage, DLTtape, the DLTtape Logo, DXi, DXi Accent, Dynamic Powerdown, FastSense, FlexLink, GoProtect, GoVault, iLayer, Lattus, MediaShield, Optyon, Pocket-sized., Well-armed., Preserving the World's Most Important Data. Yours., Q-Cloud, Quantum Certain, Quantum Certainty, Quantum vmPRO, Scalar, SDLT, SiteCare, SmartVerify, StorageCare, StorNext, Super DLTtape, SuperLoader, and Vision are either registered trademarks or trademarks of Quantum Corporation and its affiliates in the United States and/or other countries. All other trademarks are the property of their respective owners.

Products mentioned herein are for identification purposes only and may be registered trademarks or trademarks of their respective companies. All other brand names or trademarks are the property of their respective owners.

Quantum specifications are subject to change.



Contents

Preface	xvii
----------------	-------------

Chapter 1	DXi V-Series System Description	1
	Overview	1
	Features and Benefits	3
	Data Reduction	3
	Data Deduplication	3
	Compression	5
	Space Reclamation	5
	Remote Replication	6
	Storage Presentation	6
	Network Attached Storage (NAS)	7
	OpenStorage (OST)	9
	DXi Advanced Reporting	10
	Network Configuration	10

Chapter 2	DXi V-Series Remote Management	11
	Accessing Remote Management	12

Supported Browsers	12
Logging On to the DXi V-Series	12
Logging Off of the DXi V-Series	15
The Remote Management Console	15
System Banner	15
Main Menu	19
DXi V-Series Management Pages	20

Chapter 3	DXi V-Series Configuration Wizards	23
	NAS Wizard	24
	Step 1: About	25
	Step 2: Protocol	25
	Step 3: Windows	26
	Step 4: Share Access	28
	Step 5: Add Share	29
	Step 6: Confirm	30
	OST Wizard	31
	Step 1: About	32
	Step 2: Add Storage Servers	32
	Step 3: Add LSUs	34
	Step 4: Add Users	35
	Step 5: Confirm	36
	Step 6: Download OST Client Plug-In	37
	Replication Wizard	38
	Step 1: About	39
	Step 2: System	39
	Step 3: NAS Shares	41
	Step 4: Confirm	43
	Email Alerts Wizard	44
	Step 1: About	44
	Step 2: Server	45
	Step 3: Recipients	46
	Step 4: Confirm	47
	Support Wizard	48
	Step 1: About	48
	Step 2: Registration	49
	Step 3: System Log	50
	Step 4: Licensed Features	51

Chapter 4	DXi V-Series Home Page	55
	DXi V-Series System Overview	56
	Disk Usage Overview	57
	Data Reduction Statistics Overview	59
	Replication Overview	60
	Send Settings & Cumulative Statistics	61
	Receive Settings & Cumulative Statistics	62
	Current Activity Overview	63
Chapter 5	DXi V-Series Replication	67
	Understanding Data Replication	68
	Replication	68
	Directory/File Based Replication	69
	OST Optimized Duplication	70
	Multiple Target Replication	70
	Performing Data Replication	71
	Task Overview: Setting Up and Performing Replication	72
	Task Overview: Setting Up and Performing Directory/File Based Replication	73
	Task Overview: Recovering a Replicated Share	74
	Task Overview: Performing a Share Failback	75
	Replication Send	75
	Replication Jobs List	77
	Enabling Replication For a Share	79
	Configuring Directory/File Based Replication	80
	Replicating a Share	82
	Synchronizing a Share	82
	Directory/File Based Replication Queue	83
	Scheduling a Share For Replication	85
	Target DXis List	85
	Receive NAS	86
	Received Snapshots	86
	Recovery Jobs	92
	Failback Jobs	93
	Directory/File Based	94
	Actions	98

Replication Service	99
Replication State	100
Replication Performance	101
Reports	101

Chapter 6 DXi V-Series Status 103

Performance	103
Inline	104
Ethernet	105
CPU	106
Disk Usage	107
Available	107
Used	108
Data Before Reduction	108
Data After Reduction	109
OST Status	109
Activity Log	111
Viewing Logged Activities	112
Enabling or Disabling Activity Logging	113
Deleting Logged Activities	114
Downloading the Activity Log	114

Chapter 7 DXi V-Series Alerts 115

Admin Alerts	115
Service Tickets	117
Service Ticket Priority	117
Recommended Actions	118
Working With Service Tickets	118

Chapter 8 DXi V-Series Configuration 127

NAS	127
NAS Summary	128
Windows Domain	135
Share Access	138
Advanced Setting	144

- Replication Configuration 145
 - Target DXis List 147
 - Adding a Replication Target 148
 - Editing a Replication Target 150
 - Deleting a Replication Target 152
 - Pausing or Resuming Replication to a Target 152
 - Enabling System Throttling 152
 - Source DXis List 154
 - Adding a Replication Source 154
 - Deleting a Replication Source 155
 - Changing the Maximum Number of Snapshots 156
- OST 156
 - Replicating OST Data 157
 - Storage Servers 160
 - LSU 169
 - Manage Users 175
 - Manage Remote Users 179
 - Target IP Mapping 182
 - DXi Accent 185
 - OST Client Plug-In 187
- Scheduler 188
- System. 199
 - Network 199
 - Date & Time 217
 - Security 219
- Notifications 227
 - Email 227
 - SNMP 238
- Contacts 248
 - Company 249
 - Primary and Secondary 250

Chapter 9	DXi V-Series Utilities	253
	Diagnostics	254
	System Diag File	254
	Healthchecks	255
	Analyzer	259
	Network	259

Disk	261
Space Reclamation	262
License Keys	266
License Key Information	266
Adding a License Key	267
Secure Shred	269
Secure Shred and Virtual Machines	269
Running Secure Shred	270
Software Upgrades	272
Checking For Software Upgrades	273
Uploading a Software Upgrade File	277
Reboot & Shutdown	281

Appendix A

Troubleshooting	283
DXi V-Series Status and Problem Reporting	283
General Troubleshooting Actions	284
Viewing Service Tickets	284
Downloading a System Diagnostics File	285
Common Problems and Solutions	285
Start-up Problems	285
Ethernet Network Problems	286
Replication Problems	287

Glossary

289



Figures

Figure 1	NAS Backup using CIFS and NFS	8
Figure 2	OpenStorage (OST) Example	9
Figure 3	Login Window	13
Figure 4	Home Page	14
Figure 5	System Banner	16
Figure 6	Main Menu	20
Figure 7	Remote Management Pages Map	21
Figure 8	Wizards Menu	24
Figure 9	NAS Wizard: About	25
Figure 10	NAS Wizard: Protocol.	26
Figure 11	NAS Wizard: Windows.	27
Figure 12	NAS Wizard: Share Access	29
Figure 13	NAS Wizard: Add Share	30
Figure 14	NAS Wizard: Confirm	31
Figure 15	OST Wizard: About	32
Figure 16	OST Wizard: Add Storage Servers	34
Figure 17	OST Wizard: Add LSUs	35
Figure 18	OST Wizard: Add Users	36

Figure 19	OST Wizard: Confirm	37
Figure 20	OST Wizard: Download OST Client Plug-in	38
Figure 21	Replication Wizard: About	39
Figure 22	Replication Wizard: System	41
Figure 23	Replication Wizard: NAS Shares	43
Figure 24	Replication Wizard: Confirm	44
Figure 25	Email Alerts Wizard: About	45
Figure 26	Email Alerts Wizard: Server	46
Figure 27	Email Alerts Wizard: Recipients	47
Figure 28	Email Alerts Wizard: Confirm	48
Figure 29	Support Wizard: About	49
Figure 30	Support Wizard: Registration	50
Figure 31	Support Wizard: System Log	51
Figure 32	Support Wizard: Licensed Features	53
Figure 33	Home Page	56
Figure 34	DXi V-Series System Overview	57
Figure 35	Disk Usage Overview	59
Figure 36	Data Reduction Statistics Overview	60
Figure 37	Replication Overview	63
Figure 38	Current Activity Overview	65
Figure 39	Replication Send Page	76
Figure 40	Share Configure Window	79
Figure 41	Share Configure Window	81
Figure 42	Directory/File Based Replication Queue	84
Figure 43	Scheduler Calendar Window	85
Figure 44	Received Snapshots Page	87
Figure 45	Recovered Share Name Page	89
Figure 46	Failback Target Page	90
Figure 47	Recovery Jobs Page	93

Figure 48 Failback Jobs Page 94

Figure 49 Directory/File Based Page 95

Figure 50 Edit Share Settings Page 97

Figure 51 Unpack Queue 98

Figure 52 Actions Page 99

Figure 53 Reports Page 102

Figure 54 Inline Page 104

Figure 55 Ethernet Page 105

Figure 56 CPU Page 106

Figure 57 Disk Usage Page. 107

Figure 58 OST Status Page. 110

Figure 59 Activity Log Page 111

Figure 60 Activity Log View Controls 113

Figure 61 Activity Log View Controls 114

Figure 62 Admin Alerts Page 116

Figure 63 Service Tickets Page 119

Figure 64 Ticket Details 121

Figure 65 Recommended Actions 122

Figure 66 Ticket Analysis 123

Figure 67 Email Ticket Information 124

Figure 68 NAS Summary Page 129

Figure 69 Add NAS Share Page 131

Figure 70 Edit NAS Share & Replication Settings Page. 133

Figure 71 Windows Domain Page 135

Figure 72 Share Access Page (Windows Workgroup). 138

Figure 73 Share Access Page (Active Directory) 139

Figure 74 Add Workgroup User Page 140

Figure 75 Add Share Administrator Page. 141

Figure 76 Edit Workgroup User Page. 142

Figure 77	Advanced Setting Page	144
Figure 78	Replication Configuration Page	146
Figure 79	Add Target Host.	148
Figure 80	Edit Target Host.	150
Figure 81	Replication Throttle	153
Figure 82	Add Allowed Source	155
Figure 83	Setting Up OST Automatic Image Replication	160
Figure 84	Storage Servers Page	161
Figure 85	Add Storage Server Page	163
Figure 86	Edit Storage Server Page	167
Figure 87	LSU Page	169
Figure 88	Add Logical Storage Unit Page.	171
Figure 89	Edit Logical Storage Unit Page.	173
Figure 90	Manage Users Page	176
Figure 91	Add User Credential.	177
Figure 92	Edit User Credentials	178
Figure 93	Manage Remote Users Page.	179
Figure 94	Add Remote AIR Credential	180
Figure 95	Edit Remote Credentials.	181
Figure 96	Target IP Mapping Page.	183
Figure 97	Add Target Data IP Mapping	184
Figure 98	Edit Target Data IP Mapping	185
Figure 99	Accent Page	186
Figure 100	Scheduler Page	189
Figure 101	Scheduler Toolbar	190
Figure 102	Adding a New Event	192
Figure 103	Network Configuration	200
Figure 104	Network Page: General	202
Figure 105	Network Page: Bonding Details	204

Figure 106 Network Page: Interface Details. 205

Figure 107 Network Page: IP Address Table. 207

Figure 108 Network Page: Routing Details 210

Figure 109 Interface Routing: Example 1. 214

Figure 110 Interface Routing: Example 2. 215

Figure 111 Interface Routing: Example 3. 216

Figure 112 Network Page: Backpanel Locations. 217

Figure 113 Date & Time Page 218

Figure 114 Web & CLI Passwords Page 220

Figure 115 SSL Page 223

Figure 116 Install New Certificate Page 225

Figure 117 Login Session Page 226

Figure 118 Security Notice Page 227

Figure 119 Recipients Page 229

Figure 120 Add Email Recipient Page 230

Figure 121 Edit Email Recipient Page. 231

Figure 122 Server Page 233

Figure 123 Email Test Page 234

Figure 124 Recipients Page 236

Figure 125 On Demand Page. 237

Figure 126 Destinations Page 239

Figure 127 Add Trap Destination Page 240

Figure 128 Edit Trap Destination Page. 241

Figure 129 Community Page 243

Figure 130 Add SNMP Community Page 244

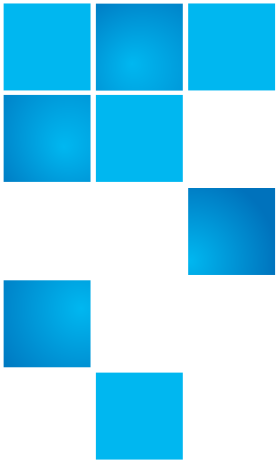
Figure 131 Edit SNMP Community Page 246

Figure 132 SNMP Test Page. 248

Figure 133 Company Page. 249

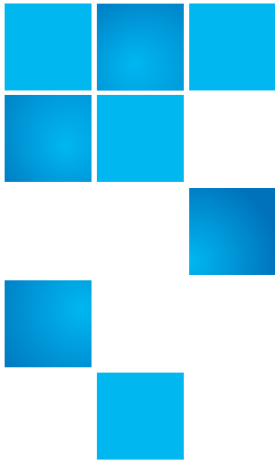
Figure 134 Primary and Secondary Pages 250

Figure 135	System Diag File Page	255
Figure 136	General Page	256
Figure 137	Status Page	257
Figure 138	Edit Healthcheck Page	258
Figure 139	Performance Page	260
Figure 140	Settings Page	261
Figure 141	Disk Analyzer Page	262
Figure 142	Space Reclamation Page	264
Figure 143	License Keys Page	266
Figure 144	Secure Shred Page	270
Figure 145	Secure Shred Mode Interface	272
Figure 146	Software Upgrade Utility	274
Figure 147	Home Page - Software Upgrade Available	275
Figure 148	Software Upgrade Utility - Software Upgrade Downloaded 276	
Figure 149	Software Upgrade Page	278
Figure 150	Software Upgrade Page - Software Upgrade File Uploaded. 279	
Figure 151	Software Upgrade Utility - Software Upgrade File Uploaded 280	
Figure 152	Reboot & Shutdown Page	282



Tables

Table 1	Low Space States	18
Table 2	Start-up Problems	285
Table 3	Ethernet Network Problems	286
Table 4	Replication Problems	287



Preface

This manual introduces the Quantum DXi V-Series virtual disk backup solution and discusses:

- System operations
- Configuration
- Web interface
- Basic troubleshooting

Audience

This manual is written for DXi V-Series operators and administrators.

Note: It is useful for the audience to have a basic understanding of Windows, Linux, and UNIX® as well as backup/recovery systems.

Document Organization

Following is a brief description of chapter contents.

- [Chapter 1, DXi V-Series System Description](#) provides an overview of the DXi V-Series.
- [Chapter 2, DXi V-Series Remote Management](#) discusses using the DXi V-Series remote management console to control the system remotely.

- [Chapter 3, DXi V-Series Configuration Wizards](#) discusses the wizards that provide guidance for setting up the DXi V-Series.
- [Chapter 4, DXi V-Series Home Page](#) discusses the information that appears on the **Home** page of the remote management console.
- [Chapter 5, DXi V-Series Replication](#) discusses the remote replication capabilities of the DXi V-Series.
- [Chapter 6, DXi V-Series Status](#) discusses DXi V-Series status information.
- [Chapter 7, DXi V-Series Alerts](#) discusses DXi V-Series alert information and service tickets.
- [Chapter 8, DXi V-Series Configuration](#) discusses configuration of the DXi V-Series.
- [Chapter 9, DXi V-Series Utilities](#) discusses DXi V-Series utilities such as diagnostic tools and rebooting the system.
- [Appendix A, Troubleshooting](#) discusses problems you may encounter during the setup and operation of the DXi V-Series.
- [Glossary](#) provides definitions of terms used in this guide.

Notational Conventions

This manual uses the following conventions:

Note: Note emphasizes important information related to the main topic.

Caution: Caution indicates potential hazards to equipment or data.

WARNING: Warning indicates potential hazards to personal safety.

- Data sizes are reported in base 1000 rather than base 1024. For example:
 - 1 MB = 1,000,000 bytes
 - 1 GB = 1,000,000,000 bytes
 - 1 TB = 1,000,000,000,000 bytes

Product Safety Statements

Quantum will not be held liable for damage arising from unauthorized use of the product. The user assumes all risk in this aspect.

This unit is engineered and manufactured to meet all safety and regulatory requirements. Be aware that improper use may result in bodily injury, damage to the equipment, or interference with other equipment.

WARNING: Before operating this product, read all instructions and warnings in this document and in the system, safety, and regulatory guide.

警告 在使用本产品之前，请先阅读本文档及系统、安全和法规信息指南中所有的说明和警告信息。

警告 操作本產品前，請先閱讀本文件及系統、安全與法規資訊指南中的指示與警告說明。

ADVERSAL Læs alle instruktioner og advarsler i dette dokument og i *Vejledning om system-sikkerheds- og lovgivningsoplysninger*, før produktet betjenes.

AVERTISSEMENT Avant d'utiliser ce produit, lisez la totalité des instructions et avertissements de ce document et du *Guide d'informations sur le système, la sécurité et la réglementation*.

HINWEIS Lesen Sie vor der Verwendung dieses Produkts alle Anweisungen und Warnhinweise in diesem Dokument und im System, Safety, and Regulatory Information Guide (Info-Handbuch: System, Sicherheit und Richtlinien).

לפני ההפעלה של מוצר זה, קרא את כל ההוראות והאזהרות הכלולות במסמך זה וכן במדריך מידע בנושאי מערכת, בטיחות ותקינה

אזהרה

警告

この製品を使用する前に、本文書、および『システム、安全、規制に関する情報ガイド』に記載しているすべての警告と指示をお読みください。

경고

이 제품을 작동하기 전에 이 문서 및 시스템, 안전, 및 규제 정보 안내서에 수록된 모든 지침과 경고 표지를 숙지하십시오.

ПРЕДУПРЕЖДЕНИЕ

Перед началом эксплуатации данного устройства ознакомьтесь во всеми инструкциями и предупреждениями, приведенными в данном документе и в *Справочном руководстве по устройству, технике безопасности и действующим нормативам*.

ADVERTENCIA

Antes de utilizar este producto, lea todas las instrucciones y advertencias en este documento y en la Guía informativa sobre sistema, seguridad y normas.

WARNING

Läs alla anvisningar och varningar i detta dokument och i *System, säkerhet och krav från myndigheter - Informationshandbok* innan denna produkt tas i bruk.

Related Documents

The following Quantum documents are also available for the DXi V-Series:

Document No.	Document Title	Document Description
6-00618	<i>System Safety and Regulatory Information - Quantum Products</i>	Lists all safety and regulatory information for all Quantum products.

Document No.	Document Title	Document Description
6-67079	<i>DXi-Series NetBackup and Backup Exec OST Configuration Guide</i>	Provides information for setting up the DXi V-Series for OST operation with NetBackup and Backup Exec.
6-67081	<i>DXi-Series Command Line Interface (CLI) Guide</i>	Provides information on the DXi V-Series command line interface.
6-67353	<i>DXi Advanced Reporting User's Guide</i>	Provides information about using DXi Advanced Reporting features.

For the most up-to-date documentation for the DXi V-Series, go to:

<http://www.quantum.com/dxi-vseriesdocs>

Note: For DXi V1000 Standard Edition users, documentation, community support, and other resources are available through Forum V (<http://www.quantum.com/forumv>), Quantum's online support forum for virtualization products.

Contacts

For information about contacting Quantum, including Quantum office locations, go to:

<http://www.quantum.com/aboutus/contactus/index.aspx>

Getting More Information or Help

StorageCare™, Quantum's comprehensive service approach, leverages advanced data access and diagnostics technologies with cross-environment, multi-vendor expertise to resolve backup issues faster and at lower cost.

Quantum. Global Services

Accelerate service issue resolution with these exclusive Quantum StorageCare services:

- **Service and Support Web site** - Register products, license software, browse Quantum Learning courses, check backup software and operating system support, and locate manuals, FAQs, software downloads, product updates and more in one convenient location. Benefit today at:

<http://www.quantum.com/ServiceandSupport/Index.aspx>

- **eSupport** - Submit online service requests, update contact information, add attachments, and receive status updates via e-mail. Online Service accounts are free from Quantum. That account can also be used to access Quantum's Knowledge Base, a comprehensive repository of product support information. Sign up today at:

<http://www.quantum.com/osr>

Note: For DXi V1000 Standard Edition users, documentation, community support, and other resources are available through Forum V (<http://www.quantum.com/forumv>), Quantum's online support forum for virtualization products. Quantum customer support options are available for DXi V-Series Enterprise Edition users. To learn more about upgrading to Enterprise Edition, contact your Quantum Sales Representative.

For further assistance, or if training is desired, contact the Quantum Customer Support Center:

United States	1-800-284-5101 (toll free) +1-720-249-5700
EMEA	+800-7826-8888 (toll free) +49-6131-3241-1164
APAC	+800-7826-8887 (toll free) +603-7953-3010

For worldwide support:

<http://www.quantum.com/ServiceandSupport/Index.aspx>

Worldwide End-User Product Warranty

For more information on the Quantum Worldwide End-User Standard Limited Product Warranty:

<http://www.quantum.com/serviceandsupport/warrantyinformation/index.aspx>



Chapter 1

DXi V-Series System Description

This chapter describes the DXi V-Series system and its components and includes the following sections:

- [Overview](#)
- [Features and Benefits](#)
- [Data Reduction](#)
- [Space Reclamation](#)
- [Remote Replication](#)
- [Storage Presentation](#)
- [DXi Advanced Reporting](#)
- [Network Configuration](#)

Overview

Quantum DXi V-Series provides an entry point for Quantum customers who want to implement a virtual infrastructure. The Quantum DXi V-Series is a flexible virtual appliance backup solution that integrates data deduplication and replication technology to connect backup and DR (disaster recovery) protection across distributed

corporate environments. DXi V-Series uses Quantum's patented data deduplication technology to increase disk capacities by 10 to 50 times and makes WAN replication a practical and effective part of disaster recovery planning. Quantum DXi V-Series is designed for customers who need to protect up to 24 TB of deduplicated data and who do not wish to deploy a physical DXi system.

Advanced Data Deduplication Increasing Disk Retention for Backup Data

The DXi V-Series leverages Quantum's patented data deduplication technology (U.S. Pat. No. 5,990,810) to dramatically increase the role that disk can play in the protection of critical data. With the DXi V-Series solution, users can retain 10 to 50 times more backup data on fast recovery disk than with conventional arrays.

Remote Replication of Backup Data Providing Automated Disaster Recovery Protection

With the DXi V-Series, users can transmit backup data from a remote site to a central, secure location to reduce or eliminate media handling. DXi™-Series replication is asynchronous, automated, and operates as a background process.

Enterprise Features Provide Secure Repository

The DXi V-Series presents storage as NAS shares (CIFS and NFS) or OST storage servers.

- **DXi V1000** - Features 1–2 TB of usable deduplication capacity.
- **DXi V2000** - Features 1–8 TB of usable deduplication capacity.
- **DXi V4000** - Features 4–24 TB of usable deduplication capacity.

DXi Accent distributes deduplication between the DXi V-Series and the backup server to accelerate backups over bandwidth-constrained networks. Compatibility with Quantum's vmPRO software provides consolidated support for backup of physical and virtual servers.

Features and Benefits

The DXi V-Series system provides the following features and benefits:

- Inline data flow provides leading deduplication with an optimal combination of total system performance, manageability, and value.
- NAS or OST (OpenStorage) presentation layer.
- LAN/WAN replication compatible with the vmPRO virtual backup system, DXi V-Series familyDXi2500-D, DXi4000 family, DXi6000 family, DXi7500, and DXi8500 models.
 - **DXi V1000** - Supports one source to one target replication.
 - **DXi V2000** - Supports one source to one target replication.
 - **DXi V4000** - Supports ten sources to one target replication, and one source to two targets replication.
- OST Optimized Duplication support with Symantec Backup Exec and Symantec NetBackup.
- Supported by every major backup software vendor.

Data Reduction

Data reduction is the process of reducing the amount of storage capacity required to store your data. The DXi V-Series systems provide two techniques to optimize the storage space required on your system:

- [Data Deduplication](#)
- [Compression](#)

Data Deduplication

The DXi-Series disk backup and replication systems use Quantum's patented data deduplication technology to dramatically increase the role that disk can play in data protection. With DXi-Series solutions, users can retain 10 to 50 times more backup data on fast recovery disk than with conventional arrays. This advantage allows IT departments to

cost-effectively retain months of backup data on disk for faster, more reliable restores and more data recovery points. Quantum's innovative implementation of this core technology means that users do not have to compromise on performance to take advantage of extended retention capability. The new, inline data flow in the DXi 2.x Software provides streamlined deduplication that offers a maximum combination of total system performance, manageability, and value.

Quantum's deduplication technology uses a sub-file, variable-length approach to identify redundant blocks in a data stream—blocks that have appeared before in the same dataset or in datasets processed at an earlier time. When a block appears that has already been stored, the DXi system inserts a reference pointer to the earlier instance of the data segment instead of storing another copy. The result is a dramatic reduction in the storage capacity needed to store the data set, and a similar reduction in the bandwidth needed to replicate deduplicated data sets over a network. For more information on enabling data deduplication, see [NAS Summary](#) on page 128.

Compression

The DXi V-Series systems use compression technology after duplicate blocks have been identified and replaced as part of the deduplication process. With compression, unique data that has been through the data deduplication process can be compressed at a typical ratio of approximately 2:1. This enables you to maximize the storage capacity of your system.

Space Reclamation

The space reclamation process performs multiple functions on the DXi V-Series.

When data is deduplicated it is stored in a block pool—a pool of all unique data blocks that were captured during the data deduplication cycle. When subsequent backup jobs occur, the data deduplication engine searches for new data entering the DXi and uses a variable length compression algorithm to compare new data to existing data in the block pool. Unique blocks are added to the block pool and known blocks are indexed.

The space reclamation function searches the blockpool for data blocks that are not referenced by any pointers (that is, the files associated with the block have been expired and removed). Once such a data block is identified, the block is removed to make the space reusable.

For correct system operation, space reclamation *must* be run at regular intervals (at least once a week). Quantum recommends creating a schedule to automatically run space reclamation (see [Scheduling Space Reclamation](#) on page 197).

It may be beneficial to schedule space reclamation for a time when other operations are not normally being carried out. Therefore it is important to know when to schedule the space reclamation process. As best practice it is recommended that this process commences at least two hours after your backup job has completed on a daily basis. It is far more efficient to process a day's worth of new data than a week's worth.

Remote Replication

Today most backup occurs on isolated devices, making it difficult to deploy disk backup when disaster recovery protection is required. DXi-Series solutions use data deduplication and replication to decrease by up to 50 times the bandwidth required to move backup data over networks and between sites. This dramatic gain makes it practical and cost-effective for users to replicate backup data over WANs for secure, network-based disaster recovery protection, and it lets users combine rapid, local restores with sound disaster recovery protection.

With DXi-Series replication, users can transmit data from a single site or multiple sites to a central location using any DXi model. DXi-Series replication is an asynchronous, automated background process that includes encryption of data in transit. This model for protecting the distributed enterprise allows users to combine disk, replication, and tape for an optimal combination of performance, simplicity, and security.

For more information on implementing a replication plan, see [Chapter 5, DXi V-Series Replication](#).

Storage Presentation

The DXi V-Series storage area is presented as NAS shares or OST LSUs (Logical Storage Units) (see [Network Attached Storage \(NAS\)](#) on page 7 and [OpenStorage \(OST\)](#) on page 9).

DXi Usage Scenarios

DXi storage presentations are optimized for backup usage rather than file sharing. Backup application usage is typically characterized by:

- Aggregated name spaces and file contents.
- Limited direct, active file access.
- Limited browsing, scanning, or metadata listing (stat).

- Limited metadata manipulation (including rename).

Usage diverging from these characteristics must be qualified to ensure acceptable behavior with respect to functionality, performance, replication, and recovery.

Note: Using Backup Exec with GRT (Granular Recovery Technology) over CIFS is not recommended usage. GRT requires frequently overwriting portions of and appending data to existing files, which is inconsistent with the DXi usage scenarios. Instead, Quantum recommends using OST.

Network Attached Storage (NAS)

The DXi V-Series system has the ability to serve as a NAS backup system (see [Figure 1](#)) where the following protocols are supported:

- [CIFS Protocol](#)
- [NFS Protocol](#)

Note: In the DXi V-Series, NAS shares are optimized for backup rather than file sharing.

CIFS Protocol

The CIFS (Common Internet File System) protocol defines a standard for remote file access from many computers at a time in Windows environments. This protocol allows users with different platforms to share files without installing additional software.

Active Directory Support

The DXi V-Series supports ADS (Active Directory Services) as well as ACLs (Access Control Lists). This provides the following benefits:

- **Compatibility with CIFS domains** - NAS shares are able to join CIFS domains and use domain authentication.
- **Precise control of file system permissions** - Administrators can specify which users and groups can perform what actions.
- **Robust administrative support** - Administrators have the same implicit permissions as they do in Windows operating systems.

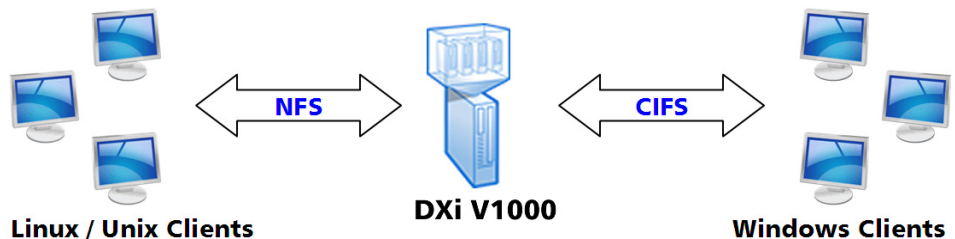
Note: Windows 2003, Windows 2003 R2, Windows 2008, and Windows 2008 R2 are supported for Active Directory domain membership.

Note: When you create a CIFS share, the initial permissions are the same as the default permissions for a Windows 2003 share with the addition of an ACE (Access Control Entry) that permits full access to the share for all authenticated users. Administrators can choose to remove this full access ACE, set up custom permissions, or leave the ACL (Access Control List) as is if the server is set up in a fully trusted environment.

NFS Protocol

The NFS (Network File System) protocol was originally designed by Sun™ Microsystems and allows all network users to access shared files stored on computers of different types. NFS provides access to shared files through an interface called the Virtual File System (VFS) that runs on top of TCP/IP. Users can manipulate shared files as if they were stored locally on the user's own hard disk. With NFS, computers connected to a network operate as clients while accessing remote files, and as servers while providing remote users access to local shared files. This protocol is used with UNIX and Linux networks. It can also be used with Windows networks.

Figure 1 NAS Backup using CIFS and NFS

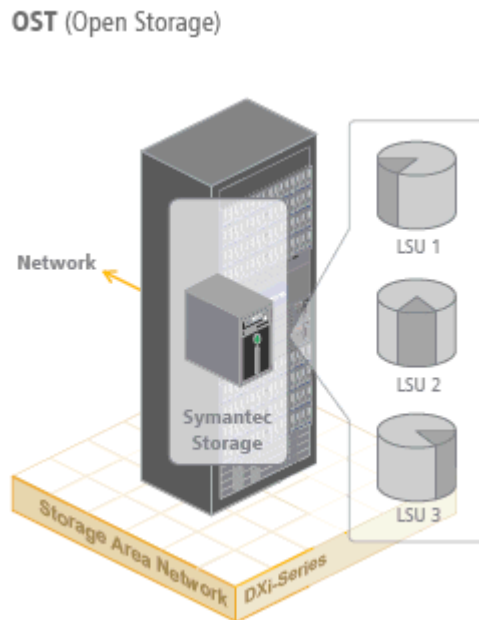


OpenStorage (OST)

With the OST presentation, the DXi system presents storage servers to a Symantec NetBackup or Backup Exec media server through a specific Symantec protocol. A storage server consists of logical storage units (LSUs), which are similar to directories in a NAS file system.

The OST presentation requires the Symantec NetBackup 7.x or later, or Backup Exec 2010 or later host application, and the OST Plug-in client installation on the media server. Plug-in clients are host-OS dependent and are supplied by Quantum. To use the DXi in OST mode, you must configure an OST storage server and LSUs on the DXi. You must also map the LSUs on the NetBackup server so that NetBackup can perform backups and restore from them. Additionally, policies for optimized duplication (OST replication) may need to be set on the NetBackup server.

Figure 2 OpenStorage (OST)
Example



DXi Advanced Reporting

Quantum DXi Advanced Reporting works with all DXi-Series disk backup systems. DXi Advanced Reporting combines comprehensive performance data logging with powerful visual reporting and analysis tools to help you identify potential problems and optimize system operation. For more information, refer to the *DXi Advanced Reporting* section of your *DXi V-Series User's Guide*.

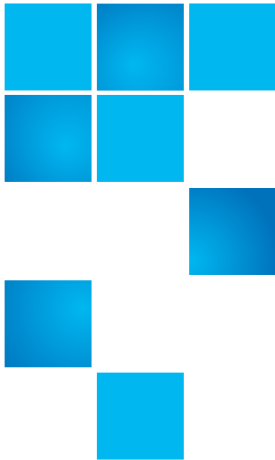
Network Configuration

During network configuration, each individual interface on the DXi V-Series can be configured as a subnet with its own network settings. The DXi V-Series utilizes four VMware VMXNET3 virtual Ethernet ports. The virtual Ethernet ports are not bonded into a single interface. Bonding would provide a benefit only if the ESXi server has network connectivity over multiple 1GbE or 10GbE physical Ethernet ports. Similarly, there is no benefit in routing different traffic types (management, replication, or data) on different interfaces unless the ESXi server hardware is configured to utilize such a configuration.

The DXi V-Series supports DHCP for automatic configuration of IP addresses. You can also manually specify IP addresses as required by your network.

For more information about configuration network settings, see [Network](#) on page 199.

Note: Each configured network interface requires its own set of network settings (IP address, network mask, and gateway).



Chapter 2

DXi V-Series Remote Management

The Quantum DXi V-Series provides a powerful Web-based user interface that allows you to configure and manage the system from a remote workstation on the same network as the DXi V-Series.

Use the DXi V-Series remote management console to perform the following tasks:

- Set up the DXi V-Series using guided procedures (see [DXi V-Series Configuration Wizards](#) on page 23).
- View important system information at a glance (see [DXi V-Series Home Page](#) on page 55).
- Manage data replication activities (see [DXi V-Series Replication](#) on page 67).
- Monitor system performance (see [DXi V-Series Status](#) on page 103).
- View administration alerts and resolve service tickets (see [DXi V-Series Alerts](#) on page 115).
- Configure storage presentation, data replication, and system settings (see [DXi V-Series Configuration](#) on page 127).
- Run diagnostic tools and maintain the system (see [DXi V-Series Utilities](#) on page 253).

Accessing Remote Management

Access the remote management console using a Web browser on a workstation that is on the same network as the DXi V-Series.

See the following sections for more information about accessing DXi V-Series remote management:

- [Supported Browsers](#)
- [Logging On to the DXi V-Series](#)
- [Logging Off of the DXi V-Series](#)

Supported Browsers

Web browser software is not included with the DXi V-Series. You must obtain and install it separately. The DXi V-Series remote management console supports the following Web browsers:

- Mozilla Firefox 10 or later
- Google Chrome 21 or later
- Microsoft Internet Explorer 8, 9, or 10

Note: For Microsoft Internet Explorer 10, you must enable Compatibility View.

Note: For correct operation of the remote management console, disable any pop-up blockers and enable JavaScript in your Web browser.

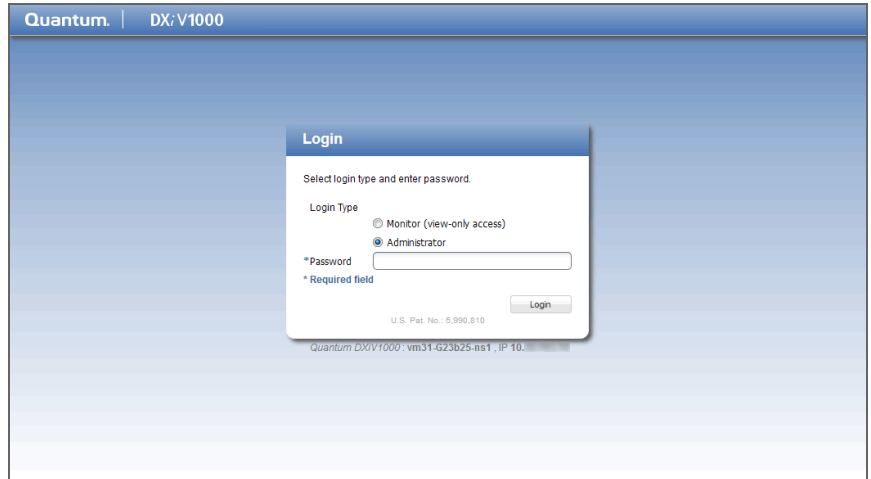
Logging On to the DXi V-Series

To log on to the DXi V-Series remote management console:

- 1 Launch a supported Web browser on a workstation that has network access to the DXi V-Series.
- 2 In the browser address box, type the IP address of the DXi V-Series, and then press **<Enter>**.

The **Login** window displays (see [Figure 3](#)).

Figure 3 Login Window



If the **Login** window does not display, verify that the IP address is correct and that the network path to the DXi V-Series is valid. Also verify that you are using a supported Web browser. Then try again. If you are still unable to access the Login window, contact your DXi V-Series administrator.

- 3 Select the login type and enter the corresponding password.
 - **Monitor** - Allowed to view information on the DXi V-Series remote management console but cannot make changes. (The default password is **password**.)
 - **Administrator** - Allowed to view and change information on the DXi V-Series remote management console. (The default password is **password**.)

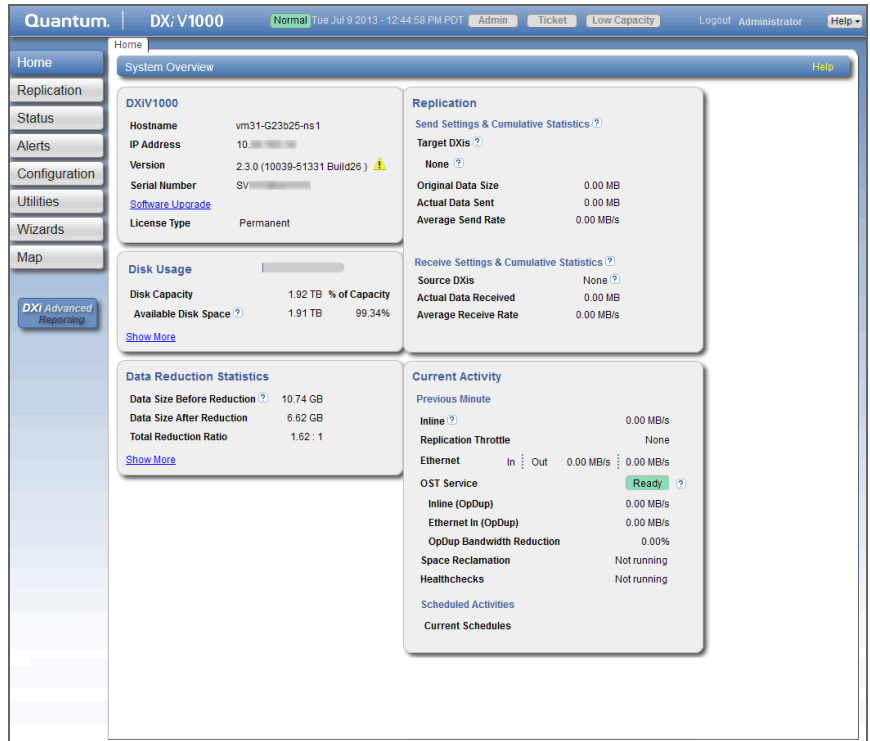
Note: Passwords are limited to 15 characters. Alphanumeric characters and special characters are allowed. Passwords can be changed on the **Web & CLI Passwords** page (see [Web & CLI Passwords](#) on page 219).

- 4 Click **Login**.
- 5 If a security banner message has been specified for the DXi V-Series, click **Accept**.

Note: For information about specifying a security banner message, see [Security Notice](#) on page 226.

The Home page displays (see [Figure 4](#)).

Figure 4 Home Page



If you are unable to log on, verify that the password is correct, then try again. If you are still unable to log on, contact your DXi V-Series administrator.

Caution: More than one Administrator can log on to the DXi at a time. If two Administrators attempt to make configuration changes on the same page at the same time, it is possible that one Administrator's changes will overwrite the other's. Always coordinate configuration changes with other Administrator users.

Logging Off of the DXi V-Series

When you are done working in the DXi V-Series remote management console, click **Logout** on the upper right of the remote management console to end your session.

Note: If the DXi V-Series remote management console is idle for more than 30 minutes (default setting), the system logs off the user. The inactivity timeout can be changed on the **Login Session** page (see [Login Session](#) on page 225).

The Remote Management Console

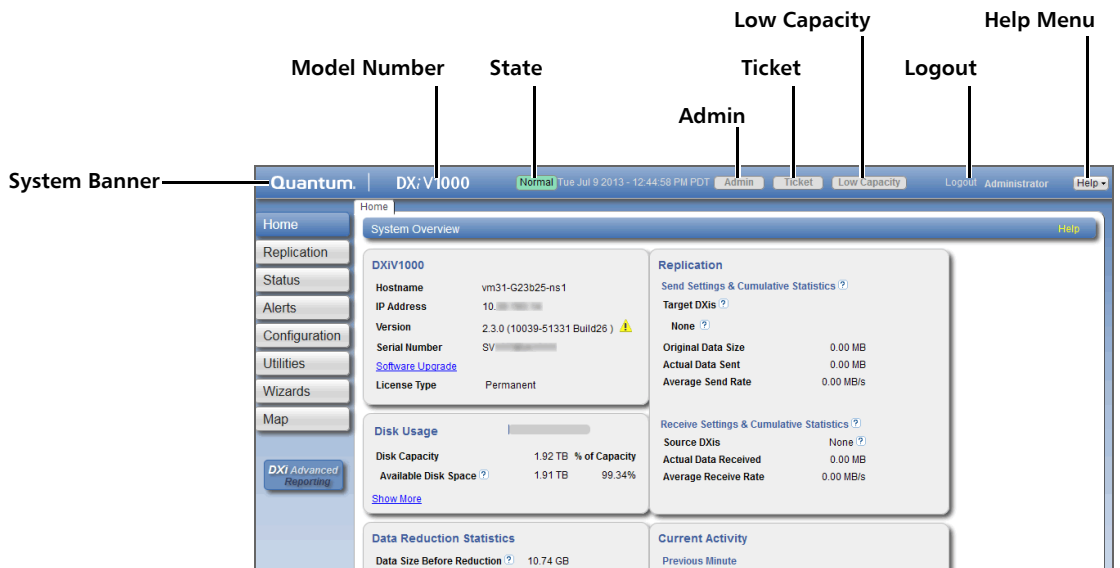
After you log on to the DXi V-Series, the remote management console displays. The remote management console includes the following features:

- [System Banner](#)
- [Main Menu](#)
- [DXi V-Series Management Pages](#)

System Banner

The system banner displays at the top of the remote management console (see [Figure 5](#)). Use the system banner to see overall system status and alert information at a glance, and to quickly access additional information. The system banner also displays the time and date as well as the login type (administrator or monitor).

Figure 5 System Banner



The following items display on the system banner:

- **Model Number** - The model number of the DXi V-Series.
- **State** - Displays the operating state of the DXi V-Series:
 - **Normal** - (Green) The system is operating correctly.
 - **Attention** - (Yellow) There is a problem with the system.

Note: The state displays **Attention** during a blockpool verify operation (see [Blockpool Verify Behavior](#) on page 19).

- **Verify Failure** - (Red) The blockpool verify process has failed.
- **Low Space** - (Yellow) Available disk space is low. Ingest and replication continue, and space reclamation starts.
- **Critical Reserve Space** - (Red) Available disk space is critically low. Ingest and replication are stopped, and space reclamation continues.
- **No Space** - (Red) Available disk space is critically low. Ingest and replication are stopped, and space reclamation continues.

Click the **State** button to display detailed status information about the system.

- **Admin** - The **Admin** button turns yellow when an administration alert occurs. Click the **Admin** button to manage administration alerts (see [Admin Alerts](#) on page 115).
- **Ticket** - The **Ticket** button turns yellow when open service tickets are present. Click the **Ticket** button to manage service tickets (see [Service Tickets](#) on page 117).
- **Low Capacity** - The **Low Capacity** button turns yellow when available disk space falls to a low level and the DXi enters **Low Space** state (see [Low Space Management](#) on page 17). Click the **Low Capacity** button to view the administration alerts related to low disk space (see [Admin Alerts](#) on page 115).

Note: When disk space is low, target replication to the system is paused (see [Replication Service](#) on page 99). In addition, space reclamation is automatically started to free up disk space (see [Space Reclamation](#) on page 262).

- **Logout** - Click to end your remote management session.
- **Help Menu** - Select from the following help options:
 - **Help Contents** - Open the DXi V-Series online help.
 - **Online Documentation** - Access documentation resources on the Quantum Web site.
 - **About** - Display DXi software version information.

Low Space Management

As disk capacity is used and free disk space approaches low levels, the DXi V-Series automatically responds as detailed in [Table 1](#).

When the DXi V-Series enters the **Low Space** state, space reclamation is automatically started to free up disk space. A space reclamation task is initiated every 10 minutes until space reclamation begins. Space reclamation ends when the DXi V-Series exits the **Low Space** state. (Any space reclamation tasks running at that time are allowed to complete.)

When the DXi V-Series enters the **Critical Reserve Space** state, backup ingest is stopped, and target replication to the system is paused. Backup

ingest and target replication resume when the DXi V-Series exits the **Critical Reserve Space** state.

Note: The system generates a service ticket and an admin alert when it enters the **Low Space**, **Critical Reserve Space**, and **No Space** states. In addition, a service ticket and an admin alert are generated when Used Disk Space reaches 85% and 95% of total disk capacity.

Table 1 Low Space States

DXi State	Disk Space Level	System Actions
Normal (Green)	Normal disk space	Low Capacity button is dark. Backup ingest and replication occur as normal. Space reclamation occurs at normally scheduled times.
Low Space (Yellow)	Free Space is less than: (DXi V1000) 50 GB + 100 GB x (total usable capacity in TB / 10 TB) (DXi V2000) 100 GB + 100 GB x (total usable capacity in TB / 10 TB)	Low Capacity button is lit. Backup ingest and replication occur as normal. Space reclamation is automatically started.
Critical Reserve Space (Red)	Free Space is less than: (DXi V1000) 10 GB (DXi V2000) 20 GB	Low Capacity button is lit. Backup ingest and replication are stopped. Space reclamation is automatically started.
No Space (Red)	Free Space is less than: (DXi V1000) 5 GB (DXi V2000) 10 GB Note: No Space also occurs if the Used Metadata percentage is 85% or greater.	Low Capacity button is lit. Backup ingest and replication are stopped. Space reclamation is automatically started.

Blockpool Verify Behavior

A blockpool verify operation occurs if data on the system requires repair, for example, after an unexpected shutdown due to a power loss. During a blockpool verify operation, the banner displays the **Attention** state. Clicking **Attention** displays the message: *A previous unclean shutdown of the DXi has required a data verification to commence. While in this condition the DXi is operational, but performance may be severely degraded.*

While a blockpool verify operation is in progress, some system operations are affected.

- Retrieving data created prior to the blockpool verify may fail.
- Ingesting new data using NAS/OST should succeed.
- Sending data that existed prior to the blockpool verify to a replication target may fail.
- Sending new data to a replication target, or receiving replicated data, should succeed.
- Space reclamation and healthchecks will fail.

When the blockpool verify is complete, the banner displays Normal, and the system resumes normal operation

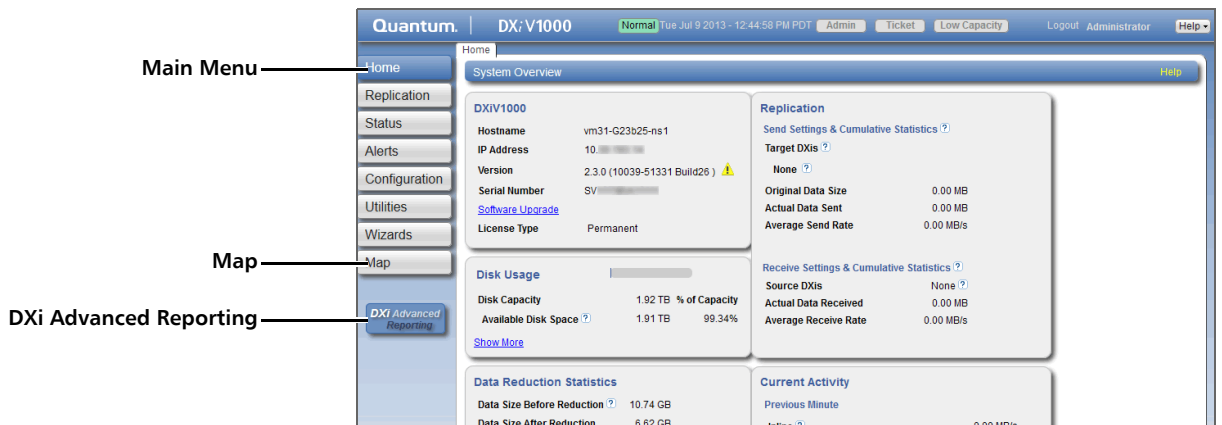
Main Menu

The main menu displays on the left side of the DXi V-Series remote management console (see [Figure 6](#)). Click a menu item to display the corresponding management page.

To access **DXi Advanced Reporting**, click the link below the main menu. Quantum DXi Advanced Reporting provides performance data logging and visual reporting and graphing features for Quantum DXi-Series systems. For more information, see the *Quantum DXi Advanced Reporting User's Guide* (6-67353).

Note: Clicking **Wizards** on the main menu replaces the main menu with the wizards menu. Click a menu item to begin a wizard, or click **Exit** to return to the main menu (see [DXi V-Series Configuration Wizards](#) on page 23).

Figure 6 Main Menu



DXi V-Series Management Pages

Use the DXi V-Series management pages to view information as well as configure and manage the system. To navigate to a page, first click a menu item, then click a tab to display the corresponding page. Some pages include sub-tabs that display pages with additional information and options.

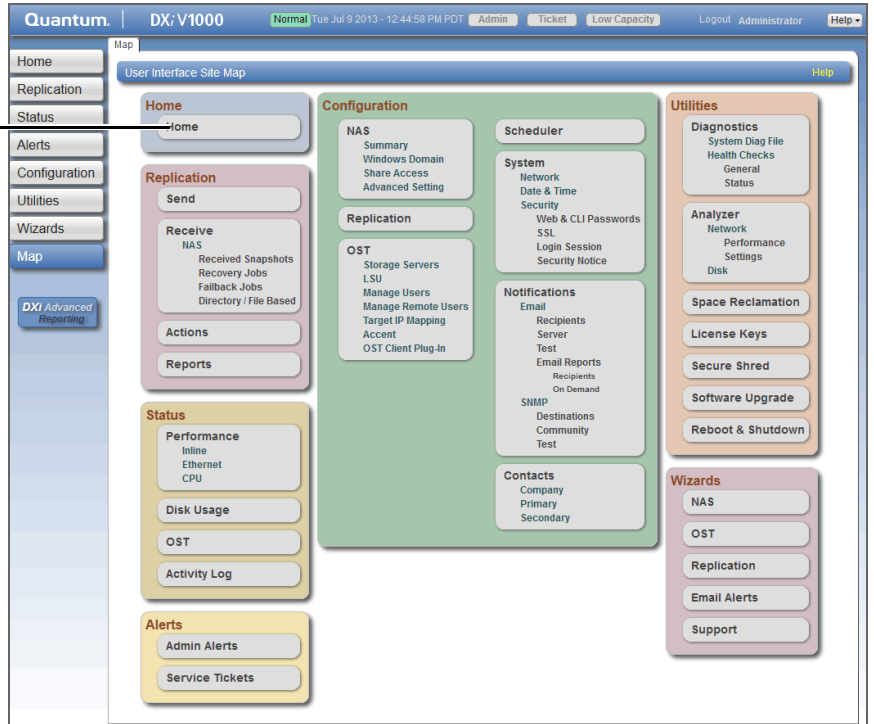
To view a graphical map of all remote management pages, click **Map** on the main menu (see [Figure 6](#)). On the map, click the name of a page to quickly navigate to that page (see [Figure 7](#)).

If you need help as you work, click **Help** in the page's title bar to see online help for that page. In addition, Quick Tips are available on many pages. Click the **Quick Tip** icon [?] next to a section or field to learn more about that item.

Caution: Unless directed to do so by the documentation, do not use your Web browser's **Back**, **Forward**, or **Refresh** buttons when navigating in the remote management console. Doing so may have unintended effects. Instead, always use the main menu and tabs to navigate in the remote management console.

Figure 7 Remote Management
Pages Map

Click a page name to
navigate to that page



Chapter 2: DXi V-Series Remote Management The Remote Management Console



Chapter 3

DXi V-Series Configuration Wizards

The **Configuration Wizards** provide guided assistance for setting up the DXi V-Series. Use the wizards to quickly configure the most important features of the system, including storage presentation and data replication. Each wizard leads you step-by-step through the configuration process.

The **Configuration Wizards** page displays the first time you log on to the remote management console after completing the **Getting Started** wizard. After that, to access the **Configuration Wizards**, click **Wizards** on the main menu. This replaces the main menu with the **Wizards** menu (see [Figure 8](#)).

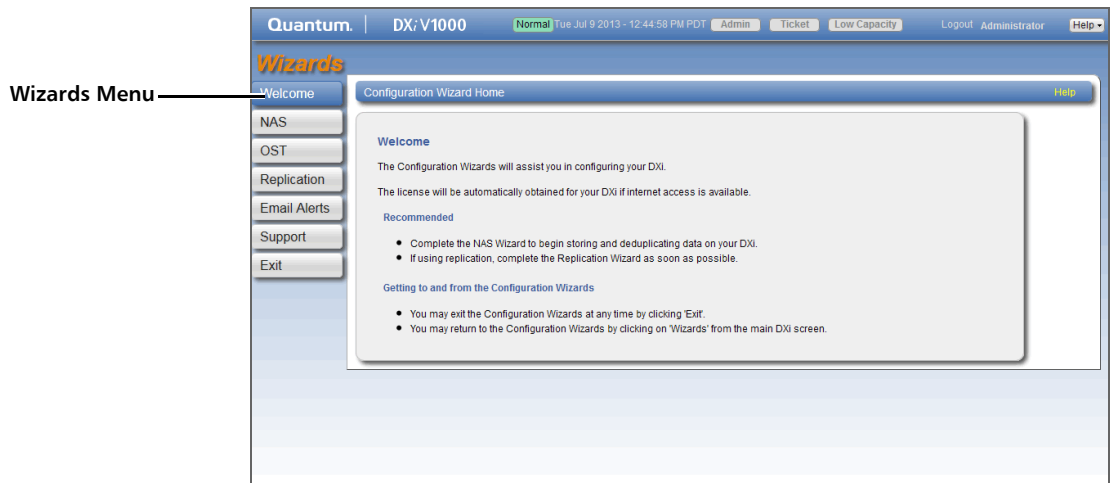
The **Wizards** menu includes the following wizards:

- **NAS** - Helps you configure the DXi V-Series as a NAS (Network Attached Storage) appliance for use on a Windows or UNIX/Linux network (see [NAS Wizard](#) on page 24).
- **OST** - Helps you configure the DXi V-Series to present its storage as one or more OST (OpenStorage) storage servers for use with a backup application (see [OST Wizard](#) on page 31).
- **Replication** - Helps you configure the DXi V-Series to send replicated data to or receive replicated data from another DXi system (see [Replication Wizard](#) on page 38).
- **Email Alerts** - Helps you configure the DXi V-Series to automatically send notifications and reports to selected recipients (see [Email Alerts Wizard](#) on page 44).

- **Support** - Helps you enable licensed features on the DXi V-Series, register your system with Quantum, and perform other tasks that will aid Quantum customer support in assisting you (see [Support Wizard](#) on page 48).

Click an item on the **Wizards** menu to begin a wizard. After you complete a wizard, a green check mark displays next to its name on the **Wizards** menu. To display the main menu again, click **Exit**.

Figure 8 Wizards Menu



NAS Wizard

The **NAS** wizard provides guided assistance for configuring the DXi V-Series as a NAS (Network Attached Storage) appliance. The wizard helps you determine if the NAS shares will be used on a Windows or UNIX/Linux network, and if necessary helps you join the DXi V-Series to a Windows domain. Then the wizard guides you through the process of adding one or more NAS shares to receive backup data.

Note: You cannot use the NAS wizard to edit existing shares. For more information about working with NAS shares, see [NAS](#) on page 127.

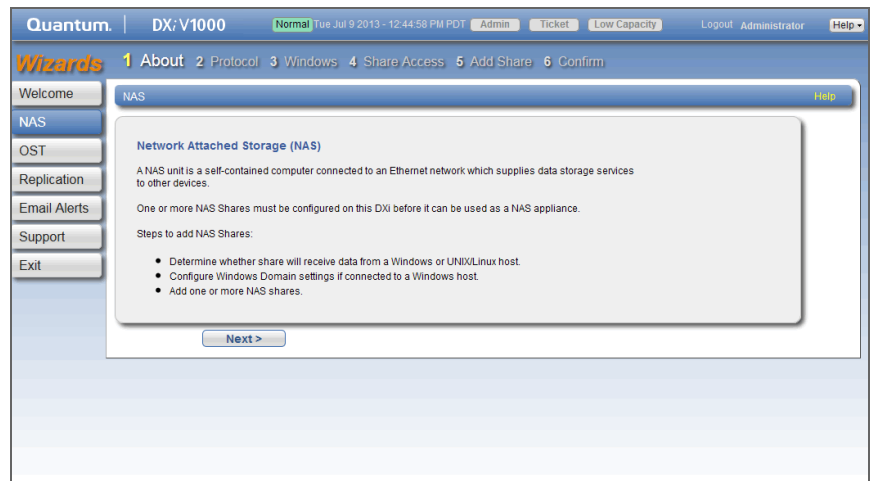
To begin the **NAS** wizard, on the **Wizards** menu, click **NAS**.

Step 1: About

- 1 Read the information about the wizard (see [Figure 9](#)).
- 2 Click **Next** to continue.

Note: At any time while using the wizard, you can click **Previous** to return to the previous step.

Figure 9 NAS Wizard: About



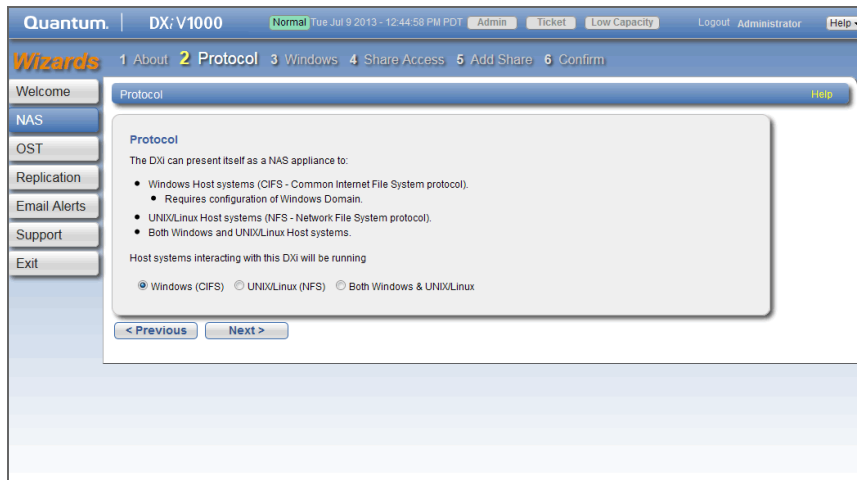
Step 2: Protocol

- 1 Select the type of host the DXi V-Series will present NAS shares to (see [Figure 10](#)):
 - **Windows (CIFS)** - All hosts that will interact with the DXi V-Series run Windows.
 - **UNIX/Linux (NFS)** - All hosts that will interact with the DXi V-Series run UNIX or Linux.

- **Both Windows & UNIX/Linux** - Both types of hosts (Windows and UNIX/Linux) will interact with the DXi V-Series.

2 Click **Next** to continue.

Figure 10 NAS Wizard:
Protocol



Step 3: Windows

Note: If you selected the **UNIX/Linux (NFS)** option in the previous step, the wizard automatically skips this step and the next step. Continue with [Step 5: Add Share](#) on page 29.

- 1 Select an option for joining the DXi V-Series to the Windows network (see [Figure 11](#)):
 - **Active Directory** - Add the DXi V-Series to a Windows network using Active Directory
 - **Workgroup** - Add the DXi V-Series to a workgroup on a Windows network

Note: To disjoin a domain, see [Windows Domain](#) on page 135.

- 2 In the **Domain/Workgroup Name** box, enter the name of the domain or workgroup the DXi V-Series is joining.
- 3 (Active Directory only) Enter information about the primary domain controller:

- **Primary Domain Controller** - Select an option for the Primary Domain Controller (PDC):
 - **Use DNS Discovery** - Discover the PDC automatically.
 - **Specify Address** - Enter the fully qualified name or the IP address of the PDC.
- **Organization Unit** - (Optional) Enter the name of the organizational unit in the domain.

The DXi V-Series will become a member of this organization.

- **Administrator Name** - Enter **Administrator** or any user that has the right to join the domain.

By default, any user belonging to the **Administrators** group or the **Domain Admins** group has the right to join the domain. In addition, any user can join the domain if they are specifically delegated this right by a member of the **Administrators** group.

- **Administrator Password** - Enter the password for the user entered above.

Note: To configure users, see [Share Access](#) on page 138.

4 Click **Next** to continue.

Figure 11 NAS Wizard:
Windows

The screenshot shows the 'Windows Domain Settings' wizard step. At the top, there's a navigation bar with steps: 1 About, 2 Protocol, 3 Windows (current), 4 Share Access, 5 Add Share, 6 Confirm. A sidebar on the left contains buttons for Welcome, NAS, OST, Replication, Email Alerts, Support, and Exit. The main content area is titled 'Windows Domain Settings' and includes a 'Help' link. Below the title, it says 'Windows Domain' and 'NAS Shares using CIFS protocol require an SMB Server be joined to either a Windows workgroup or a Windows domain.' There are two radio buttons for 'Domain Type': 'Active Directory' (selected) and 'Workgroup'. Below that is a text input field for '* Domain/Workgroup Name'. Under the heading 'Primary Domain Controller', there are two radio buttons: 'Use DNS Discovery' (selected) and 'Specify Address' (with an adjacent text input field). Below these are three text input fields for '* Organization Unit', '* Administrator Name', and '* Administrator Password'. A note at the bottom of the form states '* Required Field'. At the very bottom of the wizard window are two buttons: '< Previous' and 'Next >'.

Step 4: Share Access

- 1 Do one of the following depending on whether the DXi V-Series is joining a Windows Workgroup or an Active Directory Domain:
 - **Windows Workgroup** - Enter information about the workgroup user:
 - **User Name** - Enter the name of the workgroup user.
 - **Password** - Enter the password for the workgroup user.
 - **Confirm Password** - Enter the password again to confirm it.
 - **Description** - (Optional) Enter a brief description of the workgroup user.
 - **Grant Administrator Privileges** - Select the check box to add the workgroup user to the Windows Administrators group.

This allows the workgroup user to override certain permissions settings and prevents the workgroup user from being locked out of shares or directories.
 - **Active Directory Domain** - Enter information about the share administrator:
 - **Fully Qualified User or Group Name** - Enter the administrator's user or group name.
- 2 Click **Add**.
- 3 (Optional) To add additional workgroup users or share administrators, repeat Steps 1–2.
- 4 Click **Next** to continue.

Figure 12 NAS Wizard: Share Access



Step 5: Add Share

1 Under **Add Share**, enter information about the NAS share (see [Figure 13](#)):

- **Name** - Enter the name of the NAS share.
- **Description** - (Optional) Enter a brief description of the share.
- **Enable deduplication** - Select the check box to enable data deduplication. Quantum recommends that you enable data deduplication to optimize disk usage.

Note: Data deduplication is enabled by default. You cannot enable or disable data deduplication after the share is added.

- **Hide from network browsing** - (Windows shares only) Select the check box to hide the share from network browsing. If selected, you cannot see the share when browsing the network.
- **Export Protocol** - (Available only if you selected the **Both** option in [Step 2: Protocol](#) on page 25) Select the export protocol for the share:
 - **CIFS** - Select the CIFS option to use the share on a Windows network.

- **NFS** - Select the NFS option to use the share on a UNIX or Linux network.

- 2 Click **Add**.
- 3 (Optional) To add additional shares, repeat Steps 1–2.
- 4 Click **Next** to continue.

Figure 13 NAS Wizard: Add Share

The screenshot displays the 'Add Share' wizard step in the Quantum DXi V1000 interface. The breadcrumb trail at the top indicates the current step is '5 Add Share'. The main form area is titled 'Add Share' and contains the following elements:

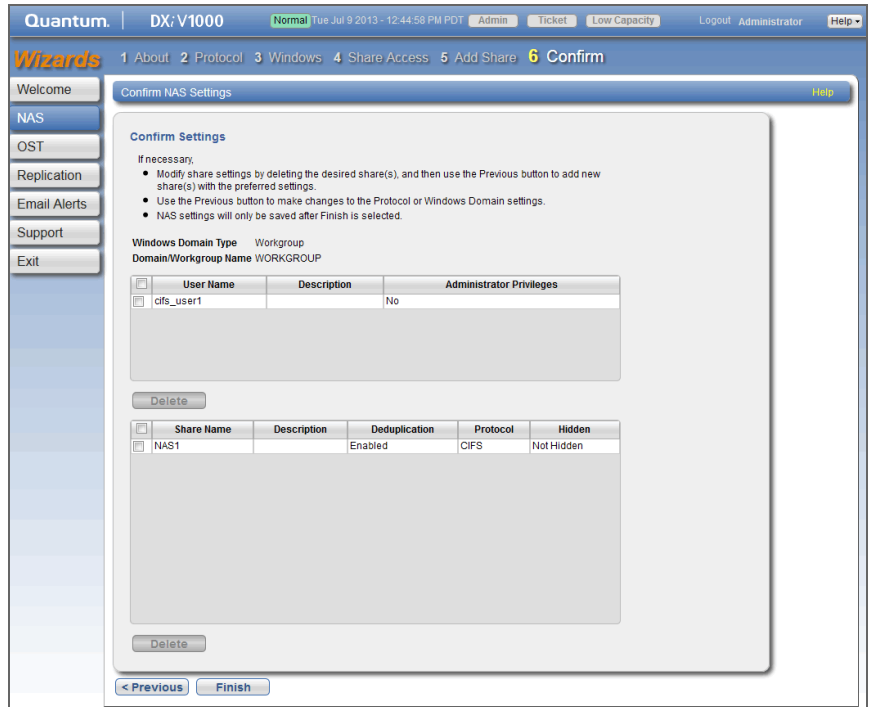
- A header: 'Add Share' and a sub-header: 'For each share you wish to add fill in the appropriate information and click the Add button.'
- Share count: 'Shares: 1 | Maximum: 128'
- * Name: [Text input field]
- Description: [Text input field]
- Enable deduplication ? Deduplication setting cannot be changed after share is created.
- Hide from network browsing
- Export Protocol:
 - CIFS (Windows network)
 - NFS (UNIX/Linux network)
- * Required Field
- Buttons: Add, Reset

Navigation buttons at the bottom of the wizard pane are '< Previous' and 'Next >'.

Step 6: Confirm

- 1 Review the settings you selected to make sure they are correct (see [Figure 14](#)). If necessary, click **Previous** to return to a previous step to make changes.
- 2 To make changes to a NAS share you added, first select the share and click **Delete** to delete the share. Then click **Previous** to return to the previous step and add a new share.
- 3 After you have confirmed all settings, click **Finish**. The wizard configures the DXi V-Series with the settings you selected.

Figure 14 NAS Wizard:
Confirm



OST Wizard

The **OST** wizard provides guided assistance for configuring the DXi V-Series to present its storage as one or more OST (OpenStorage) storage servers for use with a backup application. The wizard guides you through the process of adding one or more OST storage servers, configuring LSUs (logical storage units), and adding OST users. The wizard also provides a link for downloading and installing the OST Plug-in on your backup host.

Note: If you plan to use **Concurrent Optimized Duplication**, you should complete the Replication wizard before beginning the OST wizard (see [Replication Wizard](#) on page 38).

Note: You cannot use the OST wizard to edit existing storage servers or LSUs. For more information about working with OST, see [OST](#) on page 156.

To begin the **OST** wizard, on the **Wizards** menu, click **OST**.

Step 1: About

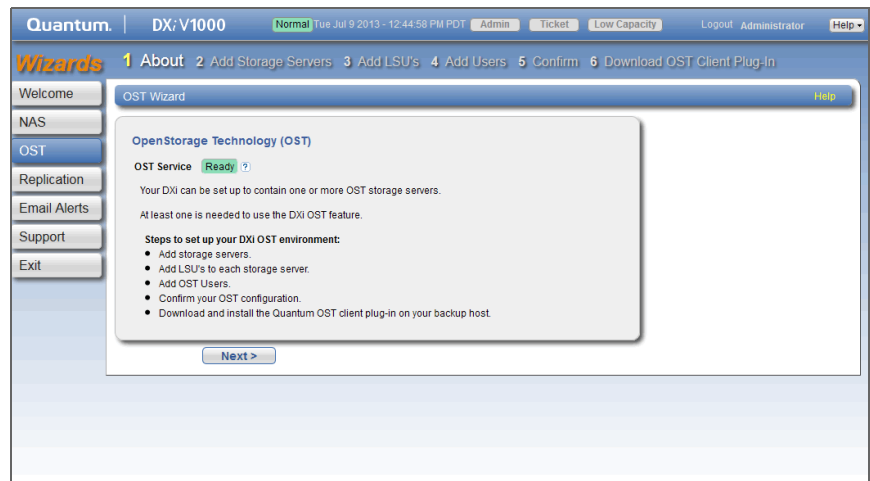
1 Read the information about the wizard (see [Figure 15](#)).

The **About** page displays the status of the OST service. OST settings can be configured in **Ready**, **Stopped**, or **Verifying** state. The OST server is available for backup only in **Ready** state.

2 Click **Next** to continue.

Note: At any time while using the wizard, you can click **Previous** to return to the previous step.

Figure 15 OST Wizard: About



Step 2: Add Storage Servers

1 Under **Add Storage Server**, enter information about the storage server (see [Figure 16](#)):

- **Name** - Enter the name of the storage server.

Caution: Do not use an underscore (_) in the name of the storage server.

- **Description** - (Optional) Enter a brief description of the storage server.
- **Max Connections** - Enter the maximum number of connections allowed to the storage server (3 to 65536).

Note: Quantum recommends setting **Max Connections** to 300.

- **Enable Concurrent Optimized Duplication** - Select the check box to enable optimized duplication during OST ingest.

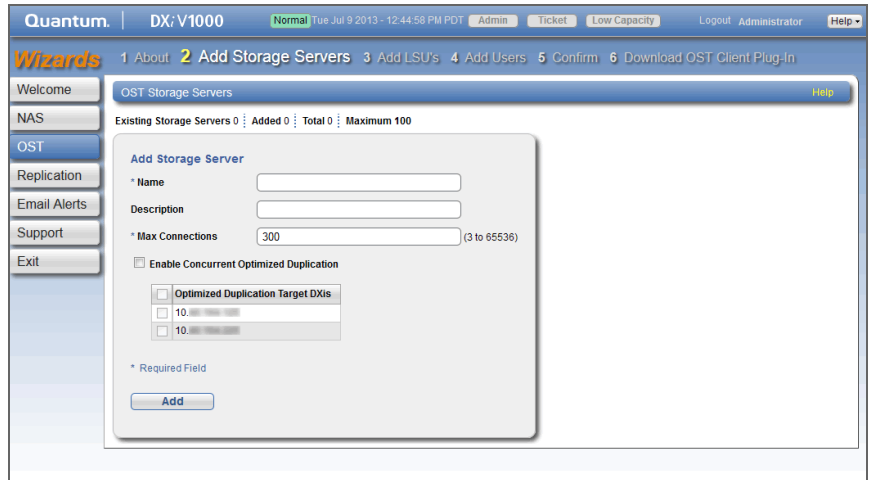
Concurrent Optimized Duplication is disabled by default. If enabled, as data is written to the storage server, it is simultaneously replicated to the target DXi. When optimized duplication or Automatic Image Replication subsequently occurs, the operation is more efficient because a portion of the required data has already been replicated to the target storage server.

Note: To configure the target DXi, see [Replication Wizard](#) on page 38.

Note: When Concurrent Optimized Duplication is enabled, all data on the storage server is duplicated, not just the specified images.

- 2 Select the check box for each optimized duplication target you want to duplicate the storage server to. When the storage server is duplicated, its data will be sent to all selected targets.
- 3 Click **Add**.
The storage server displays in the **Storage Servers Added** table.
- 4 (Optional) To add additional storage servers, repeat Steps 1–2.
To remove a storage server, select it in the **Storage Servers Added** table and click **Delete**.
- 5 Click **Next** to continue.

Figure 16 OST Wizard: Add Storage Servers



Step 3: Add LSUs

1 Enter information about the LSU (see [Figure 17](#)).

- **Storage Server** - Select the storage server that will contain the new LSU.
- **Use Available Capacity** - Select this option to add an LSU that uses the available capacity on the system.

You cannot add an available capacity LSU to a storage server that already contains an LSU. Also, if you add an available capacity LSU to a storage server, you cannot add additional LSUs to that same storage server.

Note: After you add an LSU that uses the **Available Capacity** option, you cannot change the LSU to use the **Specific Capacity** option. Instead, you must delete the LSU, then add a new LSU and choose the **Specific Capacity** option (see [Deleting an LSU](#) on page 175).

- **Specify Capacity** - Select this option to specify the physical capacity of the LSU, and then enter the following information.
 - **LSU Name** - Enter the name of the LSU.
 - **Physical Capacity** - Enter the physical capacity of the LSU (1 to 1048576 GB).

2 Click **Add**.

The LSU displays in the **LSUs Added** table.

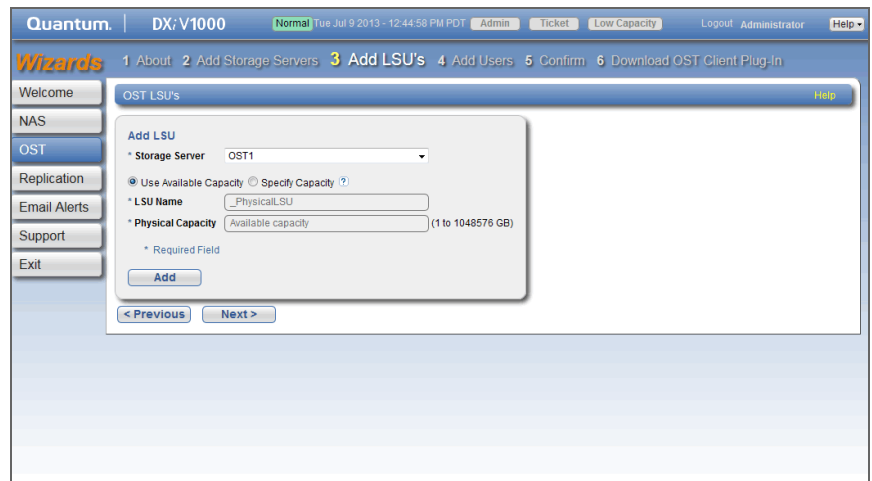
3 (Optional) To add additional LSUs, repeat Steps 1–2.

To remove an LSU, select it in the **LSUs Added** table and click **Delete**.

4 Click **Next** to continue.

Note: To configure the LSU for Automatic Image Replication, use the **Configuration > OST > LSU** page (see [LSU](#) on page 169).

Figure 17 OST Wizard: Add LSUs



Step 4: Add Users

1 Enter information about the authenticated user (see [Figure 18](#)):

- **Username** - Enter the name of the authenticated user.
- **Password** - Enter the password for the authenticated user.
- **Confirm Password** - Enter the password again to confirm it.
- **Description** - (Optional) Enter a brief description of the authenticated user.

2 Click **Apply**.

The user displays in the **Users Added** table.

- 3 (Optional) To add additional users, click **Add** and then repeat Steps 1–2.

To remove a user, select it in the **Users Added** table and click **Delete**.

- 4 Click **Next** to continue.

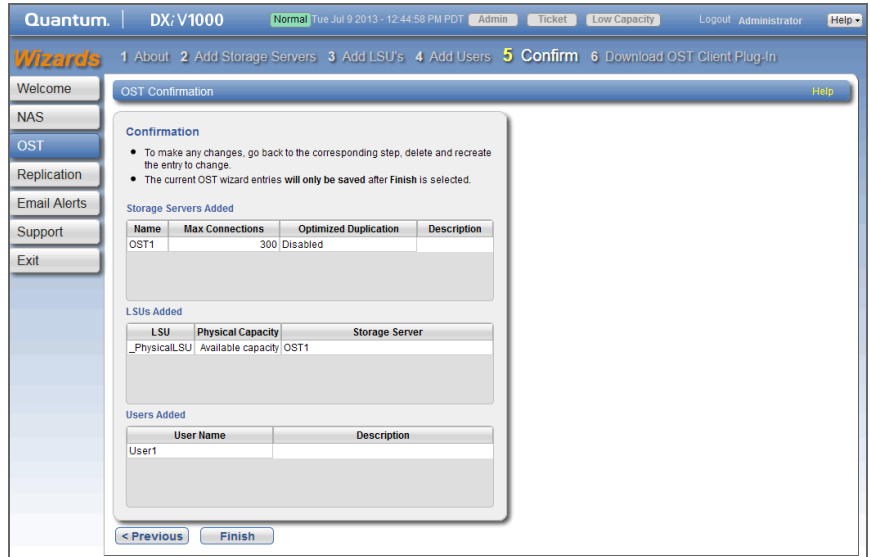
Figure 18 OST Wizard: Add Users

The screenshot shows the 'Add Users' step of the OST Wizard. The interface includes a navigation menu on the left with options: Welcome, NAS, OST, Replication, Email Alerts, Support, and Exit. The main content area is titled 'OST Users' and contains an 'Add User' form. The form has the following fields: Username (required), Password (required), Confirm Password (required), and Description. Below the form is an 'Apply' button. At the bottom of the form area are '< Previous' and 'Next >' buttons. The top of the page displays 'Quantum | DXi V1000' and a progress bar with steps: 1 About, 2 Add Storage Servers, 3 Add LSU's, 4 Add Users, 5 Confirm, 6 Download OST Client Plug-In.

Step 5: Confirm

- 1 Review the settings you selected to make sure they are correct (see [Figure 19](#)). The items to be added display in the **Storage Servers Added**, **LSUs Added**, and **Users Added** tables. If necessary, click **Previous** to return to a previous step to make changes.
- 2 To make changes to storage servers, LSUs, or users you added, click **Previous** to return to the appropriate step. Select the incorrect item and click **Delete** to remove it, and then add a new item.
- 3 After you have confirmed all settings, click **Finish**. The wizard configures the DXi V-Series with the settings you selected.

Figure 19 OST Wizard:
Confirm

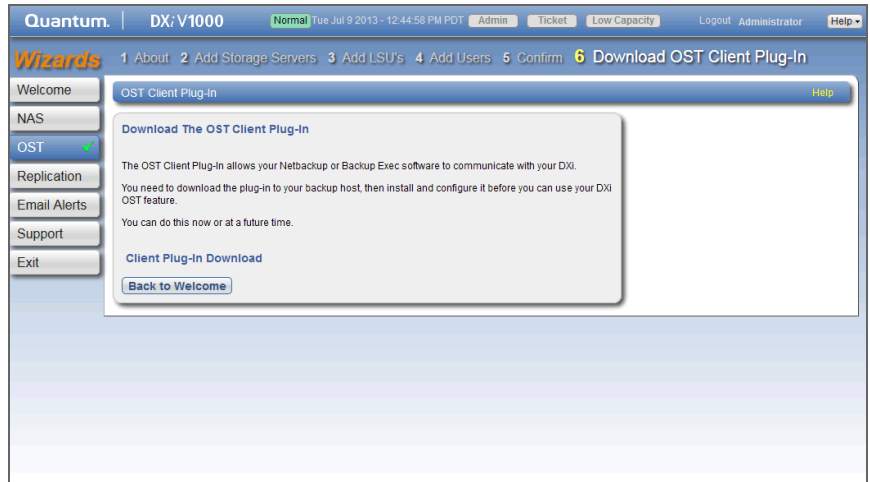


Step 6: Download OST Client Plug-In

To download the OST Plug-in, click **Client Plug-in Download** (see [Figure 20](#)). On the download page, download the correct OST Plug-in for your backup application and operating system.

Also on the download page, click **Installation Instructions**, to download the *OST Plug-in Installation Instructions*. Follow the instructions to install the OST Plug-in on your media server.

Figure 20 OST Wizard:
Download OST Client Plug-in



Replication Wizard

The **Replication** wizard provides guided assistance for configuring the DXi V-Series to send replicated data to another DXi system as part of disaster recovery plan. The wizard can also help you configure the DXi V-Series to receive replicated data from another DXi system.

Sources *send* replicated data, and targets *receive* replicated data. A target system can receive data from up to 10 sources. However, a source system can send data to only a single target. Finally, one system can act as both a source and a target.

Note: For more information about working with data replication, see [DXi V-Series Replication](#) on page 67.

Note: Use the **Replication** wizard (or the **Configuration > Replication** page) to configure other DXi systems that this DXi V-Series is configured to send replicated data to or receive replicated data from. You should configure a target system before configuring source systems.

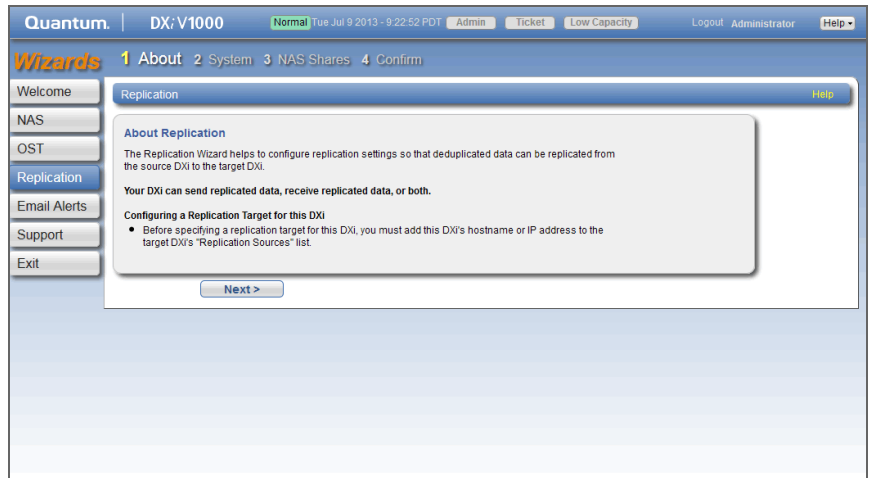
To begin the **Replication** wizard, on the **Wizards** menu, click **Replication**.

Step 1: About

- 1 Read the information about the wizard (see [Figure 21](#)).
- 2 Click **Next** to continue.

Note: At any time while using the wizard, you can click **Previous** to return to the previous step.

Figure 21 Replication Wizard:
About



Step 2: System

- 1 If data on this DXi V-Series will be replicated to another DXi system, enter target information under **Target DXIs** (see [Figure 22](#)). You can specify up to two targets:

Note: If two targets are already specified, you must delete a target before adding another. First click **Pause** to pause replication to the target, and then click **Delete** to remove the target.

- a In the **Target Hostname or IP Address** box, enter the hostname or IP address of the system that will receive the replicated data.

Note: When entering IP addresses, never use an address that is in a reserved IP address range. To see a list of reserved IP address ranges, click the quick tip icon [?] located near the IP address field.

Note: To use hostname format, you must specify at least one DNS IP address on the **Network** page (see [Network](#) on page 199).

- b** (Optional) Select the **Encrypt data before replication** check box to enable encryption when sending replication data to the target system. Or clear the **Encrypt data before replication** check box to disable encryption when sending replication data to the target system.

If encryption is enabled, select an encryption strength (**128-bit** or **256-bit**). Using 256-bit encryption (default) provides a stronger level of security but may have an impact on system performance in some situations.

Note: For best performance, if your data network is already secured, you should clear the **Encrypt data before replication** check box.

- c** In the **Source IP Address** field, enter the IP address that is used to uniquely identify the source DXi to the target. This may be different than the actual network IP address of the source DXi.

If the target system is at DXi 2.1 Software or higher, this field is not required. If the target system is at DXi 2.0.1.x Software or below, then you must enter the IP address by which the target system recognizes the source system. The default value is **0.0.0.0**.

- 2** If data on other DXi systems will be replicated to this DXi V-Series, enter the following information under **Source DXIs**:
- a** In the **Source Hostnames or IP Addresses** box, enter the hostname or IP address of the system that will send the replicated data to the DXi V-Series.

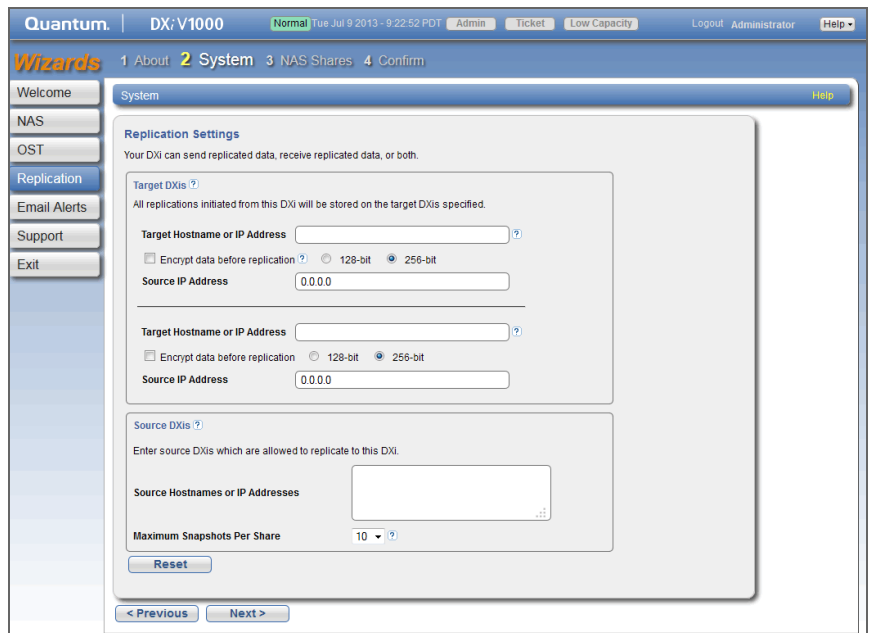
You can specify 1 replication source (DXi V1000 or DXi V2000).

- b In the **Maximum Snapshots Per Share** drop-down box, select the number of snapshots to retain for each replicated share (up to 32).

During scheduled or manual data replication, the DXi V-Series receives a snapshot from the source system. A snapshot contains all of the data necessary to fully recover or failback a NAS share to the point in time when the snapshot was saved.

- 3 Click **Next** to continue.

Figure 22 Replication Wizard: System



Step 3: NAS Shares

- 1 Select a NAS share in the **Replication Settings for NAS Shares** section to manage its replication settings (see [Figure 23](#)).

Note: For help adding NAS shares to the system, use the **NAS Configuration Wizard** (see [NAS Wizard](#) on page 24).

- 2 To configure the share to replicate its data to another DXi system, enter the following information under **Send**:

- a Select the **Enable replication for selected share** check box to enable replication for the share.
- b (Optional) Select the **Enable Directory/File based replication to target** check box to enable Directory/File Based Replication for the share, and then enter a **Sync ID** in the box.

With Directory/File Based Replication, a file is automatically replicated when it is closed or a period of time after it is modified. After replication, the replicated files are immediately available on the target system.

The Sync ID is used to identify the target share that will receive replicated data from the source share. The Sync ID *must* be identical to the Sync ID of the target share on the target system.

- c Select the check box for each replication target you want to replicate the share to. When the share is replicated, its data will be sent to all selected targets.
- 3 To configure the share to receive replicated data from another DXi system, enter the following information under **Receive**:

- a (Optional) Select the **Enable Directory/File based replication to this DXi** check box to enable Directory/File Based Replication for the share, and then enter a **Sync ID** in the box.

The Sync ID is used to identify the source share that will send replicated data to the target share. The Sync ID *must* be identical to the Sync ID of the source share on the source system.

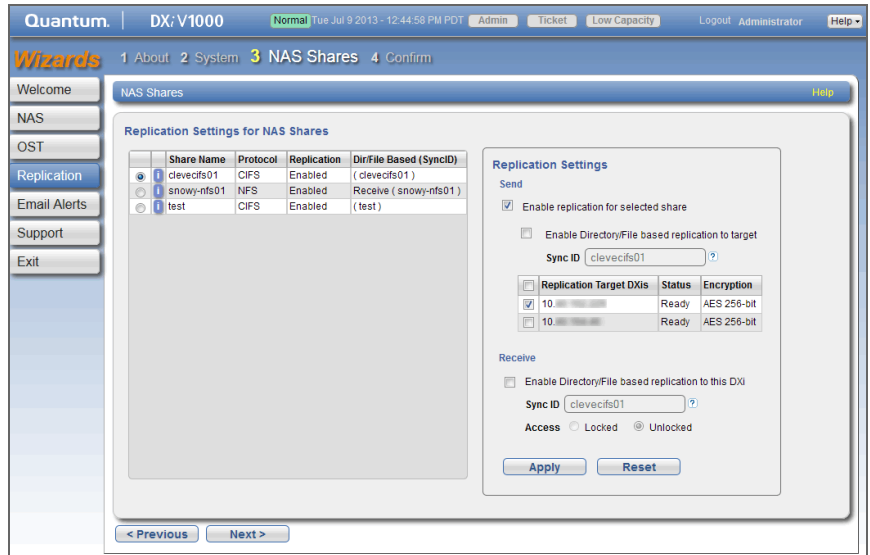
- b If you enabled Directory/File Based Replication, select an **Access** option:
 - **Locked** - The share is not allowed to receive new Directory/File Based Replication data.
 - **Unlocked** - The share is allowed to receive new Directory/File Based Replication data.

Note: You cannot configure a share to both send and receive Directory/File Based Replication data.

- 4 Click **Apply**.
- 5 (Optional) To configure additional shares for replication, repeat Steps 1–4.

6 Click **Next** to continue.

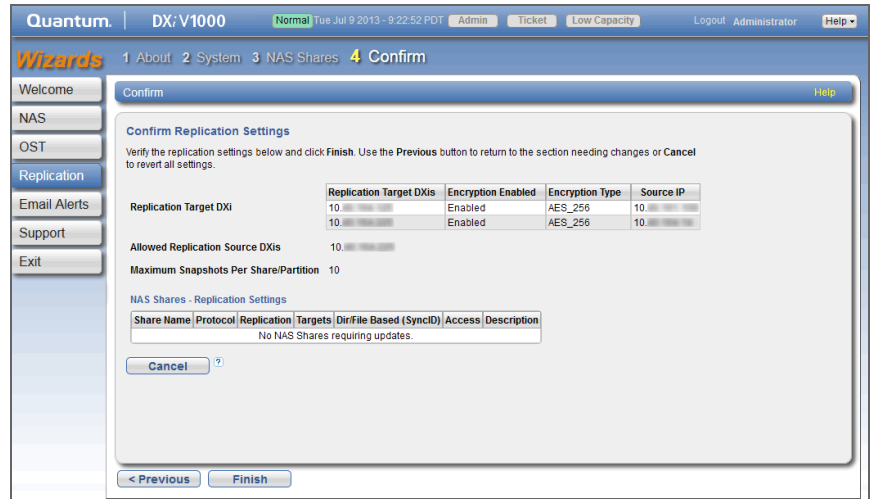
Figure 23 Replication Wizard:
NAS Shares



Step 4: Confirm

- 1 Review the settings you selected to make sure they are correct. If necessary, click **Previous** to return to a previous step to make changes (see [Figure 24](#)).
- 2 After you have confirmed all settings, click **Finish**. The wizard configures the DXi V-Series with the settings you selected.

Figure 24 Replication Wizard:
Confirm



Email Alerts Wizard

The **Email Alerts** wizard provides guided assistance for configuring the DXi V-Series to automatically send notifications and reports to selected recipients. The wizard helps you configure an outgoing e-mail server. Then the wizard guides you through the process of specifying e-mail recipients and selecting the notifications and reports to send to the recipients.

Note: For more information about sending e-mail alerts, see [Email](#) on page 227.

To begin the **Email Alerts** wizard, on the **Wizards** menu, click **Email Alerts**.

Step 1: About

- 1 Read the information about the wizard (see [Figure 25](#)).
- 2 Click **Next** to continue.

Note: At any time while using the wizard, you can click **Previous** to return to the previous step.

Figure 25 Email Alerts Wizard:
About



Step 2: Server

- 1 In the **Hostname or IP Address** box, enter the hostname or IP address of the outgoing e-mail server (see [Figure 26](#)).

Note: When entering IP addresses, never use an address that is in a reserved IP address range. To see a list of reserved IP address ranges, click the quick tip icon [?] located near the IP address field.

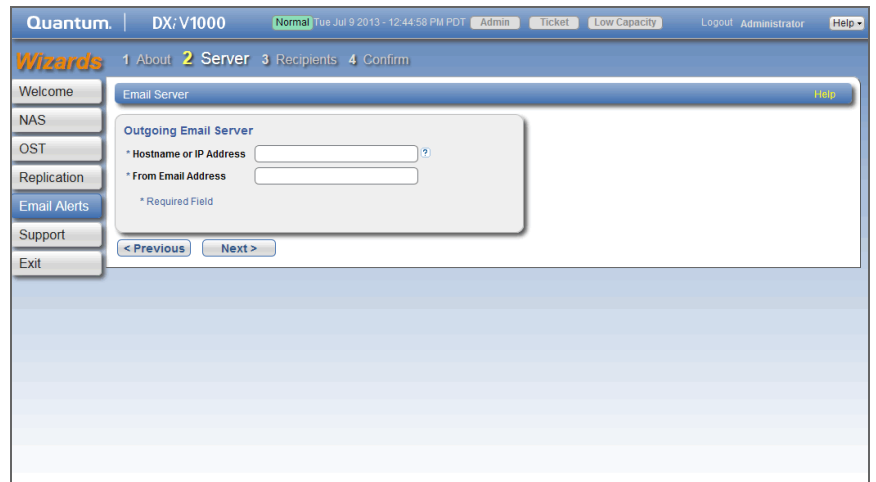
Note: To use hostname format, you must specify at least one DNS IP address on the **Network** page (see [Network](#) on page 199).

- 2 In the **From Email Address** box, enter the return e-mail address displayed in e-mails sent by the DXi V-Series.

Specify a return address that lets you easily identify the system that generated the e-mail (for example, systemname@any-domain.com). The return address must contain an @ symbol and a valid domain name, including a period.

3 Click **Next** to continue.

Figure 26 Email Alerts Wizard: Server



Step 3: Recipients

1 Under **Add Email Recipient**, enter information about the recipient (see [Figure 27](#)):

- **Name** - The name of the recipient.
- **Email Address** - The e-mail address of the recipient.
- **Notification Type** - Select the types of notifications to send to the recipient:
 - **High** - Send e-mail notifications for High service tickets.
High service tickets indicate that a critical problem has occurred and needs to be resolved immediately. The operation and performance of the DXi V-Series are degraded, and there is a risk of system failure or data loss.
 - **High and Medium** - Send e-mail notifications for High and Medium service tickets.
Medium service tickets indicate that a serious problem occurred and needs to be resolved, but it does not necessarily need to be fixed immediately. The operation and performance of the DXi V-Series may be degraded.

- **All** - Send e-mail notifications for High, Middle, and Low service tickets, as well as any administration alerts.

Low service tickets indicate that a minor problem occurred and needs to be resolved, but the operation and performance of the DXi V-Series are not significantly affected.

- 2 Select the **Notification Enabled** check box to enable sending of notifications to the recipient.
- 3 Click **Add**.
- 4 (Optional) To add additional recipients, repeat Steps 1–3
- 5 Click **Next** to continue.

Figure 27 Email Alerts Wizard:
Recipients

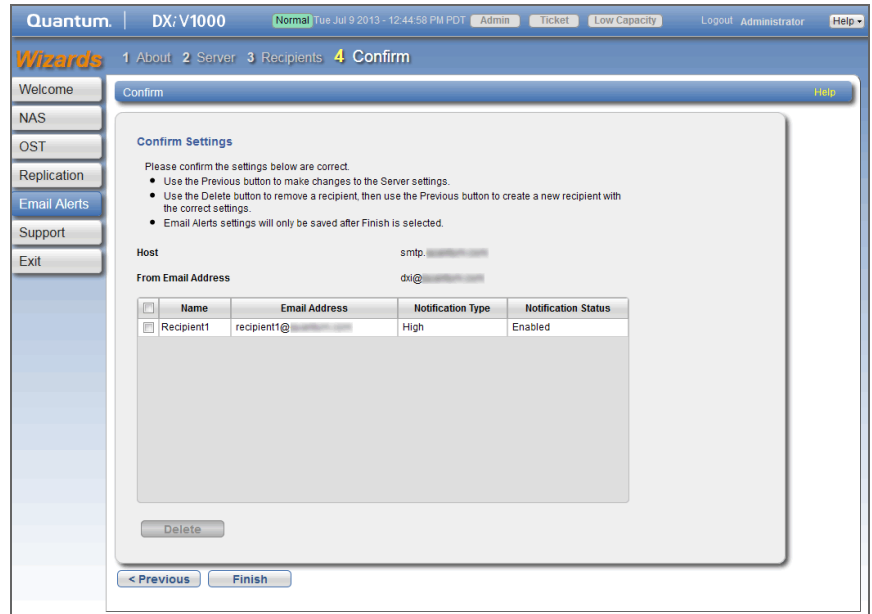
The screenshot displays the 'Add Email Alert Recipients' step of the wizard. The breadcrumb trail at the top indicates the current step is '3 Recipients'. The form contains the following elements:

- Total Recipients:** 1
- * Name:** Text input field
- * Email Address:** Text input field
- Notification Type:** Dropdown menu set to 'High'
- Notification Enabled:** Checked checkbox
- * Required Field:** Label for the Name and Email Address fields
- Buttons:** 'Add', 'Reset', '< Previous', and 'Next >'

Step 4: Confirm

- 1 Review the settings you selected to make sure they are correct. If necessary, click **Previous** to return to a previous step to make changes (see [Figure 28](#)).
- 2 To make changes to an e-mail recipient you added, first select the recipient and click **Delete** to delete the recipient. Then click **Previous** to return to the previous step and add a new recipient.
- 3 After you have confirmed all settings, click **Finish**. The wizard configures the DXi V-Series with the settings you selected.

Figure 28 Email Alerts Wizard:
Confirm



Support Wizard

The **Support** wizard provides guided assistance to help you enable licensed features on the DXi V-Series and register your system with Quantum. The wizard also guides you through other tasks that will aid Quantum customer support in assisting you, such as creating a system log.

To begin the **Support** wizard, on the **Wizards** menu, click **Support**.

Step 1: About

- 1 Read the information about the wizard (see [Figure 29](#)).
- 2 Click **Next** to continue.

Note: At any time while using the wizard, you can click **Previous** to return to the previous step.

Figure 29 Support Wizard:
About



Step 2: Registration

You must register your DXi V-Series to receive service and support from Quantum.

Note: Registration is for Enterprise Edition users only.

- 1 Click the link for [Quantum's Product Registration](#) site (see [Figure 30](#)).
- 2 Follow the onscreen instructions to register your system.
- 3 When you are finished, switch back to the **Support** wizard.
- 4 Click **Next** to continue.

Figure 30 Support Wizard:
Registration



Step 3: System Log

This system diagnostics file contains the diagnostic logs for all of the system components. The diagnostic files are helpful when troubleshooting problems on the DXi V-Series. You should generate a system diagnostic file after setting up your DXi V-Series and save it for future reference.

- 1 Click **Generate New** to generate a new system diagnostics file (see [Figure 31](#)).

The system generates a new diagnostics file. This can take several minutes.

- 2 After the file finishes generating, click the link to enable the **Download Current** button.
- 3 To download the generated diagnostics file, click **Download Current**.

A dialog box displays asking if you want to open or save the file.

- 4 Click **Save** or **OK** to download the file.
- 5 Click **Next** to continue.

Figure 31 Support Wizard:
System Log



Step 4: Licensed Features

Add a license key to enable new functionality on the DXi V-Series, for example, to add capacity or extend a Time-Based license.

Contact your Quantum sales representative to purchase a license. You will receive a License Certificate with instructions for obtaining and installing the license key.

Note: For more information about licensed features, see [License Keys](#) on page 266.

There are three methods for adding a license key:

- (Recommended) [Automatically Retrieving a License Key](#)
- [Uploading a License Key File](#)
- [Entering a License Key](#)

Automatically Retrieving a License Key

The DXi V-Series automatically checks the license server each day to make sure the appropriate licenses are installed, based on your product serial number. If you have purchased a license but the DXi V-Series has not yet automatically retrieved the license, you can follow the procedure below to prompt the system to check for the new license and install it.

To automatically retrieve a license key from the license server:

- 1 On the **License Keys** page, select the **Retrieve License Key from the server** option.
- 2 Click **Apply**.

The DXi V-Series automatically retrieves and installs the appropriate licenses based on the product serial number.

Note: To automatically retrieve license keys, the DXi V-Series must have access to the Internet. In addition, firewall port 443 (HTTPS) must be open on the network.

- 3 Click **Finish** to complete the **Support** wizard.

Uploading a License Key File

Use this method to install a license if Internet access via HTTPS (port 443) is not available and you have a **license.crt** file.

To manually upload a license key file:

- 1 Follow the instructions on the License Certificate you received to obtain the license key file.
- 2 On the **License Keys** page, select the **Upload License Key** option.
- 3 Click **Browse** to browse the system and locate the license key file. The license key file must be named **license.crt**.
- 4 Click **Apply**.
The license key is installed on the system.
- 5 Click **Finish** to complete the **Support** wizard.

Entering a License Key

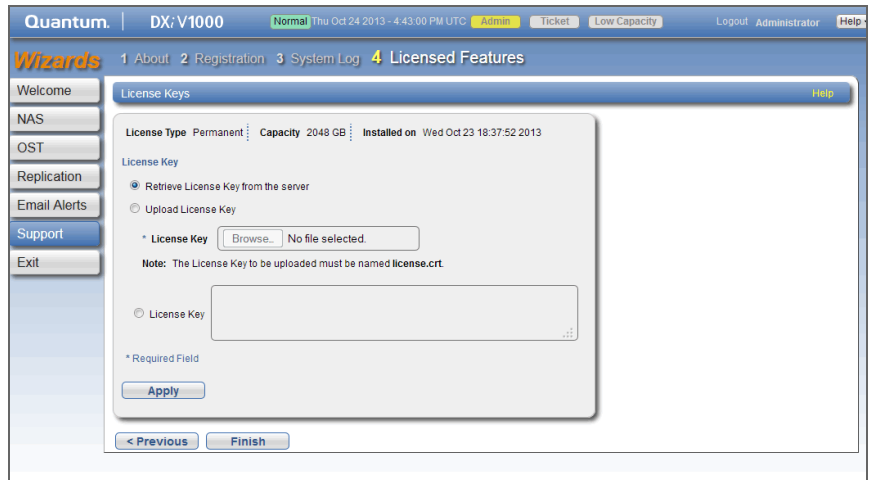
Use this method to install a license if Internet access via HTTPS (port 443) is not available and you have a license key.

To manually enter a license key:

- 1 Follow the instructions on the License Certificate you received to obtain the license key.
- 2 On the **License Keys** page, select the **License Key** option.

- 3 Copy the license key and then paste it into the **License Key** box.
- 4 Click **Apply**.
The license key is installed on the system.
- 5 Click **Finish** to complete the **Support** wizard.

Figure 32 Support Wizard:
Licensed Features





Chapter 4

DXi V-Series Home Page

The first page that displays after you log on to the DXi V-Series remote management console is the **Home** page (see [Figure 33](#)). Use the **Home** page to see important performance information at a glance, including disk usage, data reduction statistics, and replication activity.

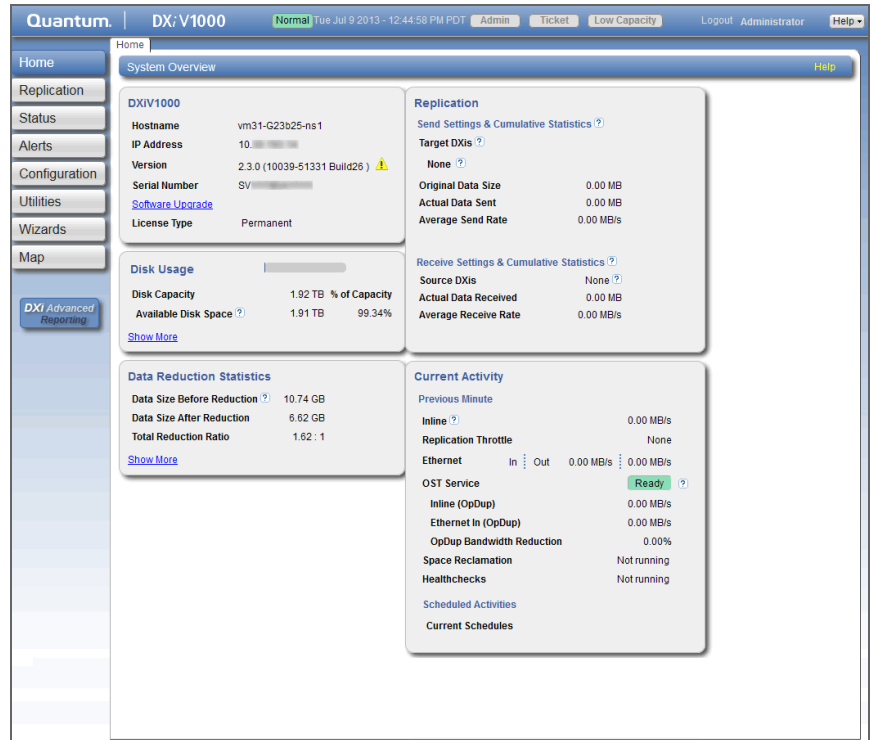
To return to the **Home** page at any time, click **Home** on the main menu.

The **Home** page contains the following overviews:

- [DXi V-Series System Overview](#)
- [Disk Usage Overview](#)
- [Data Reduction Statistics Overview](#)
- [Replication Overview](#)
- [Current Activity Overview](#)

Note: Disk usage statistics, data reduction statistics, replication statistics, and current activity are updated every 30 seconds.

Figure 33 Home Page



DXi V-Series System Overview

The DXi V-Series System Overview on the Home page (see [Figure 34](#)) displays the following information about the system:

- **Hostname** - The hostname of the DXi V-Series. Click to change the hostname (see [Network](#) on page 199).
- **IP Address** - The IP address of the DXi V-Series. Click to change the IP address (see [Network](#) on page 199).
- **Version** - The software version installed on the DXi V-Series. A Quick Tip icon indicates if a software upgrade is available for the DXi V-Series. Click to upgrade the software (see [Software Upgrades](#) on page 272).

- **Serial Number** - The serial number of the DXi V-Series. (You need to know the serial number to add a licensed feature. For more information, see [License Keys](#) on page 266.)
- **Software Upgrade** - Click to displays the **Software Upgrade Utility** (see [Software Upgrades](#) on page 272).
- **License Type** - The type of license currently installed on the DXi V-Series (**Permanent**, **Subscription**, or **Time-Based**). (To view or add licenses, see [License Keys](#) on page 266).

Figure 34 DXi V-Series System Overview



DXiV1000	
Hostname	vm31-G23b25-ns1
IP Address	10. [REDACTED]
Version	2.3.0 (10039-51331 Build26) 
Serial Number	SV [REDACTED]
Software Upgrade	
License Type	Permanent

Disk Usage Overview

The **Disk Usage** overview on the **Home** page (see [Figure 35](#)) displays the following information about disk usage as an amount and as a percentage of the total capacity in the system:

- **Disk Capacity** - The total usable disk capacity of the DXi V-Series.
- **Available Disk Space** - The disk space available for data storage (free space).

On the disk space meter, blue (left side of meter) indicates used disk space and gray (right side of meter) indicates available disk space. The left side of the meter changes color based on the amount of remaining free disk space and the state of the DXi V-Series. For more information, see [Low Space Management](#) on page 17.

Note: When disk space is low, click the **Quick Warning** icon [!] next to the space meter to see more information.

Note: When disk space is low, target replication to the system is paused (see [Replication Service](#) on page 99). In addition, space reclamation is automatically started to free up disk space (see [Space Reclamation](#) on page 262).

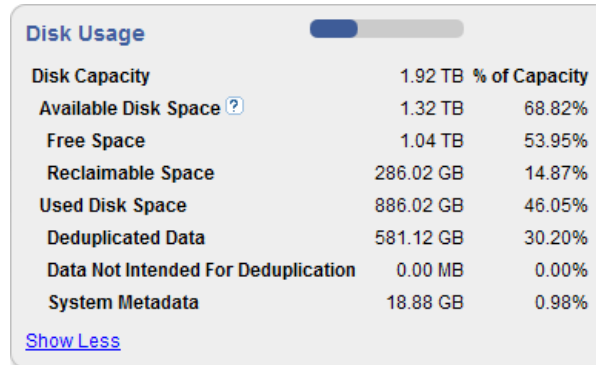
Note: For optimal system performance, Quantum recommends keeping the amount of **Available Disk Space** (free space) at 20% or more.

Click **Show More** to display additional information:

- **Free Space** - The disk space that can be used for new deduplicated or non-deduplicated data.
- **Reclaimable Space** - The disk space that is occupied by outdated deduplicated data and which will be automatically reused if additional space for new deduplicated data is needed.
- **Used Disk Space** - The disk space that already holds data, including deduplicated data, system metadata, and data not intended for deduplication.
- **Deduplicated Data** - The amount of data that has been deduplicated.
- **Data Not Intended for Deduplication** - The amount of data on shares that do not have deduplication enabled.
- **System Metadata** - The amount of disk space used for internal operations of the DXi, including system configuration files as well as temporary files created during replication, space reclamation, and healthchecks.

Click an item to view detailed statistics for disk usage (see [Disk Usage](#) on page 107).

Figure 35 Disk Usage Overview



Data Reduction Statistics Overview

The **Data Reduction Statistics** overview on the **Home** page (see [Figure 36](#)) displays the following information about the results of data reduction:

- **Data Size Before Reduction** - The original, native size of all data that has been processed by the data deduplication and compression engines.
- **Data Size After Reduction** - The final, reduced size of all data that has been processed by the data deduplication and compression engines.
- **Total Reduction Ratio** - The total reduction ratio of all data that has been processed by the data deduplication and compression engines (**Data Size Before Reduction** divided by **Data Size After Reduction**).

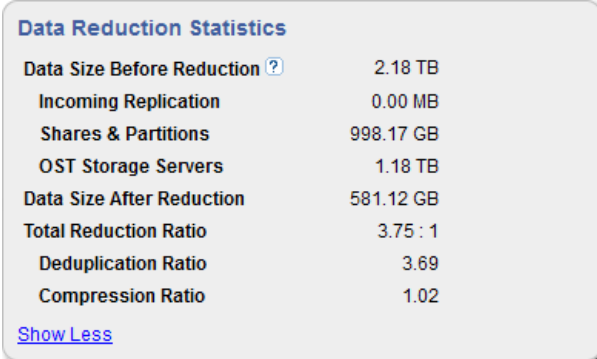
Click **Show More** to display additional information:

- **Incoming Replication** - The amount of data stored on the DXi via replication from another DXi. This does *not* include incoming data from Directory/File Based Replication, or incoming data from Failback replication.

- **Shares** - The amount of data stored on the DXi via local I/O. This includes incoming data from Directory/File Based Replication, and incoming data from Failback replication.
- **OST Storage Servers** - The amount of data stored in deduplicated OpenStorage (OST) storage servers. This includes incoming data for OST and DXi Accent.
- **Deduplication Ratio** - The deduplication ratio of all data that has been processed by the data deduplication engine.
- **Compression Ratio** - The compression ratio of all data that has been processed by the compression engine.

Click an item to view detailed statistics for disk usage (see [Disk Usage](#) on page 107).

Figure 36 Data Reduction
Statistics Overview



Data Reduction Statistics	
Data Size Before Reduction ?	2.18 TB
Incoming Replication	0.00 MB
Shares & Partitions	998.17 GB
OST Storage Servers	1.18 TB
Data Size After Reduction	581.12 GB
Total Reduction Ratio	3.75 : 1
Deduplication Ratio	3.69
Compression Ratio	1.02

[Show Less](#)

Replication Overview

The **Replication** overview on the **Home** page (see [Figure 37](#)) displays the following information about target and source replication activity:

- [Send Settings & Cumulative Statistics](#)
- [Receive Settings & Cumulative Statistics](#)

Send Settings & Cumulative Statistics

The **Send Settings & Cumulative Statistics** section displays statistics for all data sent from the system since system installation or since **Send** cumulative replication statistics were last cleared by clicking **Clear Send** on the **Replication Actions** page (see [Replication Performance](#) on page 101).

- **Target DXis** - The IP address and replication status for each configured replication target (up to two). Click to specify a replication target (see [Replication Configuration](#) on page 145).
 - **Ready** - (Green) The system is ready to perform replication.
 - **In Progress** - (Blue) A replication job is currently in progress.
 - **Queued** - (Blue) A replication job is queued and will continue when the system is ready.
 - **Manually Paused** - (Yellow) Replication was manually paused. To resume replication, click **Resume**.
 - **System Paused** - (Yellow) The system has automatically paused replication due to a problem, for example, low disk space or a problem on the target system.

To see more information about the problem that occurred, click **Admin** at the top of the remote management console to view administration alerts (see [Admin Alerts](#) on page 115). You may also need to view alerts on the target DXi. In addition, make sure that the DXi is an allowed replication source on the target DXi (see [Replication Configuration](#) on page 145).
 - **Failed** - (Red) A replication job was not completed.
 - **Internal Error** - (Red) An error occurred during replication.
- **Pause/Resume** - The source DXi controls the replication pause behavior. To manually pause replication between the source and target, click **Pause** on the source DXi. To manually restart replication, click **Resume** on the source DXi.

Note: When the target DXi enters low disk space condition, replication on the source DXi is automatically paused. Replication will resume when the target leaves low disk space condition.

- **Original Data Size** - The original, native size of data sent during replication or failback. This value does not represent the amount of

data actually sent over the network during replication or failback because data is deduplicated and compressed before being sent.

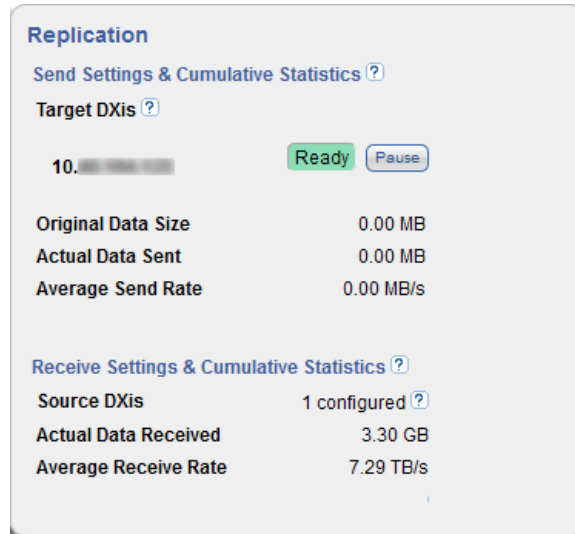
- **Actual Data Sent** - The amount of data actually sent over the network during replication or failback. This value is usually much less than the **Original Data Size** due to the benefits of data deduplication and compression.
- **Average Send Rate** - The average send rate (in MB/s) of data sent over the network during replication or failback (**Actual Data Sent** divided by the amount of time required to complete replication or failback).

Receive Settings & Cumulative Statistics

The **Receive Settings & Cumulative Statistics** section displays statistics for all data received by the system from all sources since system installation or since **Receive** cumulative replication statistics were last cleared by clicking **Clear Receive** on the **Replication Actions** page (see [Replication Performance](#) on page 101).

- **Source DXIs** - The number of source systems configured to replicate data to the DXi V-Series. Click to specify replication sources (see [Replication Configuration](#) on page 145).
- **Actual Data Received** - The amount of data actually received over the network during replication or failback.
- **Average Receive Rate** - The average receive rate (in MB/s) of data received over the network during replication or failback (**Actual Data Received** divided by the amount of time required to complete replication or failback).

Figure 37 Replication Overview



Current Activity Overview

The **Current Activity** overview on the **Home** page (see [Figure 38](#)) displays the following information about system activity that occurred in the previous minute:

- **Inline** - The inline data flow throughput (in MB/s). Inline data flow includes deduplicated and non-deduplicated backup data as well as received OST data. Click to view detailed statistics for inline performance (see [Inline](#) on page 104).
- **Replication Throttle** - The system replication throttle currently in effect (in KB/s or MB/s). When a constant throttle is enabled, the DXi limits the amount of data it sends during source replication so that it does not exceed the specified bandwidth. Click to enable or disable system throttling (see [Replication Configuration](#) on page 145).
- **Ethernet** - The amount of data received (**In**) and sent (**Out**) by all Ethernet ports (in MB/s). Click to view details statistics for Ethernet performance (see [Ethernet](#) on page 105).

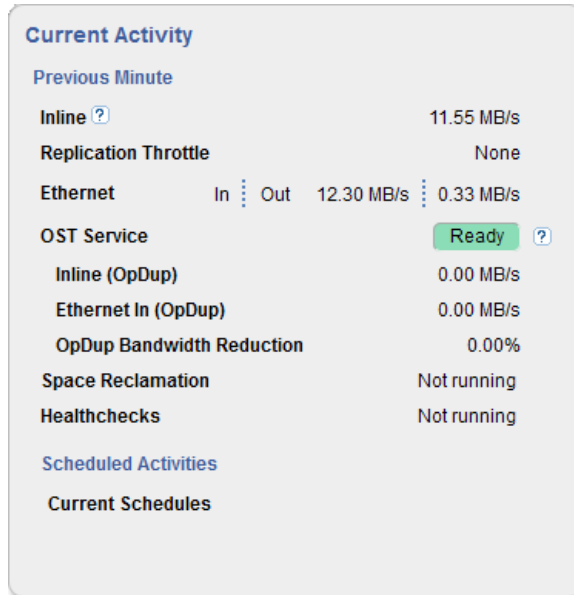
- **OST Service** - The status of the OST service. OST settings can be configured in **Ready**, **Stopped**, or **Verifying** state. The OST server is available for backup only in **Ready** state.
 - **Inline (OpDup)** - The inline data flow throughput (in MB/s). Inline data flow represents the original, native size of the data protected by the DXi.
 - **Ethernet In (OpDup)** - The amount of data received by all Ethernet ports (in MB/s). This amount represents the reduced size of the data protected by the DXi (after deduplication and compression on the media servers).
 - **OpDup Bandwidth Reduction** - The percentage by which network bandwidth utilization was reduced by using Optimized Duplication.
 - **Inline (Accent)** - The inline data flow throughput (in MB/s). Inline data flow represents the original, native size of the data protected by the DXi.
 - **Ethernet In (Accent)** - The amount of data received by all Ethernet ports (in MB/s). This amount represents the reduced size of the data protected by the DXi (after deduplication and compression on the media servers).
 - **Accent Bandwidth Reduction** - The percentage by which network bandwidth utilization was reduced by enabling Accent.
- **Space Reclamation** - The status of space reclamation (**Not running** or **Percent complete**). Click to start or stop space reclamation (see [Space Reclamation](#) on page 262).
- **Healthchecks** - The status of healthchecks (**Not running** or **Percent complete**). Click to start or stop space healthchecks (see [Healthchecks](#) on page 255).

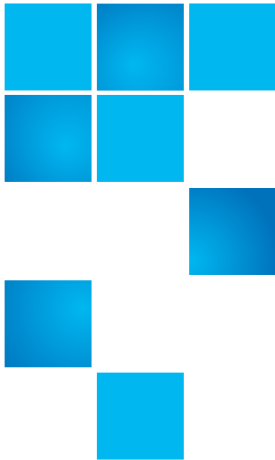
To view or modify scheduled system activity, click **Current Schedules** (see [Scheduler](#) on page 188).

Note: For more detailed information about all system activity, see [DXi V-Series Status](#) on page 103.

Note: DXi Accent activity displays only if DXi Accent is currently enabled or was previously enabled (see [DXi Accent](#) on page 185).

Figure 38 Current Activity Overview





Chapter 5

DXi V-Series Replication

The DXi V-Series provides data replication capabilities that you can use as an integral part of a disaster recovery plan. Replication allows you to configure the DXi V-Series to create a copy of your data on another DXi system at scheduled intervals (or manually as needed).

In the event of a disaster in which the original data is lost, you can quickly recover the replicated data on the remote system, allowing your business to resume normal operations. Once the original system is available again, you can restore all data back to its original location.

Note: Quantum recommends that you configure and start replication before storing large amounts of data on the DXi V-Series.

Note: A DXi V-Series can replicate data to, or receive replicated data from, a DXi system running DXi 2.x software. Replication to or from a DXi system running version 1.x software is not supported.

See the following sections for more information about the data replication capabilities of the DXi V-Series:

- [Understanding Data Replication](#)
- [Performing Data Replication](#)

Note: To schedule replication for a share, use the **Configuration > Scheduler** page (see [Scheduling a Share for Replication](#) on page 193). To limit the amount of network bandwidth used for replication, enable a constant throttle (see [Enabling System Throttling](#) on page 152), or schedule replication throttling (see [Scheduling Replication Throttling](#) on page 194).

Understanding Data Replication

During data replication, data is sent from one system (the source) to another system, usually in another location (the target). For example, you might replicate data from a branch office (the source) to a central office (the target).

Sources *send* replicated data, and targets *receive* replicated data. A target system can receive data from one source (DXi V1000 or V2000). A source system can send data to one target (V1000 or V2000) or up to two targets (V4000).

Replication works only with deduplicated data, and data is compressed before it is replicated. Because of this, the amount of data transmitted between systems during replication is greatly reduced compared to the original amount of data stored. In addition, a data block is transmitted only if the target does not already have a copy of the block. Finally, data can optionally be encrypted before it is transmitted.

The DXi V-Series can perform the following types of replication:

- [Replication](#)
- [Directory/File Based Replication](#)
- [OST Optimized Duplication](#)
- [Multiple Target Replication](#)

Replication

Replication occurs when replication is enabled for a deduplicated NAS share and a replication schedule is configured (or manual replication is performed on a regular basis). For replication to occur, the source

system must be configured to point to the target system. Similarly, the target system must be configured to accept data from the source system.

To optimize the replication process, deduplicated data is continuously sent in the background from the source system to the target system. However, a snapshot that preserves the file structure of your data is sent to the target system only when a scheduled or manual replication job occurs. A snapshot contains all of the information that is necessary to recreate a share just as it was at the point in time when the snapshot was created.

Caution: A saved snapshot is necessary to recover your data at a later time. For this reason, it is not enough to simply enable replication for a share. You must also configure a replication schedule (recommended) or perform manual replication on a regular basis to send snapshots of the share to the target system.

If the source system ever becomes unavailable, you can recover the share on the target system using a saved snapshot. After you recover a share, it is recreated on the target system and is available for use. Once the source system becomes available again, you can perform a failback operation to restore the share to its original location.

Directory/File Based Replication

Like replication, Directory/File Based Replication sends data from a NAS share to another system where it can be accessed. However, Directory/File Based Replication differs in a number of important ways:

- Both replication and Directory/File Based Replication must be enabled for the share.
- A unique Sync ID is used to associate the replicated share on the source system with the share that will receive the replicated data on the target system.
- You do not need to schedule or manually perform Directory/File Based Replication through the remote management console. Instead, replication is triggered when a file is closed or a period of time after it is modified (NAS shares).

Note: For CIFS shares, a file is replicated immediately after it is closed. For NFS shares, a file is replicated after it has been idle (not accessed) for several minutes.

Note: To optimize the replication process, deduplicated data is continuously sent in the background from the source system to the target system. Any remaining data is sent (along with metadata) at the time a file is closed.

- After files are replicated using Directory/File Based Replication, they are automatically recovered on the target system and are immediately available for use. There is no need to first recover the share to access its data.
- Deletions are automatically propagated from the source system to the target system in order to free up space on the target. In addition, you can manually initiate a synchronization from the source system at any time. Synchronizing ensures that the contents of the source share are exactly the same as the target share.

Note: If you delete a share configured for Directory/File Based Replication on the source DXi, the share is *not* automatically deleted on the target DXi. If you do not want to retain the share on the target DXi, you can manually delete it.

OST Optimized Duplication

The DXi V-Series can duplicate the data on an LSU (logical storage unit) to another location using the OST optimized duplication (OST replication) feature supported by Symantec NetBackup and Backup Exec. If you are using Symantec NetBackup 7.1 or higher, you can configure an LSU for Automatic Image Replication.

For information about configuring and using OST optimized duplication and Automatic Image Replication, see [Replicating OST Data](#) on page 157.

Multiple Target Replication

The DXi V-Series can send replicated data to multiple target systems. First, configure up to two replication targets (see [Adding a Replication Target](#) on page 148). Then, for each share, select which targets to

replicate data to—one, both, or neither (see [Enabling Replication For a Share](#) on page 79).

Below are two possible scenarios in which multiple replication targets are configured.

All Shares Replicate to Multiple Targets

For enhanced disaster recovery, all shares on the DXi V-Series are configured to replicate to multiple targets. In this scenario, even if one target system is lost, the other target system still retains a full copy of all data on the source DXi V-Series.

Some Shares Replicate to Multiple Targets

For increased flexibility, each share on the DXi V-Series is configured to replicate only to the targets where needed. In this scenario, shares fall into three categories:

- Some shares replicate to Target 1. (They may also replicate to Target 2.)
- Some shares replicate to Target 2. (They may also replicate to Target 1.)
- Some shares are not replicated.

Performing Data Replication

The **Replication** page allows you to set up replication for NAS shares and to replicate and recover data.

To access the **Replication** page, click the **Replication** menu.

The **Replication** page contains the following tabs:

- [Replication Send](#)
- [Receive NAS](#)
- [Actions](#)
- [Reports](#)

Use the DXi V-Series data replication features to perform the following tasks:

- Replicate all data on a share to another system where it can be recovered at a later time (see [Task Overview: Setting Up and Performing Replication](#) on page 72).
- Automatically replicate files to another system where they are immediately available (see [Task Overview: Setting Up and Performing Directory/File Based Replication](#) on page 73).
- Recover data from a lost or damaged share (see [Task Overview: Recovering a Replicated Share](#) on page 74).
- Restore a lost or damaged share back to its original location (see [Task Overview: Performing a Share Failback](#) on page 75).

Note: The **Replication** wizard provides guided assistance for configuring data replication (see [DXi V-Series Configuration Wizards](#) on page 23).

Task Overview: Setting Up and Performing Replication

To replicate all data on a NAS share from a source system to a target system:

- 1 On the target system, add the source system to the list of allowed replication sources (see [Adding a Replication Source](#) on page 154).
- 2 On the source system, specify the target system that will receive replicated data (see [Adding a Replication Target](#) on page 148).
- 3 On the source system, create a new share with deduplication enabled (see [Adding a NAS Share](#) on page 131).
- 4 Enable replication for the new share (see [Enabling Replication For a Share](#) on page 79).
- 5 Before writing any data to the new share, replicate the new share (see [Replicating a Share](#) on page 82).

Quantum recommends that you always replicate a new share immediately after creating it. This establishes the initial data structure on the target system and greatly increases the speed of the first replication.

- 6 Choose one of the following methods to regularly replicate the new share:

- (Recommended) Use the **Scheduler** page to set up a schedule for performing replication automatically after backups complete (see [Scheduling a Share for Replication](#) on page 193).
- Manually perform replication at frequent intervals (see [Replicating a Share](#) on page 82).

After replication, a snapshot is sent to the target system. You can use the snapshot to recover the replicated share on the target system (see [Task Overview: Recovering a Replicated Share](#) on page 74) or restore the share to its original location on the source system (see [Task Overview: Performing a Share Failback](#) on page 75).

Caution: If you do not configure a replication schedule or manually replicate the share on a regular basis, your data is *not* protected. While the DXi V-Series continually sends data to the target system in the background to optimize the replication process, a snapshot that preserves the complete structure of your data is sent to the target system *only* when a scheduled or manual replication job occurs. If you do not regularly and frequently replicate your data as described in [Step 6](#) above, it cannot be restored at a later time.

Note: To limit the amount of network bandwidth used for replication, enable a constant throttle (see [Enabling System Throttling](#) on page 152), or schedule replication throttling (see [Scheduling Replication Throttling](#) on page 194).

Task Overview: Setting Up and Performing Directory/File Based Replication

To automatically replicate files from a source system and immediately recover them for use on a target system:

- 1 Perform the following steps on the target system:
 - a Add the source system to the list of allowed replication sources (see [Adding a Replication Source](#) on page 154).
 - b Create a new share with deduplication enabled (see [Adding a NAS Share](#) on page 131).
 - c Enable Directory/File Based Replication for the new share and specify the Sync ID (see [Configuring a Target Share for Directory/File Based Replication](#) on page 96).

- 2 Perform the following steps on the source system:
 - a Specify the target system that will receive replicated data (see [Adding a Replication Target](#) on page 148).
 - b Create a new share with deduplication enabled (see [Adding a NAS Share](#) on page 131).
 - c Enable Directory/File Based Replication for the new share and specify the Sync ID (see [Configuring Directory/File Based Replication](#) on page 80)

A file is automatically replicated when it is closed or a period of time after it is modified. After replication, the replicated files are immediately available on the target system. There is no need to recover the share to make the files available.

Note: To limit the amount of network bandwidth used for replication, enable a constant throttle (see [Enabling System Throttling](#) on page 152), or schedule replication throttling (see [Scheduling Replication Throttling](#) on page 194).

Task Overview: Recovering a Replicated Share

If a NAS share is lost or damaged on the source system, you can recover it on the target system using a received snapshot. When you recover a share, it is recreated on the target system just as it was at the point in time when the snapshot was saved.

To recover a replicated share:

- 1 On the target system, select a received snapshot and perform a recover operation (see [Recovering a Share](#) on page 88).
The share is now available on the target system.
- 2 (Optional) Map your backup application to the recovered share on the target system to continue making backups.
- 3 When the source system is operating correctly again, choose one of the following actions:
 - Failback the share to restore it on the original source system (see [Task Overview: Performing a Share Failback](#) on page 75). Then, if necessary, map your backup application to the restored share on the original source system.

- Continue to make backups to the recovered share on the original target system. In addition, set up replication to replicate the share back to the original source system (see [Task Overview: Setting Up and Performing Replication](#) on page 72). In this scenario, the original source system is now the target, and the original target system is now the source.

Task Overview: Performing a Share Failback

If a NAS share is lost or damaged on the source system, you can failback the share to the source system using a received snapshot on the target system. When you failback a share, it is restored on the source system just as it was at the point in time when the snapshot was saved.

To perform a share failback:

- 1 On the original source system, add the original target system to the list of allowed replication sources (see [Adding a Replication Source](#) on page 154).

Note: For the purposes of failback, the original source system is now acting as a target because it will receive the snapshot from the original target system.

- 2 On the original target system, select a received snapshot and perform a failback operation pointing to the original source system, and then recover the share on the original source system (see [Performing a Failback For a Share](#) on page 89).

The share is now available on the original source system.

- 3 (Optional) If necessary, map your backup application to the restored share on the original source system.

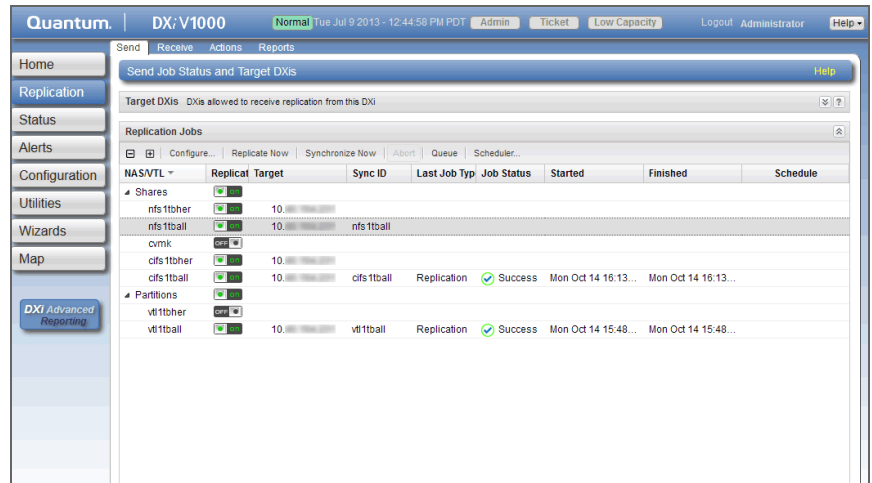
Replication Send

The **Replication Send** page allows you to manage outgoing replication activity for NAS shares. You can replicate shares on the DXi V-Series (the source) to other DXi systems (the targets). You can also schedule replication, and view the status of current and recent replication jobs.

Note: Before you can replicate shares, you must specify a replication target (see [Adding a Replication Target](#) on page 148).

To access the **Replication Send** page, click the **Replication** menu, and then click the **Send** tab (see [Figure 39](#)).

Figure 39 Replication Send Page



Use the **Replication Send** page to perform the following tasks:

- View replication information for shares (see [Replication Jobs List](#) on page 77).
- Enable or disable replication for a share (see [Enabling Replication For a Share](#) on page 79).
- Configure Directory/File Based Replication for a share (see [Configuring Directory/File Based Replication](#) on page 80).
- Initiate replication for a share (see [Replicating a Share](#) on page 82).
- Synchronize a share configured for Directory/File Based Replication (see [Synchronizing a Share](#) on page 82).
- View replication statistics for a share configured for Directory/File Based Replication (see [Directory/File Based Replication Queue](#) on page 83).
- Schedule a share for replication (see [Scheduling a Share For Replication](#) on page 85).

- Manage replication targets (see [Target DXis List](#) on page 85)

Replication Jobs List

The **Replication Jobs** list displays replication statistics for all NAS shares on the DXi V-Series that are eligible for replication. To be eligible for replication, a share must have data deduplication enabled at the time it is created.

Note: For information about creating NAS shares, see [Adding a NAS Share](#) on page 131.

The **Replication Jobs** list displays the following information:

Note: Click the arrow next to **Shares** to display all shares in the list. Alternately, click the plus [+] or minus [-] icons to show or hide all shares.

- **NAS** - The name of the share. Hold the cursor over the name to display detailed information about the share.

Note: If multiple targets are configured for a share, click the arrow next to the share to view all targets.

- **Replication** - The replication state (**On** or **Off**). Click the toggle switch to turn replication on or off for the share.

Note: Clicking the toggle next to **Shares** will turn replication on or off for all shares.

- **Target** - The hostname or IP address of the configured replication target. If the share is configured to replicate to multiple targets, click the arrow next to the share name to display all targets.
- **Sync ID** - The Sync ID of the share if Directory/File Based Replication is enabled.
- **Last Job Type** - The type of the most recent replication job (**Replication** or **Synchronization**).
- **Job Status** - The status of the most recent replication job (see [Replication and Synchronization Status](#) on page 78). Hold the cursor over the job status to display detailed job statistics.
- **Started** - The time the most recent replication job was started.

- **Finished** - The time the most recent replication job was completed.
- **Schedule** - A watch icon displays if replication is scheduled for the share, as well as the next scheduled event (see [Scheduling a Share For Replication](#) on page 85).

You can customize the appearance of the **Replication Jobs** list in the following ways:

- Click the top banner row of the list to collapse or expand the list.
- Click the arrow to the right of a column heading and select **Sort Ascending** or **Sort Descending** to sort the rows in the table by that column.
- To show or hide a column, click the arrow to the right of a column heading, and then click **Columns**. Select the check box to show a column, or clear the check box to hide a column.
- To filter content in a column, click the arrow to the right of a column heading, and then click **Filters**. Type or select the desired filter. (If one row for a share matches the filter, all rows for the share are displayed.)

Replication and Synchronization Status

A replication job can have one of the following statuses:

- **In Progress** - The replication job is in progress.
- **Queued** - The replication job is queued and will continue when the system is ready.
- **Success** - The replication job was completed successfully.
- **Failed** - The replication job was not completed.

A synchronization job can have one of the following statuses:

- **Queued** - The synchronization job is queued and will continue when the system is ready.
- **Success** - The synchronization job was completed successfully.
- **Recovering** - The recover operation is in process.
- **Replicating** - The replication operation is in process.
- **Failed** - The synchronization job was not completed.

Enabling Replication For a Share

Enable replication for a NAS share to allow the data on the share to be replicated to other DXi systems (the targets). Disable replication if you do not want to replicate the share to other DXi systems.

Note: To be eligible for replication, a share must have data deduplication enabled at the time it is created.

To enable or disable replication for a share:

- 1 Select the share and click **Configure**.

The **Share Configure** window displays (see [Figure 40](#)).

Figure 40 Share Configure Window

The screenshot shows a window titled "Configure - nfs1tbher". It contains the following elements:

- Enable Replication
- Enable Dir/File based replication to target
- * Sync ID:
- A table with columns: Target, Status, Encryption.

Target	Status	Encryption
<input checked="" type="checkbox"/> 10.10.10.10	Ready	256-BIT
<input checked="" type="checkbox"/> 10.10.10.10	Ready	256-BIT
- * Required field
- Buttons: Apply, Cancel

- 2 Select the **Enable Replication** check box to enable replication for the share.

Or clear the **Enable Replication** check box to disable replication for the share. Any jobs from that share that are in progress or queued will transition to failure. Also, all replication job history for that combination of target and share will be removed.

- 3 Select the check box for each replication target you want to replicate the share to. (You must select at least one target.) When the share is replicated, its data will be sent to all selected targets.
- 4 Click **Apply**.

Note: Quantum recommends scheduling replication to run after backups are complete (see [Scheduling a Share For Replication](#) on page 85). If you do not enable scheduled replication, replication will only occur if you manually replicate a share (see [Replicating a Share](#) on page 82) or if you configure Directory/File Based Replication (see [Configuring Directory/File Based Replication](#) on page 80).

Note: Disabling replication for a share does not delete any scheduled replication events for that share. If you no longer want to schedule the share for replication, manually delete the schedule (see [Deleting a Scheduled Event](#) on page 198).

Configuring Directory/ File Based Replication

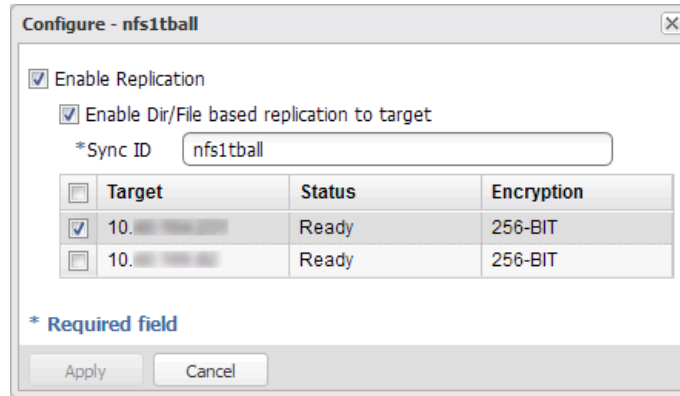
Configure a NAS share for Directory/File Based Replication to automatically replicate files to other DXi systems (the targets). A file is automatically replicated when it is closed or a period of time after it is modified. After replication, the replicated files are immediately available on the target systems. There is no need to recover the share to make the files available. Disable Directory/File Based Replication if you do not want to automatically replicate files.

When you configure a share for Directory/File Based Replication, you must specify a Sync ID. The Sync ID associates the share on the source system with the share on the target systems that will receive the replicated data. The **Sync ID** for the source share must match the **Sync ID** for the target share.

To configure a source share for Directory/File Based Replication:

- 1 If you have not already done so, configure the target share on the target DXi (see [Configuring a Target Share for Directory/File Based Replication](#) on page 96.)
- 2 On the source DXi, select the source share and click **Configure**. The **Share Configure** window displays (see [Figure 41](#)).

Figure 41 Share Configure Window



3 If it is not already selected, select the **Enable Replication** check box to enable replication for the share.

4 Select the **Enable Directory/File Based Replication to target** check box to enable Directory/File Based Replication for the share.

Or clear the **Enable Directory/File Based Replication to target** check box to disable Directory/File Based Replication for the share.

5 Enter a **Sync ID** in the box.

The **Sync ID** is used to identify the target share that will receive replicated data from the source share. The **Sync ID** *must* be identical to the **Sync ID** of the target share on the target system.

The **Sync ID** must contain no more than 32 characters (NAS share) and can contain only alphanumeric characters, underscores, and hyphens. (An underscore or hyphen must not be the first character.)

Note: If you are performing Directory/File Based Replication with a system running a DXi software version prior to 2.3, you may need to change the **Sync ID** on the system running pre-2.3 software to match the above **Sync ID** name restrictions.

6 Select the check box for each replication target you want to replicate the share to. (You must select at least one target.) When the share is replicated, its data will be sent to all selected targets.

Note: Directory/File Based Replication will be configured for all selected targets. You cannot configure one share for multiple replication types.

7 Click Apply.

Note: After you configure a share for Directory/File Based Replication, you should synchronize it to ensure it is in sync with the target share (see [Synchronizing a Share](#) on page 82).

Replicating a Share

Replicate a NAS share to send a snapshot of the share to the target systems. A snapshot is required to recover the data on the targets at a later time. If you have not configured a replication schedule for a share, replication only occurs when you manually initiate it (see [Scheduling a Share For Replication](#) on page 85).

To replicate a share:

1 Select the share to replicate.

If multiple targets are configured, click the arrow next to the share to display all targets, and then select the desired target.

2 Click **Replicate Now**.

The status of the replication job displays in the **Job Status** column.

To cancel the replication job, select the share and click **Abort**.

Synchronizing a Share

Synchronize a NAS share to synchronize its contents with the corresponding share on the target systems. To synchronize a share, it must be configured for Directory/File Based Replication (see [Configuring Directory/File Based Replication](#) on page 80).

Synchronizing a share ensures that the contents of the source share are the same as the target share. The synchronization verifies that the same files exist in both locations, and that no additional files exist in either location.

You should perform a synchronization in any of the following situations:

- When Directory/File Based Replication is first enabled for a share.

- If a Directory/File Based Replication job fails.
- If Directory/File Based Replication is disabled for a time and then is re-enabled.

Caution: Before synchronizing a share, make sure all media are unmounted and there are no active backup jobs to the share. (After the synchronization reaches the **Replicating** state, backup jobs are allowed.)

Note: Even when replication is paused, the system continues to queue Directory/File Based Replication operations. Each time an operation is queued, the system logs an administration alert that reports the total number of queued Directory/File Based Replication requests.

Note: If a synchronization fails, make sure the target share is unlocked (see [Configuring a Target Share for Directory/File Based Replication](#) on page 96).

To synchronize a share:

- 1 Select the share to synchronize.

If multiple targets are configured, click the arrow next to the share to display all targets, and then select the desired target.

- 2 Click **Synchronize Now**.

The status of the synchronization job displays in the **Job Status** column.

To cancel the synchronization job, select the share and click **Abort**.

Directory/File Based Replication Queue

The Directory/File Based Replication Queue displays replication statistics for shares that are configured for Directory/File Based Replication (see [Configuring Directory/File Based Replication](#) on page 80).

To view the Directory/File Based Replication Queue:

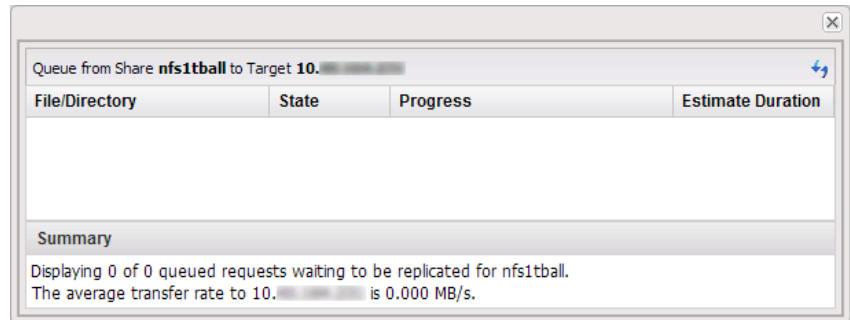
- 1 Select a share that is configured for Directory/File Based Replication.

If multiple targets are configured, click the arrow next to the share to display all targets, and then select the desired target.

2 Click Queue.

The Directory/File Based Replication Queue displays (see [Figure 42](#)).

Figure 42 Directory/File Based
Replication Queue



The Directory/File Based Replication Queue displays the following information for the share:

- **File/Directory** - The file/directory to be replicated.
- **State** - The replication state for the file/directory.
- **Progress** - The percentage complete for replication of the file/directory.
- **Estimated Duration** - The estimated time it will take to complete replication for the file/directory.

Note: The estimated duration may display as **unknown** if replication has been very recently initiated. After the system has enough information to calculate a value, the estimated duration will display.

Note: The contents of the Directory/File Based Replication Queue are dynamic. Because of this, statistics are subject to change if items are added to the queue.

Note: The queue may show a large number of deletion entries after a single directory is deleted. This is expected behavior, and occurs because several recursive file or subdirectory deletions may be required.

- 3 To close the **Directory/File Based Replication Queue**, click the **Close** icon.

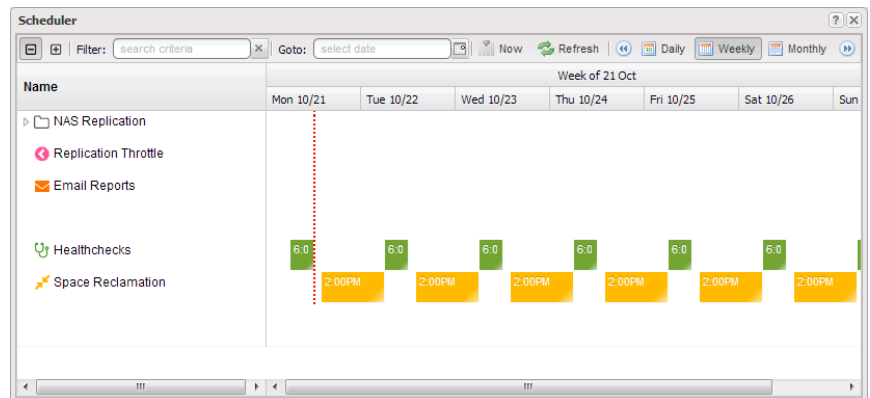
Scheduling a Share For Replication

When a share is enabled for replication, it is important to regularly replicate the share to the target systems. Quantum recommends scheduling replication to run after backups are complete.

To schedule a share for replication, click **Scheduler**. The **Scheduler Calendar** windows displays (see [Figure 43](#)).

For details about using the **Scheduler Calendar** to add or edit a replication schedule, see [Scheduling a Share for Replication](#) on page 193.

Figure 43 Scheduler Calendar Window



Target DXis List

The **Target DXis** list allows you to configure and manage replication targets on the DXi V-Series. Click the arrows at the upper right, or click the top banner row, to expand or collapse the **Target DXis** list. For details about working with targets, see [Target DXis List](#) on page 147.

Receive NAS

The **Receive NAS** page allows you to manage incoming replication activity for NAS shares. You can recover a replicated share on the target system if the source system is unavailable. Once the source system becomes available, you can failback the share to make it available on the source system again.

Note: Before you can receive replicated shares, you must specify one or more replication sources (see [Adding a Replication Source](#) on page 154).

To access the **Receive NAS** page, click the **Replication** menu, and then click the **Receive > NAS** tab.

Use the **Receive NAS** page to perform the following tasks:

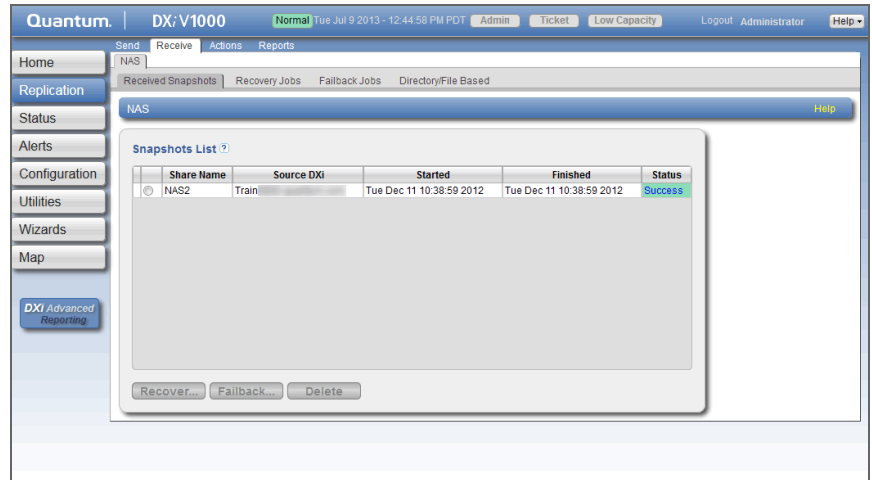
- View received snapshots and recover, failback, or delete snapshots (see [Received Snapshots](#) on page 86).
- Manage recovery jobs (see [Recovery Jobs](#) on page 92).
- Manage failback jobs (see [Failback Jobs](#) on page 93).
- Manage shares configured for Directory/File Based Replication (see [Directory/File Based](#) on page 94).

Received Snapshots

The **Received Snapshots** page allows you to view and work with received snapshots. When a replicated NAS share is received from a source system, it is saved as a snapshot. The snapshot contains all of the data necessary to fully recover or failback the share to the point in time when the snapshot was saved.

To access the **Received Snapshots** page, on the **Receive NAS** page, click the **Received Snapshots** tab (see [Figure 44](#)).

Figure 44 Received Snapshots Page



Use the **Received Snapshots** page to perform the following tasks:

- View information about received snapshots (see [Snapshots List](#) on page 87).
- Recover a share on the target system (see [Recovering a Share](#) on page 88).
- Failback a share to the source system (see [Performing a Failback For a Share](#) on page 89).
- Delete a received snapshot (see [Deleting a Snapshot](#) on page 91).

Note: The target system will retain up to 10 replication snapshots (default setting) for each replicated share. Once 10 snapshots have been saved, the oldest snapshot is deleted to make room for each new snapshot that is received. (To change the maximum number of snapshots retained for each share, see [Changing the Maximum Number of Snapshots](#) on page 156).

Snapshots List

The **Snapshots List** displays all available snapshots that have been received from configured replication sources. Snapshots are grouped by NAS share. To see all available snapshots for a share, click the plus icon [+] next to the share name.

The **Snapshots List** displays the following information about each snapshot:

- **Share Name** - The name of the share.
- **Source DXi** - The hostname of the system that the snapshot was sent from.
- **Started** - The time the most recent replication job was started.
- **Finished** - The time the most recent replication job finished.
- **Status** - The status of the most recent replication job (see [Replication and Synchronization Status](#) on page 78). Click the status to display detailed information about the most recent replication job.

Note: Click a column heading to sort the rows in the table by that column. Click the column heading again to reverse the sort order.

Recovering a Share

Recover a NAS share if the source system is unavailable and you need to access the share (for example, to continue performing backups). When you recover a share, you select a received snapshot. The DXi V-Series uses the snapshot to recreate the share on the target system just as it was at the point in time when the snapshot was saved.

Note: Before recovering a share, you must enable CIFS on the DXi (see [Windows Domain](#) on page 135). Also, if the DXi is not using Active Directory, you must configure at least one workgroup user to own recovered CIFS shares (see [Share Access](#) on page 138).

To recover a share:

- 1 On the target system, select a snapshot in the **Snapshots List** and click **Recover**.

The **Recovered Share Name** page displays (see [Figure 45](#)).

Figure 45 Recovered Share Name Page



- 2 (Optional) In the **Recovered Share Name** box, type a new name for the recovered share. (The default name is the original share name.)
- 3 Click **Apply**.
- 4 If the DXi is joined to a Windows workgroup, select the workgroup user that will own the recovered share, and then click **Apply**.

The share is recovered on the target system. All data stored on the share at the time the snapshot was saved is available. The original export protocol of the share (NFS or CIFS) is retained in the recovery process.

Note: After you recover a share, if you want to continue backing up data to the share, you must remap your backup application to point to the target system instead of the source system.

Performing a Failback For a Share

Perform a failback of a NAS share if a source system that was previously unavailable becomes available again. When you failback a share, you select a received snapshot. The DXi V-Series copies the snapshot from the target system back to the source system. You can then perform a recover operation to recreate the share on the source system just as it was at the point in time when the snapshot was saved.

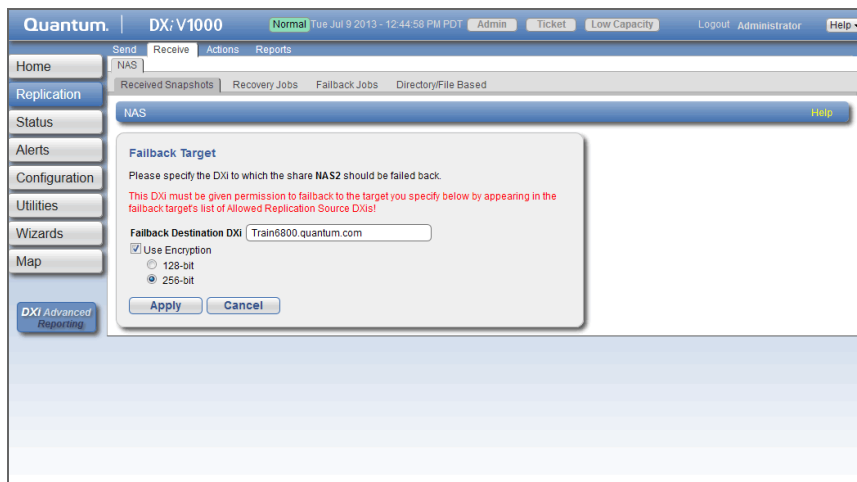
Note: Before you can failback a share, on the original source system, you must add the original target system to the list of allowed replication sources (see [Adding a Replication Source](#) on page 154). This is because, during failback, the original target is acting as a source when it sends a snapshot to the original source.

To perform a share failback:

- 1 On the target system, select a snapshot in the **Snapshots List** and click **Failback**.

The **Failback Target** page displays (see [Figure 46](#)).

Figure 46 Failback Target Page



- 2 (Optional) In the **Failback Destination DXi** box, type the hostname or IP address of a new destination system to failback the share to. (The default destination is the original source system.)

Note: To use hostname format, you must specify at least one DNS IP address on the **Network** page (see [Network](#) on page 199).

- 3 (Optional) Leave the **Use Encryption** check box selected to enable encryption when sending the snapshot to the destination. Or clear the **Use Encryption** check box to disable encryption when sending the snapshot to the destination.

If encryption is enabled, select an encryption strength (**128-bit** or **256-bit**). Using 256-bit encryption (default) provides a stronger level of security but may have an impact on system performance in some situations.

Note: Encryption is enabled by default. However, for best performance, if your data network is already secured, you should clear the **Use Encryption** check box.

4 Click **Apply**.

The snapshot is sent to the source system.

5 On the source system, in the **Snapshots List**, select the snapshot that was sent during the failback operation and click **Recover**.

The **Recovered Share Name** page displays (see [Figure 45](#)).

6 (Optional) In the **Recovered Share Name** box, type a new name for the recovered share. (The default name is the original share name.)

7 Click **Apply**.

The share is recovered on the source system. All data stored on the share at the time the snapshot was saved is available. The original export protocol of the share (NFS or CIFS) is retained in the recovery process.

Note: If you previously remapped your backup application to a recovered share on the target system, after you failback the share, you must remap your backup application again to point to the source system.

Deleting a Snapshot

Delete a snapshot if it is no longer needed. After you delete a snapshot, it can no longer be used to recover or failback a NAS share.

Note: You cannot delete a snapshot if a failback operation is in progress for the snapshot. Wait for the failback operation to complete, or abort the operation (see [Failback Jobs](#) on page 93).

To delete a snapshot:

- 1 Do one of the following actions:
 - On the source system, disable replication for the share associated with the snapshot (see [Enabling Replication For a Share](#) on page 79).
 - On the target system, delete the source system associated with the snapshot from the list of allowed replication sources (see [Deleting a Replication Source](#) on page 155).
- 2 On the target system, select a snapshot in the **Snapshots List** and click **Delete**.

Note: If you delete the last snapshot for a share while replication for the share (to this target) is still enabled, any replicated data not yet protected by a replicated share is *not* deleted. To delete this data, on the source system, disable replication for the share before deleting the last snapshot.

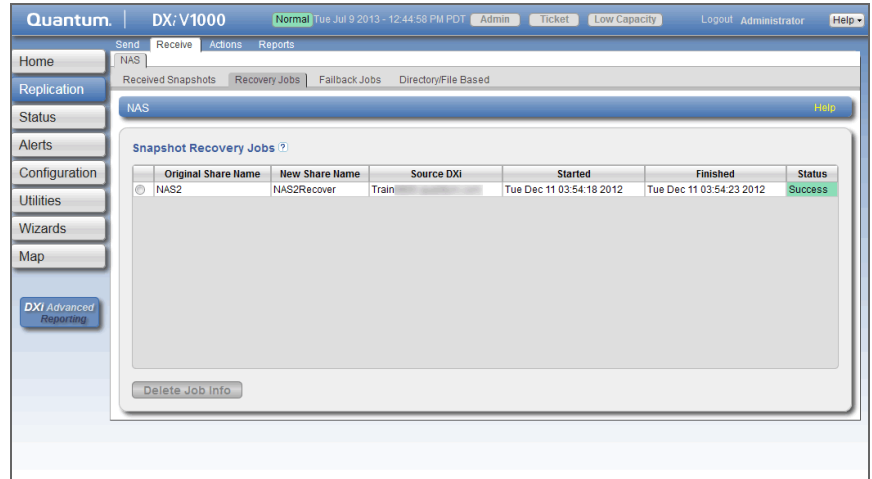
- 3 Click **Yes** to confirm the action.

Recovery Jobs

The **Recovery Jobs** page allows you to view information about snapshot recover operations that were previously completed.

To access the **Recovery Jobs** page, on the **Receive NAS** page, click the **Recovery Jobs** tab (see [Figure 47](#)).

Figure 47 Recovery Jobs Page



The **Snapshot Recovery Jobs** section displays the following information about recovery jobs:

- **Original Share Name** - The name of the share the snapshot was created from.
- **New Share Name** - The name of the share the snapshot was recovered to.
- **Source DXi** - The hostname of the system that the snapshot was received from.
- **Started** - The time the recovery job was started.
- **Finished** - The time the recovery job finished.
- **Status** - The status of the recovery job (**Success**, **In Progress**, or **Failed**).

To delete information for a recovery job, select it in the **Snapshot Recovery Jobs** list and click **Delete Job Info**.

Failback Jobs

The **Failback Jobs** page allows you to view information about snapshot failback operations that were previously completed. You can also abort a failback that is currently in progress.

To access the **Failback Jobs** page, on the **Receive NAS** page, click the **Failback Jobs** tab (see [Figure 48](#)).

Figure 48 Failback Jobs Page



The **Snapshot Failback Jobs** section displays the following information about failback jobs:

- **Share Name** - The name of the share the snapshot was created from.
- **Destination DXi** - The hostname of the system that the snapshot was sent to.
- **Started** - The time the failback job was started.
- **Finished** - The time the failback job finished.
- **Status** - The status of the failback job (**Success**, **In Progress**, or **Failed**).

Use the **Failback Jobs** page to perform the following tasks:

- To delete information for a failback job, select it in the **Snapshot Failback Jobs** section and click **Delete Job Info**.
- To abort a failback job that is in progress, select it in the **Snapshot Failback Jobs** section and click **Abort**.

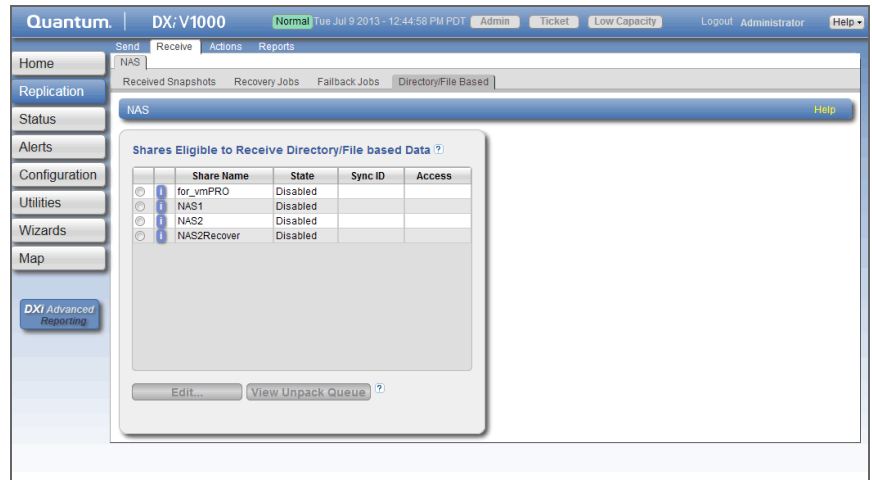
Directory/File Based

The **Directory/File Based** page allows you to manage Directory/File Based Replication on the target system. You can configure a NAS share to receive Directory/File Based Replication data sent from a source system and view replication statistics for the share.

Note: For information about creating NAS shares, see [Adding a NAS Share](#) on page 131.

To access the **Directory/File Based** page, on the **Receive NAS** page, click the **Directory/File Based** tab (see [Figure 49](#)).

Figure 49 Directory/File Based Page



Use the **Directory/File Based** page to perform the following tasks:

- View shares eligible to receive Directory/File Based data (see [Shares Eligible to Receive Directory/File Based Data](#) on page 95)
- Configure a share to receive Directory/File Based Replication data (see [Configuring a Target Share for Directory/File Based Replication](#) on page 96)
- View statistics for shares configured for Directory/File Based Replication (see [Unpack Queue](#) on page 98)

Shares Eligible to Receive Directory/File Based Data

The **Shares Eligible to Receive Directory/File Based Data** section displays information for all NAS shares on the DXi V-Series that are eligible to receive Directory/File Based Replication data from a source share. To be eligible to receive Directory/File Based Replication data, a share must have data deduplication enabled at the time it is created.

The **Shares Eligible for Replication** section displays the following information:

- **Share Name** - The name of the share.
- **State** - The state of Directory/File Based Replication for the share (**Enabled** or **Disabled**).
- **Sync ID** - The Sync ID used to identify the source share that will send replicated data to the share.
- **Access** - The selected access option for the share (**Locked** or **Unlocked**).

Note: Click the Information button [i] next to a share to display detailed information about the share and recent replication activity.

Configuring a Target Share for Directory/File Based Replication

Configuring a NAS share for Directory/File Based Replication enables the automatic replication of files and directories on the source share to the target share. Before you configure a share on the source system for Directory/File Based Replication, you must configure a share on the target system to receive the replicated data from the source share.

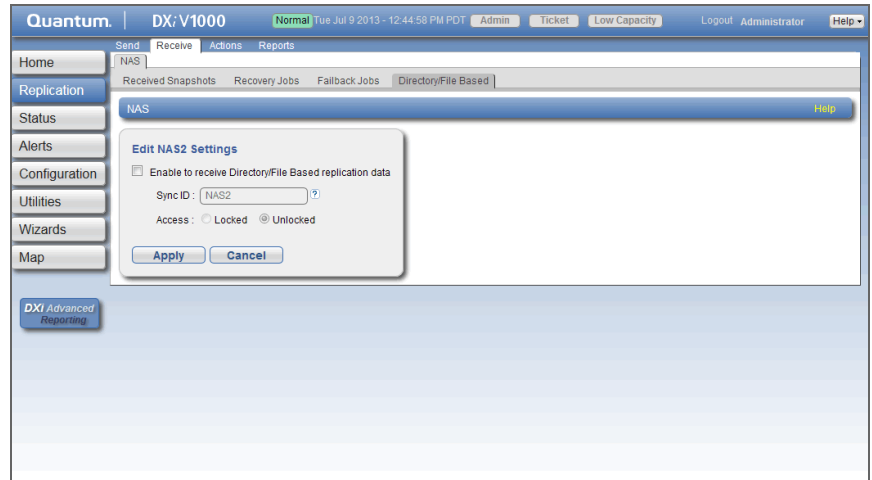
Note: For information about configuring Directory/File Based Replication on the source system, see [Configuring Directory/File Based Replication](#) on page 80.

To configure a target share for Directory/File Based Replication:

- 1 Select the share and click **Edit**.

The **Edit Share Settings** page displays (see [Figure 50](#)).

Figure 50 Edit Share Settings
Page



- 2 Select the **Enable to receive Directory/File Based replication data** check box to enable Directory/File Based Replication for the share.

Or clear the **Enable to receive Directory/File Based replication data** check box to disable Directory/File Based Replication for the share.

- 3 Enter a **Sync ID** in the box.

The Sync ID is used to identify the source share that will send replicated data to the target share. The Sync ID *must* be identical to the Sync ID of the source share on the source system.

- 4 Select an **Access** option:

- **Locked** - The share is not allowed to receive new Directory/File Based Replication data.
- **Unlocked** - The share is allowed to receive new Directory/File Based Replication data.

Note: If a share configured for Directory/File Based Replication is locked on the target system, synchronization jobs may fail on the source system.

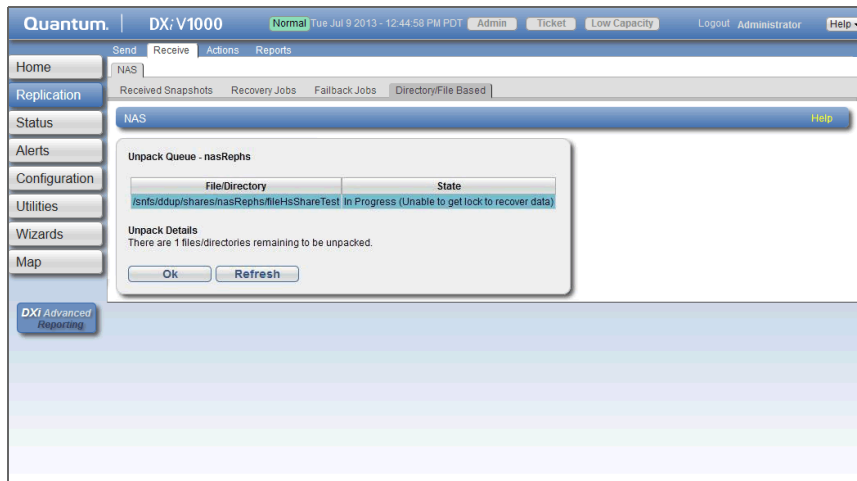
- 5 Click **Apply**.

Unpack Queue

Use the **Unpack Queue** to view Directory/File Based Replication statistics for data received from the source system.

To view the **Unpack Queue**, select a share and click **View Unpack Queue** (see [Figure 51](#)).

Figure 51 Unpack Queue



The **Unpack Queue** displays the following information:

- **File/Directory** - The file or directory to be replicated.
- **State** - The replication state of the file or directory.

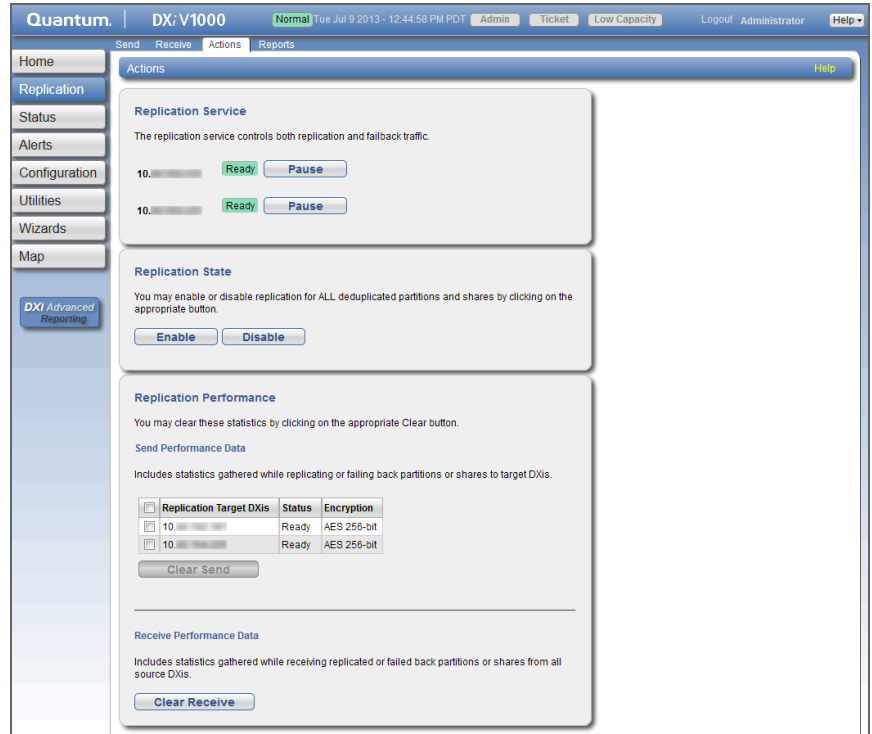
Click **Refresh** to update the statistics in the Unpack Queue. Click **OK** to return to the **Directory/File Based** page.

Actions

The **Actions** page allows you to manage replication activity on the DXi V-Series. You can pause the replication service, enable the replication state, and clear performance statistics.

To access the **Actions** page, click the **Replication** menu, and then click the **Actions** tab (see [Figure 52](#)).

Figure 52 Actions Page



Use the **Actions** page to perform the following tasks:

- Pause or resume the replication service (see [Replication Service](#) on page 99).
- Enable or disable the replication state (see [Replication State](#) on page 100).
- Clear cumulative replication statistics (see [Replication Performance](#) on page 101).

Replication Service

The replication service controls replication and failback traffic on the DXi V-Series. You can pause each replication target independently.

- Click **Pause** next to a target to pause all replication and failback traffic to that target.

If a replication job is currently in progress, the system continues to replicate the current block of data. The process of replicating the current block can take up to 15 minutes to complete. After the block has completed replication, the system pauses replication.

Note: If you pause a replication job that is in process, a Failure event is logged in the replication report (see [Reports](#) on page 101).

- Click **Resume** next to a target to resume all incoming and outgoing replication and failback traffic to that target.

If a replication job was in progress when replication was paused, the replication job continues.

Replication State

The replication state applies to all NAS shares on the DXi V-Series that are eligible for replication (that is, all deduplicated shares).

Note: The **Replication Actions** page may appear busy for a few moments when enabling or disabling the replication state. Wait for the process to complete before performing other actions.

- Click **Enable** to enable replication for all shares.
- Click **Disable** to disable replication for all shares.

If a replication job is currently in progress, the system continues until the entire replication job is complete. After the replication job has completed, the system disables replication. The system will not be able to replicate data for any shares until you click **Enable**.

Note: To disable replication for a single share, select it on the **Replication > Send** page and click **Edit**. Clear the **Enable replication** and the **Enable scheduled replication** check boxes, and then click **Apply**. For more information, see [Replication Send](#) on page 75

Replication Performance

The DXi V-Series maintains cumulative performance statistics for send and receive replication activity. The statistics appear on the **Home** page and elsewhere. You can reset these statistics so the system will calculate them with new data going forward.

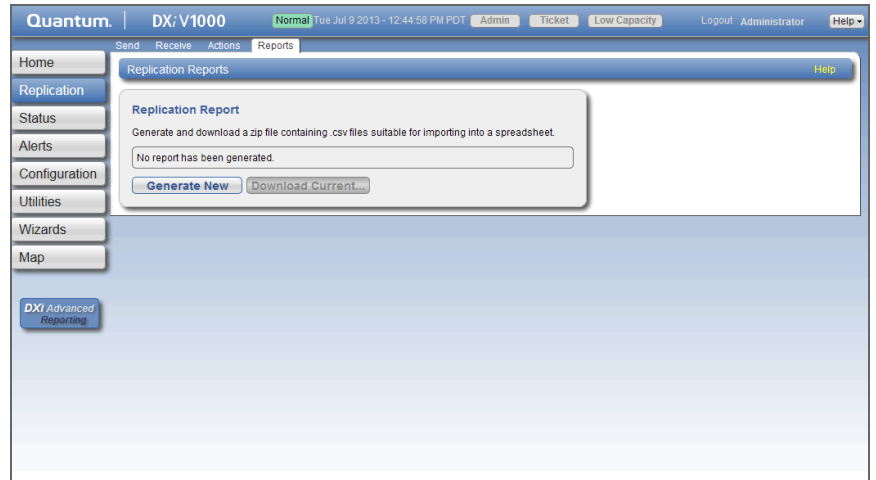
- To clear send statistics, first select one or more targets to clear statistics for, and then click **Clear Send**. This resets cumulative performance statistics gathered while replicating shares to the selected target systems, or when sending a snapshot during a failback operation.
- To clear receive statistics, click **Clear Receive**. This resets cumulative performance statistics gathered while receiving replicated shares from source systems, or when receiving a snapshot during a failback operation.

Reports

The **Reports** page allows you to generate and download a replication report. The report includes detailed information about all replication activity, including Directory/File Based Replication.

To access the **Reports** page, click the **Replication** menu, and then click the **Reports** tab (see [Figure 53](#)).

Figure 53 Reports Page



Use the **Reports** page to perform the following tasks:

- To generate a new replication report, click **Generate New**.
- To download the most recently generated replication report, click **Download Current**.

Save the replication report to your local workstation, and then unzip the downloaded file. The report consists of a ZIP file that contains multiple CSV (comma separated value) files. To view the CSV files, open them in a compatible spreadsheet application.



Chapter 6

DXi V-Series Status

The **Status** page allows you to view performance and disk usage information.

To access the **Status** pages, click the **Status** menu.

The **Status** pages contains the following tabs:

- [Performance](#)
- [Disk Usage](#)
- [OST Status](#)
- [Activity Log](#)

Performance

The **Performance** page allows you to view information about system performance, including inline throughput, network throughput, and CPU usage.

To access the **Performance** page, click the **Status** menu, and then click the **Performance** tab.

The **Performance** page contains the following tabs:

- [Inline](#)

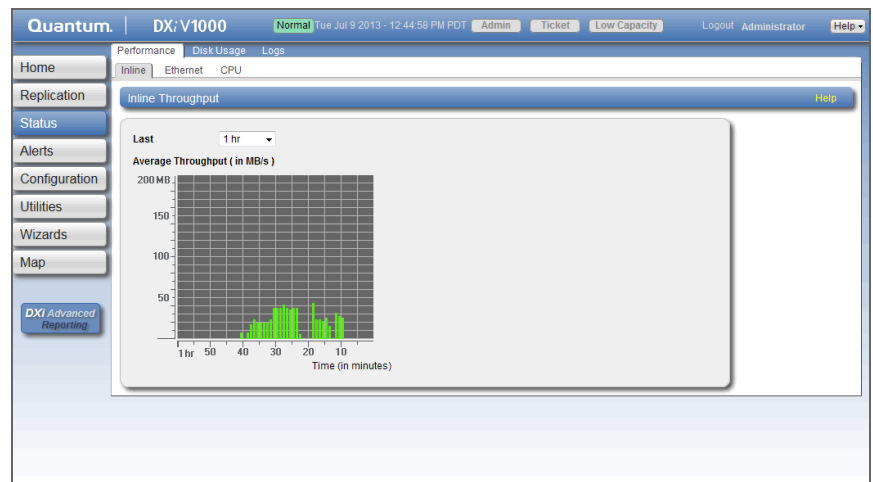
- [Ethernet](#)
- [CPU](#)

Inline

The **Inline** page allows you to view throughput performance for inline data flow. Inline data flow includes deduplicated and non-deduplicated backup data as well as received replication data.

To access the **Inline** page, on the **Performance** page, click the **Inline** tab (see [Figure 54](#)).

Figure 54 Inline Page



Use the **Inline** page to display recent inline data flow activity in a dynamic graph:

- Select the amount of time to display in the **Last** list (1–24 hours).
- The horizontal axis displays time (in minutes).
- The vertical axis displays inline throughput (0–2,000 MB/s).

Note: The range represented by the Y-axis changes based on the maximum value, increasing in 200 MB increments as needed.

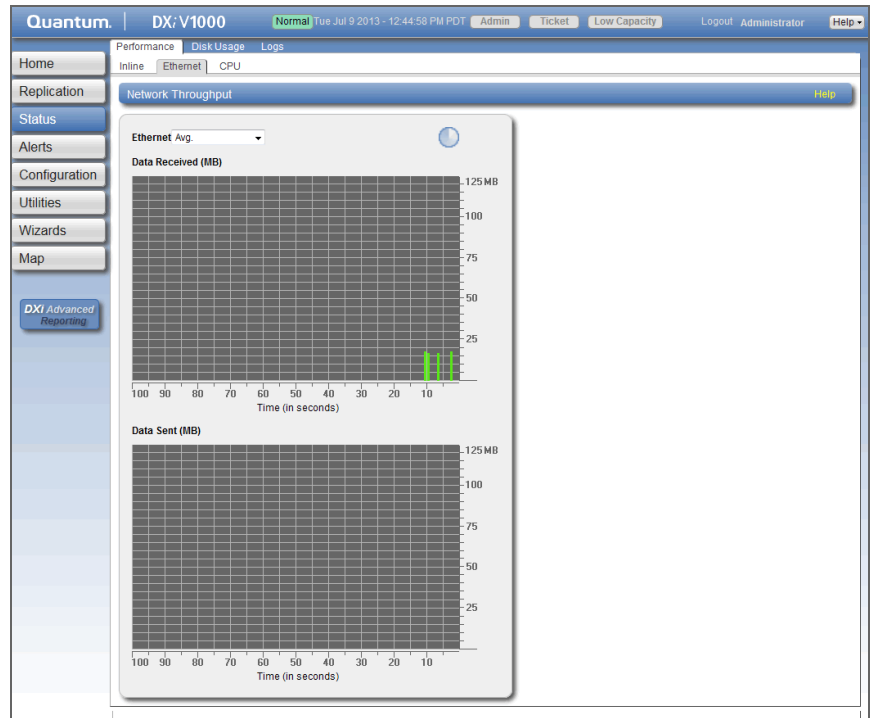
- Each bar on the graph represents approximately 1 minute of time.
- Hold the cursor over a bar to display the value of the bar.

Ethernet

The **Ethernet** page allows you to view throughput performance for network send and receive activity.

To access the **Ethernet** page, on the **Performance** page, click the **Ethernet** tab (see [Figure 55](#)).

Figure 55 Ethernet Page



Use the **Ethernet** page to display recent network activity in dynamic graphs:

- The top graph reports data received and the bottom graph reports data sent.
- Select the port to monitor in the **Ethernet** drop-down box, or select **Avg** to display an average of all ports.
- The horizontal axis displays time (0–100 seconds).
- The vertical axis displays data throughput (0–125 MB/s for 1 GbE ports or 0–1.25 GB/s for 10 GbE ports).

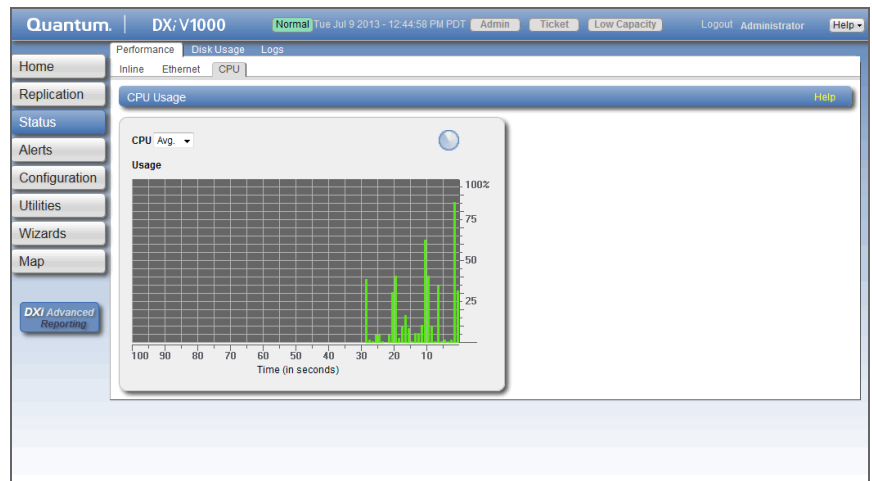
- Values that exceed the maximum value of the vertical axis are shown in lighter green.
- Each bar on the graph represents approximately 1 second of time.
- Hold the cursor over a bar to display the value of the bar.

CPU

The CPU page allows you to view CPU usage.

To access the CPU page, on the **Performance** page, click the **CPU** tab (see [Figure 56](#)).

Figure 56 CPU Page



Use the CPU page to display recent CPU usage in a dynamic graph:

- Select the CPU core to monitor in the **CPU** drop-down box, or select **Avg** to display an average of all CPUs.

Note: The **CPU** drop-down box lists all CPU threads. Each hyper-threaded CPU core counts as two threads.

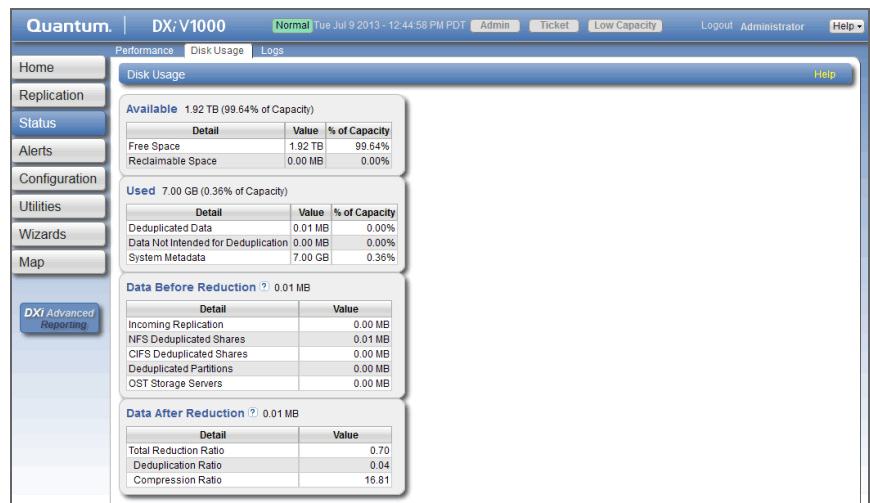
- The horizontal axis displays time (0–100 seconds).
- The vertical axis displays CPU usage (0–100%).
- Each bar on the graph represents approximately 1 second of time.
- Hold the cursor over a bar to display the value of the bar.

Disk Usage

The **Disk Usage** page allows you to view information about free and used disk space on the system. You can also view data reduction statistics.

To access the **Disk Usage** page, click the **Status** menu, and then click the **Disk Usage** tab (see [Figure 57](#)).

Figure 57 Disk Usage Page



Use the **Disk Usage** page to view the following information:

- [Available](#)
- [Used](#)
- [Data Before Reduction](#)
- [Data After Reduction](#)

Available

Available space is the area that is available for data storage. The **Available** value is displayed as an amount and as a percentage of the total capacity in the system.

Available space is divided into the following categories:

- **Free Space** - The disk space that can be used for new deduplicated or non-deduplicated data.
- **Reclaimable Space** - The disk space that is occupied by outdated deduplicated data and which will be automatically reused if additional space for new deduplicated data is needed.

Note: For optimal system performance, Quantum recommends keeping the amount of **Available** disk space at 20% or more.

Used

Used space is the area that already holds data. The **Used** value is displayed as an amount and as a percentage of the total capacity in the system.

Used space is divided into the following categories:

- **Deduplicated Data** - The amount of data that has been deduplicated.
- **Data Not Intended For Deduplication** - The amount of data that will not be deduplicated (data on shares that do not have deduplication enabled).
- **System Metadata** - The amount of disk space used for internal operations of the DXi, including system configuration files as well as temporary files created during replication, space reclamation, and healthchecks.

Data Before Reduction

The **Data Before Reduction** value represents the original, native size of all data that has been processed by the data deduplication and compression engines.

Data before reduction is divided into the following categories:

- **Incoming Replication** - The amount of data stored on the DXi via replication from another DXi. This does *not* include incoming data from Directory/File Based Replication, or incoming data from Failback replication.
- **NFS Deduplicated Shares** - The amount of data stored in deduplicated shares configured in Network File System (NFS) format for Linux systems. This includes incoming data from Directory/File Based Replication, and incoming data from Failback replication.

- **CIFS Deduplicated Shares** - The amount of data stored in deduplicated shares configured in Common Internet File System (CIFS), also known as Server Message Block (SMB), format for Windows systems. This includes incoming data from Directory/File Based Replication, and incoming data from Failback replication.
- **OST Storage Servers** - The amount of data stored in deduplicated OpenStorage (OST) storage servers. This includes incoming data for OST and DXi Accent.

Data After Reduction

The **Data After Reduction** value represents the final, reduced size of all data that has been processed by the data deduplication and compression engines.

Data after reduction is divided into the following categories:

- **Total Reduction Ratio** - The total reduction ratio of all data that has been processed by the data deduplication and compression engines (**Data Before Reduction** divided by **Data After Reduction**).
- **Deduplication Ratio** - The deduplication ratio of all data that has been processed by the data deduplication engine.
- **Compression Ratio** - The compression ratio of all data that has been processed by the compression engine.

OST Status

Use the **OST Status** page to view statistics for OST optimized duplication and DXi Accent activity that occurred in the previous minute.

Note: DXi Accent statistics display only if DXi Accent is currently enabled or was previously enabled (see [DXi Accent](#) on page 185).

To access the **OST Status** page, click the **Status** menu, and then click the **OST** tab (see [Figure 58](#)).

Figure 58 OST Status Page



Combined statistics for all media servers display at the top of each section (**Optimized Duplication** and **Accent**):

- **Inline** - The inline data flow throughput (in MB/s). Inline data flow represents the original, native size of the data protected by the DXi.
- **Ethernet In** - The amount of data received by all Ethernet ports (in MB/s). This amount represents the reduced size of the data protected by the DXi (after deduplication and compression on the media servers).
- **Bandwidth Reduction** - The percentage by which network bandwidth utilization was reduced by using optimized duplication or enabling Accent.

Statistics for individual media servers display in the tables in each section (**Optimized Duplication** and **Accent**):

- **Media Server** - The IP address of the media server.
- **Inline** - The inline data flow throughput (in MB/s). Inline data flow represents the original, native size of the data protected by the DXi.
- **Ethernet In** - The amount of data received by all Ethernet ports (in MB/s). This amount represents the reduced size of the data protected by the DXi (after deduplication and compression on the media server).

- **Bandwidth Reduction** - The percentage by which network bandwidth utilization was reduced by using optimized duplication or enabling Accent.

Activity Log

The **Activity Log** page allows you to view a record of all activities performed by administrative and service users in the past 90 days. You can view the user who performed the activity, the time the activity was performed, and other information. You can also download the activity log to an XML file.

To access the **Activity Log** page, click the **Status** menu, and then click the **Logs** tab (see [Figure 59](#)).

Figure 59 Activity Log Page

The screenshot displays the Quantum DXi V1000 web interface. The top navigation bar includes 'Home', 'Replication', 'Status', 'Alerts', 'Configuration', 'Utilities', 'Wizards', and 'Map'. The 'Status' menu is expanded, showing 'Administrative Activity Log' as the selected option. Below the menu is a toolbar with 'Refresh', 'Delete All', 'Download Log', and 'Disable Logging'. The main content area is a table with the following columns: User, Date/Time, Origin, Action, Category, Role, and Summary. The table contains several rows of activity logs, including actions like 'Generate', 'DeleteItem', 'CloseAllTickets', and 'OSTGetILsu'. At the bottom, there are navigation controls showing 'Page 1 of 250' and 'Displaying Items 1 - 50 of 12452'.

Use the **Activity Log** page to perform the following tasks:

- View information about activities that have been recorded in the log (see [Viewing Logged Activities](#) on page 112).

- Enable or disable the recording of activities in the log (see [Enabling or Disabling Activity Logging](#) on page 113).
- Delete one or more activities from the log (see [Deleting Logged Activities](#) on page 114).
- Download the activity log in XML format (see [Downloading the Activity Log](#) on page 114).

Viewing Logged Activities

The **Administrative Activity Log** list displays the following information for each entry:

- **User** - The user that performed the activity (**Administrator, Monitor, Service, Engineering, cliadmin, or root**).
- **Date/Time** - The date and time the activity was performed.
- **Origin** - The interface where the activity originated. Possible origins are the **GUI** (remote management console) or the **CLI** (command line interface).
- **Action** - The type of activity performed (**Create, Update, or Delete**).
- **Category** - The category of the activity (**Alert, Analyzer, Cluster, Date Time, Email, Event, Hard Drive Security, Healthcheck, NAS, Network, OST, Replication, Security, SNMP, Utility**).
- **Role** - The role of the user that performed the activity (**Admin**).
- **Summary** - Details about the activity that was performed, including CLI commands and field values.

Note: Click a column heading to sort the rows in the table by that column. Click the column heading again to reverse the sort order.

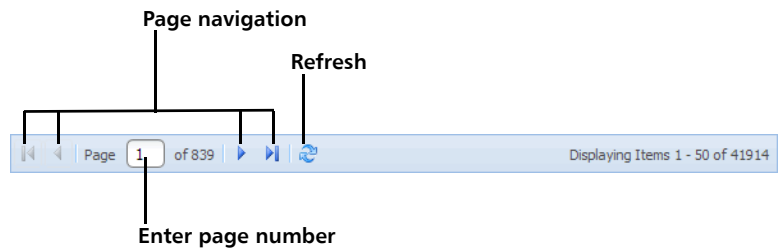
Note: To rearrange the order of the columns, click and drag a column heading left or right. To show or hide columns, click the arrow to the right of a column heading. In the pop-up menu, point to **Columns**, then select the name of a column to show or hide it.

Navigating in the Activity Log

Use the controls at the bottom of the **Administrative Activity Log** list to adjust the activity log view (see [Figure 60](#)):

- To navigate between pages in the list, use the left and right arrows.
- To view a specific page, type the page number in the box.
- To update the activity log with latest data, click the **Refresh** icon.

Figure 60 Activity Log View Controls

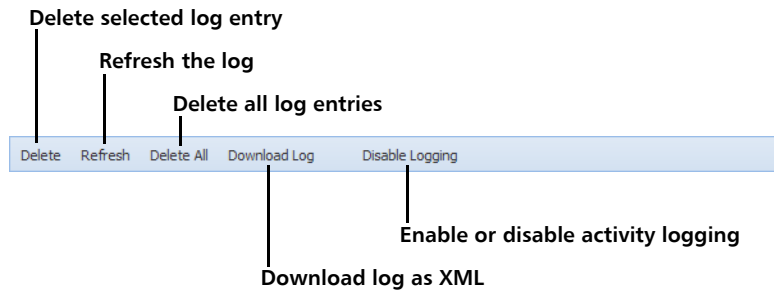


Enabling or Disabling Activity Logging

By default, activity logging is enabled on the DXi V-Series. Use the toolbar above the **Administrative Activity Log** list to enable or disable activity logging (see [Figure 61](#)).

- To enable the logging of administrative and service actions, click **Enable Logging** on the toolbar.
- To disable the logging of administrative and service actions, click **Disable Logging** on the toolbar.
- To update the activity log with latest data, click **Refresh** on the toolbar.

Figure 61 Activity Log View
Controls



Deleting Logged Activities

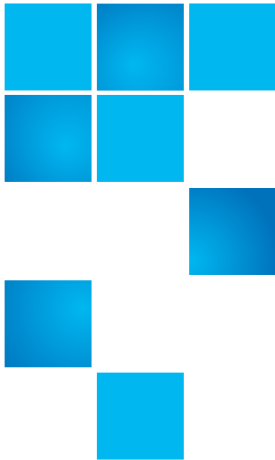
Use the toolbar above the **Administrative Activity Log** list to delete one or more entries in the activity log (see [Figure 61](#)).

- To delete a log entry, select the entry and click **Delete**.
- To delete all entries in the activity log, click **Delete All**.

Downloading the Activity Log

Use the toolbar above the **Administrative Activity Log** list to save the activity log in XML format (see [Figure 61](#)). You can then open the log file in another program that is compatible with XML.

To download the activity log, click **Download Log**. Specify a location to save the file, and then click **OK** or **Save**.



Chapter 7

DXi V-Series Alerts

The **Alerts** page allows you to view and work with administration alerts and service tickets. The DXi V-Series generates administration alerts and service tickets when a hardware or software event occurs.

To access the **Alerts** page, click the **Alerts** menu.

The **Alerts** page contains the following tabs:

- [Admin Alerts](#)
- [Service Tickets](#)

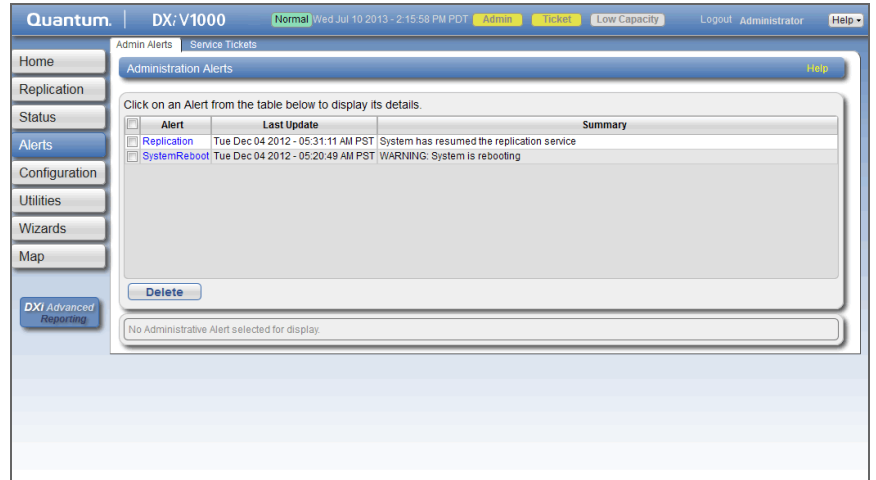
Admin Alerts

The **Admin Alerts** page allows you to view and work with administration alerts. The DXi V-Series generates an administration alert when the condition of the system has changed, such as going from the offline state to the online state.

Note: In addition to viewing administration alerts on the **Admin Alerts** page, you can configure the system to send alerts to an e-mail address (see [Recipients](#) on page 228).

To access the **Admin Alerts** page, click the **Alerts** menu, and then click the **Admin Alerts** tab (see [Figure 62](#)).

Figure 62 Admin Alerts Page



The **Admin Alerts** page displays the following information about administration alerts:

- **Alert** - The name of the administration alert.
- **Last Update** - The date when the administration alert was last updated by the system.
- **Summary** - A brief description of the administration alert.

Note: Click a column heading to sort the rows in the table by that column. Click the column heading again to reverse the sort order.

Use the **Admin Alerts** page to perform the following tasks:

- To view details about an administration alert, click the alert name. Detailed information about the alert appears in the **Activity Status History** section.
- To delete an administration alert, select it and click **Delete**.

Service Tickets

The DXi V-Series has the capability to automatically detect and resolve problems encountered by the system during operation. If a problem cannot be resolved automatically and requires user intervention or servicing, the system generates a service ticket.

A service ticket contains detailed information about the problem and, if appropriate, steps you can take to resolve it. If the DXi V-Series detects that the problem is resolved, the system automatically closes the service ticket. You can also manually close a service ticket after the problem is corrected.

Note: Tickets that are not resolved are generated again after 24 hours.

See the following sections for more information about service tickets:

- [Service Ticket Priority](#)
- [Recommended Actions](#)
- [Working With Service Tickets](#)

Service Ticket Priority

The system assigns each service ticket a priority based on the criticality of the problem that caused the system to generate the ticket. There are three priority levels:

- **Low** - A minor problem occurred and needs to be resolved, but the operation and performance of the DXi V-Series are not significantly affected.
- **Middle** - A serious problem occurred and needs to be resolved, but it does not necessarily need to be fixed immediately. The operation and performance of the DXi V-Series may be degraded.
- **High** - A critical problem has occurred and needs to be resolved immediately. The operation and performance of the DXi V-Series are degraded, and there is a risk of system failure or data loss.

Recommended Actions

If appropriate, a service ticket includes recommended actions. The recommended actions provide instructions for resolving the problem that caused the system to generate the ticket.

Perform the recommended actions to try to resolve the problem before contacting Quantum customer support. If you are able to resolve the problem, you can close the service ticket.

Note: The recommended actions should be performed by a user who is familiar with operating the DXi V-Series.

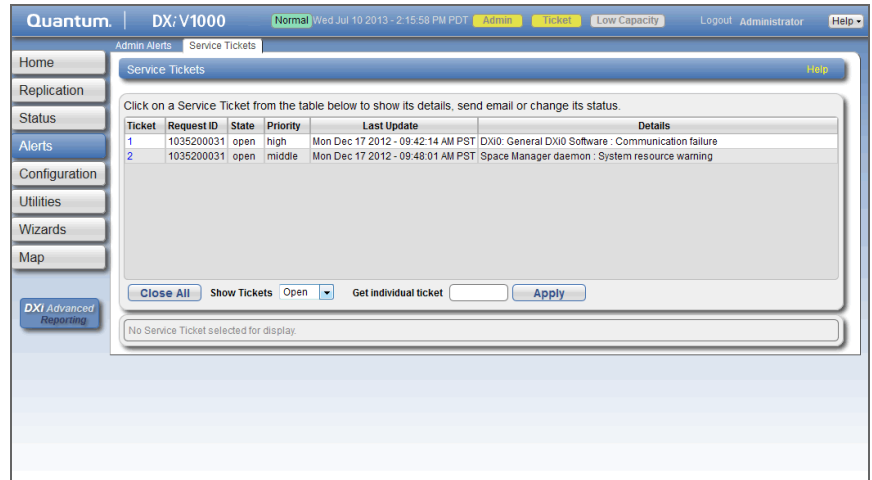
Note: For DXi V1000 Standard Edition users, documentation, community support, and other resources are available through Forum V (<http://www.quantum.com/forumv>), Quantum's online support forum for virtualization products. Quantum customer support options are available for DXi V-Series Enterprise Edition users. To learn more about upgrading to Enterprise Edition, contact your Quantum Sales Representative.

Working With Service Tickets

The **Service Tickets** page allows you to view and work with service tickets.

To access the **Service Tickets** page, click the **Alerts** menu, and then click the **Service Tickets** tab (see [Figure 63](#)).

Figure 63 Service Tickets Page



The **Service Tickets** page displays the following information about open service tickets:

- **Ticket** - The service ticket number.
- **Request ID** - The Request ID of the ticket.
- **State** - The current status of the service ticket (**Open** or **Closed**).
- **Priority** - The priority level of the service ticket (**Low**, **Middle**, or **High**).
- **Last Update** - The date when the service ticket was last updated by the system.
- **Details** - A brief description of the service ticket.
- **Close All** - Click to close all open service tickets.
- **Show Tickets** - Select an option to display **Open** tickets, **Closed** tickets, or **All** tickets.
- **Get individual ticket** - To display a specific ticket in the list, enter a ticket number and click **Apply**.

Note: Click a column heading to sort the rows in the table by that column. Click the column heading again to reverse the sort order.

Use the **Service Tickets** page to perform the following tasks:

- View details for a service ticket, including recommended actions (see [Viewing a Service Ticket](#) on page 120).
- Add information to a service ticket (see [Modifying a Service Ticket](#) on page 122).
- Send a service ticket to an e-mail address (see [Sending a Service Ticket](#) on page 123).
- Close a service ticket that has been resolved (see [Closing a Service Ticket](#) on page 124).

Viewing a Service Ticket

View a service ticket to see detailed information about the problem that caused the system to generate the ticket and to view recommended actions.

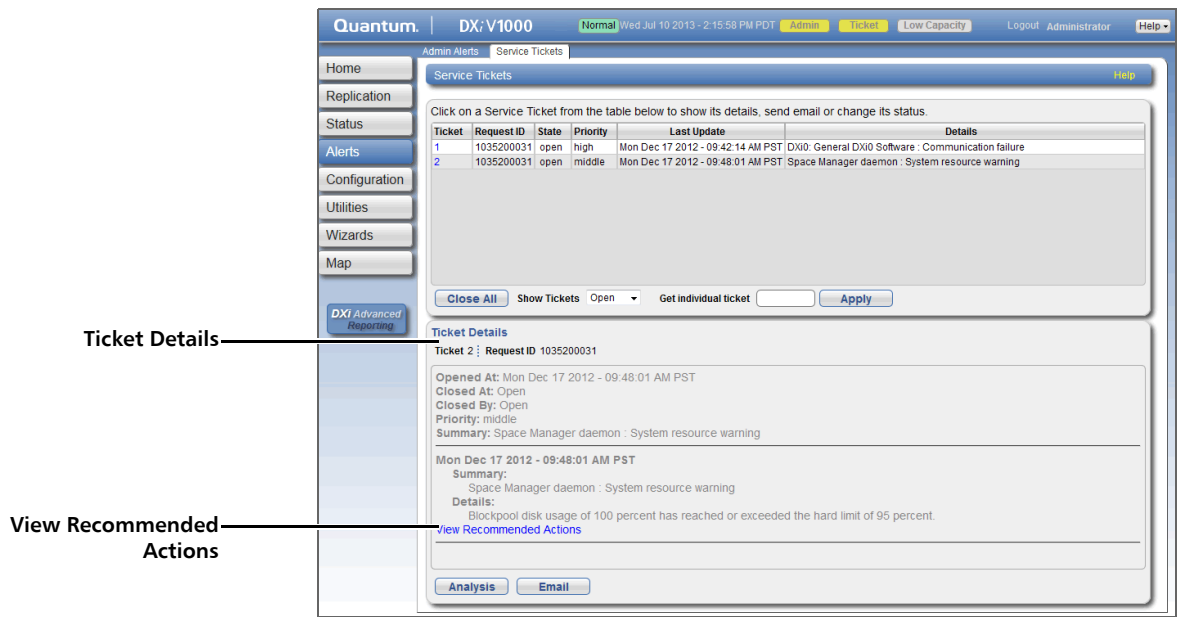
To view a service ticket:

- 1 In the list of service tickets, click the ticket number.

The **Ticket Details** section at the bottom of the page displays information about the service ticket, including the time the ticket was opened and closed, the ticket status, and detailed information about the problem (see [Figure 64](#)).

Note: The time indicated in the service ticket may not match the DXi V-Series system time.

Figure 64 Ticket Details



2 (Optional) Click **View Recommended Actions** to view instructions for resolving the problem.

The recommended actions display in a new Web browser window (see [Figure 65](#)). Follow the instructions to resolve the problem. When you are finished, click the close button [x] on the upper right corner of the window.

Figure 65 Recommended
Actions

Recommended Actions	
Disk Space Conditions	
IF	THEN
The device is approaching a low available disk space condition:	Increase storage capacity by freeing up disk space (deleting or moving files) or by adding additional disk capacity.
The device is critically low on available disk space:	Increase storage capacity by freeing up disk space (deleting or moving files) or by adding additional disk capacity.
The blockpool disk usage has exceeded a soft or hard limit:	Increase storage capacity by freeing up disk space (by deleting or moving files) or by adding additional disk capacity.
The problem is NOT resolved:	Contact the Quantum Technical Assistance Center. In the USA: 1+800-284-5101 UK, France and Germany: 00800 4 QUANTUM EMEA: +49 6131 3241 1164 / Asia Pacific: +603 7953 3010 On the Web: http://www.quantum.com/support

[Print Document](#) | [Close Window](#)

© 2012 Quantum Corporation • All rights reserved.

Modifying a Service Ticket

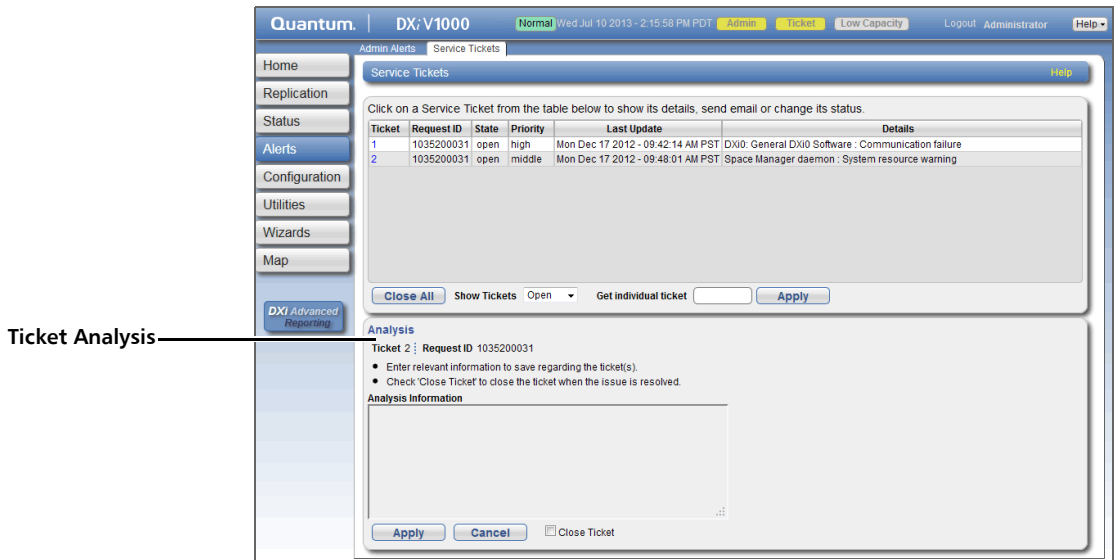
Modify a service ticket to add additional information to the ticket, for example, troubleshooting steps you have taken or a record of calls made to Quantum customer support. The additional information is saved with the service ticket and remains associated with the ticket even after it is closed.

To modify a service ticket:

- 1 In the list of service tickets, click the ticket number.
- 2 Click **Analysis** at the bottom of the page.

The **Ticket Analysis** section displays at the bottom of the page (see [Figure 66](#)).

Figure 66 Ticket Analysis



Ticket Analysis

- 3 In the **Analysis Information** box, enter all relevant information about actions taken to resolve the issue.
- 4 Click **Apply**.

Sending a Service Ticket

Send a service ticket to send the ticket details to an e-mail address. You can also add optional comments to the e-mail.

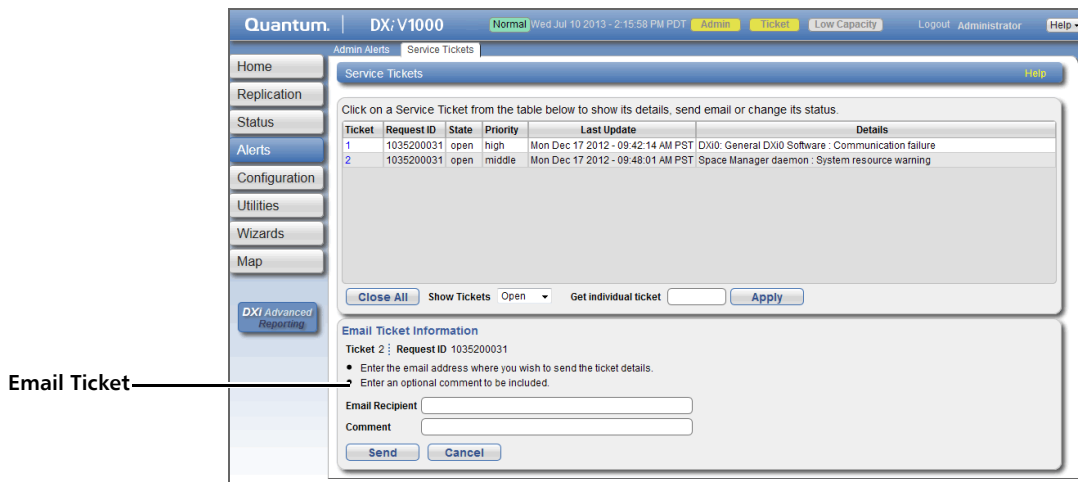
Note: To enable the DXi V-Series to send e-mail, you must specify an outgoing e-mail server (see [Server](#) on page 233).

To send a service ticket:

- 1 In the list of service tickets, click the ticket number.
- 2 Click **Email** at the bottom of the page.

The **Email Ticket Information** section displays at the bottom of the page (see [Figure 67](#)).

Figure 67 Email Ticket
Information



- 3 In the **Email Recipient** box, enter the e-mail address where you want to send the ticket details.
- 4 (Optional) In the **Comment** box, enter additional information to send with the ticket.
- 5 Click **Send**.

Closing a Service Ticket

Close a service ticket if the problem the caused the system to generate the ticket is resolved. You can also close all service tickets that are currently open.

Note: You can still view and modify a ticket after it has been closed.

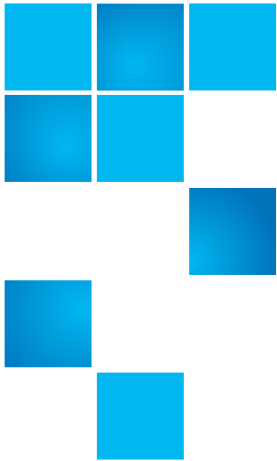
To close all service tickets that are currently open, below the list of service tickets, click **Close All**.

To close a single service ticket:

- 1 In the list of service tickets, click the ticket number.
- 2 Click **Analysis** at the bottom of the page.

The **Ticket Analysis** section displays at the bottom of the page (see [Figure 66](#)).

- 3 Select the **Close Ticket** check box.
- 4 Click **Apply**.



Chapter 8

DXi V-Series Configuration

The **Configuration** page allows you to configure the features of the DXi V-Series, including storage presentation, data replication, system settings, and notifications.

To access the **Configuration** page, click the **Configuration** menu.

The **Configuration** page contains the following tabs:

- [NAS](#)
- [Replication Configuration](#)
- [OST](#) (including DXi Accent with OST)
- [Scheduler](#)
- [System](#)
- [Notifications](#)
- [Contacts](#)

NAS

The **NAS** page allows you to configure the DXi V-Series to present its storage capacity as NAS (network attached storage) shares that are compatible with standard backup applications. You can create NAS

shares for use with Windows or Linux networks. You can also join the DXi V-Series to a Windows domain or workgroup and manage users.

Note: The **NAS** wizard provides guided assistance for configuring NAS shares (see [DXi V-Series Configuration Wizards](#) on page 23).

Caution: Filenames on NAS shares are limited to a length of 256 bytes. If a filename uses Japanese characters, the filename can be no longer than 85 characters. This is because each Japanese character is represented by 3 bytes.

To access the **NAS** page, click the **Configuration** menu, and then click the **NAS** tab.

The **NAS** page contains the following tabs:

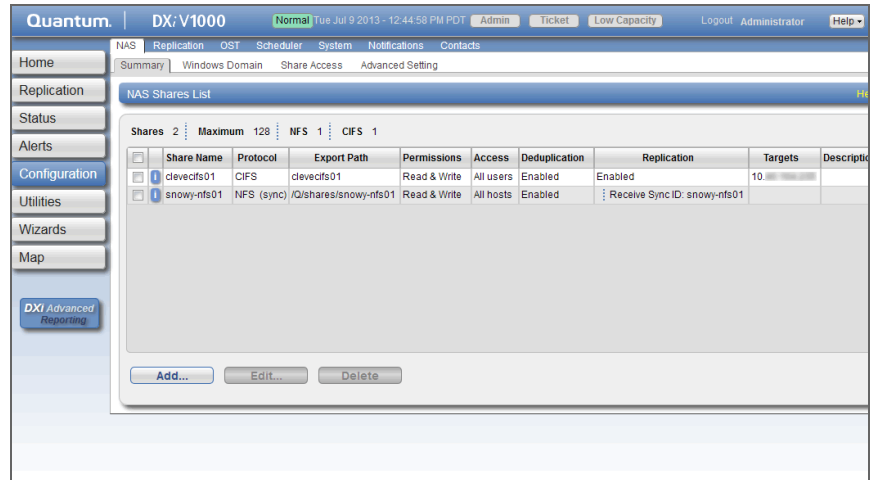
- [NAS Summary](#)
- [Windows Domain](#)
- [Share Access](#)
- [Advanced Setting](#)

NAS Summary

The **NAS Summary** page allows you to manage NAS shares on the DXi V-Series. You can view information about existing shares, add or edit shares, and delete shares.

To access the **NAS Summary** page, on the **NAS** page, click the **Summary** tab (see [Figure 68](#)).

Figure 68 NAS Summary Page



Use the **NAS** page to perform the following tasks:

- View information about existing NAS shares (see [NAS Shares List](#) on page 129).
- Add a new NAS share to the system (see [Adding a NAS Share](#) on page 131).
- Edit properties for an existing NAS share (see [Editing a NAS Share](#) on page 132).
- Delete a NAS share from the system (see [Deleting a NAS Share](#) on page 134).

NAS Shares List

The **NAS Shares List** section displays the following information for all NAS shares on the DXi V-Series:

- **Shares** - The number of shares that have been added to the system.
- **Maximum** - The maximum number of shares that can be added to the system.
- **NFS** - The number of existing shares configured to use the NFS protocol (for Linux networks).
- **CIFS** - The number of existing shares configured to use the CIFS protocol (for Windows networks).
- **Share Name** - The name of the share.

- **Protocol** - The protocol (**CIFS** or **NFS**) the share is configured to use.
For NFS shares, the **Protocol** column displays the commit type of the share (**sync** for synchronous or **async** for asynchronous). For information about changing the commit type of NFS shares, see the *DXi-Series Command Line Interface (CLI) Guide (6-67081)*.
- **Export Path** - The export path of the share (different for CIFS and NFS shares).
- **Permissions** - The permissions in use on the share (**Read & Write** or **Read Only**).
- **Access** - The access type of the share (**all hosts** or specific users).
- **Deduplication** - The data deduplication state of the share (**Enabled** or **Disabled**).
- **Replication** - The current state of replication for the share:
 - **Enabled** - Replication is enabled.
 - **Send/Receive Sync ID** - Directory/File Based Replication is enabled.
 - **Configure** - Click to configure replication for the share (see [Editing a NAS Share](#) on page 132)
 - **Scheduled** - Replication is scheduled for the share. Click to view or modify the schedule (see [Scheduling a Share for Replication](#) on page 193).
- **Targets** - The targets the share is configured to replicate to.
- **Description** - A brief description of the NAS share (if available).

Note: Click a column heading to sort the rows in the table by that column. Click the column heading again to reverse the sort order.

Note: Click the Information button [i] next to a share to display detailed information about the share and recent replication activity.

Adding a NAS Share

Add a NAS share to present the storage capacity of the DXi V-Series as a NAS share that is compatible with standard backup applications. You can add up to 128 shares. When you add a share, you must specify whether it uses the NFS protocol (for Linux networks) or the CIFS protocol (for Windows networks).

Note: If you are adding a CIFS share for use with a Windows network, you must configure the Windows domain before adding the new share (see [Windows Domain](#) on page 135).

To add a NAS share:

- 1 Click **Add**.

The **Add NAS Share** page displays (see [Figure 69](#)).

Figure 69 Add NAS Share Page

The screenshot shows the 'Add NAS Share' configuration page in the Quantum DXi V1000 web interface. The page is titled 'Add NAS Share' and is part of the 'Advanced Setting' section. It is divided into two main sections: 'NAS Share Settings' and 'Replication Settings'.
NAS Share Settings:
 - **Name:** A text input field.
 - **Description:** A text input field.
 - **Options:** A checkbox for 'Hide from network browsing' (unchecked) and a checked checkbox for 'Enable deduplication'. A note states: 'Cannot enable/disable deduplication once share is created.'
 - **Export Protocol:** Radio buttons for 'CIFS (Windows network)' (selected) and 'NFS (UNIX/Linux network)'.
 - *** Required Field:** A note indicating that the Name and Description fields are required.
Replication Settings:
 - **Send:** A checked checkbox for 'Enable replication to the replication target DXi'. Below it are two unchecked checkboxes: 'Enable Directory/File Based replication to target' and 'Enable Directory/File Based replication to this DXi'.
 - **Sync ID:** A text input field with a help icon.
 - **Table:** A table with columns 'Replication Target DXis', 'Status', and 'Encryption'.
 | 10... | Ready | AES 256-bit |
 | 10... | System Paused | AES 256-bit |
 - **Access:** Radio buttons for 'Locked' (unchecked) and 'Unlocked' (checked).
 - **Buttons:** 'Apply', 'Reset', and 'Cancel' buttons are located at the bottom of the form.

- 2 Under **NAS Share Settings**, enter information about the share:

- **Name** - Enter the name of the NAS share.
- **Description** - (Optional) Enter a brief description of the share.
- **Hide from network browsing** - (CIFS shares only) Select the check box to hide the share from network browsing. If selected, you cannot see the share when browsing the network.

- **Enable data deduplication** - Select the check box to enable data deduplication. Quantum recommends that you enable data deduplication to optimize disk usage.

Note: Data deduplication is enabled by default. You cannot enable or disable data deduplication after the share is added. If data duplication is disabled, then data compression is also disabled.

- **Export Protocol** - Select the export protocol for the share:
 - **CIFS** - Select the CIFS option to use the share on a Windows network.
 - **NFS** - Select the NFS option to use the share on a UNIX or Linux network.

3 (Optional) Under **Replication Settings**, specify replication settings.

For more information about configuring replication for a share, or to set up replication for the share at a later time, see [DXi V-Series Replication](#) on page 67.

4 Click **Apply**.

Note: When you create a CIFS share, the initial permissions are the same as the default permissions for a Windows 2003 share with the addition of an ACE (Access Control Entry) that permits full access to the share for all authenticated users. Administrators can choose to remove this full access ACE, set up custom permissions, or leave the ACL (Access Control List) as it is if the server is set up in a fully trusted environment.

Editing a NAS Share

Edit a NAS share to modify the settings for the share, for example, to change the description of the share or to select different options.

To edit a NAS share:

- 1** Select the share and click **Edit**.

The **Edit NAS Share & Replication Settings** page displays (see [Figure 70](#)).

Figure 70 Edit NAS Share & Replication Settings Page

The screenshot shows the 'Edit NAS Share & Replication Settings' page in the Quantum DXi V1000 web interface. The page is divided into two main sections: 'NAS Share Settings' and 'Replication Settings'.

NAS Share Settings:

- Name:** clevecifs01
- Description:** (empty text box)
- Options:**
 - Enforce read-only access
 - Hide from network browsing
- Deduplication:** Enabled
- Export Protocol:**
 - CIFS (Windows network)
 - Use Active Directory MMC to manage users and share security.

Replication Settings:

Send:

- Enable replication to the replication target DXi
- Enable Directory/File Based replication to target
 - Sync ID: clevecifs01

Replication Target DXis	Status	Encryption
<input checked="" type="checkbox"/> 10.10.10.10	Ready	AES 256-bit
<input checked="" type="checkbox"/> 10.10.10.10	System Paused	AES 256-bit

Receive:

- Enable Directory/File Based replication to this DXi
 - Sync ID: clevecifs01
 - Access: Locked Unlocked

Buttons: Apply, Reset, Cancel

2 Under NAS Share Settings, enter information about the share:

Note: If you are editing a share, only the **Description**, **Enforce read-only access**, **Hide from network browsing**, and **Allow all users to access this share** options can be changed.

- **Description** - (Optional) Enter a brief description of the share.
- **Enforce read-only access** - Select the check box to make the share read only. If selected, you cannot write to the share.
- **Hide from network browsing** - (CIFS shares only) Select the check box to hide the share from network browsing. If selected, you cannot see the share when browsing the network.
- **Allow all users/hosts to access this share** - Select this check box to allow all users (CIFS shares) or hosts (NFS shares) to access the share.

Or clear the check box to allow only specified users or hosts to access the share. To add a user or host to the access list, click **Add**. Specify the **Workgroup User** (CIFS shares) or the **Hostname or IP Address** (NFS shares) and the associated permissions (**Read Only** or **Read & Write**), and then click **Apply**.

Note: To modify the users that are available in the **Workgroup User** list, see [Share Access](#) on page 138.

Note: After you add a user or host to the access list, you cannot change their permissions. Instead, select the user or host in the access list and click **Delete** to remove them from the list. Then add the user or host again with the correct permissions.

3 (Optional) Under **Replication Settings**, specify replication settings.

For more information about configuring replication for a share, or to set up replication for the share at a later time, see [DXi V-Series Replication](#) on page 67.

4 Click **Apply**.

Note: If you modify a NAS share that uses the CIFS protocol, you must restart the CIFS service for the changes to take effect. To restart the CIFS service, first disjoin the Windows workgroup, then join it again (see [Windows Domain](#) on page 135). Restarting the CIFS service will close all active connections to the share. Most Windows workstations will automatically reconnect, but some applications may be affected.

Deleting a NAS Share

Delete a NAS share if it is no longer needed. When you delete a share, all data stored on the share is lost, and any schedules associated with the share are deleted.

Note: If you delete a share configured for Directory/File Based Replication on the source DXi, the share is *not* automatically deleted on the target DXi. If you do not want to retain the share on the target DXi, you can manually delete it.

To delete a NAS share:

1 Select the share and click **Delete**.

Note: You can select multiple shares to delete at once.

- 2 Click **Yes** to confirm the deletion.

Windows Domain

The **Windows Domain** page allows you to join the DXi V-Series to a Windows workgroup or a Windows domain using **SMB**. To use a NAS share configured for the CIFS protocol on a Windows network, you must first join the DXi V-Series to a workgroup or a domain. After you join the DXi V-Series to a workgroup or a domain, CIFS shares are available for use on the Windows network.

To access the **Windows Domain** page, on the **NAS** page, click the **Windows Domain** tab (see [Figure 71](#)).

Figure 71 Windows Domain Page

The screenshot shows the Quantum DXi V1000 management interface. The top navigation bar includes 'NAS', 'Replication', 'OST', 'Scheduler', 'System', 'Notifications', and 'Contacts'. The 'Windows Domain' tab is selected. A message states 'This DXi has not joined a Windows Domain'. The configuration section includes:

- Domain Type:** A dropdown menu with 'Select a Type'.
- Domain/Workgroup Name:** A text input field.
- Primary Domain Controller:** Radio buttons for 'Use DNS Discovery' (selected) and 'Specify Address'.
- Organization Unit:** A text input field.
- Administrator Name:** A text input field.
- Administrator Password:** A text input field.

An 'Apply' button is located at the bottom of the configuration area.

Use the **Windows Domain** page to perform the following tasks:

- Join the DXi V-Series to a Windows workgroup (see [Joining a Windows Workgroup](#) on page 136).
- Join the DXi V-Series to a Windows domain (see [Joining a Windows Domain](#) on page 136).
- Remove the DXi V-Series from a Windows workgroup or domain (see [Disjoining a Workgroup or Domain](#) on page 137).

Joining a Windows Workgroup

Join a Windows workgroup to add the DXi V-Series to a workgroup on a Windows network. After you join a workgroup, CIFS shares are available for use on the Windows network.

To join a Windows workgroup:

1 Enter the following information about the Windows domain:

- **Domain Type** - Select Workgroup.
- **Domain/Workgroup Name** - Enter the workgroup name.

The workgroup name can be the name of an existing workgroup or a new workgroup (for example, **Workgroup** or **Sales**).

2 Click **Apply**.

Note: When an SMB server is joined to a workgroup, share security is managed directly from the remote management console. For a CIFS share, security is provided through the read only or read/write access to the share. By default, when a CIFS share is created, the default security setting allows access for all users. Any access restrictions on individual users can be managed by editing a share on the NAS Summary page (see [Editing a NAS Share](#) on page 132).

Joining a Windows Domain

Join a Windows domain to add the DXi V-Series to a Windows network using Active Directory. After you join a domain, CIFS shares are available for use on the Windows network.

Before joining a Windows domain, make sure the date and time on the DXi V-Series is correct and is synchronized with the Active Directory Services (ADS) server (see [Date & Time](#) on page 217). The time difference between the DXi V-Series and the ADS server (domain controller) must be less than 300 seconds. Quantum recommends using the same NTP server for the DXi V-Series and the ADS server to keep them synchronized.

To join a Windows domain:

1 Enter the following information about the Windows domain:

- **Domain Type** - Select **Active Directory**.
- **Domain/Workgroup Name** - Enter the domain name.
- **Primary Domain Controller** - Select an option for the Primary Domain Controller (PDC):
 - **Use DNS Discovery** - Discover the PDC automatically.
 - **Specify Address** - Enter the fully qualified name or the IP address of the PDC.
- **Organization Unit** - (Optional) Enter the name of the organizational unit in the domain.

The DXi V-Series will become a member of this organization.
- **Administrator Name** - Enter **Administrator** or any user that has the right to join the domain.

By default, any user belonging to the **Administrators** group or the **Domain Admins** group has the right to join the domain. In addition, any user can join the domain if they are specifically delegated this right by a member of the **Administrators** group.
- **Administrator Password** - Enter the password for the user entered above.

2 Click **Apply**.

Note: When the system is joined to the Active Directory domain, share security is managed by the MMC (Microsoft Management Console) that is running on the domain controller. By default, when a CIFS share is created, the default security setting allows access for all users. Any access restrictions on individual users must be managed from the MMC.

Disjoining a Workgroup or Domain

Disjoin a workgroup or a domain to remove the DXi V-Series from a Windows workgroup or domain. After you disjoin the workgroup or domain, CIFS shares are no longer available for use on the Windows network

To disjoin a workgroup or domain, click **Disjoin**.

Share Access

The **Share Access** page allows you to manage workgroup users when the DXi V-Series is joined to a Windows workgroup, or manage share administrators when the DXi V-Series is joined to a Windows domain using Active Directory. You can add users or administrators, change user privileges, and delete users or administrators. Available users or administrators can be granted access to NAS shares configured for the CIFS protocol.

Note: You must join a Windows workgroup or domain before you can add workgroup users or share administrators (see [Windows Domain](#) on page 135). The **Share Access** page is different depending on whether the DXi is joined to a workgroup or domain.

To access the **Share Access** page, on the **NAS** page, click the **Share Access** tab (see [Figure 72](#) and [Figure 73](#)).

Figure 72 Share Access Page
(Windows Workgroup)

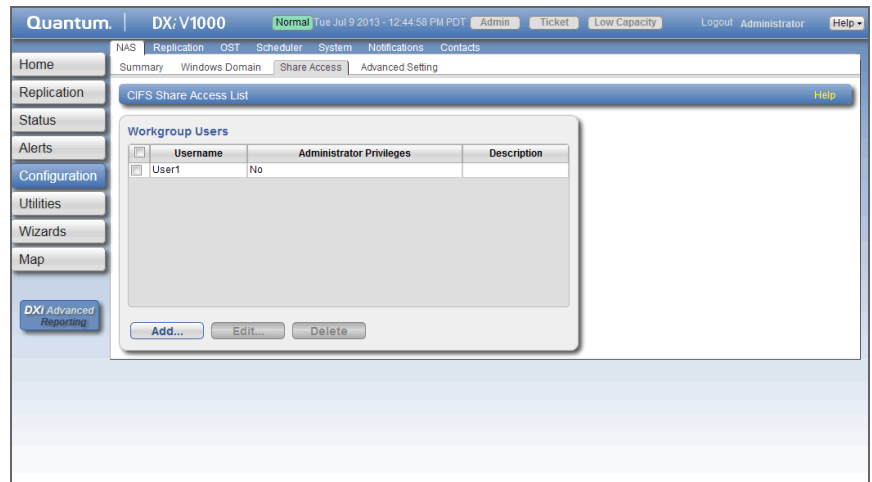
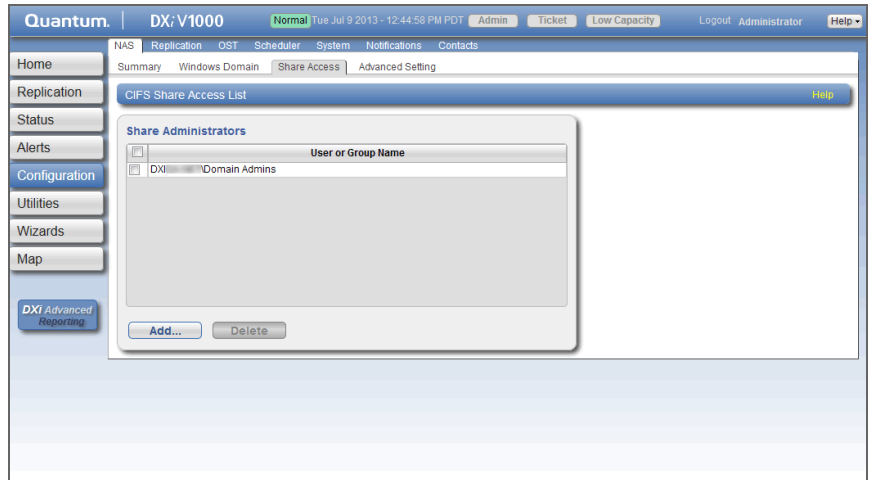


Figure 73 Share Access Page
(Active Directory)



Use the **Share Access** page to perform the following tasks:

- View information about workgroup users or share administrators (see [Workgroup Users or Share Administrators](#) on page 139).
- Add a workgroup user or a share administrator (see [Adding a Workgroup User or Share Administrator](#) on page 140).
- Edit a workgroup user (see [Editing a Workgroup User](#) on page 141).
- Delete a workgroup user or a share administrator (see [Deleting a Workgroup User or Share Administrator](#) on page 143).

Workgroup Users or Share Administrators

If the DXi V-Series is joined to a Windows workgroup, the **Workgroup Users** section displays the following information about workgroup users:

- **Username** - The name of the workgroup user.
- **Administrator Privileges** - The privileges of the workgroup user (**Yes** if the user has administrator privileges, **No** if they do not.)
- **Description** - A brief description of the workgroup user (if available).

If the DXi V-Series is joined to a Windows domain using Active Directory, the **Share Administrators** section displays the following information about share administrators:

- **User or Group Name** - The fully qualified name of the user or group.

Adding a Workgroup User or Share Administrator

Add a workgroup user or share administrator to be able to grant that user or administrator access to CIFS shares.


Windows Workgroup

To add a workgroup user for a Windows workgroup:

- 1 Click **Add**.

The **Add Workgroup User** page displays (see [Figure 74](#)).

Figure 74 Add Workgroup User Page



The screenshot shows the Quantum DXi V1000 web interface. The top navigation bar includes 'NAS', 'Replication', 'OST', 'Scheduler', 'System', 'Notifications', and 'Contacts'. Below this, there are tabs for 'Summary', 'Windows Domain', 'Share Access', and 'Advanced Setting'. The main content area is titled 'Add Workgroup User' and contains a form with the following fields: '* User Name', '* Password', '* Confirm Password', and 'Description'. There is also a checkbox for 'Grant Administrator Privileges' and a '* Required Field' label. At the bottom of the form are 'Apply', 'Reset', and 'Cancel' buttons. The left sidebar contains navigation links: Home, Replication, Status, Alerts, Configuration (highlighted), Utilities, Wizards, and Map. The bottom left corner has a 'DXi Advanced Reporting' button.

- 2 Enter information about the workgroup user:

- **User Name** - Enter the name of the workgroup user.
- **Password** - Enter the password for the workgroup user.
- **Confirm Password** - Enter the password again to confirm it.
- **Description** - (Optional) Enter a brief description of the workgroup user.
- **Grant Administrator Privileges** - Select the check box to add the workgroup user to the Windows Administrators group.

This allows the workgroup user to override certain permissions settings and prevents the workgroup user from being locked out of shares or directories.

3 Click Apply.

After you create a workgroup user, you can grant the user access to a NAS share (see [Editing a NAS Share](#) on page 132).

Windows Domain

To add a share administrator for a Windows domain:

1 Click Add.

The **Add Share Administrator** page displays (see [Figure 75](#)).

Figure 75 Add Share Administrator Page



2 Enter the Fully Qualified User or Group Name of the share administrator.

3 Click Apply.

Use the MMC (Microsoft Management Console) to manage users (see [ADS Share Permissions](#) on page 143).

Editing a Workgroup User

Edit a workgroup user to change the user's password or description, or to change the user's administrator privileges.

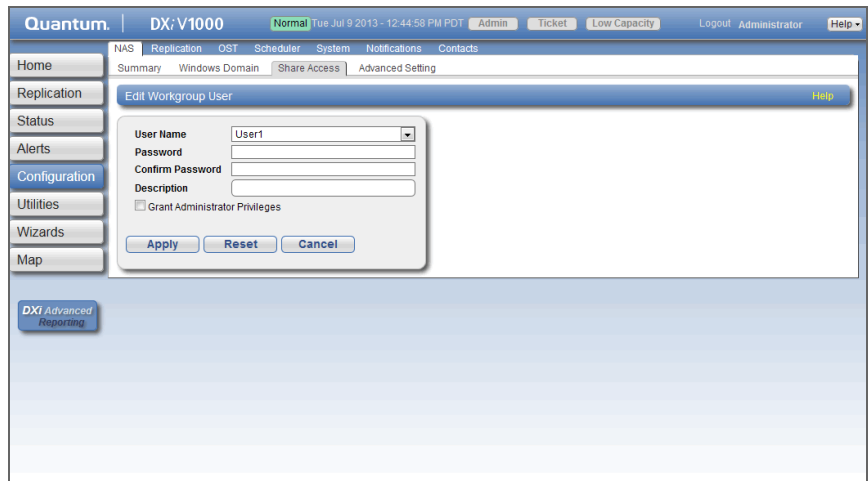
Note: You cannot edit a share administrator. Instead, delete the share administrator, then add a new share administrator.

To edit a workgroup user:

- 1 Select the user and click **Edit**.

The **Edit Workgroup User** page displays (see [Figure 76](#)).

Figure 76 Edit Workgroup User Page



The screenshot shows the Quantum DXi V1000 web interface. The top navigation bar includes 'NAS', 'Replication', 'OST', 'Scheduler', 'System', 'Notifications', and 'Contacts'. The main content area is titled 'Edit Workgroup User' and features a form with the following fields: 'User Name' (a dropdown menu currently showing 'User1'), 'Password', 'Confirm Password', and 'Description'. Below these fields is a checkbox labeled 'Grant Administrator Privileges'. At the bottom of the form are three buttons: 'Apply', 'Reset', and 'Cancel'. The left sidebar contains navigation options: Home, Replication, Status, Alerts, Configuration (highlighted), Utilities, Wizards, and Map. The bottom left corner of the interface displays 'DXi Advanced Repowering'.

- 2 Enter information about the workgroup user:

Note: If you are editing a workgroup user, you cannot change the **User Name**.

- **User Name** - (Optional) Select a different workgroup user to edit.
- **Password** - Enter the password for the workgroup user.
- **Confirm Password** - Enter the password again to confirm it.
- **Description** - (Optional) Enter a brief description of the workgroup user.
- **Grant Administrator Privileges** - Select the check box to add the workgroup user to the Windows Administrators group.

This allows the workgroup user to override certain permissions settings and prevents the workgroup user from being locked out of shares or directories.

3 Click Apply.

Deleting a Workgroup User or Share Administrator

Delete a workgroup user or share administrator if the user or administrator no longer needs to access CIFS shares.

To delete a workgroup user or share administrator, select the user or administrator and click **Delete**.

Note: You can select multiple users or administrators to delete at once.

ADS Share Permissions

To manage user access to CIFS shares when the DXi V-Series is joined to a Windows domain, use the MMC (Microsoft Management Console). Log onto the MMC on the domain controller and access a share's properties to set share permissions for users.

Note: In some cases, when you view file permissions on a Windows system, you will not see the user and group information. Instead you will see the SID (security ID) which appears as a series of numbers. This occurs when you move files (for example, using a backup utility or DOS **xcopy**) from one system to another system, and the user and group from the source system do not exist on the target system.

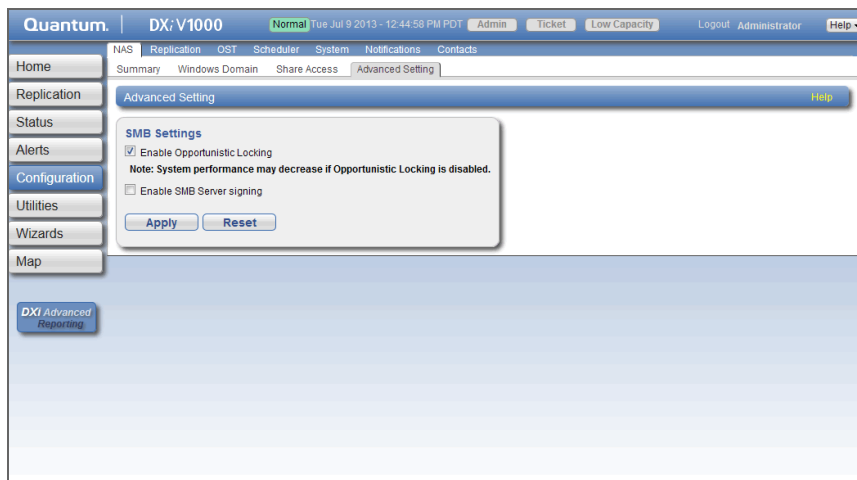
Often users and groups are unique to a particular scope, such as a Windows system or an ADS domain. As a result, some assigned permissions might not be available on the target system because the associated user and group do not exist there. However, common groups (for example, **Administrators**, **Users**, and **Everyone**) are recognized on most Windows systems and domains.

Advanced Setting

The **Advanced Setting** page allows you to enable or disable advanced SMB settings.

To access the **Advanced Setting** page, on the **NAS** page, click the **Advanced Setting** tab (see [Figure 77](#)).

Figure 77 Advanced Setting Page



To enable or disable advanced SMB settings:

- 1 Select the check box to enable, or clear the check box to disable, the following settings:
 - **Enable Opportunistic Locking** - (Enabled by default)
Opportunistic locking lets clients lock files and locally cache information without the risk of another user changing the file. This increases performance for many file operations, but it may decrease performance in other operations because the server that grants the opportunistic lock must manage the breaking of that lock when another user requests access to the file.
-
- Note:** System performance may decrease if **Opportunistic Locking** is disabled.
-
- **Enable SMB Server signing** - (Disabled by default) SMB server signing improves security on Windows networks by requiring clients to provide a security signature to connect to a server. If the DXi V-Series is joined to a Windows domain that is

configured to require signing, you should enable SMB server signing.

2 Click **Apply**.

Replication Configuration

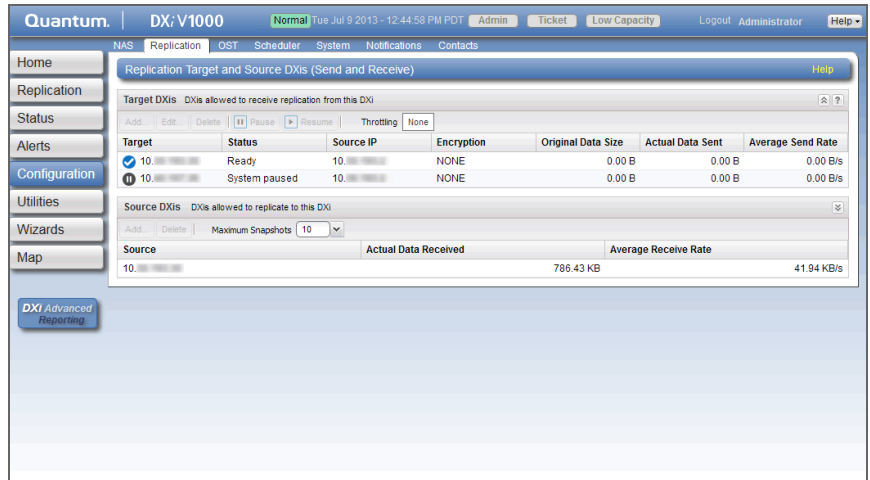
The **Replication Configuration** page allows you to configure and manage replication targets and allowed replication sources on the DXi V-Series. A target system can *receive* data from 1 source (DXi V1000 and V2000). A source system can *send* data to 1 target (V1000 and V2000) or up to 2 targets (V4000).

Note: For more information about data replication, or to perform data replication, see [DXi V-Series Replication](#) on page 67.

Note: If the DXi is configured as a replication target *and* replication is performed across a public network, with the source and target located behind NAT-enabled routers, you *must* specify a NAT IP address for the DXi on the **Network** page (see [Configuring Interface IP Addresses](#) on page 206).

To access the **Replication Configuration** page, click the **Configuration** menu, and then click the **Replication** tab (see [Figure 78](#)).

Figure 78 Replication
Configuration Page



Use the **Replication Configuration** page to perform the following tasks:

- View information about configured replication target systems (see [Target DXis List](#) on page 147).
- Add, edit, or delete a replication target (see [Adding a Replication Target](#) on page 148, [Editing a Replication Target](#) on page 150, or [Deleting a Replication Target](#) on page 152).
- Pause or resume replication to a target (see [Pausing or Resuming Replication to a Target](#) on page 152).
- Configure a constant replication throttle (see [Enabling System Throttling](#) on page 152).
- View information about allowed replication source systems (see [Source DXis List](#) on page 154).
- Add or delete an allowed replication source (see [Adding a Replication Source](#) on page 154 or [Deleting a Replication Source](#) on page 155).
- Specify the maximum number of received snapshots to retain for each source (see [Changing the Maximum Number of Snapshots](#) on page 156).

Target DXis List

The **Target DXis** list displays the following information for each target DXi:

- **Target** - The IP address of the target system that the DXi V-Series is configured to send data to.
- **Status** - The replication status of the DXi V-Series. For a detailed description of all possible replication statuses, see [Replication Overview](#) on page 60.
- **Source IP** - The IP address that is used to uniquely identify the source DXi to the target.
- **Encryption** - The type of encryption used when sending replicated data to the target system (**None**, **128-bit**, or **256-bit**).
- **Original Data Size** - The original, native size of data sent during replication or failback. This value does not represent the amount of data actually sent over the network during replication or failback because data is deduplicated and compressed before being sent.
- **Actual Data Sent** - The amount of data actually sent over the network during replication or failback. This value is usually much less than the **Original Data Size** due to the benefits of data deduplication and compression.
- **Average Send Rate** - The average send rate (in B/s) of data sent over the network during replication or failback (**Actual Data Sent** divided by the amount of time required to complete replication or failback).

You can customize the appearance of the **Target DXis** list in the following ways:

- Click the top banner row of the list to collapse or expand the list.
- Click the arrow to the right of a column heading and select **Sort Ascending** or **Sort Descending** to sort the rows in the table by that column.
- To show or hide a column, click the arrow to the right of a column heading, and then click **Columns**. Select the check box to show a column, or clear the check box to hide a column.

Note: The statistics in the **Target DXis** list are for each target DXi rather than a cumulative total for all targets as is displayed on the **Home** page.

Adding a Replication Target

Add a replication target to configure the DXi V-Series to send replicated data to that target. You can add up to two targets. After you add a target, you can enable replication to that target for a NAS share. When replication is enabled for a share, replicated data is sent to the target system during scheduled or manual replication.

Note: Before you can add a replication target, you must add the DXi to the list of allowed replication sources on the target DXi (see [Adding a Replication Source](#) on page 154).

Note: To add a new target when two targets are already configured, first delete one target (see [Deleting a Replication Target](#) on page 152). Then add the new target.

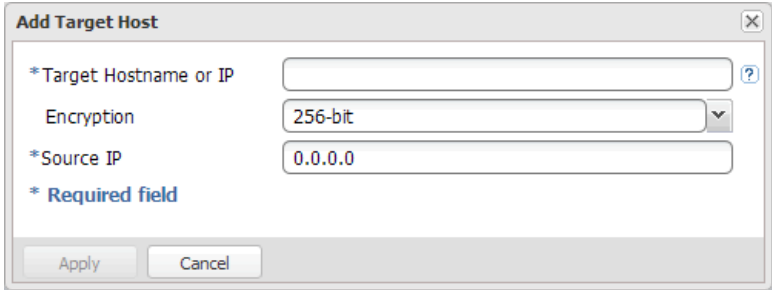
Note: For more information about enabling and scheduling replication for a share, see [Replication Send](#) on page 75.

To add a replication target:

- 1 Under **Target DXis**, click **Add**.

The **Add Target Host** window displays (see [Figure 79](#)).

Figure 79 Add Target Host



The screenshot shows a dialog box titled "Add Target Host" with a close button in the top right corner. It contains three input fields: "*Target Hostname or IP" with a help icon, "Encryption" with a dropdown menu set to "256-bit", and "*Source IP" with the value "0.0.0.0". Below the fields is a "* Required field" label. At the bottom are "Apply" and "Cancel" buttons.

- 2 In the **Target Hostname or IP** box, enter the hostname or IP address of the system that will receive the replicated data.

Note: When entering IP addresses, never use an address that is in a reserved IP address range. To see a list of reserved IP address ranges, click the quick tip icon [?] located near the IP address field.

Note: To use hostname format, you must specify at least one DNS IP address on the **Network** page (see [Network](#) on page 199).

- 3 In the **Encryption** drop-down box, select the type of encryption to use when sending replication data to the target system (**None**, **128-bit**, or **256-bit**).

Using 256-bit encryption (default) provides a stronger level of security but may have an impact on system performance in some situations. For best performance, if your data network is already secured, you should select **None** for encryption.

Caution: For encryption, select **None** or **128-bit** if you are sending data to a DXi running a system software version prior to DXi 2.1 Software.

- 4 In the **Source IP** box, enter the IP address that is used to uniquely identify the source DXi to the target. This may be different than the actual network IP address of the source DXi.

If the target system is at DXi 2.1 Software or higher, the **Source IP** field is not required. If the target system is at DXi 2.0.1.x Software or below, then you must enter the IP address by which the target system recognizes the source system. The default value is **0.0.0.0**.

Note: The **Source IP** field does not accept fully qualified domain names. You must enter a valid IP address. Make sure this IP address is configured in the allowable sources list on the target DXi.

Note: When configuring segmented network interfaces, if the source DXi replication, data, and management interfaces are on the same subnet, you must add a host route on the source DXi to make sure the replication interface is correctly selected when replicating data to the target DXi (see [Understanding Interface Routing](#) on page 212).

5 Click **Apply**.

Note: The new target is not automatically added to existing replication schedules. You must add or edit scheduled events to schedule replication to the new target (see [Scheduler](#) on page 188).

Editing a Replication Target

Edit a replication target to change encryption options or the source IP address.

To edit a replication target:

- 1 Under **Target DXIs**, select the target and click **Pause** to pause replication.
- 2 Select the target again and click **Edit**.

The **Edit Target Host** window displays (see [Figure 80](#)).

Note: If you are editing a target, you cannot change the **Target Hostname or IP**.

Figure 80 Edit Target Host

The screenshot shows a dialog box titled "Edit Target Host". It contains the following fields and controls:

- *Target Hostname or IP: 10.40.165.181
- Encryption: 256-bit
- *Source IP: 0.0.0.0
- * Required field (indicated by a blue asterisk)
- Buttons: Apply, Cancel

- 3 In the **Encryption** drop-down box, select the type of encryption to use when sending replication data to the target system (**None**, **128-bit**, or **256-bit**).

Using 256-bit encryption (default) provides a stronger level of security but may have an impact on system performance in some situations. For best performance, if your data network is already secured, you should select **None** for encryption.

Caution: For encryption, select **None** or **128-bit** if you are sending data to a DXi running a system software version prior to DXi 2.1 Software.

- 4 In the **Source IP Address** box, enter the IP address that is used to uniquely identify the source DXi to the target. This may be different than the actual network IP address of the source DXi.

If the target system is at DXi 2.1 Software or higher, the **Source IP Address** field is not required. If the target system is at DXi 2.0.1.x Software or below, then you must enter the IP address by which the target system recognizes the source system. The default value is **0.0.0.0**.

Note: The **Source IP Address** field does not accept fully qualified domain names. You must enter a valid IP address. Make sure this IP address is configured in the allowable sources list on the target DXi.

Note: When configuring segmented network interfaces, if the source DXi replication, data, and management interfaces are on the same subnet, you must add a host route on the source DXi to make sure the replication interface is correctly selected when replicating data to the target DXi (see [Understanding Interface Routing](#) on page 212).

- 5 Click **Apply**.
- 6 Under **Target DXis**, select the target and click **Resume** to pause replication.

Deleting a Replication Target

Delete a replication target if the DXi V-Series no longer needs to send replicated data to that target. After the target system is deleted, the DXi V-Series will no longer send replicated data to that system.

When a target is deleted:

- All replication jobs to that target that are in progress or queued will transition to failed.
- All replication job history for that combination of target and share is removed.
- All shares will be reconfigured to no longer replicate to that target.

To delete a replication target:

- 1 Under **Target DXis**, select one or more targets to delete.
- 2 Click **Pause** to pause replication to the target.
- 3 Click **Delete**.

Note: The deleted target is not automatically removed from existing replication schedules. You must edit scheduled events to remove the deleted target (see [Scheduler](#) on page 188).

Pausing or Resuming Replication to a Target

The source DXi controls the replication pause behavior.

- To pause replication, select a target under **Target DXis** and click **Pause**. The DXi temporarily stops sending replicated data to the selected target.
- To resume replication, select a target under **Target DXis** and click **Resume**. The DXi resumes sending replicated data to the selected target.

Enabling System Throttling

Enable system throttling to limit the network bandwidth used for replication to all targets. When a constant throttle is enabled, the DXi limits the amount of data it sends during source replication so that it does not exceed the specified bandwidth.

Note: If multiple targets are configured, replication to all targets counts against the same bandwidth limit.

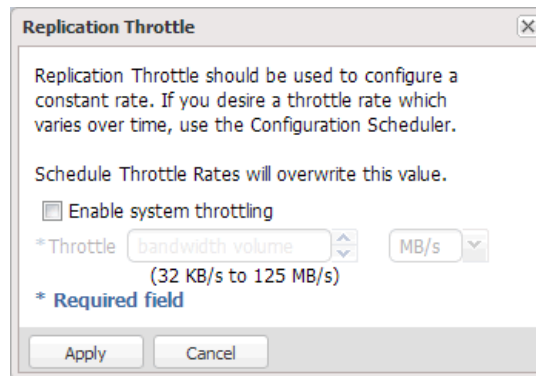
Note: To vary the replication throttle rate over time, use the **Configuration > Scheduler** page (see [Scheduler](#) on page 188). Do *not* enable a constant throttle if a throttle schedule is configured. The scheduled replication throttling bandwidth settings take precedence over the constant throttle value. (The currently active replication throttle rate appears on the **Home** page under **Current Activity**.)

To enable system replication throttling:

- 1 Under **Target DXis**, click the box next to **Throttling**.

The **Replication Throttle** window displays (see [Figure 79](#)).

Figure 81 Replication Throttle



- 2 Select the **Enable system throttling** check box.

Or clear the check box to disable system throttling.

- 3 In the **Throttle** box, enter the maximum allowed bandwidth, and select the units you want to use to specify the constant throttle (**KB/s** or **MB/s**). The lowest value you can set is 32 KB/s. The highest value you can set is 125 MB/s.
- 4 Click **Apply**.

Caution: Do not set the maximum allowed bandwidth to a value that is lower than necessary. If the maximum allowed bandwidth is set to the lowest value, large replication jobs may fail.

Source DXis List

The **Source DXis** list displays the following information for each source DXi:

- **Source** - The IP address of the source system that is allowed to send data to the DXi V-Series.
- **Actual Data Received** - The amount of data actually received over the network during replication or failback.
- **Average Receive Rate** - The average receive rate (in MB/s) of data received over the network during replication or failback (**Actual Data Received** divided by the amount of time required to complete replication or failback).

You can customize the appearance of the **Source DXis** list in the following ways:

- Click the top banner row of the list to collapse or expand the list.
- Click the arrow to the right of a column heading and select **Sort Ascending** or **Sort Descending** to sort the rows in the table by that column.
- To show or hide a column, click the arrow to the right of a column heading, and then click **Columns**. Select the check box to show a column, or clear the check box to hide a column.

Note: The statistics in the **Source DXis** list are for each source DXi rather than a cumulative total for all sources as is displayed on the **Home** page.

Adding a Replication Source

Add a system to the list of replication sources to allow it to send replicated data to the DXi V-Series. You must add a source system to the list of allowed replication sources on the target DXi before you configure the source DXi to send replicated data to the target. The DXi can receive replicated data from 1 source (DXi V1000 and V2000).

Note: For more information about working with received snapshots, see [Receive NAS](#) on page 86.

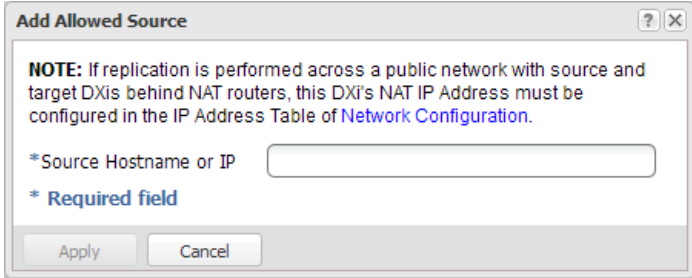
Note: It is typical for the target DXi to require additional disk space for replication data compared to the source DXi. This is because complete replication data is sent to the target before old data is deleted. For optimal performance, if the DXi is a replication target, Quantum recommends keeping the amount of free space at 20% or more (see [Disk Usage](#) on page 107).

To add a replication source:

- 1 Under **Source DXis**, click **Add**.

The **Add Allowed Source** window displays (see [Figure 79](#)).

Figure 82 Add Allowed Source



- 2 In the **Source Hostname or IP** box, enter the hostname or IP address of the system that will send the replicated data to the DXi V-Series.

Note: To use hostname format, you must specify at least one DNS IP address on the **Network** page (see [Network](#) on page 199).

- 3 Click **Apply**.

Deleting a Replication Source

Delete a system from the list of replication sources if it will no longer send replicated data to the DXi V-Series. After the source system is

deleted, the DXi V-Series will no longer accept replicated data from that system.

To delete a replication source:

- 1 Under **Source DXis**, select one or more sources to delete.
- 2 Click **Delete**.

Note: If a source DXi is deleted from the list, its contribution to the cumulative totals on the **Home** page are not removed until you clear **Receive** statistics (see [Replication Performance](#) on page 101).

Changing the Maximum Number of Snapshots

During scheduled or manual data replication, the DXi V-Series receives a snapshot from the source system. A snapshot contains all of the data necessary to fully recover or failback a NAS share to the point in time when the snapshot was saved.

The DXi V-Series can retain up to 32 snapshots for each replicated share. Once the maximum number of snapshots have been saved, the oldest snapshot is deleted to make room for each new snapshot that is received.

To change the maximum number of received snapshots:

- Under **Source DXis**, in the **Maximum Snapshots** drop-down box, select the number of snapshots to retain for each replicated share.
- The default value is 10. The maximum value is 32.

OST

The **OST** page allows you to configure the DXi V-Series to present its storage capacity as storage servers using OpenStorage (OST) technology. You can add one or more Logical Storage Units (LSUs) to a storage server. Storage servers and LSUs are compatible with backup applications that support OST, such as Symantec NetBackup and Symantec Backup Exec. In addition, OST data can be duplicated

(replicated) between DXi systems using NetBackup (see [Replicating OST Data](#) on page 157).

To authenticate OST devices on a media server, you must create OST user credentials. After you create the OST user credentials, enter them in the backup application to authenticate OST devices on the media server.

To access the **OST** page, click the **Configuration** menu, and then click the **OST** tab.

The **OST** page contains the following tabs:

- [Storage Servers](#)
- [LSU](#)
- [Manage Users](#)
- [Manage Remote Users](#)
- [Target IP Mapping](#)
- [DXi Accent](#)
- [OST Client Plug-In](#)

Replicating OST Data

The DXi V-Series can replicate (duplicate) OST data to another DXi using the following methods:

- **Optimized Duplication** - With optimized duplication, backup images on a storage server can be replicated to another storage server on a DXi that resides in the same NetBackup domain. The duplication occurs when it is initiated in NetBackup. With optimized duplication can specify up to two replication targets.
- **Automatic Image Replication (AIR)** - If you are using Symantec NetBackup 7.1 or higher, you can configure an LSU for Automatic Image Replication (see [Task Overview: Setting Up Automatic Image Replication](#) on page 158). If enabled, data on an LSU is automatically replicated to a remote LSU that resides on a DXi in a different NetBackup domain. The timing of the duplication, as well as the backup images that are duplicated, are determined by the storage lifecycle policies (SLPs) configured in NetBackup. With AIR, you can specify a single replication target.
- **Concurrent Optimized Duplication** - For both optimized duplication and Automatic Image Replication, you can optionally enable Concurrent Optimized Duplication. If enabled, as data is

written to the storage server, it is simultaneously replicated to the target DXi. When optimized duplication or Automatic Image Replication subsequently occurs, the operation is more efficient because a portion of the required data has already been replicated to the target storage server.

It is important to remember that, with Automatic Image Replication, the local and remote LSUs reside in *different* NetBackup domains. This differs from optimized duplication, which occurs between two LSUs residing within *the same* NetBackup domain.

Note: For more information about configuring the DXi V-Series for optimized duplication or Automatic Image Replication, see the *DXi-Series NetBackup and Backup Exec OST Configuration Guide (6-67079)*.

Note: For information about configuring NetBackup for optimized duplication or Automatic Image Replication (also referred to as duplicating images to a remote master server domain), see the *Symantec NetBackup Administrator's Guide*.

Task Overview: Setting Up Automatic Image Replication

Setting up Automatic Image Replication (AIR) requires that you first configure the target (remote) DXi and then the source DXi (see [Figure 83](#)). In addition, you must create storage lifecycle policies (SLPs) in NetBackup that define when the automatic replication occurs and which backup images are duplicated.

To automatically replicate (duplicate) all data on an LSU to a remote LSU that resides on a DXi in a different NetBackup domain:

- 1 On the target system, add the source system to the list of allowed replication sources (see [Adding a Replication Source](#) on page 154).
- 2 On the target system, create a local OST user (see [Manage Users](#) on page 175).

Caution: On the target system, make sure to create a *local* user on the **Configuration > OST > Manage Users** page.

- 3 On the target system, create a storage server and LSU to receive the replicated OST data (see [Adding a Storage Server](#) on page 162).

Note: Quantum recommends selecting the **Available Capacity** option when creating an LSU for use with Automatic Image Replication.

- 4 On the source system, specify the target system that will receive the replicated data (see [Adding a Replication Target](#) on page 148).
- 5 On the source system, create a remote OST user with the same user name and password that you used in step 2 above (see [Manage Remote Users](#) on page 179).

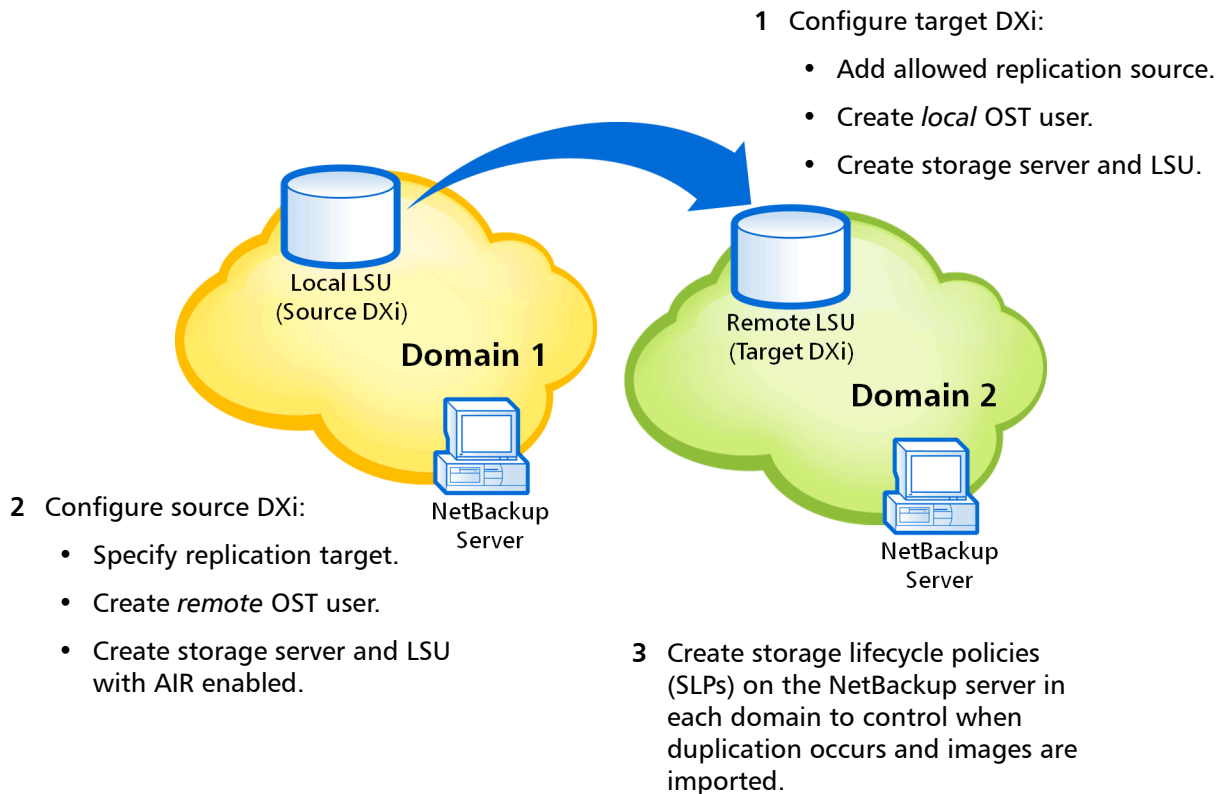
Caution: On the source system, make sure to create a *remote* user on the **Configuration > OST > Manage Remote Users** page.

- 6 On the source system, create a storage server and LSU, and enable the LSU for Automatic Image Replication (see [Adding a Storage Server](#) on page 162).

For **Remote Storage Server** and **Remote LSU**, make sure to specify the storage server and LSU created in step 3 above. Also, for **Remote User**, make sure to select the remote user created in step 5 above.

- 7 Configure storage lifecycle policies in NetBackup to control when automatic replication of the LSU occurs (see the *Symantec NetBackup Administrator's Guide*).

Figure 83 Setting Up OST
Automatic Image Replication

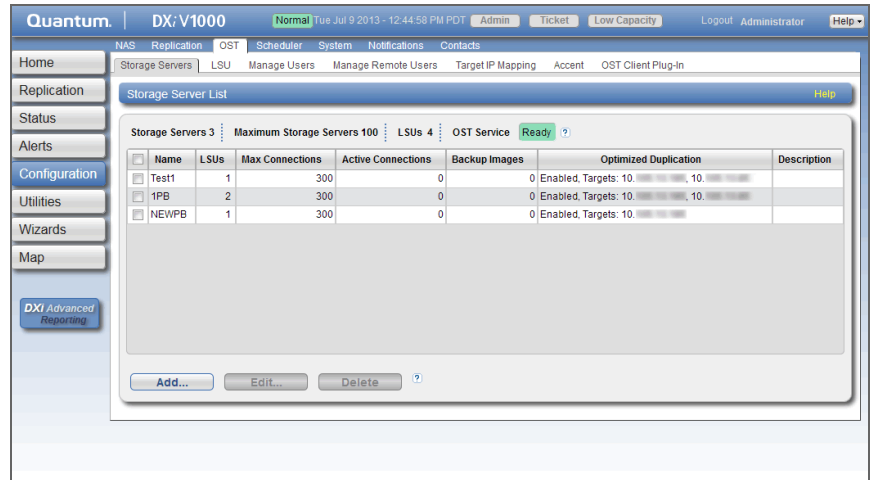


Storage Servers

The **Storage Servers** page allows you to manage OST storage servers on the DXi V-Series. You can view information about existing storage servers, add or edit storage servers, and delete storage servers.

To access the **Storage Servers** page, on the **OST** page, click the **Storage Servers** tab (see [Figure 84](#)).

Figure 84 Storage Servers Page



Use the **Storage Servers** page to perform the following tasks:

- View information about existing storage servers (see [Storage Server List](#) on page 161).
- Add a new storage server to the system (see [Adding a Storage Server](#) on page 162).
- Edit properties for an existing storage server (see [Editing a Storage Server](#) on page 166).
- Delete a storage server from the system (see [Deleting a Storage Server](#) on page 168).

Storage Server List

The **Storage Server List** displays the following information for all storage servers on the DXi V-Series:

- **Storage Servers** - The number of storage servers that have been added to the system.
- **Maximum Storage Servers** - The maximum number of storage servers that can be added to the system.
- **LSUs** - The number of logical storage units (LSUs) that have been added to the system (see [LSU](#) on page 169).

- **OST Service** - The status of the OST service. OST settings can be configured in **Ready**, **Stopped**, or **Verifying** state. The OST server is available for backup only in **Ready** state.
- **Name** - The name of the storage server.
- **LSUs** - The number of LSUs that have been added to the storage server.
- **Max Connections** - The maximum number of connections allowed to the storage server.
- **Active Connections** - The number of currently active connections to the storage server.
- **Backup Images** - The number of backup images on the storage server.
- **Optimized Duplication** - The status of Concurrent Optimized Duplication for the storage server (**Enabled** or **Disabled**), as well as the configured targets (if any).
- **Description** - A brief description of the storage server (if available).

Note: Click a column heading to sort the rows in the table by that column. Click the column heading again to reverse the sort order.

Note: The connections of a storage server that are used equals the data streams plus one for each LSU polling. A backup job may generate more than one data stream if the data can be read in parallel. For example, a policy that is backing up A, B, C, and D drives of a Windows system can generate four data streams in parallel.

Adding a Storage Server

Add a storage server to present the storage capacity of the DXi V-Series as LSUs that are compatible with backup applications that support OST. You can add up to 100 storage servers. When adding a storage server, you must also add an LSU to the storage server. (For more information about LSUs, see [LSU](#) on page 169.)

Note: Data on storage servers is always deduplicated.

To add a storage server:

- 1 Click **Add**.

The **Add Storage Server** page displays (see [Figure 85](#)).

Figure 85 Add Storage Server Page

The screenshot shows the 'Add Storage Server' configuration page in the Quantum DXi V1000 interface. The page is titled 'Add Storage Server' and contains the following fields and options:

- Name:** A text input field.
- Description:** A text input field.
- Max Connections:** A text input field with the value '300' and a range '(3 to 65536)'.
- Enable Concurrent Optimized Duplication:** A checkbox that is currently unchecked.
- Optimized Duplication Target DXis:** A table with columns for 'Optimized Duplication Target DXis', 'Status', and 'Encryption'.

Optimized Duplication Target DXis	Status	Encryption
10	Ready	AES 256-bit
10	System Paused	AES 256-bit
- Logical Storage Unit:** A section with radio buttons for 'Available Capacity' (selected) and 'Specific Capacity'.
- LSU Name:** A text input field.
- Physical Capacity:** A text input field with a range '(1 to 1048576 GB)'.
- Description:** A text input field.
- Enable Automatic Image Replication:** A checkbox that is currently unchecked.
- Replication Target DXis:** A list of two items, each with a radio button and a target name.
- Remote Storage Server Name:** A text input field.
- Remote LSU Name:** A text input field with the value '_Physical.LSU'.
- Remote User:** A dropdown menu.
- Buttons:** 'Apply', 'Reset', and 'Cancel' buttons at the bottom.

- 2 Under **Add Storage Server**, enter information about the storage server:

- **Name** - Enter the name of the storage server.

Caution: Do not use an underscore (_) in the name of the storage server.

- **Description** - (Optional) Enter a brief description of the storage server.

- **Max Connections** - Enter the maximum number of connections allowed to the storage server (3 to 65536).

Note: Quantum recommends setting **Max Connections** to 300.

- **Enable Concurrent Optimized Duplication** - Select the check box to enable optimized duplication during OST ingest.

Concurrent Optimized Duplication is disabled by default. If enabled, as data is written to the storage server, it is simultaneously replicated to the target DXi. When optimized duplication or Automatic Image Replication subsequently occurs, the operation is more efficient because a portion of the required data has already been replicated to the target storage server.

Note: To configure the target DXi, see [Adding a Replication Target](#) on page 148.

Note: When Concurrent Optimized Duplication is enabled, all data on the storage server is duplicated, not just the specified images.

- 3 Select the check box for each optimized duplication target you want to duplicate the storage server to. When the storage server is duplicated, its data will be sent to all selected targets.

- 4 Under **Logical Storage Unit**, select the type of LSU to add to the new storage server:

- **Available Capacity** - (Recommended for best performance) Select this option to add an LSU that uses the available capacity on the system.

You cannot add an available capacity LSU to a storage server that already contains an LSU. Also, if you add an available capacity LSU to a storage server, you cannot add additional LSUs to that same storage server.

Note: After you add an LSU that uses the **Available Capacity** option, you cannot change the LSU to use the **Specific Capacity** option. Instead, you must delete the LSU, then add a new LSU and choose the **Specific Capacity** option (see [Deleting an LSU](#) on page 175).

- **Specific Capacity** - Select this option to specify the physical capacity of the LSU, and then enter the following information.
 - **LSU Name** - Enter the name of the LSU.
 - **Physical Capacity** - Enter the physical capacity of the LSU (1 to 1048576 GB).

Note: Quantum recommends setting LSUs to maximum size (1048576 GB) because spanning them on a backup is not possible.

- 5 (Optional) In the **Description** box, enter a brief description of the LSU.
- 6 (Optional) Select the **Enable Automatic Image Replication** check box to automatically replicate (duplicate) data on the LSU to a remote LSU on another DXi.

Automatic Image Replication (AIR) is disabled by default. If enabled, data on an LSU is automatically replicated to a remote LSU that resides on a DXi in a different NetBackup domain. The timing of the duplication, as well as the backup images that are duplicated, are determined by the storage lifecycle policies (SLPs) configured in NetBackup.

OST AIR requires NetBackup 7.1 or higher. For information about configuring NetBackup for Automatic Image Replication, see the *DXi-Series NetBackup and Backup Exec OST Configuration Guide* (6-67079).

Note: You must configure at least one remote user before you can enable Automatic Image Replication (see [Manage Remote Users](#) on page 179).

- 7 If Automatic Image Replication is enabled, select the replication target you want to replicate images to. (You can select only a single

target.) When images are replicated, data will be sent to the selected target.

8 If Automatic Image Replication is enabled, specify the following information:

- **Remote Storage Server Name** - The name of the remote storage server (on the target DXi) to replicate data to. The source DXi and target DXi must reside in different NetBackup domains.

Note: To configure the target DXi, see [Adding a Replication Target](#) on page 148.

- **Remote LSU Name** - The name of the LSU in the remote storage server that will receive the replicated data.
- **Remote User** - The OST user credentials to use for authentication on the remote (target) DXi. The selected remote user *must* match a local user on the **Configuration > OST > Manage Users** page on the target DXi (see [Manage Users](#) on page 175).

9 Click **Apply**.

Editing a Storage Server

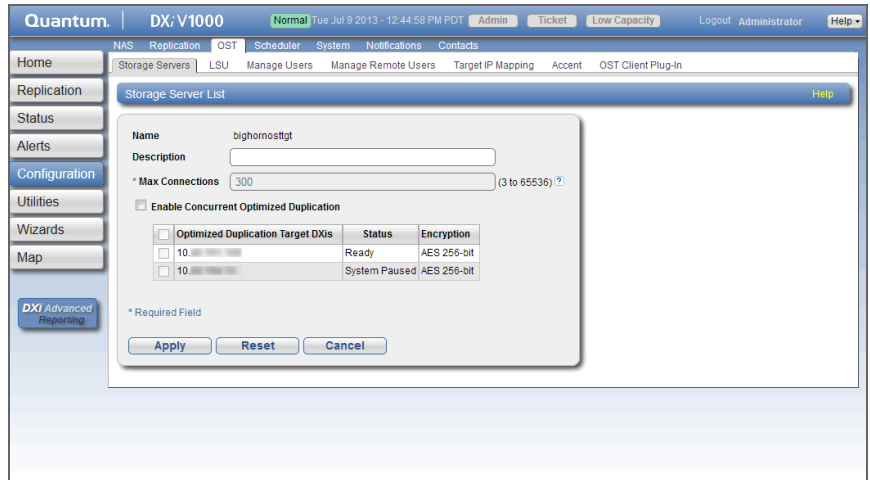
Edit a storage server to change the description of the storage server or the maximum number of allowed connections.

To edit a storage server:

1 Select the storage server and click **Edit**.

The **Edit Storage Server** page displays (see [Figure 86](#)).

Figure 86 Edit Storage Server Page



2 Enter information about the storage server:

Note: If you are editing a storage server, the **Name** option cannot be changed.

- **Description** - (Optional) Enter a brief description of the storage server.
- **Max Connections** - Enter the maximum number of connections allowed to the storage server (3 to 65536).

The maximum number of connections cannot be changed if the storage server has more than zero currently active connections. The number of active connections is displayed on the **OST** page (see [Storage Server List](#) on page 161).

Note: Quantum recommends setting **Max Connections** to 300.

- **Enable Concurrent Optimized Duplication** - Select the check box to enable optimized duplication during OST ingest.
Concurrent Optimized Duplication is disabled by default. If enabled, as data is written to the storage server, it is simultaneously replicated to the target DXi. When optimized duplication or Automatic Image Replication subsequently occurs, the operation is more efficient because a portion of the

required data has already been replicated to the target storage server.

Note: To configure the target DXi, see [Adding a Replication Target](#) on page 148.

Note: When Concurrent Optimized Duplication is enabled, all data on the storage server is duplicated, not just the specified images.

- 3 Select the check box for each optimized duplication target you want to duplicate the storage server to. When the storage server is duplicated, its data will be sent to all selected targets.
- 4 Click **Apply**.

Deleting a Storage Server

Delete a storage server if it is no longer needed. When you delete a storage server, all data stored on the storage server is lost.

Note: If you deleted the storage server from Symantec NetBackup or Symantec Backup Exec, you must wait several minutes before deleting the storage server from the DXi V-Series.

To delete a storage server:

- 1 Select the storage server in the **Storage Server List**.

You cannot delete a storage server if it has more than zero currently active connections. The number of active connections is displayed on the **OST** page (see [Storage Server List](#) on page 161). Also, you cannot delete a storage server if it contains LSUs. Before deleting the storage server, you must first delete any LSUs it contains (see [Deleting an LSU](#) on page 175).

Note: You can select multiple storage servers to delete at once.

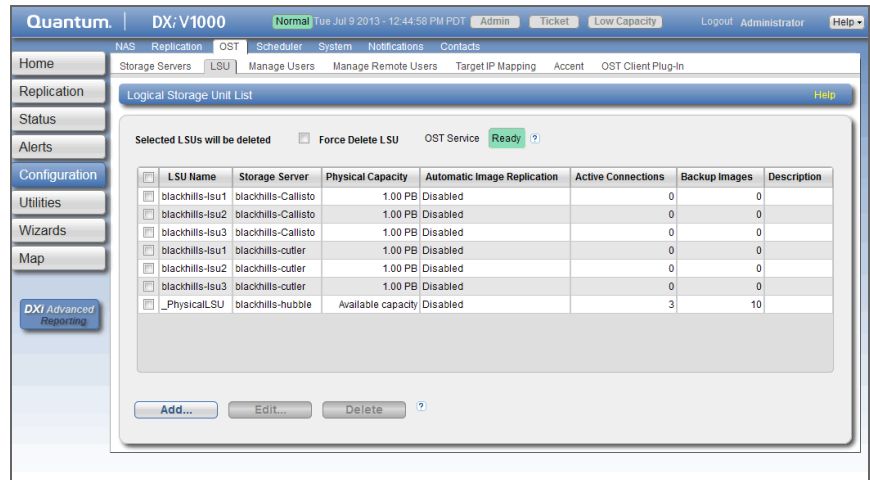
- 2 Click **Delete**.

LSU

The **LSU** page allows you to manage the logical storage units (LSUs) contained on OST storage servers on the DXi V-Series. You can view information about existing LSUs, add or edit LSUs, and delete LSUs.

To access the **LSU** page, on the **OST** page, click the **LSU** tab (see [Figure 87](#)).

Figure 87 LSU Page



Use the **LSU** page to perform the following tasks:

- View information about existing LSUs (see [Logical Storage Unit List](#) on page 169).
- Add a new LSU to the system (see [Adding an LSU](#) on page 170).
- Edit properties for an existing LSU (see [Editing an LSU](#) on page 173).
- Delete an LSU from the system (see [Deleting an LSU](#) on page 175).

Logical Storage Unit List

The **Logical Storage Unit List** displays the following information for all LSUs on the DXi V-Series:

- **OST Service** - The status of the OST service. OST settings can be configured in **Ready**, **Stopped**, or **Verifying** state. The OST server is available for backup only in **Ready** state.
- **LSU Name** - The name of the LSU.

- **Storage Server** - The storage server that contains the LSU.
- **Physical Capacity** - The physical storage capacity of the LSU.
- **Automatic Image Replication** - The status of Automatic Image Replication (AIR) for the LSU (**Enabled** or **Disabled**), as well as the configured targets (if any).

Note: To view details about the remote LSU if AIR is enabled, use the **Edit Logical Storage Unit** page (see [Editing an LSU](#) on page 173).

- **Active Connections** - The number of currently active connections to the LSU.
- **Backup Images** - The number of backup images on the LSU.
- **Description** - A brief description of the LSU (if available).

Note: Click a column heading to sort the rows in the table by that column. Click the column heading again to reverse the sort order.

Adding an LSU

Add an LSU to a storage server to present the storage capacity of the DXi V-Series as an LSU that is compatible with backup applications that support OST. You can add an LSU with a specific capacity, or you can add an LSU that uses the available capacity of the DXi V-Series.

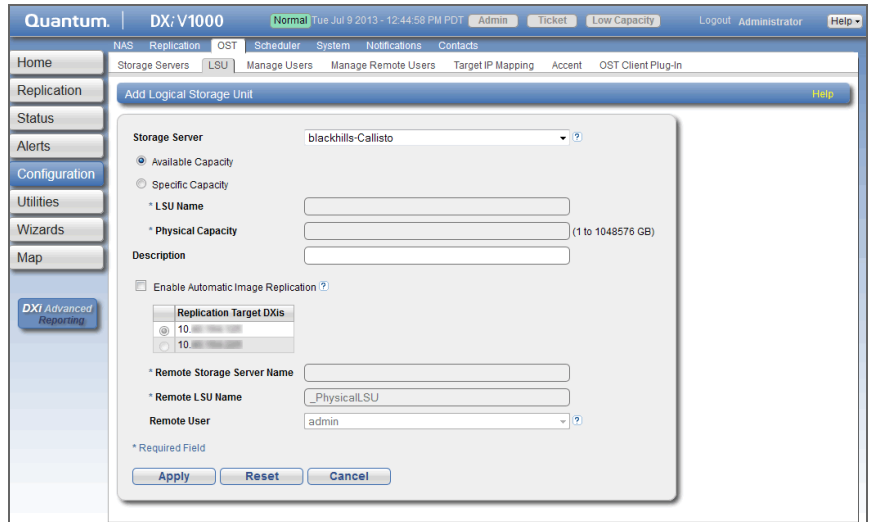
Note: You must create a storage server before you can add an LSU (see [Adding a Storage Server](#) on page 162).

To add an LSU to a storage server:

- 1 Click **Add**.

The **Add Logical Storage Unit** page displays (see [Figure 88](#)).

Figure 88 Add Logical Storage Unit Page



2 Enter information about the LSU.

- **Storage Server** - Select the storage server that will contain the new LSU.
- **Available Capacity** - (Recommended for best performance) Select this option to add an LSU that uses the available capacity on the system.

You cannot add an available capacity LSU to a storage server that already contains an LSU. Also, if you add an available capacity LSU to a storage server, you cannot add additional LSUs to that same storage server.

Note: After you add an LSU that uses the **Available Capacity** option, you cannot change the LSU to use the **Specific Capacity** option. Instead, you must delete the LSU, then add a new LSU and choose the **Specific Capacity** option (see [Deleting an LSU](#) on page 175).

- **Specific Capacity** - Select this option to specify the physical capacity of the LSU, and then enter the following information.
 - **LSU Name** - Enter the name of the LSU.
 - **Physical Capacity** - Enter the physical capacity of the LSU (1 to 1048576 GB).

Note: Quantum recommends setting LSUs to maximum size (1048576 GB) because spanning them on a backup is not possible.

- 3 (Optional) In the **Description** box, enter a brief description of the LSU.
- 4 (Optional) Select the **Enable Automatic Image Replication** check box to automatically replicate (duplicate) data on the LSU to a remote LSU on another DXi.

Automatic Image Replication (AIR) is disabled by default. If enabled, data on an LSU is automatically replicated to a remote LSU that resides on a DXi in a different NetBackup domain. The timing of the duplication, as well as the backup images that are duplicated, are determined by the storage lifecycle policies (SLPs) configured in NetBackup.

OST AIR requires NetBackup 7.1 or higher. For information about configuring NetBackup for Automatic Image Replication, see the *DXi-Series NetBackup and Backup Exec OST Configuration Guide (6-67079)*.

Note: You must configure at least one remote user before you can enable Automatic Image Replication (see [Manage Remote Users](#) on page 179).

- 5 If Automatic Image Replication is enabled, select the replication target you want to replicate images to. (You can select only a single target.) When images are replicated, data will be sent to the selected target.
- 6 If Automatic Image Replication is enabled, specify the following information:
 - **Remote Storage Server Name** - The name of the remote storage server (on the target DXi) to replicate data to. The source DXi and target DXi must reside in different NetBackup domains.

Note: To configure the target DXi, see [Adding a Replication Target](#) on page 148.

- **Remote LSU Name** - The name of the LSU in the remote storage server that will receive the replicated data.
- **Remote User** - The OST user credentials to use for authentication on the remote (target) DXi. The selected remote user *must* match a local user on the **Configuration > OST > Manage Users** page on the target DXi (see [Manage Users](#) on page 175).

7 Click **Apply**.

Editing an LSU

Edit an LSU to change its capacity, description, or automatic image replication settings.

To edit an LSU:

- 1 Select the LSU and click **Edit**.

The **Edit Logical Storage Unit** page displays (see [Figure 89](#)).

Figure 89 Edit Logical Storage Unit Page

The screenshot shows the 'Edit Logical Storage Unit' configuration page in the Quantum DXi V1000 interface. The page includes a navigation menu on the left with options like Home, Replication, Status, Alerts, Configuration, Utilities, Wizards, and Map. The main content area contains the following fields and controls:

- Name:** blackhills-lsu1
- Storage Server Name:** blackhills-Callisto
- * Physical Capacity ?**: 1048576 (1 to 1048576 GB)
- Description:** (empty text box)
- Enable Automatic Image Replication ?**:
- Replication Target DXIs:** Two radio button options, both labeled '10. ...', with the first one selected.
- * Remote Storage Server Name:** (empty text box)
- * Remote LSU Name:** _PhysicalLSU
- Remote User:** admin (dropdown menu)
- * Required Field** (small text below the Remote User field)
- Buttons:** Apply, Reset, and Cancel

- 2 Enter information about the LSU:

Note: If you are editing an LSU, the **Name** option cannot be changed.

- **Physical Capacity** - (Specific capacity LSUs only) Enter the physical capacity of the LSU (1 to 1048576 GB).

The physical capacity cannot be changed if the LSU has more than zero currently active connections. The number of active connections is displayed on the **LSU** page (see [Logical Storage Unit List](#) on page 169).

- **Description** - (Optional) Enter a brief description of the LSU.

- 3 (Optional) Select the **Enable Automatic Image Replication** check box to automatically replicate (duplicate) data on the LSU to a remote LSU on another DXi.

Automatic Image Replication (AIR) is disabled by default. If enabled, data on an LSU is automatically replicated to a remote LSU that resides on a DXi in a different NetBackup domain. The timing of the duplication, as well as the backup images that are duplicated, are determined by the storage lifecycle policies (SLPs) configured in NetBackup.

OST AIR requires NetBackup 7.1 or higher. For information about configuring NetBackup for Automatic Image Replication, see the *DXi-Series NetBackup and Backup Exec OST Configuration Guide* (6-67079).

Note: You must configure at least one remote user before you can enable Automatic Image Replication (see [Manage Remote Users](#) on page 179).

- 4 If Automatic Image Replication is enabled, select the replication target you want to replicate images to. (You can select only a single target.) When images are replicated, data will be sent to the selected target.
- 5 If Automatic Image Replication is enabled, specify the following information:
 - **Remote Storage Server Name** - The name of the remote storage server (on the target DXi) to replicate data to. The source DXi and target DXi must reside in different NetBackup domains.

Note: To configure the target DXi, see [Adding a Replication Target](#) on page 148.

- **Remote LSU Name** - The name of the LSU in the remote storage server that will receive the replicated data.
- **Remote User** - The OST user credentials to use for authentication on the remote (target) DXi. The selected remote user *must* match a local user on the **Configuration > OST > Manage Users** page on the target DXi (see [Manage Users](#) on page 175).

6 Click **Apply**.

Deleting an LSU

Delete an LSU if it is no longer needed. When you delete an LSU, all data stored on the LSU is lost.

Note: If you deleted the LSU from Symantec NetBackup or Symantec Backup Exec, you must wait several minutes before deleting the LSU from the DXi V-Series.

To delete an LSU:

1 Select the LSU in the **Logical Storage Unit List**.

You cannot delete an LSU if it has more than zero currently active connections. The number of active connections is displayed on the **LSU** page (see [Logical Storage Unit List](#) on page 169).

Note: You can select multiple LSUs to delete at once.

2 (Optional) Select the **Force Delete LSU** check box to delete LSUs that are not empty.

Normally, you cannot delete an LSU if it contains existing backup images. If for some reason you cannot remove files from the LSU, selecting the **Force Delete LSU** check box allows you to delete the LSU even though it is not empty.

3 Click **Delete**.

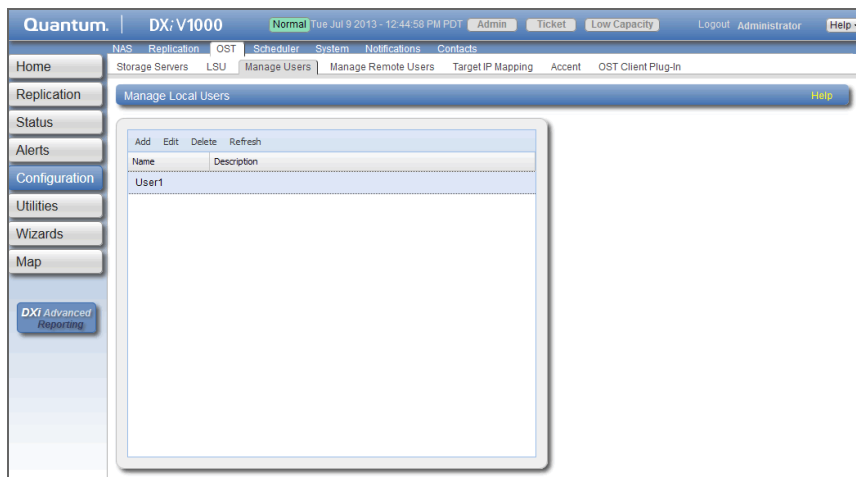
Manage Users

The **Manage Users** page allows you to create and manage local authenticated users for use with OST. After you create the OST user credentials, enter them in the backup application to authenticate OST devices on the media server. When using OST Automatic Image

Replication (AIR), the remote user credentials specified on the source DXi must match the local user credentials on the target (remote) DXi.

To access the **Manage Users** page, on the **OST** page, click the **Manage Users** tab (see [Figure 90](#)).

Figure 90 Manage Users Page



Use the **Manage Users** page to perform the following tasks:

- View information about local authenticated users (see [Manage Local Users List](#) on page 176).
- Add a local authenticated user (see [Adding an Authenticated User](#) on page 177).
- Edit a local authenticated user (see [Editing an Authenticated User](#) on page 177).
- Delete a local authenticated user (see [Deleting an Authenticated User](#) on page 178).

Manage Local Users List

The **Manage Local Users** list displays the following information for all local authenticated users:

- **Name** - The name of the local authenticated user.
- **Description** - A brief description of the local authenticated user (if available).

Note: To update the list with the latest information, click **Refresh**.

Adding an Authenticated User

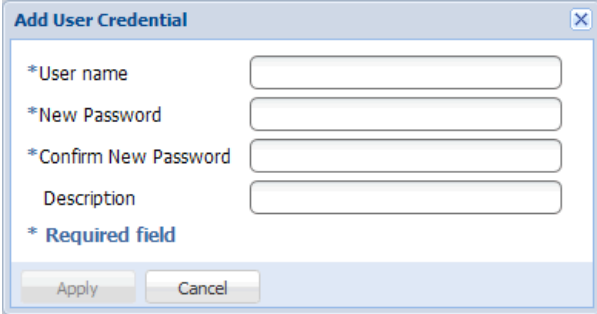
Add an authenticated user to create local OST user credentials. The OST user credentials are required to authenticate OST devices on a media server, or to enable the DXi to receive duplicated data using OST AIR.

To add an authenticated user:

- 1 Click **Add**.

The **Add User Credential** window displays (see [Figure 91](#)).

Figure 91 Add User Credential



The screenshot shows a dialog box titled "Add User Credential" with a close button in the top right corner. The dialog contains the following fields and labels:

- *User name (required field)
- *New Password (required field)
- *Confirm New Password (required field)
- Description (optional field)

Below the fields is a legend: * Required field. At the bottom of the dialog are two buttons: "Apply" and "Cancel".

- 2 Enter information about the authenticated user:

- **User name** - Enter the name of the authenticated user.
- **New Password** - Enter the password for the authenticated user.
- **Confirm New Password** - Enter the password again to confirm it.
- **Description** - (Optional) Enter a brief description of the authenticated user.

- 3 Click **Apply**.

Editing an Authenticated User

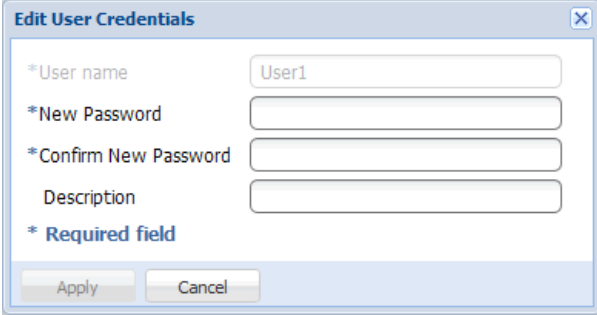
Edit an authenticated user to change the user's password or description.

To edit an authenticated user:

- 1 Select the user and click **Edit**.

The **Edit User Credentials** window displays (see [Figure 92](#)).

Figure 92 Edit User Credentials



The screenshot shows a dialog box titled "Edit User Credentials". It contains the following fields and controls:

- *User name: A text box containing "User1".
- *New Password: An empty text box.
- *Confirm New Password: An empty text box.
- Description: An empty text box.
- A legend below the fields states: "* Required field".
- At the bottom, there are two buttons: "Apply" and "Cancel".

- 2 Enter information about the authenticated user:

Note: If you are editing an authenticated user, you cannot change the **User name**.

- **New Password** - Enter the password for the authenticated user.
- **Confirm New Password** - Enter the password again to confirm it.
- **Description** - (Optional) Enter a brief description of the authenticated user.

- 3 Click **Apply**.

Deleting an Authenticated User

Delete an authenticated user if the OST user credentials are no longer needed to authenticate OST devices on a media server.

To delete an authenticated user, select the user and click **Delete**.

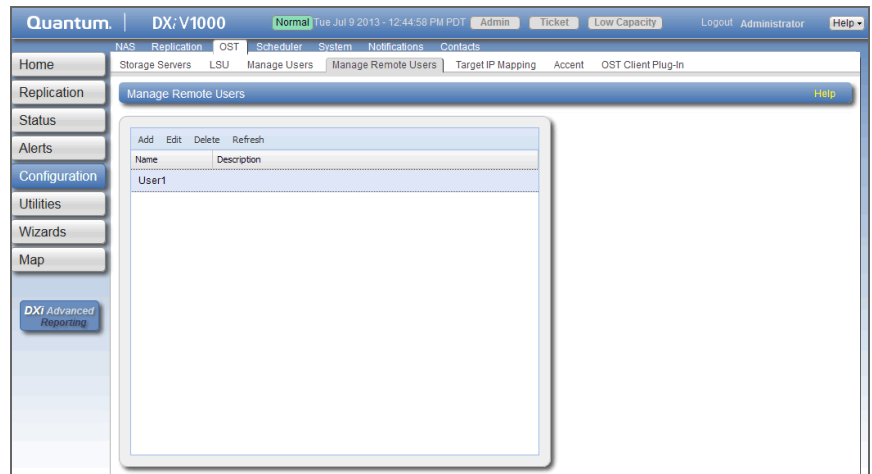
Note: You can select multiple users to delete at once.

Manage Remote Users

The **Manage Remote Users** page allows you to create and manage remote users for use with OST Automatic Image Replication (AIR). You must configure at least one remote user before you can enable Automatic Image Replication for an LSU (see [Adding an LSU](#) on page 170). When using OST Automatic Image Replication (AIR), the remote user credentials specified on the source DXi must match the local user credentials on the target (remote) DXi.

To access the **Manage Remote Users** page, on the **OST** page, click the **Manage Remote Users** tab (see [Figure 93](#)).

Figure 93 Manage Remote Users Page



Use the **Manage Users** page to perform the following tasks:

- View information about remote users (see [Manage Remote Users List](#) on page 179).
- Add a remote user (see [Adding a Remote User](#) on page 180).
- Edit a remote user (see [Editing a Remote User](#) on page 181).
- Delete a remote user (see [Deleting a Remote User](#) on page 181).

Manage Remote Users List

The **Manage Remote Users** list displays the following information for all remote users:

- **Name** - The name of the remote user.

- **Description** - A brief description of the remote user (if available).

Note: To update the list with the latest information, click **Refresh**.

Adding a Remote User

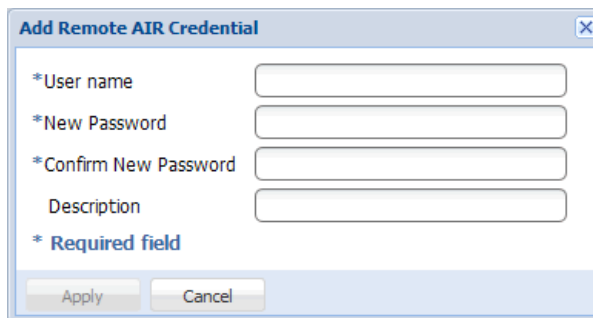
Add a remote user to create OST user credentials for use with OST AIR. When you enable Automatic Image Replication for an LSU, you specify a remote user. The remote user credentials on the source DXi must match the local user credentials on the target (remote) DXi.

To add a remote user:

- 1 Click **Add**.

The **Add Remote AIR Credential** window displays (see [Figure 94](#)).

Figure 94 Add Remote AIR
Credential



The screenshot shows a dialog box titled "Add Remote AIR Credential" with a close button in the top right corner. It contains four text input fields: "*User name", "*New Password", "*Confirm New Password", and "Description". Below the fields is a legend for "* Required field". At the bottom are "Apply" and "Cancel" buttons.

- 2 Enter information about the remote user:

- **User name** - Enter the name of the remote user.
- **New Password** - Enter the password for the remote user.
- **Confirm New Password** - Enter the password again to confirm it.
- **Description** - (Optional) Enter a brief description of the remote user.

- 3 Click **Apply**.

Editing a Remote User

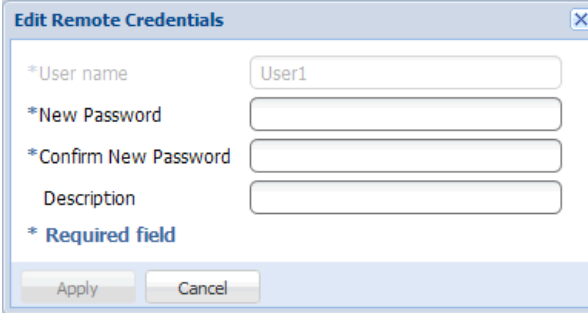
Edit a remote user to change the user's password or description.

To edit a remote user:

- 1 Select the user and click **Edit**.

The **Edit Remote Credentials** window displays (see [Figure 95](#)).

Figure 95 Edit Remote
Credentials



The screenshot shows a dialog box titled "Edit Remote Credentials" with a close button in the top right corner. The dialog contains the following fields and labels:

- *User name: A text box containing "User1".
- *New Password: An empty password field.
- *Confirm New Password: An empty password field.
- Description: An empty text box.

Below the fields is a legend: "* Required field". At the bottom of the dialog are two buttons: "Apply" and "Cancel".

- 2 Enter information about the remote user:

Note: If you are editing a remote user, you cannot change the **User name**.

- **New Password** - Enter the password for the remote user.
- **Confirm New Password** - Enter the password again to confirm it.
- **Description** - (Optional) Enter a brief description of the remote user.

- 3 Click **Apply**.

Deleting a Remote User

Delete a remote user if the OST user credentials are no longer needed to authenticate an LSU for Automatic Image Replication.

To delete a remote user, select the user and click **Delete**.

Note: You can select multiple users to delete at once.

Target IP Mapping

The **Target IP Mapping** page allows you to map a target data IP address to route all network traffic sent to the data IP address to the specified replication IP address instead. This can be necessary if the target DXi is configured with different network interfaces (and therefore different IP addresses) for data and replication traffic (see [Network](#) on page 199).

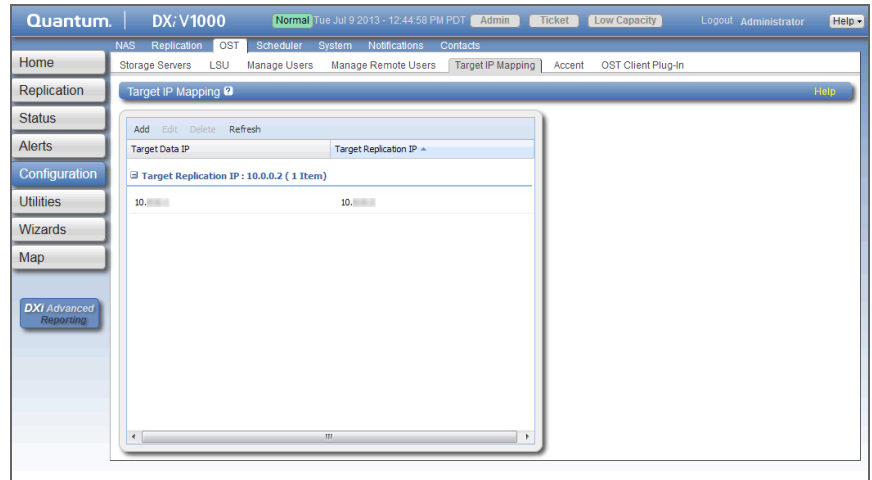
Generally, OST traffic is routed to the data network segment. However, the OST Automatic Image Replication (AIR) and Concurrent Optimized Duplication features use the replication network segment to transmit data to the target system. (Optimized duplication can optionally use the replication channel.) When a data IP address is mapped to a replication IP address, OST traffic that is sent to one of the IP addresses is routed to the other IP address as necessary.

Note: You must add target IP mapping information if you are performing optimized duplication on a segmented network and replication is not configured between the source DXi and target DXi.

Note: Quantum does not recommend mapping multiple data IP addresses to a single replication IP address. If you have mapped multiple data IP addresses and the routing is not working, try removing the additional data IP addresses, and map only a single data IP address.

To access the **Target IP Mapping** page, on the **OST** page, click the **Target IP Mapping** tab (see [Figure 96](#)).

Figure 96 Target IP Mapping Page



Use the **Target IP Mapping** page to perform the following tasks:

- View information about mapped data and replication IP addresses (see [Target IP Mapping List](#) on page 183).
- Map a target data IP address to a replication IP address (see [Mapping a Target IP Address](#) on page 184).
- Edit the mapping for a target data IP address (see [Editing a Mapped IP Address](#) on page 184).
- Delete the mapping for a target data IP address (see [Deleting a Mapped IP Address](#) on page 185).

Target IP Mapping List

The **Target IP Mapping** list displays the following information for all mapped IP addresses:

- **Target Data IP** - The mapped target data IP address.
- **Target Replication IP** - The replication IP address to which the data IP address is mapped.

By default, items in the list are grouped by target replication IP address. To turn off grouping, click the arrow to the right of a column heading and clear the **Show in groups** check box.

Note: To update the list with the latest information, click **Refresh**.

Mapping a Target IP Address

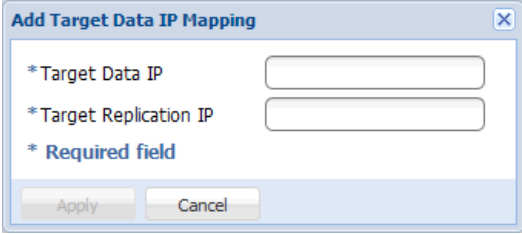
Add mapping for a target data IP address to route all network traffic sent to the address to the specified replication IP address instead.

To map a target IP address:

- 1 Click **Add**.

The **Add Target Data IP Mapping** window displays (see [Figure 97](#)).

Figure 97 Add Target Data IP Mapping



The screenshot shows a dialog box titled "Add Target Data IP Mapping". It features two text input fields: the first is labeled "* Target Data IP" and the second is labeled "* Target Replication IP". Below these fields is a label "* Required field". At the bottom of the dialog are two buttons: "Apply" and "Cancel".

- 2 Enter information about the mapping:
 - **Target Data IP** - The target data IP address to map.
 - **Target Replication IP** - The replication IP address to map the data IP address to.
- 3 Click **Apply**.

Editing a Mapped IP Address

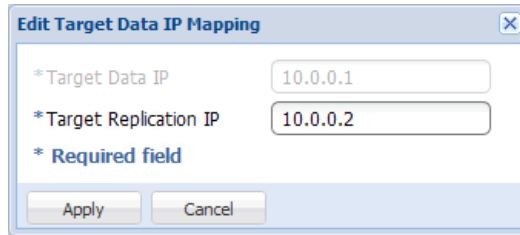
Edit a mapped IP address to route traffic sent to the target data IP address to a different replication IP address.

To edit a mapped IP address:

- 1 Select the mapped IP address and click **Edit**.

The **Edit Target Data IP Mapping** window displays (see [Figure 98](#)).

Figure 98 Edit Target Data IP Mapping



- 2 In the **Target Replication IP** box, enter the replication IP address to map the data IP address to.

Note: If you are editing a mapped IP address, you cannot change the target data IP address.

- 3 Click **Apply**.

Deleting a Mapped IP Address

Delete a mapped IP address if traffic sent to the target data IP address no longer needs to be routed to a replication IP address

To delete a mapped IP address, select the IP address and click **Delete**.

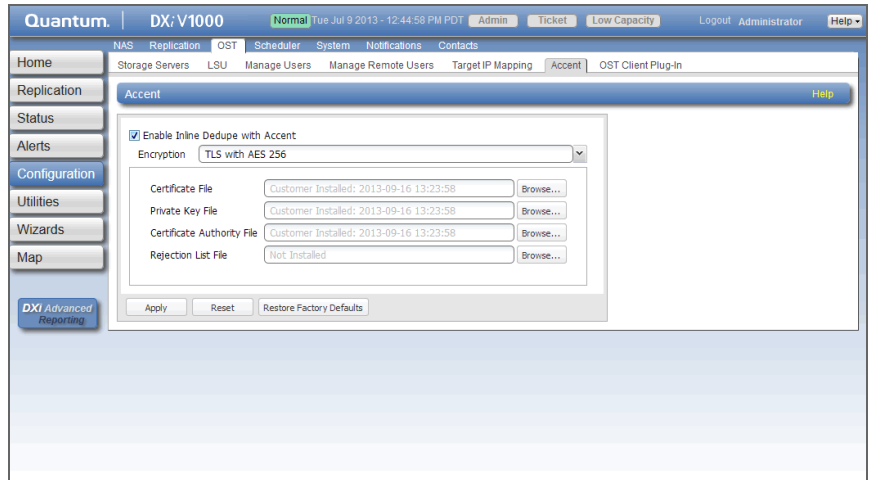
Note: You can select multiple mapped IP addresses to delete at once.

DXi Accent

Use the **Accent** page to enable or disable DXi Accent. Quantum's DXi Accent software accelerates backups and reduces network bandwidth requirements by distributing deduplication between the backup server and the DXi. OST data sent from the media server to the DXi can be encrypted using AES (Advanced Encryption Standard) encryption methods.

To access the **Accent** page, on the **OST** page, click the **Accent** tab (see [Figure 90](#)).

Figure 99 Accent Page



To configure DXi Accent:

- 1 To enable DXi Accent, select the **Enable Inline Dedupe with Accent** check box.

Or to disable DXi Accent, clear the **Enable Inline Dedupe with Accent** check box.

- 2 To enable or disable encryption when sending OST data from the media server to the DXi, select an option in the **Encryption** drop-down box:
 - **None** - OST data is not encrypted.
 - **Default AES 128** - OST data is encrypted using AES 128-bit encryption.
 - **Default AES 256** - OST data is encrypted using AES 256-bit encryption.
 - **TLS with AES 256** - OST data is encrypted using AES 256-bit encryption with Transport Layer Security (TLS).

Note: Using 256-bit encryption provides a stronger level of security but may have an impact on system performance in some situations.

- 3 If you selected the **TLS with AES 256** encryption option, you must install the required certificate and key files on the DXi:

- Certificate File
- Private Key File
- Certificate Authority File
- Rejection List File

To install a file, click the **Browse** button to browse the system and locate the file, and then click **Open**.

Caution: Installing certificate files requires a system reboot immediately after the changes are applied. Wait for at least 15 minutes before logging back in.

Note: You can install new certificate and key files at any time, as long as there are no active network connections between the OST media server and the DXi.

4 Click **Apply**.

Note: To clear all changes without saving them, click **Reset**. To remove user installed certificate and key files, click **Restore Factory Defaults**.

Note: To use DXi Accent, you must install the Quantum OST Client Plug-in on the media server. For information about installing the OST Plug-in and using DXi Accent, see the *DXi-Series NetBackup and Backup Exec OST Configuration Guide (6-67079)*.

OST Client Plug-In

Use the **OST Client Plug-In** page to download the Quantum OST Plug-in.

OST (OpenStorage) technology allows Symantec NetBackup and Backup Exec to seamlessly integrate with the DXi V-Series. Using OST, NetBackup and Backup Exec can manage backups through the DXi V-Series and can take advantage of the system's capabilities, such as data deduplication and replication. To use OST, you must first download the OST Plug-in and install it on the NetBackup or Backup Exec media server.

To download the OST Plug-in, click **Client Plug-in Download**. On the download page, download the correct OST Plug-in for your backup application and operating system. Also on the download page, click **Installation Instructions**, to download the *OST Plug-in Installation Instructions*. Follow the included instructions to install the OST Plug-in on your media server.

Note: For information about configuring and using OST with the DXi V-Series, see the *DXi-Series NetBackup and Backup Exec OST Configuration Guide (6-67079)*.

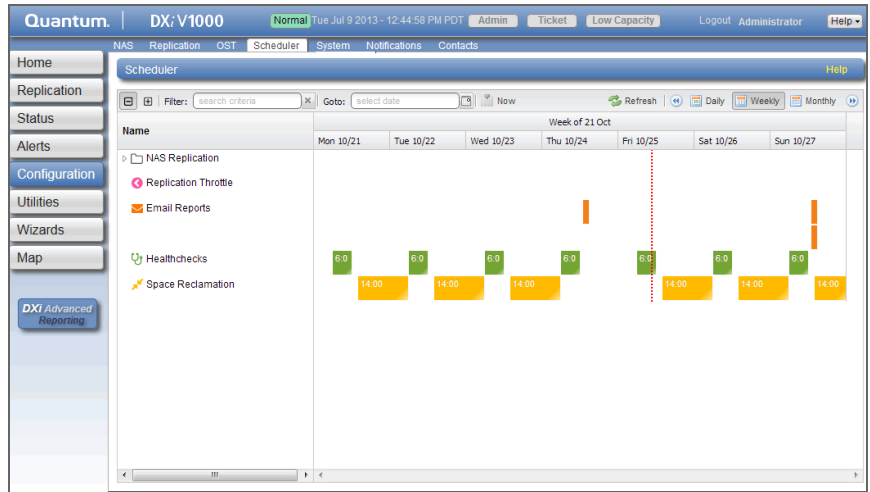
Note: *NetBackup and Backup Exec* To update the list with the latest information, click **Refresh**.

Scheduler

The **Scheduler** page allows you to manage scheduled events on the DXi V-Series, including replication and replication throttling, e-mail reports, healthchecks, and space reclamation. With schedules, you specify when certain events should occur, and the system automatically performs those events at the specified time. Events can be one-time only, or they can reoccur at defined intervals.

To access the **Scheduler** page, click the **Configuration** menu, and then click the **Scheduler** tab (see [Figure 100](#)).

Figure 100 Scheduler Page



Use the **Scheduler** page to perform the following tasks:

- View currently scheduled events (see [Viewing Scheduled Events](#) on page 190).
- Add a new scheduled event or edit an existing event (see).
- Configure NAS shares for scheduled replication (see [Scheduling a Share for Replication](#) on page 193).
- Configure replication throttle events (see [Scheduling Replication Throttling](#) on page 194).
- Configure the DXi V-Series to send status and configuration reports (see [Scheduling E-mail Reports](#) on page 196).
- Configure the DXi V-Series to run healthchecks (see [Scheduling Healthchecks](#) on page 196).
- Configure the DXi V-Series to run space reclamation (see [Scheduling Space Reclamation](#) on page 197).
- Specify when and how often an event reoccurs (see [Setting Recurrence for a Scheduled Event](#) on page 197).
- Remove an event occurrence or event series from the schedule (see [Deleting a Scheduled Event](#) on page 198).

Viewing Scheduled Events

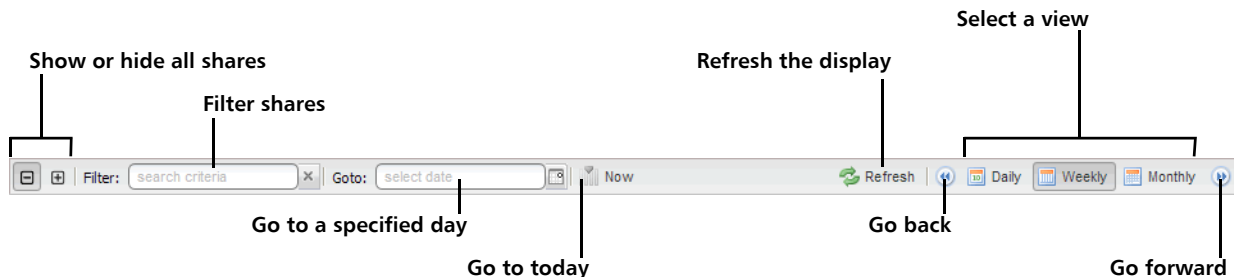
The **Scheduler** page displays all replication, replication throttle, e-mail report, healthchecks, and space reclamation events scheduled to occur in a selected time period. To view scheduled replication events for NAS shares, click the arrow next to the folder to display all shares.

Use the following toolbar controls to adjust the schedule view (see [Figure 100](#)):

- To show or hide all shares, click the plus [+] or minus [-] icons.
- To filter shares based on name, begin typing in the **Filter** box. Click the x to clear the filter.
- To view the schedule for a specific day, select it in the **Goto** pop-up calendar.
- To view the schedule for today, click **Now**.
- To update the schedule view with the latest data, click the **Refresh** icon.
- To move the view backward or forward in time, click the arrows.
- To change the number of days displayed at a time, click **Daily**, **Weekly**, or **Monthly**.

Note: The thickness of the bars on the schedule view varies based on the type of event and the selected time frame. Healthcheck events have an estimated span of 6 hours. Space Reclamation events have an estimated span of 16 hours. All other open-ended events have a default span of 2 hours.

Figure 101 Scheduler Toolbar



Adding or Editing a Scheduled Event

To add or edit a scheduled event:

- 1 On the **Scheduler** page, adjust the schedule view to display the time period when the event will occur (see [Viewing Scheduled Events](#) on page 190). Then do one of the following actions (see [Figure 102](#)):

- To add a new event, click and drag on the schedule in the row for the type of event to add. A new event is added where you dragged the cursor.

To schedule replication for NAS shares, click the arrow next to the folder to display all shares. Then click and drag in the row for the share to schedule.

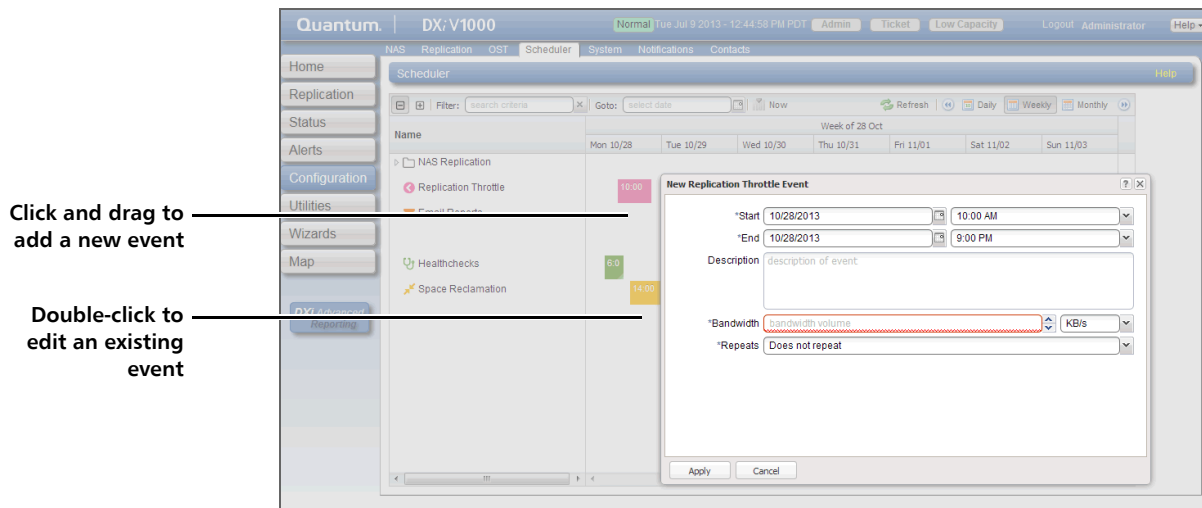
Note: The new event must begin after the current time, which is indicated by the dotted vertical line.

- To edit an existing event, double-click the event. If the event is recurring, select **Open this occurrence** to edit only the one instance of the event, or select **Open the series** to edit the entire recurring series, and then click **OK**.

Note: You cannot edit an event that occurred in the past.

Note: You can also right-click an existing event to see options for editing an event.

Figure 102 Adding a New Event



2 Define the start and, if applicable, the end of the event.

- Specify the **Start Date** and **Start Time** using the pop-up calendar and drop-down box.
- (Replication throttle events only) Specify the **End Date** and **End Time**. The end date and time must occur after the start date and time.

Note: For a new event, you can click and drag to adjust the start and end time. For an existing event, you can drag the event to change when it occurs. You can also drag the left or right edge of the event to adjust the start or end time.

3 Enter a brief description of the event in the **Description** box. (This description will display on the schedule view.)

4 Specify options specific to the type of event. See the following sections:

- [Scheduling a Share for Replication](#) on page 193
- [Scheduling Replication Throttling](#) on page 194
- [Scheduling E-mail Reports](#) on page 196
- [Scheduling Healthchecks](#) on page 196

- [Scheduling Space Reclamation](#) on page 197
- 5 (Required for healthchecks and space reclamation) Specify when and how often the event reoccurs (see [Setting Recurrence for a Scheduled Event](#) on page 197).
 - 6 Click **Apply**.
 - 7 Refresh the browser window to make sure the event settings are applied.

Caution: When adding multiple events of the same type, make sure the events do not overlap. If two events of the same type overlap, the later event takes precedence over the earlier event.

Note: After a system reboot, all open-ended events (for example, replication) will restart at their next scheduled time. Events with end times (for example, replication throttle) that are past their start time will have their end action occur.

Scheduling a Share for Replication

Configure a replication schedule for a NAS share to automatically replicate the share data to the target system at regular intervals. Disable scheduled replication if you do not want to automatically replicate the share data to the target.

Note: Note: To schedule a share for replication, you must first add one or more replication targets (see [Replication Configuration](#) on page 145). In addition, you must add one or more shares with deduplication enabled and at least one target selected (see [NAS Summary](#) on page 128).

Note: Disabling replication for a share, or deleting a share, does not delete any scheduled replication events for that share. If you no longer want to schedule the share for replication, manually delete the schedule (see [Deleting a Scheduled Event](#) on page 198).

To configure a replication schedule for a share:

- 1 On the **Scheduler** page, add or edit an event in the **NAS Replication** row (see [Adding or Editing a Scheduled Event](#) on page 191).
- 2 In the **Share** drop-down box, select the share to schedule for replication.
Only shares that are enabled for deduplication appear in the drop-down box.

Note: Scheduling a share that has replication disabled will automatically enable replication.

- 3 In the **Target** drop-down box, select the replication target you want to replicate the share to.
- 4 Click **OK**.
- 5 (Optional) Specify when and how often the event reoccurs (see [Setting Recurrence for a Scheduled Event](#) on page 197).
- 6 Click **Apply**.

Scheduling Replication Throttling

During replication throttling, the DXi V-Series limits the amount of source replication data it sends to not exceed a specified maximum bandwidth. Schedule replication throttling to control the amount of network bandwidth used by source replication at certain times. For example, you might configure replication throttling to occur during planned backup times to avoid network contention.

Note: For more information about configuring the DXi V-Series for replication, see [DXi V-Series Replication](#) on page 67.

To schedule replication throttling:

- 1 On the **Scheduler** page, add or edit an event in the **Replication Throttle** row (see [Adding or Editing a Scheduled Event](#) on page 191).
- 2 Specify the maximum allowed bandwidth by entering a value in the **Bandwidth** box and selecting the units in the drop-down box (**KB/s** or **MB/s**). The lowest value you can set is 32 KB/s. The highest value you can set is 125 MB/s.

Caution: Do not set the maximum allowed bandwidth to a value that is lower than necessary. If the maximum allowed bandwidth is set to the lowest value, large replication jobs may fail.

During the replication throttle event, the DXi will limit the amount of data it sends during source replication so that it does not exceed the specified bandwidth. After the replication throttle event ends, the DXi will no longer throttle the sending of source replication data (until the next replication throttle event occurs).

Do *not* configure a throttle schedule if a constant throttle is enabled (see [Enabling System Throttling](#) on page 152). The scheduled replication throttling bandwidth settings take precedence over the constant throttle value. (The currently active replication throttle rate appears on the **Home** page under **Current Activity**.)

- 3 (Optional) Specify when and how often the event reoccurs (see [Setting Recurrence for a Scheduled Event](#) on page 197).
- 4 Click **Apply**.

About Replication Throttling Statistics

Keep in mind the following information when observing actual network bandwidth usage during a replication throttle event:

- During a replication throttle event, only outgoing replication data traffic is throttled, not other outgoing traffic. Because of this, you may observe network usage to be higher than the specified maximum bandwidth. Differences in the sampling time period may also cause discrepancies between the specified maximum bandwidth and observed traffic.
- If the DXi is configured to use a bonded network interface for replication traffic, load balancing is determined independently by the bonding mode selected for the interface (see [Network](#) on page 199). Because of this, you may need to sum the values for all slave devices in the bonded interface to calculate the overall outgoing traffic rate.
- The replication throttle bandwidth maximum is specified in KB/s or MB/s, so depending on the statistic or report you are observing, you may need to convert the bandwidth maximum to Kb/s or Mb/s in order to correctly compare it to the observed values.

Scheduling E-mail Reports

The DXi V-Series can automatically generate a report with system status data or with configuration data and send it to all configured e-mail recipients.

Note: To enable the DXi V-Series to send e-mail, you must specify an outgoing e-mail server (see [Server](#) on page 233). In addition, you must specify one or more recipients (see [Email Reports](#) on page 235).

To configure a schedule for e-mail reports:

- 1 On the **Scheduler** page, add or edit an event in the **Email Reports** row (see [Adding or Editing a Scheduled Event](#) on page 191).
- 2 In the **Report Type** drop-down box, select the type of e-mail report to schedule (**Status** or **Configuration**).
- 3 (Optional) Specify when and how often the event reoccurs (see [Setting Recurrence for a Scheduled Event](#) on page 197).
- 4 Click **Apply**.

Scheduling Healthchecks

During healthchecks, the DXi V-Series performs tests to verify the health and integrity of the data deduplication blockpool. Schedule healthchecks regularly to make sure the system is healthy and operating correctly. When you schedule healthchecks, only the healthchecks that are currently enabled are run.

Note: For more information about enabling healthchecks, see [Healthchecks](#) on page 255.

To configure a schedule for healthchecks:

- 1 On the **Scheduler** page, add or edit an event in the **Healthchecks** row (see [Adding or Editing a Scheduled Event](#) on page 191).
- 2 Specify when and how often the event reoccurs (see [Setting Recurrence for a Scheduled Event](#) on page 197).

Caution: For correct system operation, healthchecks *must* be run at regular intervals (at least once a week). You can schedule healthchecks to occur daily or weekly but not monthly or yearly. Also, recurrence is required.

3 Click **Apply**.

Scheduling Space Reclamation

During space reclamation, the DXi V-Series deletes unneeded tags from the blockpool to free up disk space. Schedule space reclamation regularly to make sure there is enough disk space to store data.

Caution: Because space reclamation can affect system performance, avoid running space reclamation during known backup periods.

Note: For more information about space reclamation, see [Space Reclamation](#) on page 262.

To configure a schedule for space reclamation:

- 1 On the **Scheduler** page, add or edit an event in the **Space Reclamation** row (see [Adding or Editing a Scheduled Event](#) on page 191).
- 2 Specify when and how often the event reoccurs (see [Setting Recurrence for a Scheduled Event](#) on page 197).

Caution: For correct system operation, space reclamation *must* be run at regular intervals (at least once a week). You can schedule space reclamation to occur daily or weekly but not monthly or yearly. Also, recurrence is required.

3 Click **Apply**.

Setting Recurrence for a Scheduled Event

To specify when and how often the event reoccurs:

- 1 On the **Scheduler** page, add or edit an event (see [Adding or Editing a Scheduled Event](#) on page 191).
- 2 In the **Repeats** drop-down box, select **Does not repeat** to disable recurrence. Or to enable recurrence, select how often the event reoccurs:

Note: Healthchecks and space reclamation must occur at least every seven days or once a week.

- **Daily** - Specify the recurrence interval in days.
 - **Weekly** - Specify the recurrence interval in weeks, and select the days the event occurs on.
- 3 For recurring events, specify how long the recurrence continues (**forever**, for a certain number of occurrences, or **until** a specific date).

Note: For healthchecks and space reclamation, recurrence is always **forever**.

- 4 Click **Apply**.

Deleting a Scheduled Event

To delete an event occurrence or event series.

- 1 On the **Scheduler** page, right-click an event.
- 2 On the pop-up menu, select an option:
 - **Delete this occurrence** - Remove the selected occurrence in an event series from the schedule.
 - **Delete all occurrences** - Remove the entire event series from the schedule.

The event or series is deleted from the schedule and will no longer occur.

System

The **System** page allows you to configure system settings for the DXi V-Series, including network settings, system date and time, and security settings.

To access the **System** page, click the **Configuration** menu, and then click the **System** tab.

The **System** page contains the following tabs:

- [Network](#)
- [Date & Time](#)
- [Security](#)

Network

The **Network** page allows you to view and change network configuration information for the DXi V-Series. The DXi V-Series uses this information to connect to the network.

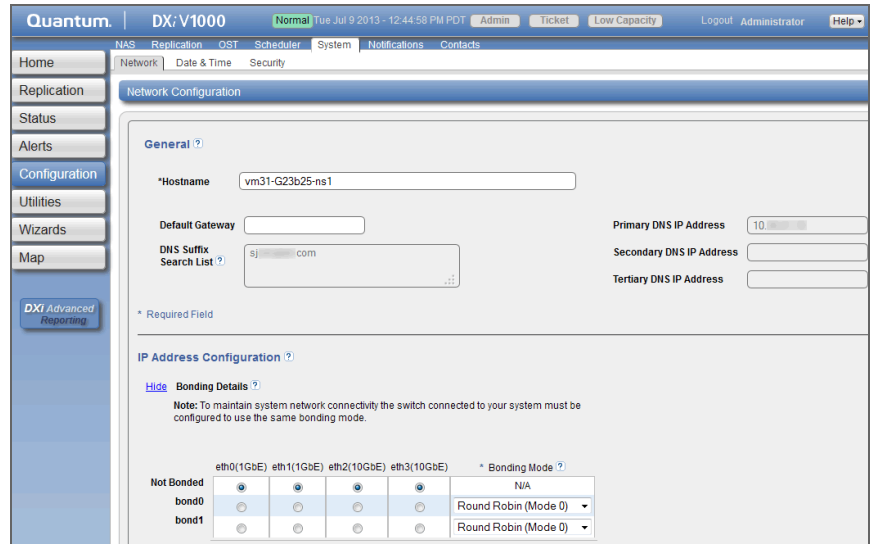
Network configuration information is entered during initial setup DXi V-Series. You should consult your network administrator before making any changes to the network settings.

Caution: Changing the network configuration requires a system reboot to allow all system services to function correctly. Changing the network configuration requires a system reboot immediately after the changes are applied.

Note: Rebooting the system can take several minutes. After the new network configuration is saved, close your Web browser and wait 15 minutes before logging in again. If you change the IP address that you use to log in to the system, you will temporarily lose your connection to the remote management console. Because of this, you might not see a confirmation page informing you that the new settings have been saved.

To access the **Network** page, on the **System** page, click the **Network** tab (see [Figure 103](#)).

Figure 103 Network Configuration



Configuring the Network

Using the **Network** page, each virtual Ethernet port in the DXi can be configured as a separate device. In addition, you can create bonded devices (logical ports) consisting of two or more virtual ports. For each port or device, you can specify the MTU (Maximum Transmission Unit) frame size.

After you define devices (single port or bonded), you can create up to ten network interfaces for each device. Each interface has its own IP address information. In addition, you can configure the following options for each interface:

- Assign the interface to a VLAN (Virtual Local Area Network).
- Indicate whether the interface IP address will be used to externally identify the system (external host IP address).
- Specify the types of traffic allowed on the interface (management, replication, or data).
- Specify the NAT address that the interface is mapped to if it is used for replication through a NAT firewall.
- Add routing information for an interface to enable connectivity with devices on different subnets.

Note: You can choose to allow any traffic type (management, replication, or data) on an interface. In this case, the routing of different traffic types, as well as firewall capability, must be controlled using the network infrastructure (routers and switches) that the DXi is connected to.

Keep in mind the following information when configuring the network on the DXi V-Series:

- The DXi V-Series utilizes four VMware VMXNET3 virtual Ethernet ports, which appear on the **Network** page as eth0, eth1, eth2, and eth3.
- The link speed of eth0 and eth1 are always reported as 1GbE on the **Network** page. The link speed of eth2 and eth3 are always reported as 10GbE on the **Network** page. However, the actual link speed is determined by the physical Ethernet ports on the host ESXi server.
- By default, eth0 and eth1 are *not* bonded into a single device. Similarly, eth2 and eth3 are *not* bonded. While the **Network** page will not prevent configuring a bonded device, Quantum does not support bonding the virtual Ethernet ports on the DXi V-Series. In addition, network segmentation (routing management, replication, or data traffic on different interfaces) is not enforced when using DHCP.
- The DXi V-Series supports DHCP for automatic configuration of IP addresses. You can also manually specify IP addresses as required by your network.
- For correct operation, make sure the network switch connected to the ESXi server is properly configured. If the DXi V-Series is set to use LACP, then the network switch must be configured for (static) port trunking with a submode of LACP.

The ESXi vSwitch should be configured for **Route based on IP hash** (ESXi node > Configuration tab > Ports tab > vSwitch > Edit button > NIC Teaming parameter > Load Balancing).

Configuring the network includes the following major steps:

Note: Before configuring the network, work with your network administrator to determine the network settings that will be required to properly integrate the DXi V-Series with your company's network.

- 1 [Configuring General Network Settings](#) on page 202
- 2 [Configuring Bonding Details](#) on page 203
- 3 [Configuring Interface Details](#) on page 205
- 4 [Configuring Interface IP Addresses](#) on page 206
- 5 [Configuring Interface Routing](#) on page 210
- 6 [Applying Network Settings](#) on page 212

Configuring General Network Settings

Under **General**, enter the following network information as provided by your network administrator (see [Figure 104](#)):

Figure 104 Network Page: General

The screenshot shows the 'General' configuration page for network settings. It includes the following fields and values:

- Hostname:** DXi
- Default Gateway:** (empty)
- DNS Suffix Search List:** .com
- Primary DNS IP Address:** 10. (with a warning icon)
- Secondary DNS IP Address:** 10.
- Tertiary DNS IP Address:** (empty)

A legend at the bottom left indicates that an asterisk (*) denotes a required field.

Note: If DHCP is enabled for the device, you cannot specify DNS information. Instead, DNS information is automatically assigned by the DHCP server.

Note: When entering IP addresses, never use an address that is in a reserved IP address range. To see a list of reserved IP address ranges, click the quick tip icon [?] located near the IP address field.

- **Hostname** - The hostname of the DXi V-Series.

The **Hostname** cannot be blank and must contain only letters [A-Z, a-z], numbers [0-9], and hyphens [-].

- **Default Gateway** - The default gateway IP address.

Specifying a default gateway is optional if all access is local to a particular subnet. For example, if the DXi V-Series and all of its clients are on the same subnet, you do not need to specify a default gateway.

Caution: Specifying a default gateway is required to enable connectivity with all subnets other than those that the DXi V-Series is directly connected to. For example, if the DXi V-Series and its clients are on different subnets, or you are using an external NTP server, you must specify a default gateway.

- **DNS Suffix Search List** - (Optional) The domain list to search when resolving domain names.

The list may be either a single domain name or a comma-separated list of up to 6 domain names. The first domain name listed is used as the local domain. Domain names must contain only letters [A–Z, a–z], numbers [0–9], dots [.], and hyphens [-].

- **Primary, Secondary, and Tertiary DNS IP Address** - (Optional) The IP addresses of up to three DNS servers used to resolve domain names and translate them into IP addresses.

Note: You must specify a DNS IP address if you plan to use hostname format when configuring an NTP time server, outgoing e-mail server, replication sources and targets, and other information.

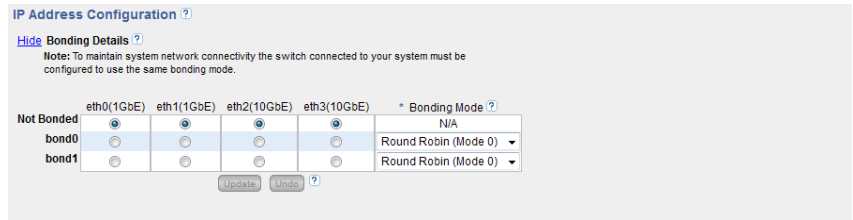
Note: The **DNS Suffix Search List** and **DNS IP Addresses** cannot be modified if the DXi V-Series is currently joined to a Windows domain. To disjoin a Windows domain, see [Windows Domain](#) on page 135.

Configuring Bonding Details

Note: While the **Network** page will not prevent configuring a bonded device, Quantum does not support bonding the virtual Ethernet ports on the DXi V-Series. In addition, network segmentation (routing management, replication, or data traffic on different interfaces) is not enforced when using DHCP.

Under **IP Address Configuration > Bonding Details**, configure bonded devices (see [Figure 105](#)):

Figure 105 Network Page: Bonding Details



- 1 If necessary, click the **Show** link to show the bonding details table.
- 2 For each available bonded device (**bond0**, **bond1**, and so on), select two or more Ethernet ports with the same link speed to assign to the bond. Or select **Not Bonded** to leave a port unassigned to any bond.

If no ports are assigned to a bond, the bond cannot be configured. That is, settings cannot be entered for the bond in the **Interface Details** or **IP Address** tables because no Ethernet ports are assigned to the device.

All ports assigned to the same device are bonded together into a single logical port. For example, if you select **bond0** for port **eth0** and port **eth1**, both ports are bonded together in the **bond0** device. A bonded device can contain two or more ports.

Note: All ports associated with a bond must have the same link speed (1GbE or 10GbE).

- 3 For each bonded device, specify the bonding mode:

Note: To maintain network connectivity, the switch connected to the DXi V-Series must be configured to use the same bonding mode. The best time to change the bonding mode on the switch is during the next reboot of your system, after saving the new network settings. Changing the bonding mode on the switch before saving these settings and rebooting may result in the loss of network connectivity to the system.

- **Round Robin (Mode 0)** - This option sends Ethernet frames using the bonded Ethernet ports with a valid MII link. Frames are sent in a round-robin fashion, starting with the first slave device and then the rest of the devices. This only applies to the

traffic sent from the DXi V-Series. The Ethernet switch needs to aggregate the ports, so the connected ports are treated as a logical port. The DXi frame reception is completely dependent on the transmission algorithm of the Ethernet switch. The bonding mechanism does not balance the frame reception.

- **LACP (Mode 4)** - This option (Link Aggregation Control Protocol) is based on the 802.3ad IEEE standard for aggregating Ethernet ports. If the bonding algorithm is set to LACP, the Ethernet switch ports must be configured in a 802.3ad based Link Aggregation group (LAG) in LACP mode. The DXi frame reception and transmission is controlled by the LACP between the bonded ports and the Ethernet switch ports.
- **Active Backup (Mode 1)** - This option does not require switch configuration but may not provide the same level of load balancing and performance as other bonding modes. Only one port in the bond is active at a time. If the active port fails, another port becomes active to take its place. Because only the MAC address of the active port is visible to the Ethernet switch, the switch does not require additional configuration.

4 Click **Update** to save the changes you made to the **Bonding Details** table. (Clicking **Update** does not yet apply the new network settings to the DXi V-Series.)

Click **Undo** to revert to all current Bonding Details changes to the last update.

Configuring Interface Details

Under **IP Address Configuration > Interface Details**, configure DHCP and jumbo Ethernet frame settings for each port or device (see [Figure 106](#)):

Figure 106 Network Page: Interface Details

	DHCP	Physical Ports	Bonding Mode	Link Speed	Link Status	Carrier Status	Jumbo Frame MTU Size
eth0	<input checked="" type="checkbox"/>	eth0	N/A	1GbE	Up	Up	1500
eth1	<input checked="" type="checkbox"/>	eth1	N/A	1GbE	Up	Up	1500
eth2	<input checked="" type="checkbox"/>	eth2	N/A	10GbE	Up	Up	1500
eth3	<input checked="" type="checkbox"/>	eth3	N/A	10GbE	Up	Up	1500

1 If necessary, click the **Show** link to show the interface details table.

- 2 For each device, select the **DHCP** check box to enable Dynamic Host Configuration Protocol for the device. When DHCP is enabled, IP address information is automatically assigned to the device by the DHCP server.

Note: If you intend to use DHCP for long-term operation, Quantum recommends registering the DXi V-Series with the DNS server. Alternately, you can use a DHCP reservation. Doing so ensures that the IP address of the DXi V-Series will not change. Otherwise, if the system is powered down and is unable to renew its DHCP lease, it could be assigned a new IP address the next time it is powered up. If a new IP address is assigned, NAS and replication services must be updated for the new IP address.

- 3 For each device, select the MTU (Maximum Transmission Unit) frame size in the **Jumbo Frame MTU Size** drop-down box.
 - **1500 MTU** - (Default) The standard (STD) MTU frame size of 1,500 bytes is used.
 - **9000 MTU** - The jumbo MTU frame size of 9,000 bytes is used. (For best performance, make sure the entire network path to the DXi is configured to use 9000 MTU.)
- 4 Click **Update** to save the changes you made to the **Interface Details** table. (Clicking **Update** does not yet apply the new network settings to the DXi V-Series.)

Click **Undo** to revert to all current Interface Details changes to the last update.

Configuring Interface IP Addresses

Under **IP Address Configuration > IP Address Table**, configure one or more network interfaces for each port or device (virtual Ethernet port or bonded device) (see [Figure 107](#)):

Note: If DHCP is enabled for the device, you cannot specify network information. Instead, network information is automatically assigned by the DHCP server. DHCP assumes that all network interfaces are on the same subnet. The default gateway is the IP address of the last discovered DHCP client. If the network interfaces are on different subnets, then the default gateway may not be correct.

Figure 107 Network Page: IP Address Table

IP Address Table

Note: A maximum of 10 IP addresses per interface are allowed.

If replication is performed across public network with source and target DXi behind NAT routers, you must configure this DXi's NAT IP Address.

IP Config	External			IP Address	Netmask	Gateway	Replication NAT IP Config [?]		Traffic Type Allowed [?]				
	Type	Interface	VLAN ID				NATed	NAT IP Address	Mgmt	Repl	Data	Any	
eth0	DHCP	<input checked="" type="radio"/>		-	10. [text]	255. [text]	10. [text]			-	-	-	✓
eth1	DHCP	<input checked="" type="radio"/>		-	10. [text]	255. [text]	10. [text]			-	-	-	✓
eth2	DHCP	<input checked="" type="radio"/>		-	10. [text]	255. [text]	10. [text]			-	-	-	✓
eth3	DHCP	<input checked="" type="radio"/>		-	10. [text]	255. [text]	10. [text]			-	-	-	✓

Update Delete Undo [?]

- 1 Click **Add IP** to add a network interface to a device.

Or select an interface to edit the IP address, netmask, gateway and traffic type. (To select an interface, click the radio button next to the interface index name, for example, **bond0:2**.)

Note: A maximum of 10 IP addresses are allowed per device. All IP addresses in the IP Address Table (added or modified) must be valid and unique, and must have a valid gateway and netmask.

- 2 In the **VLAN ID** column, select the check box to enable VLAN tagging for the interface. (Or clear the check box to disable VLAN tagging for the interface.)

VLAN tagging allows you to assign an interface to a virtual local area network (VLAN). With VLAN tagging, you can route different

traffic types (management, data, and replication) over different VLANs, making sure traffic types do not mix.

If VLAN tagging is enabled, enter the **VLAN Tag ID** for the interface. (Valid values are 2 to 4094. You can assign only one tag ID to an interface.)

Note: The maximum allowed number of VLAN tag IDs is 64. If you attempt to add more than 64 VLAN tag IDs, an error displays.

Note: To maintain connectivity, the switch ports connected to the DXi must be configured to accept the correct VLAN tag ID.

Caution: If VLAN tagging is enabled for an interface, DXi Advanced Reporting is unable to collect and record statistics for traffic moving over the VLAN interface (for example, eth1.400). Statistics are still collected for the base device (for example, eth1.)

- 3 In the **External Host IP** column, select the check box to designate the interface as an external host IP. This associates the interface IP address with the host name of the DXi, and the DXi is externally identified by the host IP. The following restrictions apply:
 - You can designate only one external host IP for the network configuration.
 - You must specify a traffic type of **Mgmt** (management) or **Any** for the external host IP interface.
 - You must specify a valid **Default Gateway** in the **General** section. In addition, the external host IP must be on the same subnet as the **Default Gateway** to ensure external communication.
- 4 Enter the following network information as provided by your network administrator (all fields are required):
 - **IP Address** - The IP address of the interface.
 - **Netmask** - The network mask of the interface.
 - **Gateway** - The gateway of the DXi V-Series. (This is usually not the same as the default gateway.)

- 5 If necessary, specify NAT (Network Address Translation) settings for the interface:

Note: You *must* specify a NAT IP address if the DXi V-Series is a replication target *and* replication is performed across a public network, with the source and target located behind NAT-enabled routers.

- **NATed** - Select the check box if the IP address of the DXi is translated by a firewall to a NAT IP address when the DXi communicates to the outside world.
- **NAT IP Address** - The IP address used to access the DXi from the public network. The router that connects the DXi to the Internet performs Network Address Translation that maps the IP address of the DXi to the NAT IP address, providing a valid replication interface for a source DXi.

- 6 Select the check box for each type of network traffic allowed on the interface (segmentation):

Note: At least one interface must allow management traffic.

Note: If the DXi is configured for source or target replication, you should configure at least one interface to allow replication traffic (select **Repl** or **Any**) before applying changes to network settings.

Note: If you configure segmentation for non-bonded interfaces (Ethernet ports) that are on the same subnet, all traffic will use the lowest numbered Ethernet port first, no matter how segmentation is configured. To avoid this issue, create bonded interfaces, and then select the desired traffic type for each bonded interface.

- **Mgmt** - Select to allow management traffic.
- **Repl** - Select to allow replication traffic.
- **Data** - Select to allow data traffic.
- **Any** - Select to allow all types of traffic (management, replication, and data).

- 7 Click **Update** to save the changes you made to the **IP Address** table. (Clicking **Update** does not yet apply the new network settings to the DXi V-Series.)

Click **Delete** to remove IP address information for the selected interface. Or click **Undo** to revert all current IP Address Table changes to the last update.

Note: When you add a network interface, a default route (via the default gateway) is automatically created for the interface after network settings are applied and the DXi reboots. For example, if you add an interface with IP address 10.20.185.172, a route with the destination IP address 10.20.185.0 is automatically added. If you delete the default route, it is automatically added again the next time network settings are applied and the DXi reboots. For more information about interface routing, see [Understanding Interface Routing](#) on page 212.

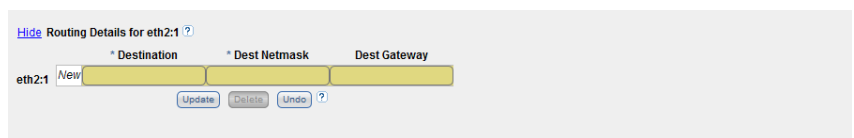
Configuring Interface Routing

Some network configurations require that you specify routing details for an interface. You need to specify routing details if the host or client the interface connects to is on a different subnet that is not reachable using the default gateway. You also need to specify routing details if you have configured multiple network segments (replication, data, or management) on the same subnet. For more information and examples, see [Understanding Interface Routing](#) on page 212.

Under **IP Address Configuration > Routing Details**, enter routing information for one or more interfaces (see [Figure 108](#)):

Note: If DHCP is enabled for the device, you cannot specify routing information. Instead, all IP address information is automatically assigned by the DHCP server.

Figure 108 Network Page: Routing Details



- 1 In the **IP Address Table** (above routing details), select an interface to add or modify routing data. (To select an interface, click the radio button next to the interface index name, for example, **bond0:2**.)

After selecting an interface in the **IP Address Table**, the **Routing Details** table below expands to display available routes (if any).

Note: A maximum of 8 routes per interface are allowed.

- 2 If necessary, click the **Show** link to show the routing details table.
- 3 Click **Add Route** to add a route to the selected interface.
Or select a route to edit its settings.
- 4 Enter the following network information as provided by your network administrator:
 - **Destination** - The destination network for the route.
 - **Dest Netmask** - The network mask for the route.
 - **Dest Gateway** - The gateway IP address used for *outgoing* traffic sent from the interface to a host or client. (This is usually not the same as the default gateway.)

Note: The destination gateway of each route *must* match the subnet of at least one configured IP address listed in the **IP Address Table**. If no match is found, an error displays stating that the route's destination gateway is not reachable.

Note: In the example shown in [Figure 109](#), to reach a host on the 10.50.50.x subnet, you would enter 10.50.50.0 for destination network, 255.255.255.0 for the destination netmask, and 10.20.20.1 as the destination gateway.

- 5 Click **Update** to save the changes you made to the **Routing Details** table. (Clicking **Update** does not yet apply the new network settings to the DXi V-Series.)

Click **Delete** to remove IP routing information for the selected interface. Or click **Undo** to revert all current Routing Details changes to the last update.

Applying Network Settings

For network changes to take effect, you must apply the changes, finalize the confirmation, and reboot the system. To apply all changed settings on the **Network** page to the DXi V-Series, click **Apply** at the bottom of the page. Follow the prompts to confirm the changes and reboot the system.

Note: To revert all network settings to the initial state and undo all changes, click the **Reset** button.

Understanding Interface Routing

For a network on the interface to communicate with a host located on a different subnet, you must specify routing information in the **Routing Details** section. Routing is used to direct outgoing traffic from a network interface on the DXi to an IP address in another subnet by means of a destination gateway. Responses from the destination are routed back to the DXi using the gateway specified for the interface in the **IP Address Table** section.

In addition, when configuring segmented network interfaces, if the source DXi replication, data, and management interfaces are on the same subnet, you must add a host route on the source DXi to make sure the replication interface is correctly selected when replicating data to the target DXi.

See the following examples for details:

- [Example 1: Segments and Target on Different Subnets](#)
- [Example 2: Segments and Target on the Same Subnet](#)
- [Example 3: Segments on the Same Subnet and Target on a Different Subnet](#)

Example 1: Segments and Target on Different Subnets

In the example below (see [Figure 109](#)), the DXi has two segmented interfaces, one for management traffic and one for data traffic:

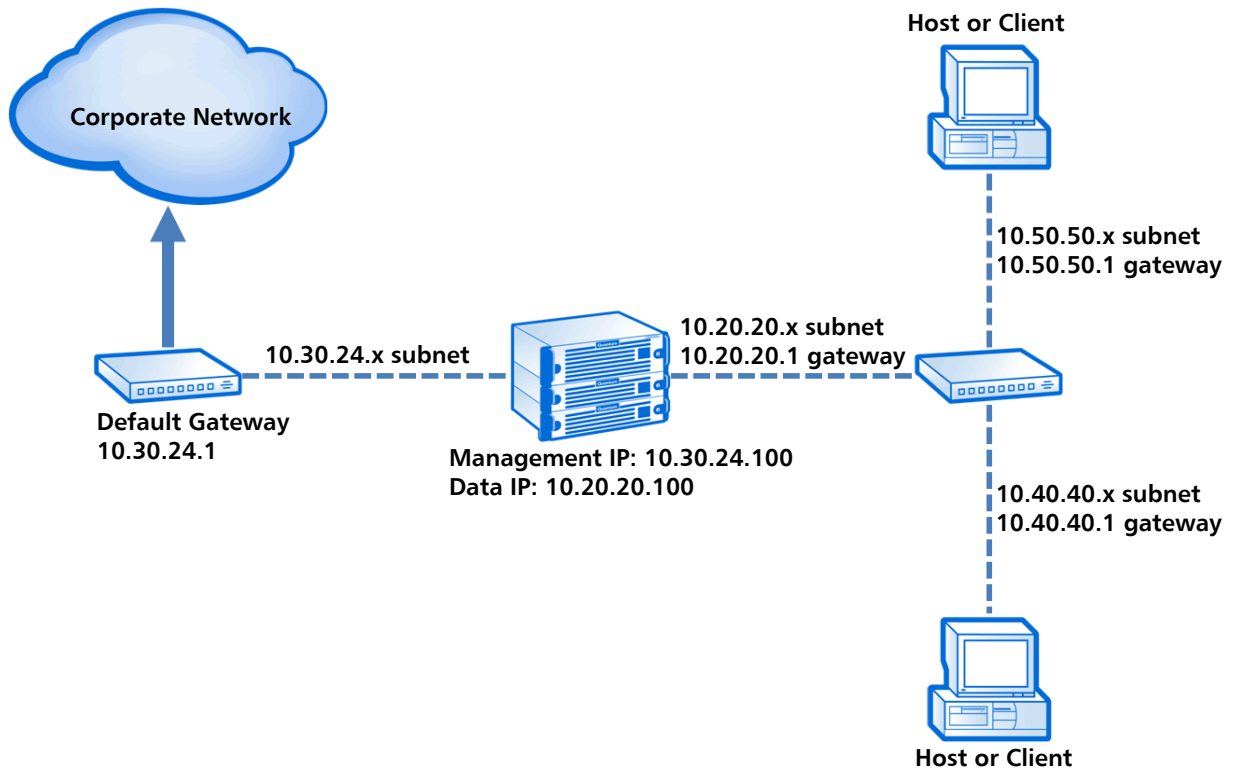
- The management interface is assigned to the 10.30.24.x subnet in the **IP Address Table** section. This subnet connects to the corporate network by mean of the default gateway (10.30.24.1).

- The data interface is assigned to the 10.20.20.x subnet in the **IP Address Table** section. This subnet connects to a gateway at 10.20.20.1.
- Using the data interface, the DXi needs to connect to a backup host that is on the 10.50.50.x subnet. Because this host is not on the same subnet as the data interface, the DXi cannot communicate with the host unless you specify routing information in the **Routing Details** section.

In this example, you would specify 10.50.50.0 for destination network, 255.255.255.0 for the destination netmask, and 10.20.20.1 as the destination gateway.

Note: The gateway specified in the **IP Address Table** section is for *incoming* traffic to the interface. The gateway specified in the **Routing Details** section is for *outgoing* traffic from the interface.

Figure 109 Interface Routing: Example 1



Example 2: Segments and Target on the Same Subnet

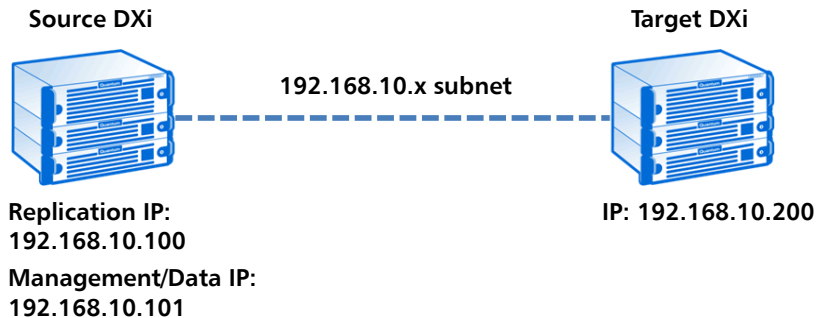
In the example below (see [Figure 110](#)), the DXi has two segmented interfaces, one for data and management traffic, and one for replication traffic:

- The source DXi management/data IP address, the source DXi replication IP address, and the target DXi IP address are all on the same subnet (192.168.10.x).
- To make sure the replication segment is used when communicating with the target DXi, you must add a host route in the **Routing Details** section on the source DXi.

In this example, you would specify the following routing details for the replication interface on the source DXi:

- **Destination** - Use the IP address of the target DXi (192.168.10.200).
- **Dest Netmask** - Use 255.255.255.255.
- **Dest Gateway** - Use the replication IP address of the source DXi (192.168.10.100).

Figure 110 Interface Routing:
Example 2



Example 3: Segments on the Same Subnet and Target on a Different Subnet

In the example below (see [Figure 111](#)), the DXi has two segmented interfaces, one for data and management traffic, and one for replication traffic:

- The source DXi management/data IP address and the source DXi replication IP address are on the same subnet (192.168.10.x). The target DXi IP address is on a different subnet (192.168.20.x)
- To make sure the replication segment is used when communicating with the target DXi, you must add a network route in the **Routing Details** section on the source DXi.

In this example, you would specify the following routing details for the replication interface on the source DXi:

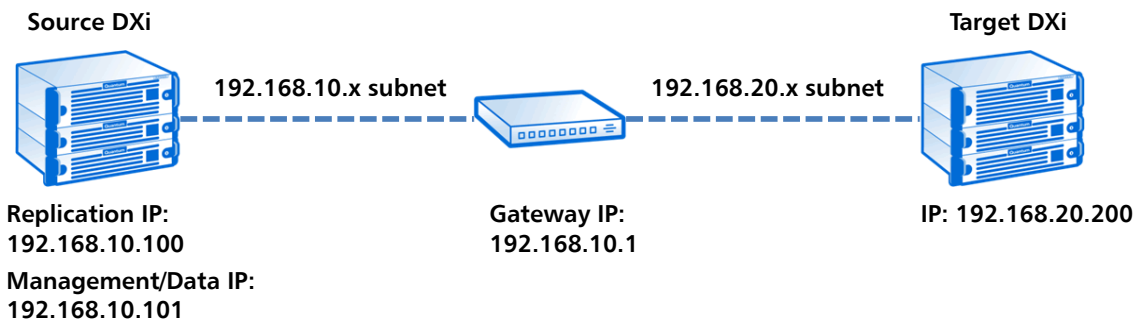
- **Destination** - Use the subnet of the target DXi (192.168.20.0).
- **Dest Netmask** - Use 255.255.255.0.

- **Dest Gateway** - Use the IP address of the gateway (192.168.10.1).
- In addition, to enable communication with the target DXi by means of the gateway, you must add a second host route in the **Routing Details** section on the source DXi.

In this example, you would specify a second set of routing details for the replication interface on the source DXi:

- **Destination** - Use the IP address of the gateway (192.168.10.1).
- **Dest Netmask** - Use 255.255.255.255.
- **Dest Gateway** - Use the replication IP address of the source DXi (192.168.10.100).

Figure 111 Interface Routing: Example 3



Backpanel Locations

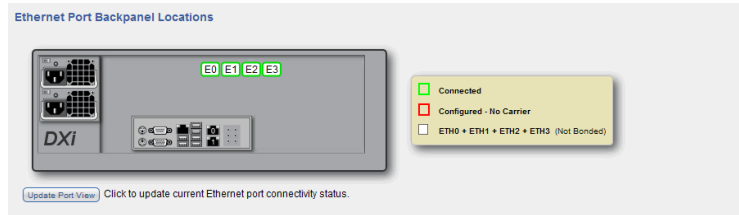
The **Backpanel Locations** section at the bottom of the **Network** page displays a graphical representation of the virtual Ethernet ports (see [Figure 112](#)).

The diagram indicates the current bonding configuration and connectivity status for all Ethernet ports.

- Ports that are bonded together in an interface are shaded the same color.

- A green border indicates a port is connected to a network.
- A red border indicates a port is configured but is not connected to a network.
- Click **Update Port View** to update the information on the diagram.

Figure 112 Network Page: Backpanel Locations



Date & Time

The **Date & Time** page allows you to set the system date and time of the DXi V-Series. You can specify a Network Time Protocol (NTP) server to synchronize the system time with, or you can manually enter the date and time.

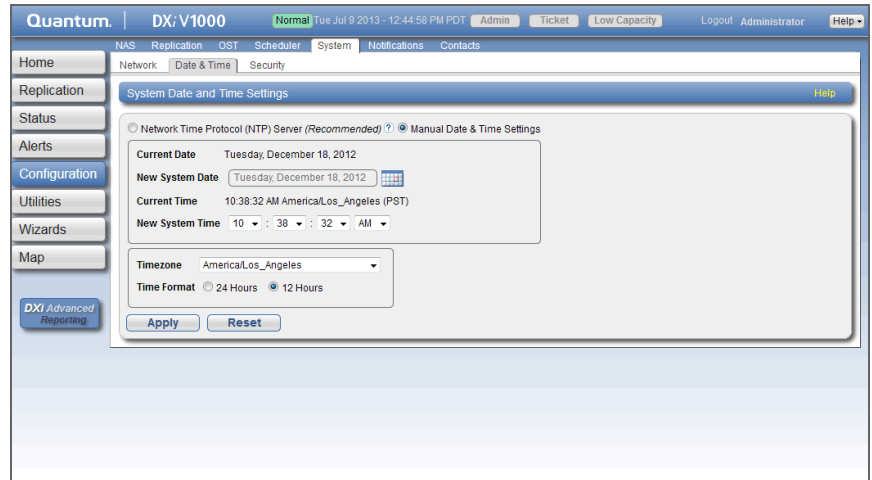
Caution: The DXi V-Series uses VMware Tools time management services. Quantum recommends that you do *not* configure NTP on the DXi V-Series. Instead, you should configure NTP on the ESXi server.

Caution: Changing the date and time settings requires a system reboot immediately after the changes are applied. Wait for at least 15 minutes before logging back in.

Note: If you intend to join the DXi V-Series to a Windows network using Active Directory for NAS storage, Quantum recommends using an NTP Server to set the system date and time (see [Windows Domain](#) on page 135).

To access the **Date & Time** page, on the **System** page, click the **Date & Time** tab (see [Figure 113](#)).

Figure 113 Date & Time Page



To set the system date and time:

1 Select one of the following options:

- **Network Time Protocol (NTP) Server** - Select this option to synchronize the DXi V-Series with an NTP timeserver or pool. Then select or specify a timeserver or pool.
 - **Select a Timeserver Pool** - (Recommended) Select one of the well-known, geographically-based NTP timeserver pools in the drop-down box.

Note: To select a timeserver pool, you must first specify at least one DNS IP address on the **Network** page (see [Network](#) on page 199). Otherwise, you must specify the IP address of the timeserver pool.

- **Specify a Timeserver or Pool** - Type the name or IP address of the NTP server or pool. (See <http://support.ntp.org> for information about publicly available NTP servers)

To verify that the DXi V-Series can communicate with the NTP server or pool, click **Test NTP**.

- **Manual Date & Time Settings** - Select this option to manually set the system date and time.

Specify the **New System Date** by clicking the calendar icon. Specify the **New System Time** using the drop-down boxes.

- 2 In the **Timezone** drop-down box, select the time zone where the DXi V-Series is located.
- 3 Next to **Time Format**, select the format to use when displaying times (**24 hours** or **12 hours**).
- 4 Click **Apply**.

Security

The **Security** page allows you to configure security settings for the DXi V-Series, including access passwords, SSL settings, and the inactivity timeout.

To access the **Security** page, click the **Configuration** menu, and then click the **Security** tab.

The **Security** page contains the following tabs:

- [Web & CLI Passwords](#)
- [SSL](#)
- [Login Session](#)
- [Security Notice](#)

Web & CLI Passwords

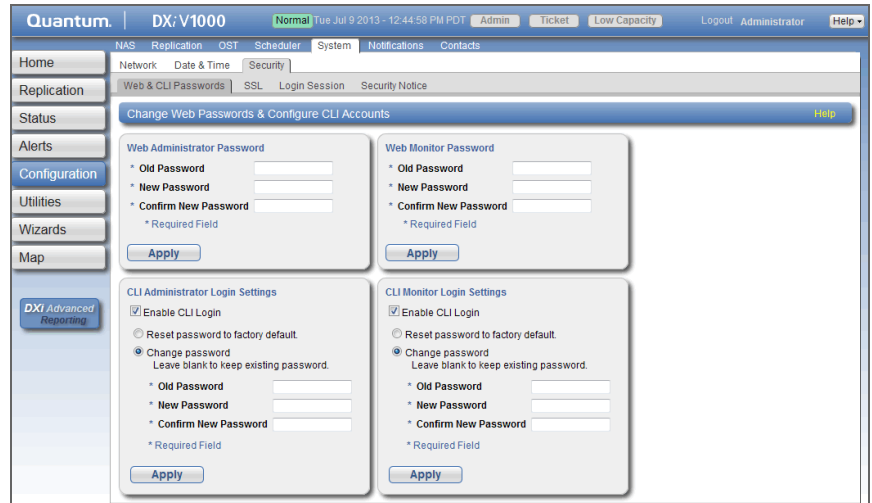
The **Web & CLI Passwords** page allows you to change the account passwords for the remote management console (Web) and the command line interface (CLI). You can also enable or disable the CLI account.

The DXi V-Series has two access levels for logging onto the remote management console or the CLI:

- **Monitor** - Allowed to view information on the DXi V-Series remote management console or the CLI but cannot make changes.
- **Administrator** - Allowed to view and change information on the DXi V-Series remote management console or the CLI.

To access the **Web & CLI Passwords** page, on the **Security** page, click the **Web & CLI Passwords** tab (see [Figure 114](#)).

Figure 114 Web & CLI Passwords Page



Use the **Web & CLI Passwords** page to perform the following tasks:

- Change the administrator or monitor password for Web access (see [Changing Web Passwords](#) on page 220).
- Enable or disable CLI access for the administrator or monitor account (see [Enabling CLI Accounts](#) on page 221).
- Change the administrator or monitor password for CLI access (see [Changing CLI Passwords](#) on page 221).
- Reset the CLI administrator or monitor password to the factory default (see [Resetting CLI Passwords](#) on page 222).

Changing Web Passwords

Use the Web passwords when logging onto the remote management console as an administrator or monitor (see [Accessing Remote Management](#) on page 12).

To change the Web passwords:

- 1 Under **Web Administrator Password** or under **Web Monitor Password**, enter the following information:
 - **Old Password** - Enter the old password.
 - **New Password** - Enter the new password.
 - **Confirm New Password** - Enter the new password again to confirm it.

Note: The default password is **password**.

Note: Passwords are limited to 15 characters. Alphanumeric characters and special characters are allowed.

2 Click **Apply**.

Enabling CLI Accounts

The CLI accounts provide access to the DXi V-Series command line interface as an administrator or monitor.

Note: For more information about using the CLI, see the *DXi V-Series Command Line Interface (CLI) Guide*.

To enable or disable the CLI accounts:

1 Under **CLI Administrator Login Settings** or under **CLI Monitor Login Settings**, do one of the following steps:

- Select the **Enable CLI Login** check box to enable the CLI account.
- Clear the **Enable CLI Login** check box to disable the CLI account.

2 Click **Apply**.

Changing CLI Passwords

Use the CLI passwords when logging onto the command line interface as an administrator or monitor.

To change the CLI passwords:

1 Under **CLI Administrator Login Settings** or under **CLI Monitor Login Settings**, select the **Change password** option.

2 Enter the following information:

- **Old Password** - Enter the old password.
- **New Password** - Enter the new password.
- **Confirm New Password** - Enter the new password again to confirm it.

Note: The default password for the CLI Administrator account is **cliadmin**. The default password for the CLI Monitor account is **cliviewer**.

Note: Passwords are limited to 15 characters. Alphanumeric characters and special characters are allowed.

3 Click **Apply**.

Resetting CLI Passwords

The default password for the CLI Administrator account is **cliadmin**. The default password for the CLI Monitor account is **cliviewer**.

To reset the CLI account passwords to their default values:

- 1 Under **CLI Administrator Login Settings** or under **CLI Monitor Login Settings**, select the **Reset password to factory default** option.
- 2 Click **Apply**.

SSL

The **SSL** page allows you to enable or disable SSL on the DXi V-Series. You can also install a new SSL certificate to replace the Quantum default SSL certificate.

To access the **SSL** page, on the **Security** page, click the **SSL** tab (see [Figure 115](#)).

Figure 115 SSL Page



Use the **SSL** page to perform the following tasks:

- Enable or disable SSL on the DXi V-Series (see [Enabling SSL](#) on page 223).

Note: If you enable SSL, see [Server Authentication Warnings](#) on page 224 for important information about Web browser settings.

- Install a new SSL certificate (see [Installing an SSL Certificate](#) on page 224).

Enabling SSL

SSL (Secure Sockets Layer) is a protocol that provides security and privacy over the Internet by negotiating encryption keys before transmitting data between a client and a server.

To establish a secure connection, the DXi V-Series must have an encryption key assigned to it by a Certification Authority in the form of a certificate file, private key file, and pass phrase. After you install these components, you can establish a secure connection using the SSL protocol. The DXi V-Series comes with a Quantum default SSL certificate.

To enable or disable SSL:

- 1 Under **SSL Properties**, select the **Enable SSL** option to enable SSL.

Or select the **Disable SSL** option to disable SSL.

Note: The default setting is disabled.

2 Click **Apply**.

Server Authentication Warnings

Enabling SSL with the default Quantum certificate allows you to securely communicate with the DXi V-Series Web-based interface using SSL encryption. However, you may receive a warning from your Web browser stating that the server you are attempting to connect to does not match the server embedded within the certificate.

This is expected behavior because the default certificate can only be used for encryption and not server authentication. You can install your own custom certificate in order to take advantage of server authentication in addition to encrypted communication.

To suppress server authentication warnings for the default certificate:

- **Internet Explorer** - If a dialog box displays warning you of a possible certificate error, add the IP address for the DXi V-Series to the **Trusted Sites** list (**Tools > Internet Options > Security > Trusted Sites**). If subsequent warning pages display along with an option to close your Web browser or continue to the Web site, click **Continue**. This suppresses the warnings until you restart your Web browser.
- **Firefox** - If the **Secure Connection Failed** dialog box displays, click the link at the bottom of the dialog box and follow the instructions to add an exception for your DXi V-Series.

Installing an SSL Certificate

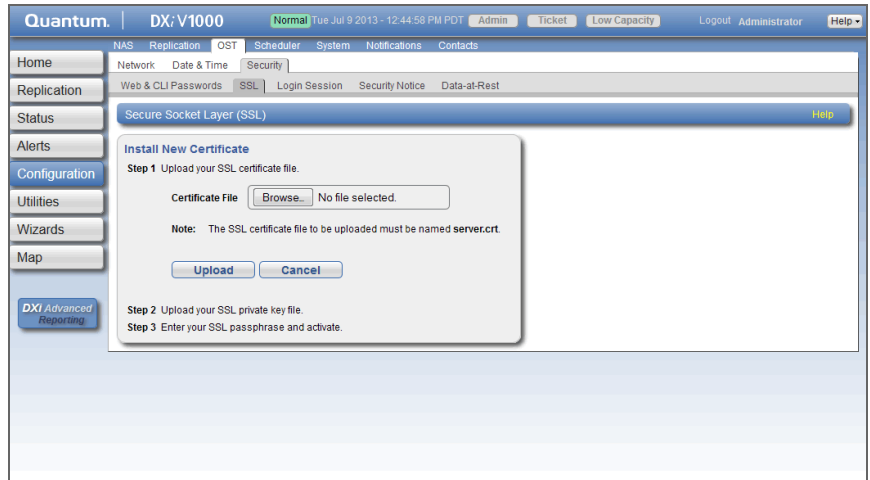
You can purchase and install your own custom SSL certificate in order to take advantage of server authentication in addition to encrypted communication on the DXi V-Series.

To install an SSL certificate:

1 Under **Certificate**, click **New**.

The **Install New Certificate** page displays (see [Figure 116](#)).

Figure 116 Install New Certificate Page



2 In the **Certificate File** box, type the location and filename of the new SSL certificate file.

Or click **Browse** to browse the system and locate the SSL certificate file. The SSL certificate file must be named **server.crt**.

3 Click **Upload**.

4 Type your SSL private key and press **<Enter>**.

5 Type your SSL passphrase and press **<Enter>**.

A **Successful Upload** page displays stating that the SSL certificate file has been installed on the system.

6 Click **OK**.

The certificate displays in the **Certificate** section.

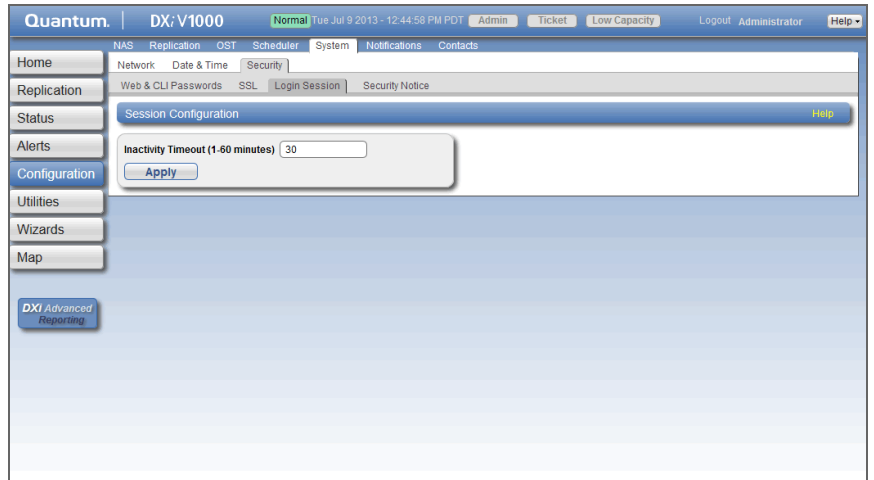
Login Session

The **Login Session** page allows you to specify the inactivity timeout for the DXi V-Series remote management console. The default timeout is 30 minutes.

When the remote management console is inactive for the specified period of time, the user is automatically logged off and must log back on to continue (see [Accessing Remote Management](#) on page 12).

To access the **Login Session** page, on the **Security** page, click **Login Session** (see [Figure 117](#)).

Figure 117 Login Session Page



To specify the inactivity timeout:

- 1 In the **Inactivity Timeout** box, enter the number of minutes of inactivity before a user is automatically logged off (1–60 minutes).
- 2 Click **Apply**.

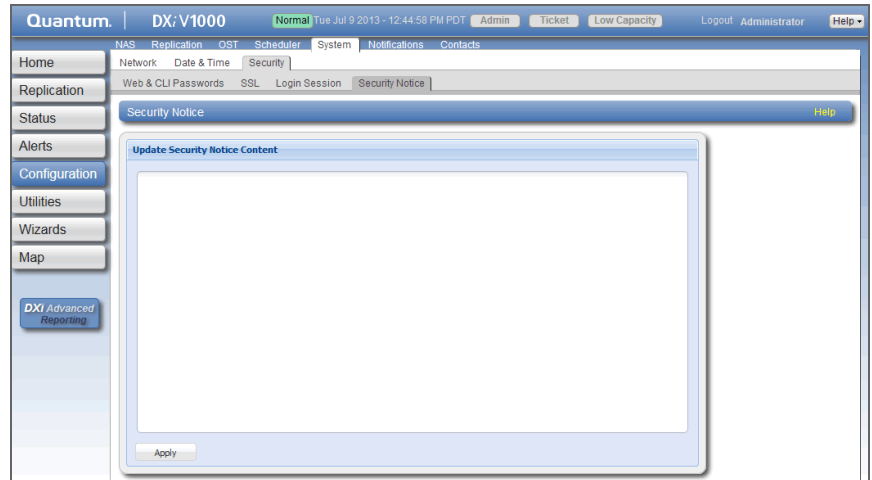
Security Notice

The **Security Notice** page allows you to specify a message that will appear to all users when logging on to the remote management console or the CLI (command line interface).

If a security notice message has been specified, the user must accept the message in order to begin using the system. If no security notice has been specified, the user can use the system immediately after logging on.

To access the **Security Notice** page, on the **Security** page, click **Security Notice** (see [Figure 118](#)).

Figure 118 Security Notice Page



To add or update a security notice message, enter the message in the box and click **Apply**.

Notifications

The **Notifications** page allows you to manage the methods the DXi V-Series uses to send notifications. The DXi V-Series can send notifications by e-mail, or using SNMP (Simple Network Management Protocol).

To access the **Notifications** page, click the **Configuration** menu, and then click the **Notifications** tab.

The **Notifications** page contains the following tabs:

- [Email](#)
- [SNMP](#)

Email

The **Email** page allows you to specify the recipients to notify by e-mail when administration alerts or service tickets occur. You can specify e-mail recipients, notification levels, and information about your e-mail

configuration. You can also configure the DXi V-Series to generate and send configuration and status reports.

Note: For more information about administration alerts and service tickets, see [DXi V-Series Alerts](#) on page 115.

To access the **Email** page, on the **Notifications** page, click the **Email** tab.

The **Email** page contains the following tabs:

- [Recipients](#)
- [Server](#)
- [Test](#)
- [Email Reports](#)

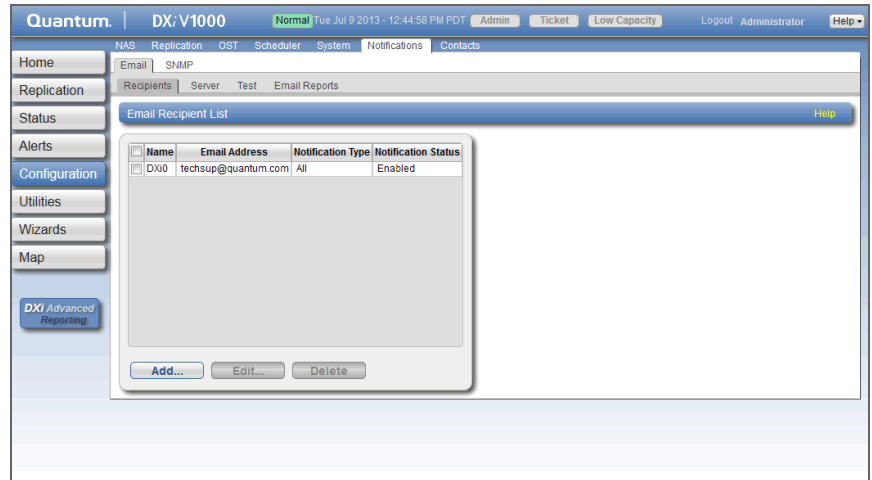
Recipients

The **Recipients** page allows you to manage the e-mail recipients the DXi V-Series sends notifications to. You can add, edit, and delete e-mail recipients, and you can specify the types of notifications to send.

Note: To enable the DXi V-Series to send e-mail, you must specify an outgoing e-mail server (see [Server](#) on page 233).

To access the **Recipients** page, on the **Email** page, click the **Recipients** tab (see [Figure 119](#)).

Figure 119 Recipients Page



Use the **Recipients** page to perform the following tasks:

- View information about e-mail recipients (see [Email Recipient List](#) on page 229).
- Add an e-mail recipient (see [Adding an E-mail Recipient](#) on page 230).
- Edit an e-mail recipient (see [Editing an E-mail Recipient](#) on page 231).
- Delete an e-mail recipient (see [Deleting an E-mail Recipient](#) on page 232).

Email Recipient List

The **Email Recipient List** displays the following information about e-mail recipients:

- **Name** - The name of the recipient.
- **Email Address** - The e-mail address of the recipient.
- **Notification Type** - The types of notifications sent to the recipient (**High**, **High and Medium**, or **All**).
- **Notification Status** - The status of e-mail notifications for the recipient (**Enabled** or **Disabled**).

Adding an E-mail Recipient

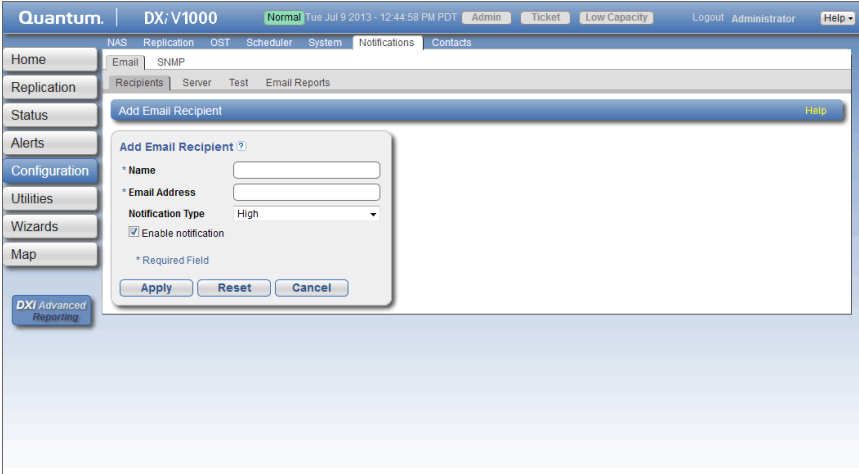
Add an e-mail recipient to send notifications about administration alerts or service tickets to the recipient by e-mail.

To add an e-mail recipient:

- 1 Click **Add**.

The **Add Email Recipient** page displays (see [Figure 120](#)).

Figure 120 Add Email Recipient Page



The screenshot shows the Quantum DXi V1000 web interface. The top navigation bar includes 'Quantum', 'DXi V1000', and system status information. A left sidebar contains navigation links: Home, Replication, Status, Alerts, Configuration, Utilities, Wizards, and Map. The main content area is titled 'Add Email Recipient' and features a dialog box with the following fields and options:

- * Name**: Text input field.
- * Email Address**: Text input field.
- Notification Type**: Dropdown menu set to 'High'.
- Enable notification**
- * Required Field** label.
- Buttons: **Apply**, **Reset**, and **Cancel**.

- 2 Enter information about the recipient:

- **Name** - The name of the recipient.
- **Email Address** - The e-mail address of the recipient.
- **Notification Type** - Select the types of notifications to send to the recipient:
 - **High** - Send e-mail notifications for High service tickets.
High service tickets indicate that a critical problem has occurred and needs to be resolved immediately. The operation and performance of the DXi V-Series are degraded, and there is a risk of system failure or data loss.
 - **High and Medium** - Send e-mail notifications for High and Medium service tickets.
Medium service tickets indicate that a serious problem occurred and needs to be resolved, but it does not

necessarily need to be fixed immediately. The operation and performance of the DXi V-Series may be degraded.

- **All** - Send e-mail notifications for High, Middle, and Low service tickets, as well as any administration alerts.

Low service tickets indicate that a minor problem occurred and needs to be resolved, but the operation and performance of the DXi V-Series are not significantly affected.

- 3 Select the **Enable notification** check box to enable sending of notifications to the recipient.

Or clear the **Enable notification** check box to disable sending of notifications to the recipient.

- 4 Click **Apply**.

Editing an E-mail Recipient

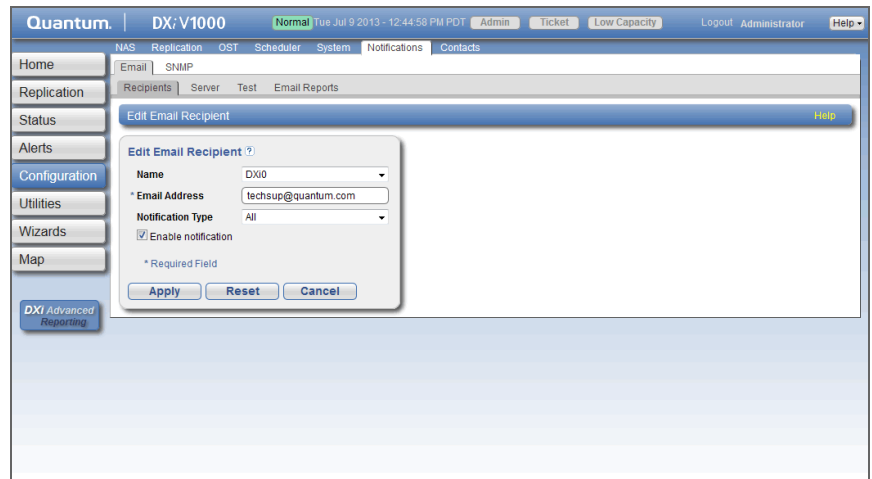
Edit an e-mail recipient to change the recipient's e-mail address or the types of notifications sent to the recipient. You can also enable or disable sending of notifications to the recipient.

To edit an e-mail recipient:

- 1 Click **Edit**.

The **Edit Email Recipient** page displays (see [Figure 121](#)).

Figure 121 Edit Email Recipient Page



2 Enter information about the recipient:

Note: If you are editing an e-mail recipient, you cannot change the **Name**.

- **Name** - (Optional) Select a different e-mail recipient to edit.
- **Email Address** - The e-mail address of the recipient.
- **Notification Type** - Select the types of notifications to send to the recipient:
 - **High** - Send e-mail notifications for High service tickets.
High service tickets indicate that a critical problem has occurred and needs to be resolved immediately. The operation and performance of the DXi V-Series are degraded, and there is a risk of system failure or data loss.
 - **High and Medium** - Send e-mail notifications for High and Medium service tickets.
Medium service tickets indicate that a serious problem occurred and needs to be resolved, but it does not necessarily need to be fixed immediately. The operation and performance of the DXi V-Series may be degraded.
 - **All** - Send e-mail notifications for High, Middle, and Low service tickets, as well as any administration alerts.
Low service tickets indicate that a minor problem occurred and needs to be resolved, but the operation and performance of the DXi V-Series are not significantly affected.

3 Select the **Enable notification** check box to enable sending of notifications to the recipient.

Or clear the **Enable notification** check box to disable sending of notifications to the recipient.

4 Click **Apply**.

Deleting an E-mail Recipient

Delete an e-mail recipient if you no longer want the DXi V-Series to send e-mail notifications to the recipient.

To delete an e-mail recipient, select the recipient and click **Delete**.

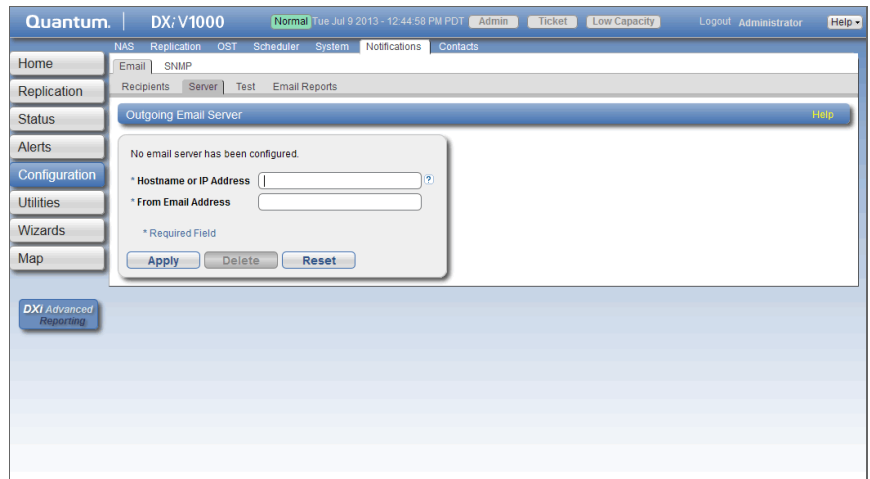
Note: You can select multiple recipients to delete at once.

Server

The **Server** page allows you to specify the server for outgoing e-mail. The DXi V-Series cannot send e-mail notifications until you specify the outgoing e-mail server.

To access the **Server** page, on the **Email** page, click the **Server** tab (see [Figure 122](#)).

Figure 122 Server Page



To specify the outgoing e-mail server:

- 1 In the **Hostname or IP Address** box, enter the hostname or IP address of the outgoing e-mail server.

Note: When entering IP addresses, never use an address that is in a reserved IP address range. To see a list of reserved IP address ranges, click the quick tip icon [?] located near the IP address field.

Note: To use hostname format, you must specify at least one DNS IP address on the **Network** page (see [Network](#) on page 199).

- 2 In the **From Email Address** box, enter the return e-mail address displayed in e-mails sent by the DXi V-Series.

Specify a return address that lets you easily identify the system that generated the e-mail (for example, systemname@any-domain.com). The return address must contain an @ symbol and a valid domain name, including a period.

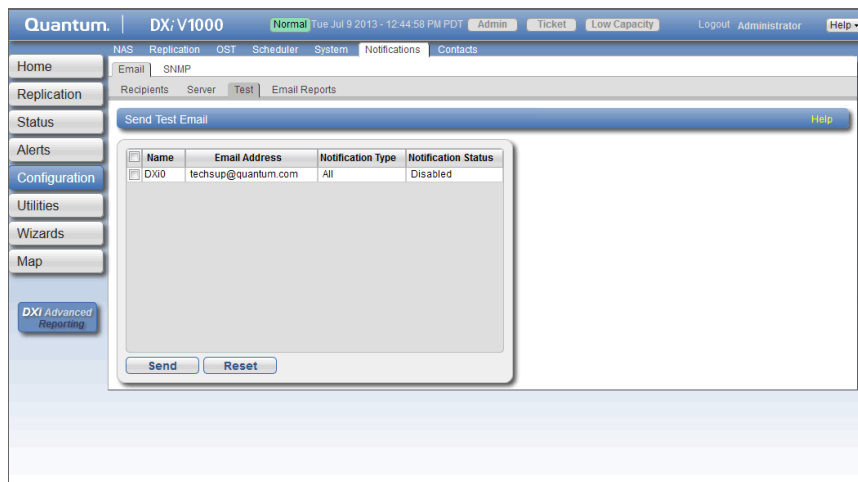
- 3 Click **Apply**.

Test

The **Email Test** page allows you to send a test e-mail to verify that e-mail notifications are correctly configured on the DXi V-Series.

To access the **Email Test** page, on the **Email** page, click the **Test** tab (see [Figure 123](#)).

Figure 123 Email Test Page



To send a test e-mail, select a recipient in the list and click **Send**. If the recipient does not receive the e-mail, make sure that the recipient's e-mail address is correct (see [Editing an E-mail Recipient](#) on page 231). Also make sure that the outgoing e-mail server is correct (see [Server](#) on page 233).

Email Reports

The **Email Reports** page allows you to specify the e-mail recipients for automatically generated reports. You can also generate reports on demand.

The system can generate a report with system status data or with configuration data. Each report also includes the system serial number, date and time, and a message that informs the recipient that the e-mail is automated and they should not respond to it.

Note: To enable the DXi V-Series to send e-mail, you must specify an outgoing e-mail server (see [Server](#) on page 233).

To access the **Email Reports** page, on the **Email** page, click the **Email Reports** tab.

The **Email Reports** page contains the following tabs:

- [Recipients](#)
- [On Demand](#)

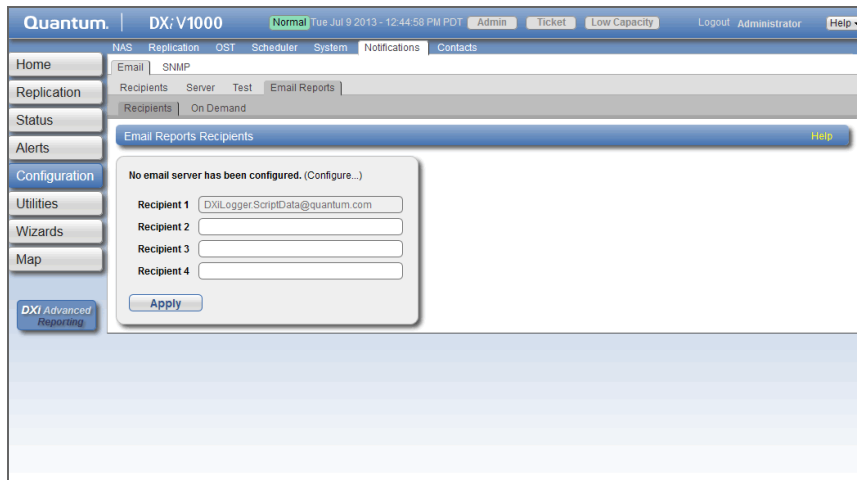
Recipients

The **Recipients** page allows you to specify the e-mail recipients who will receive all scheduled status data and configuration data reports.

Note: To configure the schedule when e-mail reports are sent, use the **Configuration > Scheduler** page (see [Scheduling E-mail Reports](#) on page 196).

To access the **Recipients** page, on the **Email Reports** page, click the **Recipients** tab (see [Figure 124](#)).

Figure 124 Recipients Page



Enter the e-mail addresses of up to three recipients in the boxes, and then click **Apply**. When the DXi generates scheduled e-mail reports, they will be sent to the specified addresses.

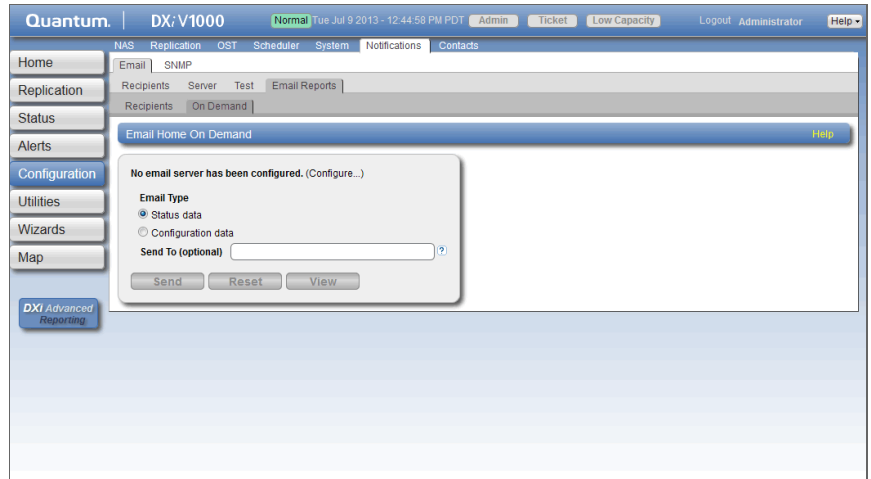
Note: You cannot edit the first recipient.

On Demand

The **On Demand** page allows you to manually generate a status data or configuration data report. The report is immediately sent to the specified e-mail recipient. You can also view configuration data.

To access the **On Demand** page, on the **Email Reports** page, click the **On Demand** tab (see [Figure 125](#)).

Figure 125 On Demand Page



Use the **On Demand** page to perform the following tasks:

- Manually send a status data or configuration data report (see [Sending a Report](#) on page 237).
- View a configuration data report (see [Viewing Configuration Data](#) on page 237).

Sending a Report

To manually send a status data or configuration data report:

- 1 Under **Email Type**, select the type of report to send (**Status data** or **Configuration data**).
- 2 In the **Send To** box, enter the e-mail address of the recipient.
An e-mail address is required for sending **Configuration data**. For **Status data**, if you do not enter an e-mail address, the report is sent to **DXiLogger.ScriptData@quantum.com**.
- 3 Click **Send**.

Viewing Configuration Data

To view a configuration data report:

- 1 Under **Email Type**, select **Configuration data**.
- 2 Click **View**.
The **System Configuration Report** window displays.

- 3 (Optional) Click **Save** to save a local copy of the report in TXT format.

SNMP

The **SNMP** page allows you to configure the DXi V-Series to send status messages using SNMP (Simple Network Management Protocol). The DXi V-Series supports SNMP v1 and v2c.

SNMP works by sending messages, called protocol data units (PDUs), to different parts of a network, or communities. SNMP compliant devices, called agents, store data about themselves in Management Information Bases (MIBs) and return this data to the SNMP requesters.

You can configure the DXi V-Series to act as an agent and send traps to a specified destination. You can also add SNMP community information.

To access the **SNMP** page, on the **Notifications** page, click the **SNMP** tab.

The **SNMP** page contains the following tabs:

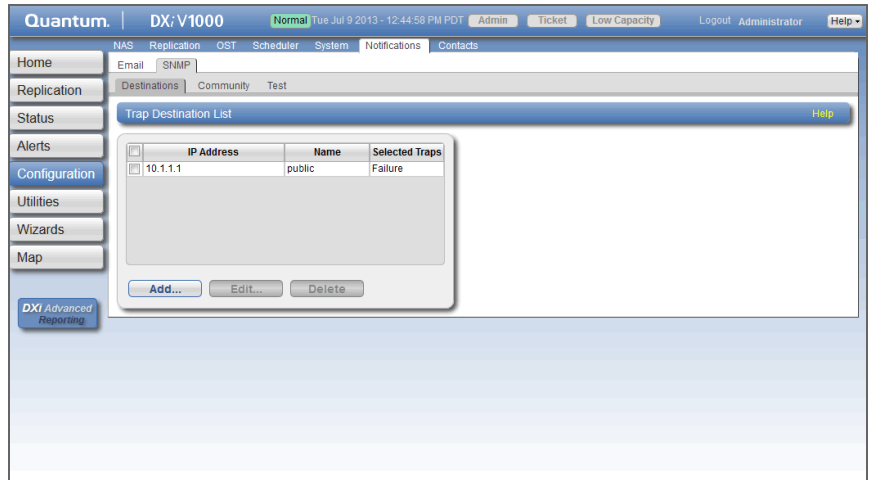
- [Destinations](#)
- [Community](#)
- [Test](#)

Destinations

The **Destinations** page allows you to manage the destinations the DXi V-Series sends SNMP traps to. You can add, edit, and delete SNMP destinations, and you can specify the types of traps to send.

To access the **Destinations** page, on the **SNMP** page, click the **Destinations** tab (see [Figure 126](#) on page 239).

Figure 126 Destinations Page



Use the **Destinations** page to perform the following tasks:

- View information about SNMP destinations (see [Trap Destination List](#) on page 239).
- Add an SNMP destination (see [Adding a Destination](#) on page 239).
- Edit an SNMP destination (see [Editing a Destination](#) on page 241).
- Delete an SNMP destination (see [Deleting a Destination](#) on page 242).

Trap Destination List

The **Trap Destination List** displays the following information about SNMP destinations:

- **IP Address** - The IP address of the destination.
- **Name** - The name of the destination.
- **Selected Traps** - The traps the DXi V-Series sends to the destination (**Failure**, **Warning**, **Informational**, **Available**, or **Unavailable**).

Adding a Destination

Add an SNMP destination to send traps from the DXi V-Series to the destination.

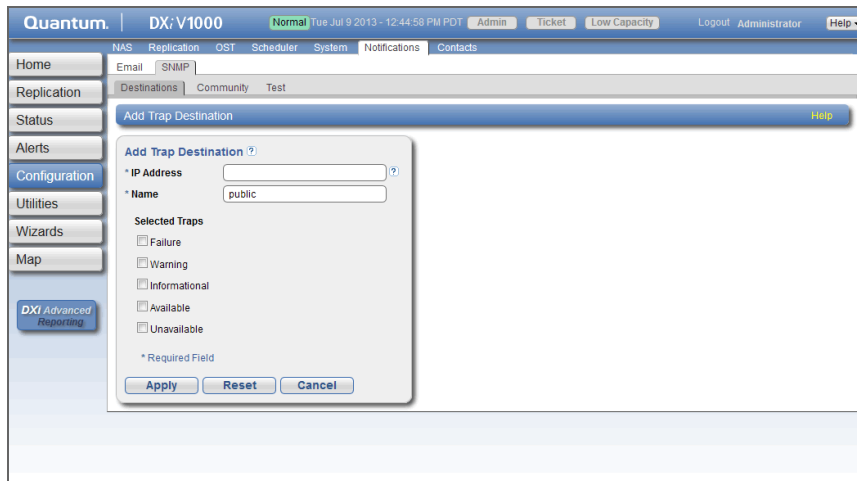
Note: You can add up to 5 destinations.

To add a destination:

- 1 Click **Add**.

The **Add Trap Destination** page displays (see [Figure 127](#)).

Figure 127 Add Trap Destination Page



- 2 Enter information about the destination:

- **IP Address** - Enter the IP address of the system that will receive the traps generated by the DXi V-Series.

Note: When entering IP addresses, never use an address that is in a reserved IP address range. To see a list of reserved IP address ranges, click the quick tip icon [?] located near the IP address field.

Note: To use hostname format, you must specify at least one DNS IP address on the **Network** page (see [Network](#) on page 199).

- **Name** - Enter the name of the destination.

- 3 Select one or more traps to send to the destination:

- **Failure** - Sends failure traps.
- **Warning** - Sends warning traps.
- **Informational** - Sends informational traps.

- **Available** - Sends a trap when the system transitions from an unavailable to an available state.
- **Unavailable** - Sends a trap when the system transitions from an available to an unavailable state.

4 Click **Apply**.

Editing a Destination

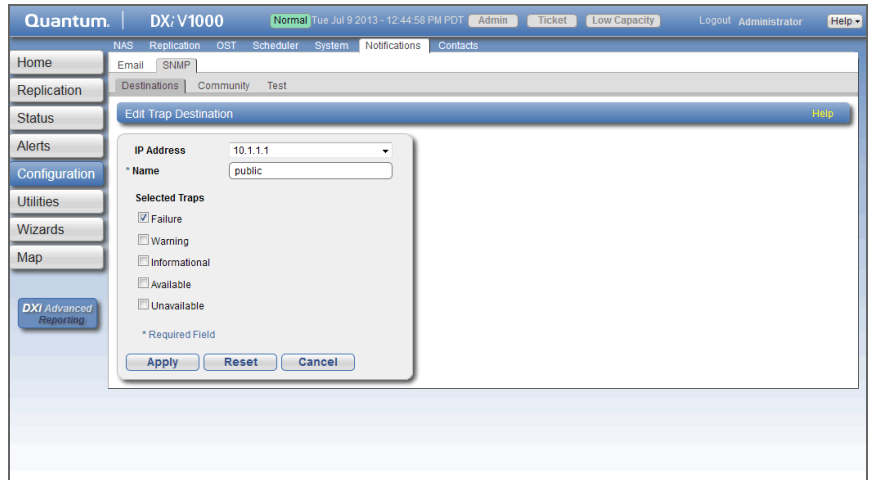
Edit an SNMP destination to change the name of the destination or the types of traps the DXi V-Series sends to the destination.

To edit a destination:

1 Click **Edit**.

The **Edit Trap Destination** page displays (see [Figure 128](#)).

Figure 128 Edit Trap Destination Page



2 Enter information about the destination:

Note: If you are editing a destination, you cannot change the **IP Address**.

- **IP Address** - (Optional) Select a different destination to edit.
- **Name** - Enter the name of the destination.

3 Select one or more traps to send to the destination:

- **Failure** - Sends failure traps.
- **Warning** - Sends warning traps.
- **Informational** - Sends informational traps.
- **Available** - Sends a trap when the system transitions from an unavailable to an available state.
- **Unavailable** - Sends a trap when the system transitions from an available to an unavailable state.

4 Click **Apply**.

Deleting a Destination

Delete an SNMP destination if you no longer want the DXi V-Series to send traps to the destination.

To delete a destination, select the destination and click **Delete**.

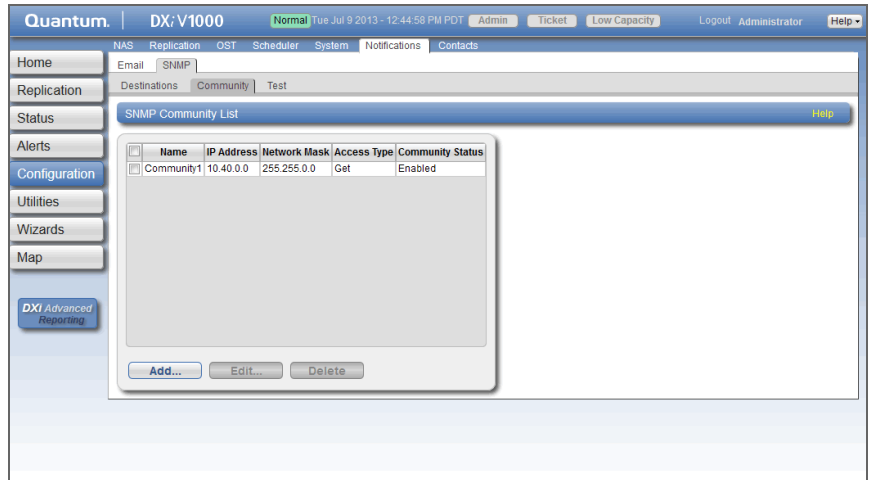
Note: You can select multiple destinations to delete at once.

Community

The **Community** page allows you to manage SNMP community information for the DXi V-Series. You can add, edit, and delete communities, and you can specify the community access type.

To access the **Community** page, on the **SNMP** page, click the **Community** tab (see [Figure 129](#)).

Figure 129 Community Page



Use the **Community** page to perform the following tasks:

- View information about SNMP communities (see [SNMP Community List](#) on page 243).
- Add an SNMP community (see [Adding a Community](#) on page 243).
- Edit an SNMP community (see [Editing a Community](#) on page 245).
- Delete an SNMP community (see [Deleting a Community](#) on page 247).

SNMP Community List

The **SNMP Community List** displays the following information about SNMP communities:

- **Name** - The name of the community.
- **IP Address** - The IP address of the community.
- **Network Mask** - The network mask of the community.
- **Access Type** - The access type of the community (**Get** or **Get/Set**).
- **Community Status** - The status of the community (**Enabled** or **Disabled**).

Adding a Community

Add an SNMP community to include the DXi V-Series in a group of devices that are monitored by a common management station.

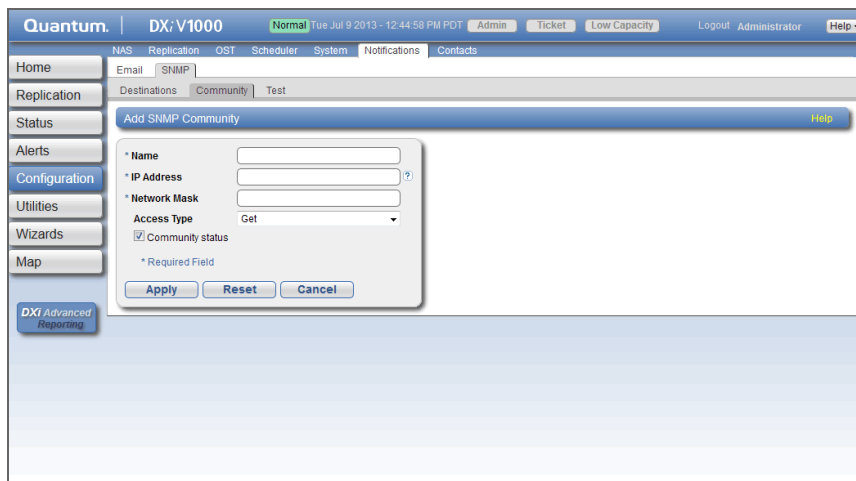
Note: If no communities are defined, the SNMP agent is not accessible.

To add a community:

- 1 Click **Add**.

The **Add SNMP Community** page displays (see [Figure 130](#)).

Figure 130 Add SNMP Community Page



- 2 In the **Name** box, enter a unique **Name** for the community (up to 20 characters).

Valid characters are letters, numbers, hyphens, and underscores.

- 3 Enter a valid **IP Address** and **Network Mask** pair.

A pair is valid if performing a logical bitwise **AND** operation on the IP address and the network mask results in the IP address. See the table below for examples:

IP Address / Network Mask	Result
10.40.166.87 255.255.255.255	Allows access only from 10.40.166.87
10.40.166.87 10.40.166.87	Allows access only from 10.40.166.87

IP Address / Network Mask	Result
10.40.166.87 10.40.166.0	Invalid because the logical bitwise operation (address AND mask) is not equal to the address
10.40.166.87 255.255.0.0	Invalid because the logical bitwise operation (address AND mask) is not equal to the address
10.40.0.0 255.255.0.0	Allows access from any client with address 10.40.xx.xx

Note: If you define a single community and set both the IP address and network mask to 0.0.0.0 (or leave both blank), then IP address-based access control is disabled. In this case, the SNMP agent is accessible from any IP address.

Note: When entering IP addresses, never use an address that is in a reserved IP address range. To see a list of reserved IP address ranges, click the quick tip icon [?] located near the IP address field.

- 4 In the **Access Type** drop-down box, select the access type for the community:
 - **Get** - Allows SNMP get operations.
 - **Get/Set** - Allows both SNMP **get** and **put** operations.
- 5 Select the **Community status** check box to enable the community.
Or clear the **Community status** check box to disable the community.
- 6 Click **Apply**.

Editing a Community

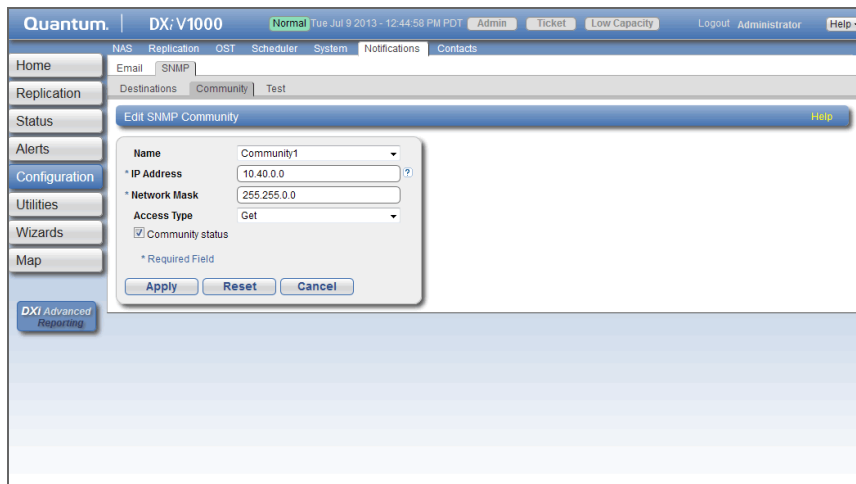
Edit an SNMP community to change the IP address or access type for the community. You can also enable or disable the community.

To edit a community:

1 Click **Edit**.

The **Edit SNMP Community** page displays (see [Figure 130](#)).

Figure 131 Edit SNMP Community Page



2 (Optional) In the **Name** box, select a different community to edit.

3 Enter a valid **IP Address and Network Mask** pair.

A pair is valid if performing a logical bitwise **AND** operation on the IP address and the network mask results in the IP address. See the table below for examples:

IP Address / Network Mask	Result
10.40.166.87 255.255.255.255	Allows access only from 10.40.166.87
10.40.166.87 10.40.166.87	Allows access only from 10.40.166.87
10.40.166.87 10.40.166.0	Invalid because the logical bitwise operation (address AND mask) is not equal to the address

IP Address / Network Mask	Result
10.40.166.87 255.255.0.0	Invalid because the logical bitwise operation (address AND mask) is not equal to the address
10.40.0.0 255.255.0.0	Allows access from any client with address 10.40.xx.xx

Note: If you define a single community and set both the IP address and network mask to 0.0.0.0 (or leave both blank), then IP address-based access control is disabled. In this case, the SNMP agent is accessible from any IP address.

Note: When entering IP addresses, never use an address that is in a reserved IP address range. To see a list of reserved IP address ranges, click the quick tip icon [?] located near the IP address field.

- 4 In the **Access Type** drop-down box, select the access type for the community:
 - **Get** - Allows SNMP get operations.
 - **Get/Set** - Allows both SNMP **get** and **put** operations.
- 5 Select the **Community status** check box to enable the community.
Or clear the **Community status** check box to disable the community.
- 6 Click **Apply**.

Deleting a Community

Delete an SNMP community if you no longer want the DXi V-Series to belong to a group of devices that are monitored by a common management station.

To delete a community, select the community and click **Delete**.

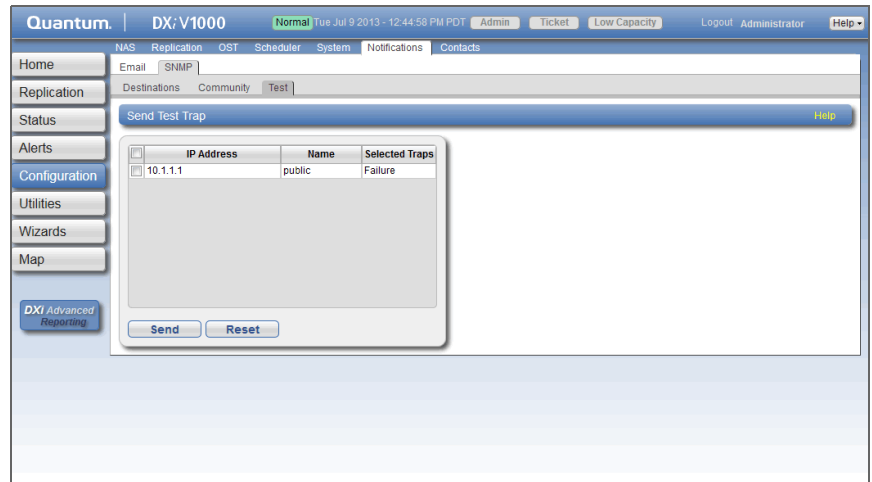
Note: You can select multiple communities to delete at once.

Test

The **SNMP Test** page allows you to send a test SNMP trap to verify that SNMP is correctly configured on the DXi V-Series.

To access the **SNMP Test** page, on the **SNMP** page, click the **Test** tab (see [Figure 132](#)).

Figure 132 SNMP Test Page



To send a test SNMP trap, select a destination in the list and click **Send**. If the destination does not receive the SNMP trap, make sure that the destination IP address is correct (see [Editing a Destination](#) on page 241). Also make sure that the community information is correct (see [Community](#) on page 242).

Contacts

The **Contacts** page allows you to enter company information. You can also enter individual contact information for primary and secondary contacts.

To access the **Contacts** page, click the **Configuration** menu, and then click the **Contacts** tab.

The **Contacts** page contains the following tabs:

- [Company](#)
- [Primary and Secondary](#)

Company

The **Company** page allows you to enter information about the company and location of the DXi V-Series.

To access the **Company** page, on the **Contacts** page, click the **Company** tab (see [Figure 133](#)).

Figure 133 Company Page

The screenshot shows the Quantum DXi V1000 web interface. The top navigation bar includes 'Quantum', 'DXi V1000', 'Normal', 'Tue Jul 9 2013 - 12:44:58 PM PDT', 'Admin', 'Ticket', 'Low Capacity', 'Logout', 'Administrator', and 'Help'. Below this is a secondary navigation bar with 'NAS', 'Replication', 'OST', 'Scheduler', 'System', 'Notifications', and 'Contacts'. The 'Contacts' tab is active, and the 'Company' sub-tab is selected. The main content area is titled 'Company Information' and contains a form with the following fields: 'Company Name', 'Street', 'City', 'State', 'Postal Code', 'Country', 'DXiV1000 Location', and 'Support Contract'. An 'Apply' button is located at the bottom of the form. A left sidebar contains navigation links: 'Home', 'Replication', 'Status', 'Alerts', 'Configuration', 'Utilities', 'Wizards', 'Map', and a 'DXi Advanced Reporting' button.

To enter company information:

1 Enter the following information:

- **Company Name** - Enter the company name.
- **Street** - Enter the company street address.
- **City** - Enter the company city.
- **State** - Enter the company state.
- **Postal Code** - Enter the company postal code.
- **Country** - Enter the company country.
- **DXi V-Series Location** - Enter the physical location of the DXi V-Series (for example, data center).

- **Support Contract** - Enter the support contract number for the DXi V-Series.

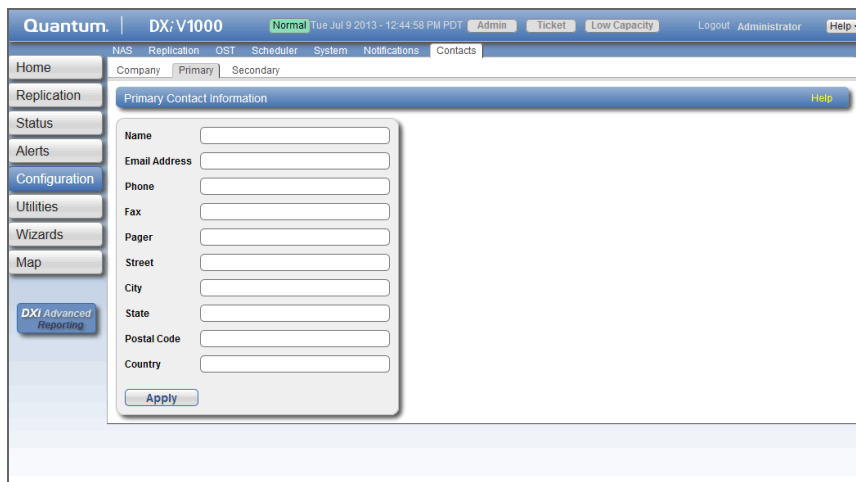
2 Click **Apply**.

Primary and Secondary

The **Primary** and **Secondary** pages allow you to enter information about the primary and secondary contacts for the DXi V-Series.

To access the **Primary** or **Secondary** page, on the **Contacts** page, click the **Primary** or **Secondary** tab (see [Figure 134](#)).

Figure 134 Primary and Secondary Pages



The screenshot shows the Quantum DXi V1000 web interface. The top navigation bar includes 'Home', 'Replication', 'Status', 'Alerts', 'Configuration', 'Utilities', 'Wizards', and 'Map'. The 'Configuration' menu is expanded, showing 'Primary Contact Information' as the selected option. The form contains the following fields: Name, Email Address, Phone, Fax, Pager, Street, City, State, Postal Code, and Country. An 'Apply' button is located at the bottom of the form. The page title is 'Quantum DXi V1000' and the user is logged in as 'Administrator'.

To enter primary or secondary contact information:

- 1 Enter the following information:
 - **Name** - Enter the contact name.
 - **Email Address** - (Required) Enter the contact e-mail address.
 - **Phone** - Enter the contact phone number.
 - **Fax** - Enter the contact fax number.
 - **Pager** - Enter the contact pager number.
 - **Street** - Enter the contact street address.
 - **City** - Enter the contact city.
 - **State** - Enter the contact state.

- **Postal Code** - Enter the contact postal code.
- **Country** - Enter the contact country.

2 Click **Apply**.



Chapter 9

DXi V-Series Utilities

The **Utilities** pages to perform maintenance tasks on the DXi V-Series, such as generating and downloading diagnostic files, analyzing disk and network performance, managing space reclamation, and securely erasing the system. You can also install license keys, upgrade the system software, and reboot or shut down the DXi V-Series.

To access the **Utilities** pages, click the **Utilities** menu.

The **Utilities** pages contain the following tabs:

- [Diagnostics](#)
- [Analyzer](#)
- [Space Reclamation](#)
- [Secure Shred](#)
- [License Keys](#)
- [Software Upgrades](#)
- [Reboot & Shutdown](#)

Diagnostics

The **Diagnostics** page allows you to generate and download diagnostic files. You can also perform healthchecks to verify the health and integrity of the data deduplication blockpool.

The diagnostic files are helpful when troubleshooting problems on the DXi V-Series. Generate and download the diagnostic files before contacting Quantum customer support.

To access the **Diagnostics** page, click the **Utilities** menu, and then click the **Diagnostics** tab.

The **Diagnostics** page contains the following tabs:

- [System Diag File](#)
- [Healthchecks](#)

System Diag File

The **System Diag File** page allows you to generate and download a system diagnostics file. This file contains the diagnostic logs for all of the system components.

To access the **System Diag File** page, on the **Diagnostics** page, click the **System Diag File** tab (see [Figure 135](#)).

Figure 135 System Diag File
Page



To generate and download a system diagnostics file:

- 1 Click **Generate New** to generate a new system diagnostics file.
The system generates a new diagnostics file. This can take several minutes.
- 2 After the file finishes generating, click the link to enable the **Download Current** button.
- 3 To download the generated diagnostics file, click **Download Current**.
A dialog box displays asking if you want to open or save the file.
- 4 Click **Save** or **OK** to download the file.

Healthchecks

The **Healthchecks** page allows you to perform tests that verify the health and integrity of the data deduplication blockpool. You can also enable and disable healthchecks.

Note: To configure the DXi V-Series to automatically run the healthchecks at specified intervals, use the **Configuration > Scheduler** page (see [Scheduling Healthchecks](#) on page 196).

To access the **Healthchecks** page, on the **Diagnostics** page, click the **Healthchecks** tab.

The **Healthchecks** page contains the following tabs:

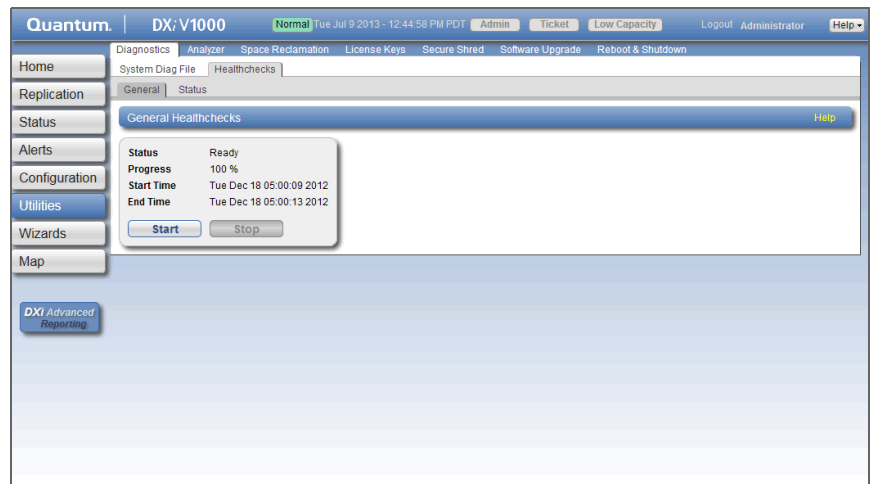
- [General](#)
- [Status](#)

General

The **General** page allows you to start running the healthchecks or stop them if they are already running. When you start the healthchecks, only the healthchecks that are currently enabled are run (see [Status](#) on page 257).

To access the **General** page, on the **Healthchecks** page, click the **General** tab (see [Figure 136](#)).

Figure 136 General Page



The **General** page displays the following information about the most recently run healthchecks:

- **Status** - The status of the healthchecks (**In Progress**, **Success**, **Failed**, or **Interrupted**).
- **Progress** - The percentage complete of the healthchecks.
- **Start Time** - The time the healthchecks started.
- **End Time** - The time the healthchecks ended.

Use the **General** page to perform the following tasks:

- To start all enabled healthchecks, click **Start**.
- To stop all healthchecks in progress, click **Stop**.

Status

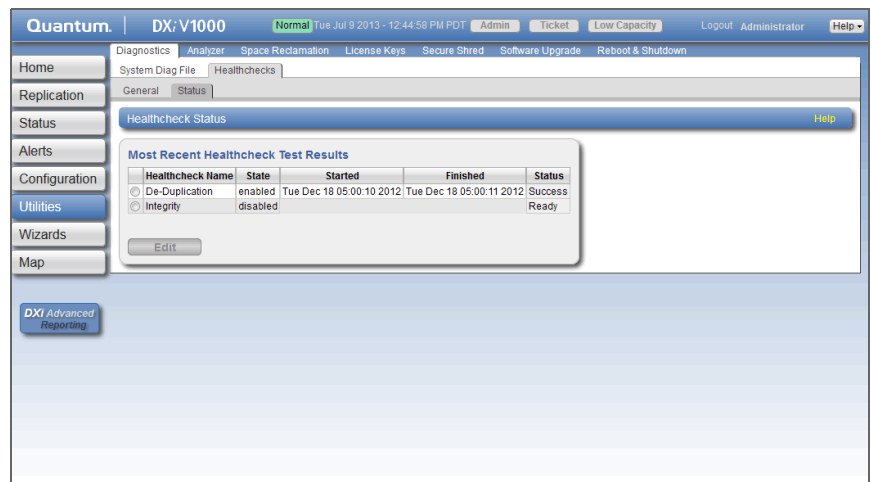
The **Status** page allows you to view information about the most recent test results for each healthcheck. You can also enable or disable a healthcheck.

The following healthchecks are available:

- **De-Duplication** - Checks the overall health of the blockpool. This healthcheck verifies that the metadata in the namespace file and the data tags in the blockpool are correctly in sync.
- **Integrity** - Checks the integrity of data in the blockpool. This healthcheck examines a sample of data tags in the blockpool and verifies that the data has been properly stored without errors or corruption.

To access the **Status** page, on the **Healthchecks** page, click the **Status** tab (see [Figure 137](#)).

Figure 137 Status Page



The **Status** page displays the following information about the most recently run test for each healthcheck:

- **Healthcheck Name** - The name of the healthcheck.

- **State** - The state of the healthcheck (**enabled** or **disabled**).
- **Started** - The time the healthcheck started.
- **Finished** - The time the healthcheck ended.
- **Status** - The status of the healthcheck (**Success** or **Failed**).

Note: If running a healthcheck results in the Contact Support status, contact Quantum Customer Support for further assistance.

To enable or disable a healthcheck:

- 1 Select the healthcheck and click **Edit**.

The **Edit Healthcheck** page displays (see [Figure 138](#)).

Figure 138 Edit Healthcheck Page



- 2 Select the check box to enable the healthcheck.
Or clear the check box to disable the healthcheck.
- 3 Click **Apply**.

Note: When healthchecks are run (manually or scheduled), only enabled healthchecks are run.

Caution: If a healthcheck fails when it is run, there may be a problem in the blockpool that could cause replication or restore operations to fail. Contact Quantum customer support if a healthcheck fails.

Analyzer

The **Analyzer** page allows you to analyze the network and disk performance of the DXi V-Series.

To access the **Analyzer** page, click the **Utilities** menu, and then click the **Analyzer** tab.

The **Analyzer** page contains the following tabs:

- [Network](#)
- [Disk](#)

Network

The **Network Analyzer** page allows you to analyze network performance by measuring network throughput between the DXi V-Series and another system (such as another DXi system).

To access the **Network Analyzer** page, on the **Analyzer** page, click the **Network** tab.

The **Network Analyzer** page contains the following tabs:

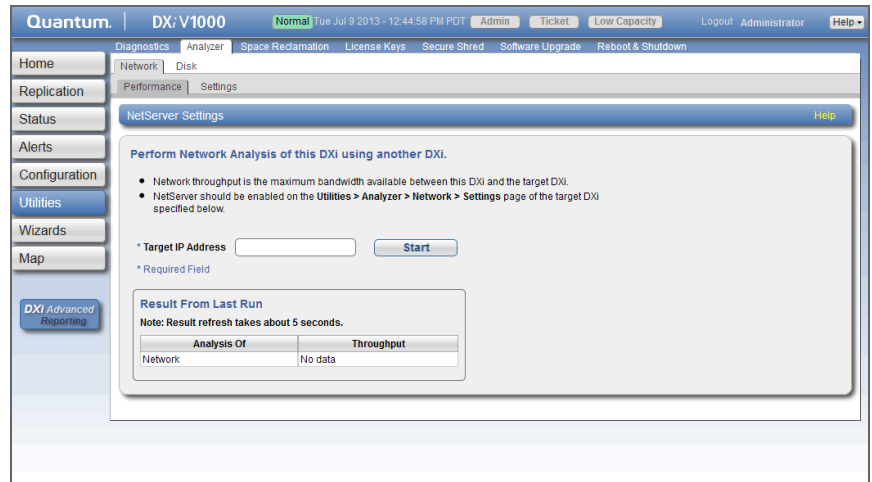
- [Performance](#)
- [Settings](#)

Performance

The **Performance** page allows you to perform network analysis with another system (the target). You can also view results from the most recently run test

To access the **Performance** page, on the **Network Analyzer** page, click the **Performance** tab (see [Figure 139](#)).

Figure 139 Performance Page



To perform network analysis:

- 1 In the **Target IP Address** box, enter the IP address of the system to perform network analysis with.

The target system must have NetServer enabled (see [Settings](#) on page 260).

- 2 Click **Start**.

The throughput result is displayed under **Result From Last Run** in MB/s.

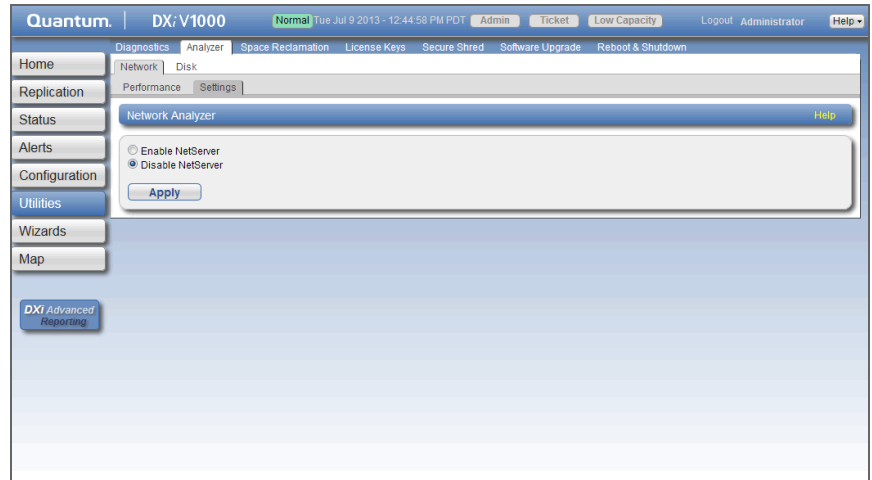
Note: It takes approximately 5 seconds to refresh the results.

Settings

The **Settings** page allows you to enable or disable NetServer on the DXi V-Series. NetServer must be enabled on the target DXi system to perform network analysis with the system (see [Performance](#) on page 259).

To access the **Settings** page, on the **Network Analyzer** page, click the **Settings** tab (see [Figure 140](#)).

Figure 140 Settings Page



To enable or disable NetServer on the target DXi V-Series:

- 1 Select **Enable NetServer** to enable NetServer.
Or select **Disable NetServer** to disable NetServer.
- 2 Click **Apply**.

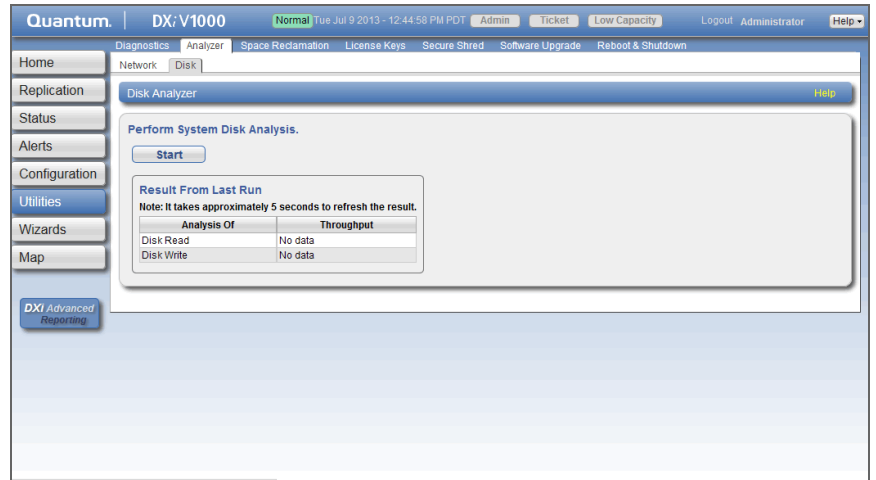
Note: You should disable NetServer on the target system when you are done analyzing network performance.

Disk

The **Disk Analyzer** page allows you to analyze disk performance by measuring disk read and write throughput.

To access the **Disk Analyzer** page, on the **Analyzer** page, click the **Disk** tab (see [Figure 141](#)).

Figure 141 Disk Analyzer Page



To perform disk analysis, click **Start**. The throughput result is displayed under **Result From Last Run** in KB/s.

Note: It takes approximately 5 seconds to refresh the results.

Space Reclamation

The **Space Reclamation** page allows you to manage space reclamation activity on the DXi V-Series. You can start or stop space reclamation. You can also monitor the progress of space reclamation activity.

During space reclamation, the DXi V-Series searches the blockpool for tags that are no longer referenced and then deletes the unneeded tags to free up space.

Caution: For correct system operation, space reclamation *must* be run at regular intervals (at least once a week). Quantum recommends creating a schedule to automatically run space reclamation (see [Scheduling Space Reclamation](#) on page 197). Because space reclamation can affect system performance, avoid running space reclamation during known backup periods.

The space reclamation process can include up to four stages (see [Space Reclamation Status](#) on page 265).

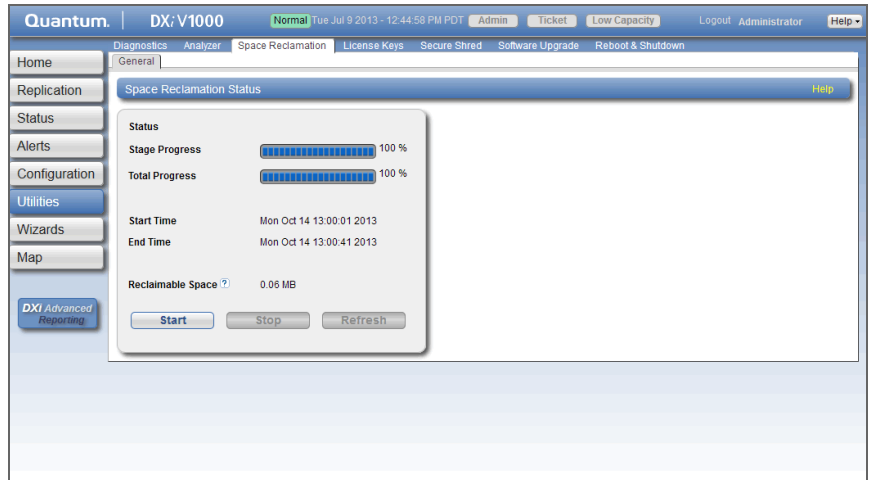
- **New or Normal Mode** - To increase performance, when space reclamation is initiated on the **Space Reclamation** page or as a scheduled event, only Stage 2 (Calculating Deletion Candidates) and Stage 3 (Deleting New Candidates) are run.

Note: Stage 1 and 4 are not required in Normal mode because the DXi can automatically compact reclaimable space as needed and use it to store new deduplicated data.

- **Low Space or Legacy Mode** - When disk capacity is low, space reclamation is automatically started to free up disk space. In this case, all four stages of space reclamation are run.

To access the **Space Reclamation** page, click the **Utilities** menu, and then click the **Space Reclamation** tab (see [Figure 142](#)).

Figure 142 Space Reclamation Page



The **Space Reclamation** page displays the following information about the current or most recent space reclamation activity:

- **Status** - The status of space reclamation (see [Space Reclamation Status](#) on page 265).
- **Stage Progress** - The progress of the current space reclamation stage.
- **Total Progress** - The overall progress of space reclamation activity.
- **Start Time** - The time space reclamation started.
- **End Time** - The time space reclamation ended.
- **Reclaimable Space** - The disk space that is occupied by outdated deduplicated data and which will be automatically reused if additional space for new deduplicated data is needed. Displays **Pending** when space reclamation is running.

Note: Because the DXi can automatically use reclaimable space to store new deduplicated data, space reclamation statistics may be affected (appear lower) if ingest occurs at the same time as space reclamation.

Use the **Space Reclamation** page to perform the following tasks:

- To start space reclamation, click **Start**.
- To stop space reclamation, click **Stop**.

- To update the display while space reclamation is running, click **Refresh**.

Space Reclamation Status

Space reclamation can have one of the following statuses:

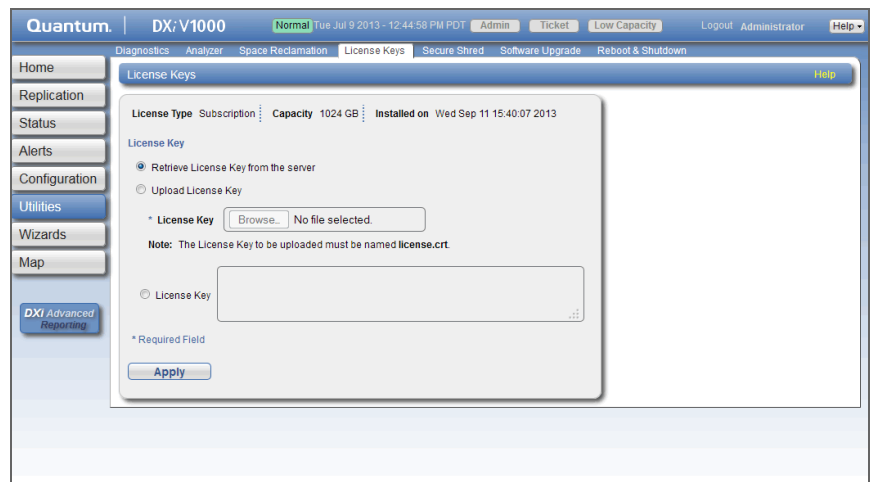
- **Reclamation Completed** - Space reclamation completed without errors.
- **Reclamation Started by User** - Space reclamation was started manually by a user.
- **Reclamation Interrupted** - Space reclamation was interrupted and must be restarted.
- **Reclamation Interrupted by User** - Space reclamation was interrupted by a user and must be restarted.
- **Reclamation Interrupted - Error Encountered** - Space reclamation was interrupted because an error was encountered and must be restarted.
- **Reclamation Interrupt by User - Cannot be interrupted at this time** - Because the system is in a Low Space state, space reclamation cannot be stopped. Wait for space reclamation to finish freeing up disk space.
- **Reclamation Completed - No Candidates To Delete** - Space reclamation completed, but there were no candidates for reclamation.
- **Reclaim Existing Blockpool Freed Space** - The existing blockpool space has been reclaimed for use.
- **Stage 1 of 4** - Reclaim Disk Space (Initial).
- **Stage 2 of 4** - Calculating Deletion Candidates.
- **Stage 3 of 4** - Deleting New Candidates.
- **Stage 4 of 4** - Reclaim Disk Space.

License Keys

The **License Keys** page allows you to add a license key to the DXi V-Series to enable new functionality. You can also see the licenses that are installed on the system.

To access the **License Keys** page, click the **Utilities** menu, and then click the **License Keys** tab (see [Figure 143](#)).

Figure 143 License Keys Page



Use the **License Keys** page to perform the following tasks:

- View information about installed licenses (see [License Key Information](#) on page 266).
- Add a license key (see [Adding a License Key](#) on page 267).

License Key Information

The **License Keys** page displays the following information about the licenses that are installed on the DXi V-Series:

- **License Type** - The type of license currently installed on the DXi V-Series (**Permanent**, **Subscription**, or **Time-Based**).

Note: For **Time-Based** licenses, the time remaining on the license is also displayed.

- **Capacity** - The current licensed capacity of the DXi V-Series.
- **Installed On** - The date a license was last installed.

Available Licenses

The following licenses are included with the DXi V-Series.

- **NAS** - Enables NAS (NFS, CIFS) connectivity.
- **Data Deduplication** - Enables data deduplication and compression.
- **Replication** - Enables replication to other DXi systems.
- **Storage Capacity** - Enables the purchased storage capacity for the system.
 - **DXi V1000 Trial Edition** - 256 GB of storage capacity.
 - **DXi V1000 Standard Edition** - 1 TB of storage capacity.
 - **DXi V1000 Enterprise Edition** - 1 TB of storage capacity, expandable to 2 TB.
 - **DXi V2000 Trial Edition** - 2 TB of storage capacity.
 - **DXi V2000 Enterprise Edition** - 1 TB of storage capacity, expandable to 8 TB in 1 TB increments.
 - **DXi V4000 Trial Version** - 4 TB of storage capacity.

If you purchase a storage capacity upgrade, you will receive a new Product Key certificate (see [Adding a License Key](#) on page 267).

- **OST** - Enables OpenStorage backup with Symantec OST.

Adding a License Key

Add a license key to enable new functionality on the DXi V-Series, for example, to add capacity or extend a Time-Based license.

Note: Contact your Quantum sales representative to purchase a license. You will receive a License Certificate with instructions for obtaining and installing the license key.

There are three methods for adding a license key:

- (Recommended) [Automatically Retrieving a License Key](#)
- [Uploading a License Key File](#)
- [Entering a License Key](#)

Automatically Retrieving a License Key

The DXi V-Series automatically checks the license server each day to make sure the appropriate licenses are installed, based on your product serial number. If you have purchased a license but the DXi V-Series has not yet automatically retrieved the license, you can follow the procedure below to prompt the system to check for the new license and install it.

To automatically retrieve a license key from the license server:

- 1 On the **License Keys** page, select the **Retrieve License Key from the server** option.
- 2 Click **Apply**.

The DXi V-Series automatically retrieves and installs the appropriate licenses based on the product serial number.

Note: To automatically retrieve license keys, the DXi V-Series must have access to the Internet. In addition, firewall port 443 (HTTPS) must be open on the network.

Uploading a License Key File

Use this method to install a license if Internet access via HTTPS (port 443) is not available and you have a **license.crt** file.

To manually upload a license key file:

- 1 Follow the instructions on the License Certificate you received to obtain the license key file.
- 2 On the **License Keys** page, select the **Upload License Key** option.
- 3 Click **Browse** to browse the system and locate the license key file. The license key file must be named **license.crt**.
- 4 Click **Apply**.

The license key is installed on the system.

Entering a License Key

Use this method to install a license if Internet access via HTTPS (port 443) is not available and you have a license key.

To manually enter a license key:

- 1 Follow the instructions on the License Certificate you received to obtain the license key.
- 2 On the **License Keys** page, select the **License Key** option.
- 3 Copy the license key and then paste it into the **License Key** box.
- 4 Click **Apply**.

The license key is installed on the system.

Secure Shred

The **Secure Shred** page allows you to securely and permanently erase sensitive data stored on the DXi V-Series. To securely erase data, first delete files on NAS shares or storage servers, then start secure shred. During secure shred, all residual data associated with the deleted files is securely erased from the disk drives by performing a single-pass overwrite with zeros.

While secure shred is running, the DXi V-Series operates in limited mode. This means you cannot perform backups or restores, all scheduled jobs (including replication jobs) are stopped, and you cannot access or use any other features of the DXi. If necessary, you can cancel secure shred at any time and return the DXi to normal operation.

Caution: The secure shred process can take multiple days to complete.

Secure Shred and Virtual Machines

Secure shred behaves differently when it is run on a virtual machine compared to a physical system. Keep in mind the following information when running secure shred on a DXi V-Series:

- The secure shred function will zero out all empty space, up to a maximum of 2 TB (DXi V1000) of storage, regardless of the licensed capacity of the DXi V-Series. Make sure that the storage system has a full 2 TB (DXi V1000) of disk space available before running secure shred.

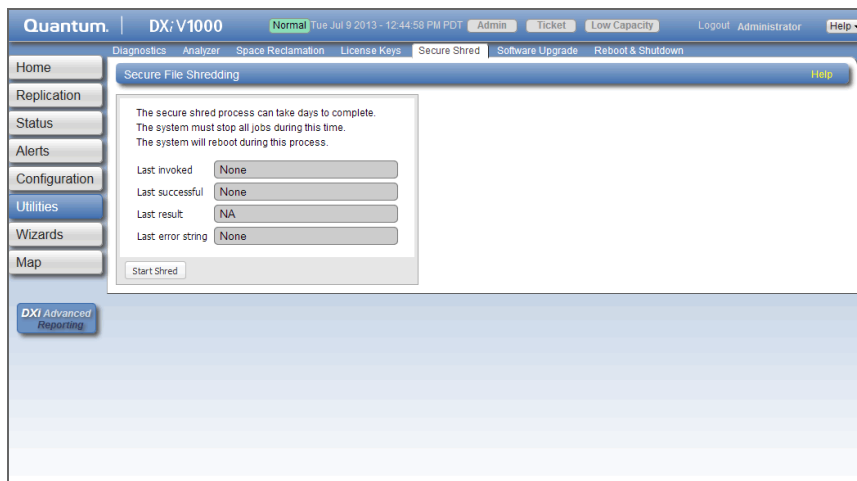
Note: If the DXi V-Series is deployed on a thin-provisioned virtual disk, this will be converted to a thick-provisioned virtual disk if secure shred is run. (No capacity change will occur if the disk is already thick-provisioned.)

- The secure shred function is only effective on the current datastore location of the DXi V-Series. If the datastore has changed physical storage arrays since the DXi V-Series began operation, residual un-shredded data may be left in previously stored locations.
- For additional security, or in cases where the DXi V-Series may frequently migrate between physical storage arrays, you may choose to use VMware’s virtual machine encryption option. While residual data would still be left after a migration, that data would be encrypted and unreadable without the appropriate password.

Running Secure Shred

To access the **Secure Shred** page, click the **Utilities** menu, and then click the **Secure Shred** tab (see [Figure 144](#)).

Figure 144 Secure Shred Page



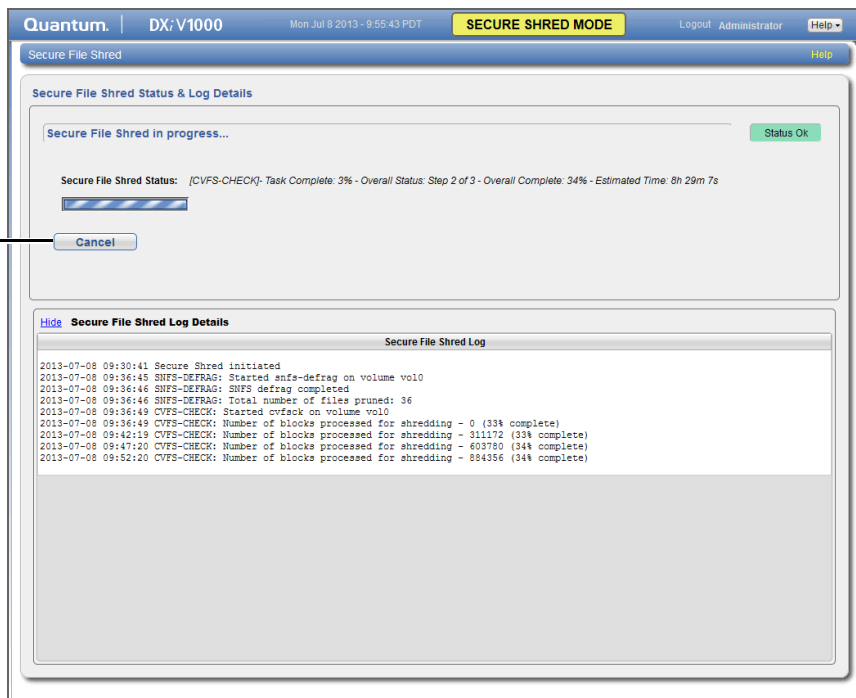
To securely erase data on the DXi V-Series:

- 1 Delete the data you want to securely erase:
 - Delete files on NAS shares, or delete the shares (see [NAS](#) on page 127).
 - Delete backup images on OST logical storage units (LSUs), or delete the LSUs and storage servers (see [OST](#) on page 156).
- 2 Run space reclamation from the **Utilities > Space Reclamation** page (see [Space Reclamation](#) on page 262).
- 3 Make sure all replication and backup jobs are completed (see [DXi V-Series Replication](#) on page 67).
- 4 On the **Secure Shred** page, click **Start Shred**.
A warning message displays.
- 5 Click **Yes**.
The system reboots and begins the secure shred process. This process can take multiple days to complete.
- 6 To check the status of secure shred, log onto the DXi V-Series to view the limited **Secure Shred Mode** interface (see [Figure 145](#)).
 - The **Secure File Shred Log** displays details about the secure shred progress. Click **Hide** to hide the log.
 - To cancel the secure shred process, click **Cancel**. The DXi reboots and resumes normal operation.
 - When the secure shred process is complete, the **Reboot** button displays.

Note: You must log on as an Admin user to cancel secure shred or reboot the system.

Figure 145 Secure Shred Mode Interface

When secure shred is complete, Cancel changes to Reboot



- 7 Click **Reboot** to finalize the secure shred process and reboot the DXi.

After the DXi finishes rebooting, you can resume normal system operation.

Software Upgrades

Software upgrades allow you to update the software running on the DXi V-Series to the latest version. Software upgrades can include new features as well as bug fixes.

Note: To help Quality and Service provide customer support, Quantum regularly collects system serial number, model, and software version when checking for software upgrades and after successful software downloads and upgrades. The information collected does not contain any customer data stored on the system.

There are two methods for upgrading the DXi software:

- **Check for an upgrade (Home page)** - The DXi can automatically check for software upgrades on the **Home** page, or you can manually perform an upgrade check (see [Checking For Software Upgrades](#) on page 273). If an upgrade is found, you can choose to download and install it.

This is the recommended method for upgrading, but it requires that the DXi be able to access the Internet.

- **Upload a software upgrade file (Software Upgrade page)** - You can download a software upgrade file from the Quantum Service and Support Web site and then manually upload it to the DXi using the **Software Upgrade** page (see [Uploading a Software Upgrade File](#) on page 277).

You can use this method if the DXi cannot access the Internet.

Note: Uploading a software upgrade file may be useful if you are upgrading multiple DXi systems, as the file only needs to be downloaded once. Also, this method assures that all systems will be running the same software version following the upgrade.

Checking For Software Upgrades

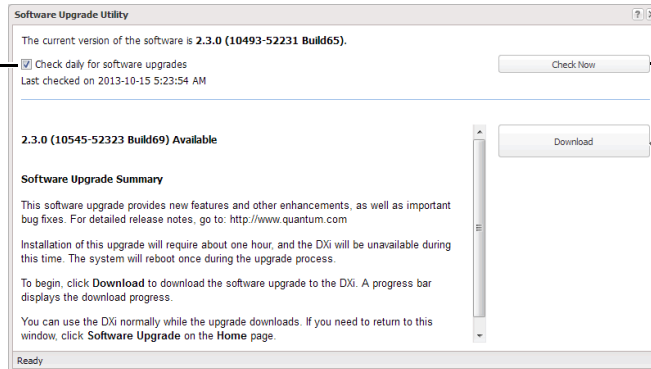
The **Software Upgrade Utility** (accessible from the **Home** page) allows you to check for available DXi software upgrades and, if available, download and install them. You can also configure the DXi V-Series to automatically check for software upgrades.

Note: To check for and download software upgrades, the DXi must be able to access the Internet. If the DXi cannot access the Internet, see [Uploading a Software Upgrade File](#) on page 277.

To access the **Software Upgrade Utility**, click **Home** on the main menu, and then click the **Software Upgrade** link (see [Figure 146](#)).

Figure 146 Software Upgrade Utility

Select to automatically check for upgrades daily



Click to manually check for upgrades

Click to download an available upgrade

Use the **Software Upgrade Utility** to perform the following tasks:

- Configure the DXi V-Series to automatically check for software upgrades (see [Automatically Checking for Upgrades](#) on page 274).
- Manually check for software upgrades (see [Manually Checking for Upgrades](#) on page 275).
- Download and install available software upgrades (see [Downloading and Installing Upgrades](#) on page 275).

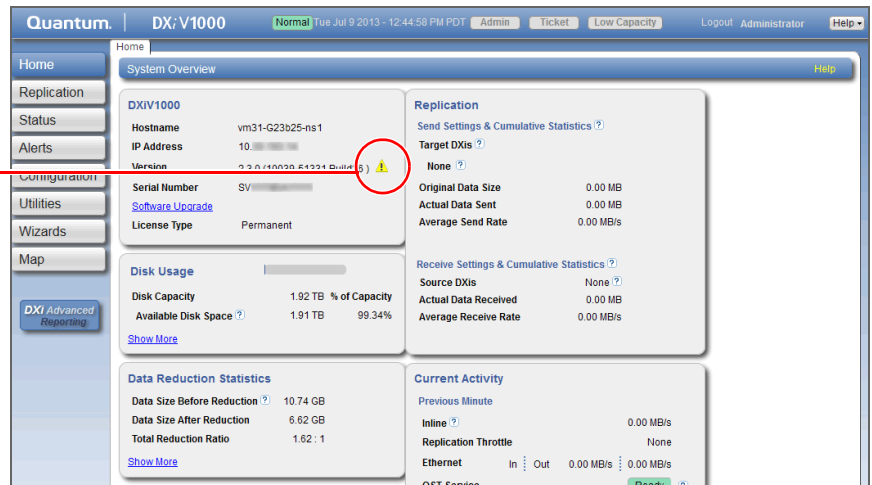
Automatically Checking for Upgrades

The DXi V-Series can automatically check for available software upgrades on a daily basis. If a software upgrade is found, you will be notified by an admin alert as well as by a Quick Tip icon on the **Home** page, next to the current software version (see [Figure 147](#)).

On the **Software Upgrade Utility**, select the **Check daily for software upgrades** check box to enable automatic upgrade checking. Automatic upgrade checking is enabled by default. To disable automatic upgrade checking, clear the **Check daily for software upgrades** check box (not recommended).

Figure 147 Home Page -
Software Upgrade Available

Available software upgrade



Manually Checking for Upgrades

To check for available software upgrades at any time, on the **Software Upgrade Utility**, click **Check Now**.

If a software upgrade is available, you can read information about the contents of the upgrade and, if you choose, download and install it.

Downloading and Installing Upgrades

If a software upgrade is available (after automatically or manually checking for upgrades), a summary describing the upgrade displays on the **Software Upgrade Utility**.

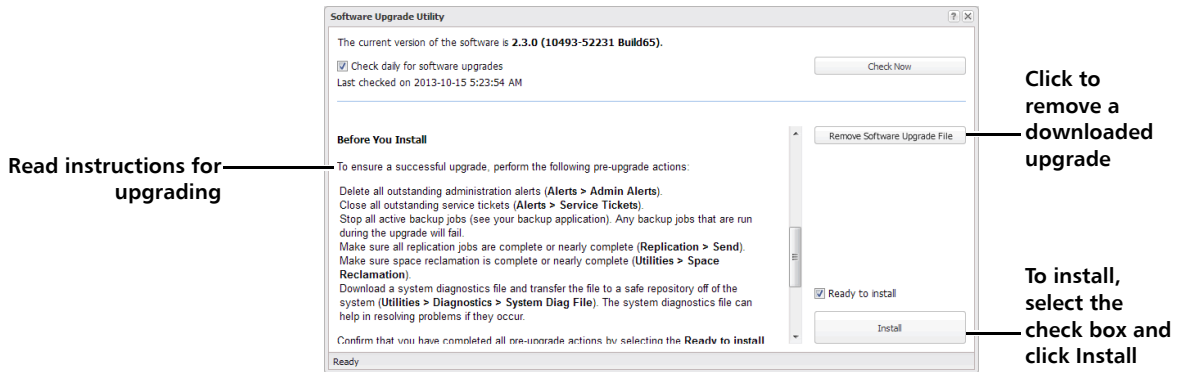
To download and install an available software upgrade:

- 1 On the **Software Upgrade Utility**, click **Download**.

The bottom status bar displays download progress. It will take several minutes to download the upgrade, depending on network speeds. You can use the DXi normally while the upgrade downloads. If you need to return to this window, click **Software Upgrade** on the **Home** page.

When the download is complete, a list of pre-upgrade actions displays (see [Figure 148](#)). These are important actions you should take prior to installing the upgrade.

Figure 148 Software Upgrade Utility - Software Upgrade Downloaded



2 To ensure the system is healthy before upgrading, read and follow the instructions in each of the pre-upgrade actions. The pre-upgrade actions can differ depending on the type of upgrade, but typical actions include the following:

- Address and delete all outstanding administration alerts (see [Admin Alerts](#) on page 115).
- Resolve and close all outstanding service tickets (see [Service Tickets](#) on page 117).

Note: Quantum recommends taking the following actions before upgrading.

- Stop all active backup jobs (see your backup application). Any backup jobs that are run during the upgrade will fail.
- Make sure all replication jobs are complete (see [DXi V-Series Replication](#) on page 67). If replication or synchronization jobs are nearly complete, Quantum recommends allowing them to complete before upgrading.

- Make sure space reclamation is complete (see [Space Reclamation](#) on page 262). If space reclamation is nearly complete, Quantum recommends allowing it to complete before upgrading.
 - Download a system diagnostics file and transfer the file to a safe repository off of the DXi (see [System Diag File](#) on page 254). The system diagnostics file can help in resolving problems if they occur.
- 3 Confirm that you have completed all pre-upgrade actions by selecting the **Ready to install** check box.

Note: The **Ready to install** check box and the **Install** button are disabled if there are any outstanding administration alerts or service tickets.

- 4 To begin the upgrade process, click **Install**.

Read the onscreen information to learn what to expect during the upgrade. The bottom status bar displays installation progress, and a message displays if a reboot is required.

Depending on the type of upgrade, the DXi may be placed in service mode for about an hour. While in service mode, the system will shut down all backup and replication services. If necessary, the DXi will restart one or more times to complete the upgrade.

Note: If you decide not to install the software upgrade after downloading it, click **Remove Software Upgrade File** to remove the current download from the DXi.

Note: Clear your Web browser cache before logging on to the remote management console for the first time following the software upgrade. This will ensure the remote management console displays correctly.

Uploading a Software Upgrade File

The **Software Upgrade** page allows you to upload and install a software upgrade file on the DXi V-Series. Use this upgrade method if the DXi cannot access the Internet.

Before you begin, download the software upgrade file on a computer connected to the Internet, and then copy the software upgrade file (.fw) to the computer you will use to access the DXi remote management console. You can download the software upgrade file and release notes from the Quantum Service and Support Web site:

<http://www.quantum.com/ServiceandSupport/Index.aspx>

To access the **Software Upgrade** page, click the **Utilities** menu, and then click the **Software Upgrade** tab (see [Figure 149](#)).

Figure 149 Software Upgrade Page



To upload a software upgrade file:

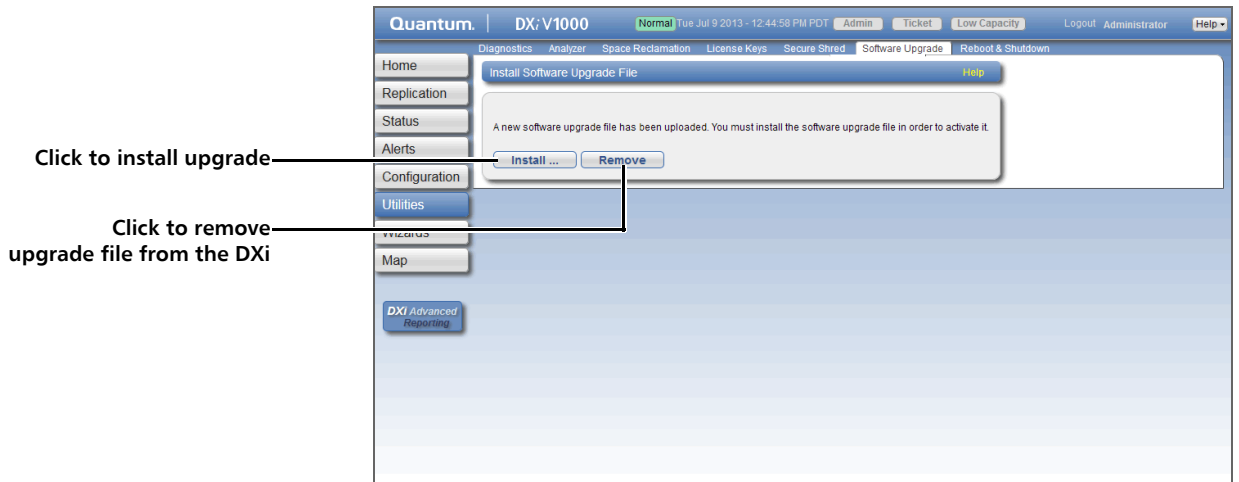
- 1 Click the **Browse** button to browse the system and locate the software upgrade file.
- 2 Click **Upload**.
- 3 Click **Start** to begin the upload process.

Do not close the window until the uploading and unpacking process is complete. An **Information** message displays stating the software upgrade file was uploaded successfully.

- 4 Click **OK**.

The **Software Upgrade** page indicates that a software upgrade file has been uploaded (see [Figure 150](#)).

Figure 150 Software Upgrade
Page - Software Upgrade File
Uploaded



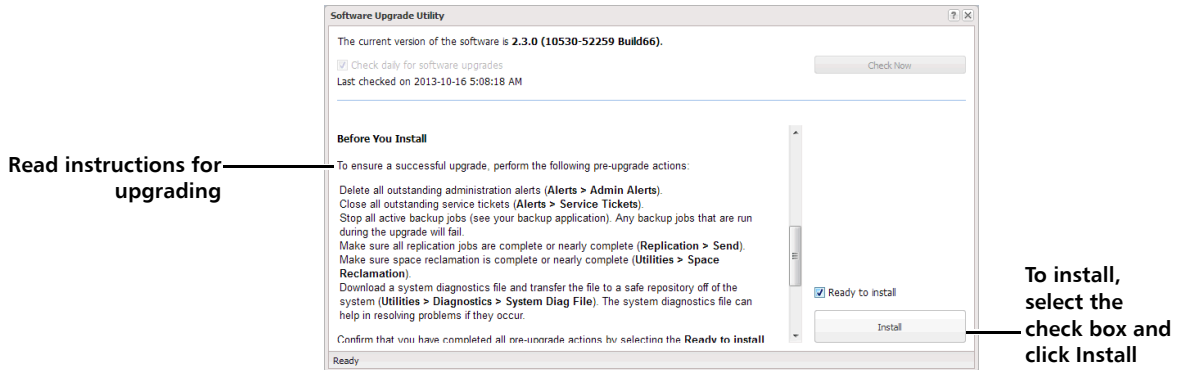
5 Click Install.

Note: If necessary, click the link to delete any outstanding administration alerts before proceeding.

Note: If you decide not to install the software upgrade file after uploading it, click **Remove** on the **Utilities > Software Upgrade** page to remove the uploaded software upgrade file from the DXi.

The **Software Upgrade Utility** displays (see [Figure 151](#)).

Figure 151 Software Upgrade Utility - Software Upgrade File Uploaded



6 To ensure the system is healthy before upgrading, read and follow the instructions in each of the pre-upgrade actions. The pre-upgrade actions can differ depending on the type of upgrade, but typical actions include the following:

- Address and delete all outstanding administration alerts (see [Admin Alerts](#) on page 115).
- Resolve and close all outstanding service tickets (see [Service Tickets](#) on page 117).

Note: Quantum recommends taking the following actions before upgrading.

- Stop all active backup jobs (see your backup application).
- Make sure all replication jobs are complete (see [DXi V-Series Replication](#) on page 67). If replication or synchronization jobs are nearly complete, Quantum recommends allowing them to complete before upgrading.
- Make sure space reclamation is complete (see [Space Reclamation](#) on page 262). If space reclamation is nearly complete, Quantum recommends allowing it to complete before upgrading.

- Download a system diagnostics file and transfer the file to a safe repository off of the DXi (see [System Diag File](#) on page 254). The system diagnostics file can help in resolving problems if they occur.
- 7 After you have completed all pre-upgrade actions, confirm that you are ready to continue by selecting the **Ready to install** check box.

Note: The **Ready to install** check box and the **Install** button are disabled if there are any outstanding administration alerts or service tickets.

- 8 To begin the upgrade process, click **Install**.

Read the on-screen information to learn what to expect during the upgrade. The bottom status bar displays installation progress, and a message displays if a reboot is required.

Depending on the type of upgrade, the DXi may be placed in service mode for about an hour. While in service mode, the system will shut down all backup and replication services. If necessary, the DXi will restart one or more times to complete the upgrade.

Note: Clear your Web browser cache before logging on to the remote management console for the first time following the software upgrade. This will ensure the remote management console displays correctly.

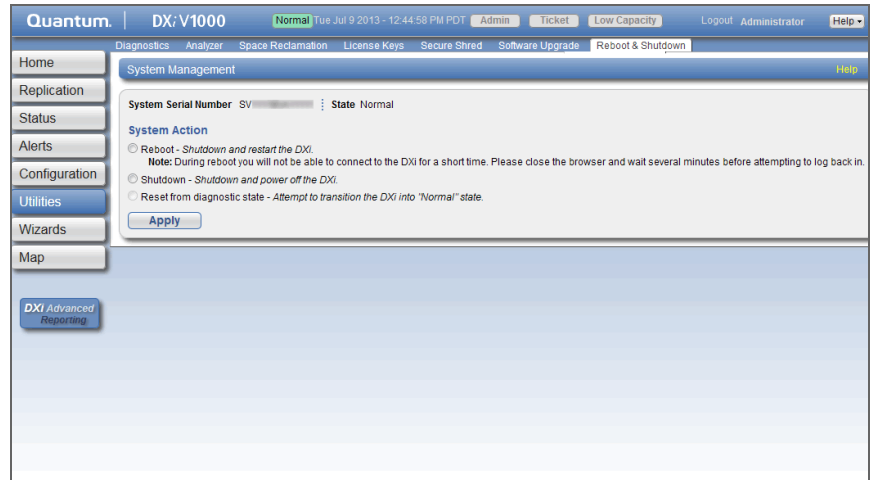
Reboot & Shutdown

The **Reboot & Shutdown** page allows you to reboot or shut down the DXi V-Series.

To access the **Reboot & Shutdown** page, click the **Utilities** menu, and then click the **Reboot & Shutdown** tab (see [Figure 152](#)).

Caution: Before shutting down the DXi V-Series, make sure that all backup and replication jobs are finished, and that space reclamation activity is complete.

Figure 152 Reboot & Shutdown Page



To reboot or shutdown the DXi V-Series:

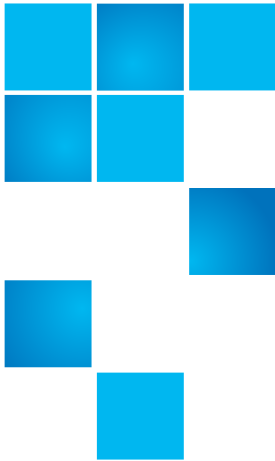
1 Under **System Action**, select an option:

- **Reboot** - Reboots the DXi V-Series.
Rebooting the system closes the Web browser connection. You must log on again after the system has rebooted.
- **Shutdown** - Shuts down the DXi V-Series.
- **Reset from diagnostic state** - (Only available when the node is in degraded mode) Restarts the services on the node without rebooting the system.

2 Click **Apply**.

3 Close the browser window.

Note: Shutting down the system can take up to 15 minutes. Only the node will completely shut down. When rebooting, the system can take approximately 30 minutes to start up, depending on the amount of installed storage capacity.



Appendix A

Troubleshooting

This appendix describes the status and problem reporting features of the DXi V-Series as well as problems you might encounter during setup and operation of the system. Corrective information is provided to help you resolve these problems.

For for information about troubleshooting the DXi V-Series, see the following sections:

- [DXi V-Series Status and Problem Reporting](#)
- [General Troubleshooting Actions](#)
- [Common Problems and Solutions](#)

DXi V-Series Status and Problem Reporting

To maintain system health and help you identify and correct problems that occur, the DXi V-Series constantly performs the following actions:

- Monitors the system software and hardware components.
- Detects system problems.
- Attempts to isolate each problem to a specific field replaceable component.

- Attempts to recover from the problem.
- Logs the problem.
- If the problem requires service, the system reports the problem in a service ticket associated with the field replaceable component.

General Troubleshooting Actions

For information about general troubleshoot actions you can take, see the following sections:

- [Viewing Service Tickets](#)
- [Downloading a System Diagnostics File](#)

Viewing Service Tickets

Service tickets include time and date information, status (open or closed), information about each error, and links to recommended troubleshooting procedures. The DXi V-Series generates service tickets according to the following scenarios:

- If the component associated with the problem does not have an open service ticket, the DXi V-Series opens a service ticket for the component and reports the problem in a service ticket.
- If the problem reoccurs, the DXi V-Series logs the number of times that it detects the problem in the existing report.
- If a different problem occurs with the same component, the DXi V-Series adds a new report to the same service ticket.
- If a problem occurs with a different component, the DXi V-Series uses the above scenario to open a new service ticket for the component or report the problem in an existing service ticket associated with the component.

To access the **Service Tickets** page, click the **Alerts** menu, and then click the **Service Tickets** tab.

For more information about working with service tickets, see [Service Tickets](#) on page 117.

Downloading a System Diagnostics File

The **System Diag File** page allows you to generate and download a system diagnostics file. This file contains the diagnostic logs for all of the system components.

To access the **System Diag File** page, on the **Diagnostics** page, click the **System Diag File** tab.

For information about downloading the system diagnostics file, see [System Diag File](#) on page 254.

Common Problems and Solutions

The troubleshooting information in this section covers the following topics:

- [Start-up Problems](#)
- [Ethernet Network Problems](#)
- [Replication Problems](#)

Start-up Problems

[Table 2](#) describes problems that can occur during system start-up.

Table 2 Start-up Problems

Problem	Corrective Action
FATAL ERROR Unable to start SNFS! Message displays.	Contact your Quantum Customer Support representative (see Getting More Information or Help on page xxi).
FATAL ERROR Unable to start blockpool! Message displays.	Contact your Quantum Customer Support representative (see Getting More Information or Help on page xxi).

Ethernet Network Problems

[Table 3](#) describes corrective actions for problems occurring with the Ethernet network.

Table 3 Ethernet Network Problems

Problem	Corrective Action
DXi V-Series system is not visible on the Ethernet network.	Try to ping the DXi V-Series system IP address from a host on the same network. If the ping reports round trip times, the DXi V-Series system is active. If not, check the cables, switches, or hubs for damaged components. If everything checks out, contact the Quantum Customer Support department (see Getting More Information or Help on page xxi).
DXi V-Series remote management pages are not visible.	IF you cannot connect to the DXi V-Series remote management pages, verify that the following network settings for the DXi V-Series are correct: <ul style="list-style-type: none">• Hostname• IP addresses• Default gateway• Subnet mask• Domain name (optional)
An Ethernet cable is removed during normal operation.	The system will discontinue use of the associated Ethernet port. A Service ticket will be issued. The possibility of errors exist; data corruption will not occur. Reconnect the cable as soon as possible. It is not necessary to power the system off. Depending on the state of the system when the Ethernet cable was removed, replication, system management, or ingest may need to be restarted.

Replication Problems

[Table 4](#) describes corrective actions for problems occurring with the replication.

Table 4 Replication Problems

Problem	Explanation/Corrective Action
The replication was paused, but the replication is still in process.	When you click Pause , the system will continue to replicate the current tag or block of information in process. The process of completing the current tag replication can take up to 15 minutes to complete. Once that tag has completed replication the system will pause and wait to resume.
The replication was paused and a Failure event was generated in the Replication Events page.	This is normal. When a replication is paused, a failure event is generated on the Replication Events page. The system will continue the replication when you click Resume .
Replication was disabled while a replication was in process and the replication completed.	If you click Disable during a replication in process, the system will complete the entire replication and then disable replication on the system. The system will be unable to replicate until you click Enable .
Enabled replication on a NAS share and received the following Event: No destination host is specified for replication.	You must configure the target system prior to configuring the source. If the target system is not configured first, you will not be able to designate the replication target.
Able to enable and schedule replication for NAS even though no target IP configured.	It is possible to enable and schedule a replication when a target system has not been configured. The replication will not start until a target system is configured.

Appendix A: Troubleshooting
Common Problems and Solutions



Glossary

B

Blockpool A pool of all unique data blocks that were captured during the data deduplication cycle. When backup jobs occur, the data deduplication engine searches for new data entering the DXi V-Series and uses a variable length compression type algorithm to compare this to existing data in the blockpool. Unique blocks are added to the blockpool and all known blocks are indexed.

Byte The basic unit of computer memory which is large enough to hold one character.

C

Compress A process of removing fine-grained redundancy from data prior to storing or transmitting it. The granularity may vary, but generally compression deals with redundancy in grains of a few bytes.

D

Data Deduplication A process of removing coarse-grained redundancy from data prior to storing or transmitting it. The granularity may vary, but generally data deduplication deals with redundancy in grains of several kilobytes. When you select **Enable Data Deduplication** for a NAS share, data deduplication is running all of the time. Backup data is sent to

the DXi V-Series and data deduplication is performed on data as it is ingested.

Disk A fixed set of sectors with sequential numbers starting from zero, directly and independently accessible and mutable by those numbers without affecting any other sector.

F

Filesystem An abstraction layered over storage devices (typically disks) obscuring the physical details of the storage devices it supports in favor of a presentation oriented at storing and organizing files.

H

Host The device or devices to which the system is connected.

I

Ingest The throughput performance of data writes to the system.

L

LSU Logical Storage Unit. A logical storage entity defined under the Symantec OpenStorage API.

N

NAS Network Attached Storage is file-level computer data storage connected to a computer network providing data access to network clients.

NDMP Network Data Management Protocol is a protocol meant to transport data between NAS devices, also known as filers, and backup devices. This removes the need for transporting the data through the backup server itself, thus enhancing speed and removing load from the backup server.

O

OST OpenStorage API. An interface specific to Symantec NetBackup and Backup Exec for writing data to disk backup appliances, replicating it, and, in the case of NetBackup, writing data directly to disk, under control of the backup application.

-
- R**
- RAID** Redundant Array of Independent Disks is a technology through which several physical storage disks are grouped into an array that appears to an operating system as one or more physical devices.
-
- S**
- SNFS** StorNext[®] File System
- SNMP** Short for *Simple Network Management Protocol*, a set of protocols for managing complex networks.
- Sync ID** When you configure a share for Directory/File Based Replication, you specify a Sync ID for the share. The Sync ID associates the share on the source system with the share on the target system that will received the replicated data. The Sync ID of the source share and the target share *must* be identical.
-
- T**
- Terabyte** A unit of measure for digital data equal to 1,000 gigabytes.

