



Use Amazon FSx for ONTAP

Amazon FSx for ONTAP

NetApp
May 16, 2022

Table of Contents

- Use Amazon FSx for ONTAP 1
 - Create and manage an Amazon FSx for ONTAP working environment 1
 - Create volumes for Amazon FSx for ONTAP 9
 - Manage volumes for Amazon FSx for ONTAP 14

Use Amazon FSx for ONTAP

Create and manage an Amazon FSx for ONTAP working environment

Using Cloud Manager you can create and manage FSx for ONTAP working environments to add and manage volumes and additional data services.

Create an Amazon FSx for ONTAP working environment

The first step is to create an FSx for ONTAP working environment. If you already created an FSx for ONTAP file system in the AWS Management Console, you can [discover it using Cloud Manager](#).

Before you begin

Before creating your FSx for ONTAP working environment in Cloud Manager, you will need:

- The ARN of an IAM role that gives Cloud Manager the permissions needed to create an FSx for ONTAP working environment. See [adding AWS credentials to Cloud Manager](#) for details.
- The region and VPN information for where you will create the FSx for ONTAP instance.

Steps

1. In Cloud Manager, add a new Working Environment, select the location **Amazon Web Services**, and click **Next**.
2. Select **Amazon FSx for ONTAP** and click **Next**.

The screenshot shows the 'Add Working Environment' wizard in AWS Cloud Manager. The 'Choose a Location' section has four options: Microsoft Azure, Amazon Web Services (selected), Google Cloud Platform, and On-Premises. The 'Choose Type' section has four options: Cloud Volumes ONTAP (Single Node), Cloud Volumes ONTAP HA (High Availability), Amazon FSx for ONTAP (High Availability, selected), and Kubernetes Cluster (Managed). A search bar at the bottom suggests discovering an existing Amazon FSx for ONTAP in AWS with a 'Click Here' link. A 'Next' button is at the bottom right.

3. Authenticate FSx for ONTAP in Cloud Manager.
 - a. If there is an existing IAM role in your account with the correct AWS permissions for FSx for ONTAP,

select it from the dropdown.

- b. If there is no IAM role in your account, click **Credentials Page** and follow the steps in the wizard to add an ARN for an AWS IAM role with FSx for ONTAP credentials. See [adding AWS credentials to Cloud Manager](#) for details.

4. Provide information about your FSx for ONTAP instance:
- a. Enter the working environment name you want to use.
 - b. Optionally, you can create tags by clicking the plus sign and entering a tag name and value.
 - c. Enter and confirm the ONTAP Cluster password you want to use.

- d. Select the option to use the same password for your SVM user or set a different password.
- e. Click **Next**.

The screenshot shows the 'Add FSx for ONTAP' wizard at the 'Details and Credentials' step. The interface is divided into two main sections: 'Details' and 'Credentials'.

Details Section:

- Working Environment Name:** A text input field containing 'myfsxenvironment'.
- Tags:** A section labeled 'Optional' with a blue link 'Add Tags'.

Credentials Section:

- User Name:** A text input field containing 'fsxadmin'.
- ONTAP Cluster Password:** A password input field with masked characters.
- Confirm ONTAP Cluster Password:** A second password input field with masked characters.
- Use the same password for SVM user (vsadmin):** A checkbox that is checked.

At the bottom of the form, there are two buttons: 'Previous' (disabled) and 'Next' (active).

5. Provide region and VPC information:
 - a. Select a region and VPC with subnets in at least two Availability Zones so each node is in a dedicated Availability Zone.
 - b. Accept the default security group or select a different one. [AWS security groups](#) control inbound and outbound traffic. These are configured by your AWS admin and are associated with your [AWS elastic network interface \(ENI\)](#).
 - c. Select an Availability Zone and subnet for each node.
 - d. Click **Next**.

The screenshot shows the 'Add FSx for ONTAP' wizard at the 'Region and VPC' step. The interface is divided into three main sections: 'Region', 'VPC', and 'Security Group'.

Region: A dropdown menu showing 'us-east-2 | US East (Ohio)'.

VPC: A dropdown menu showing 'VPC4QA - 10.0.0.0/16'.

Security Group: A dropdown menu showing 'Default security group'.

Below these sections, there are two columns for configuring nodes:

- Node 1:**
 - Availability Zone:** A dropdown menu showing 'us-east-2b'.
 - Subnet:** A dropdown menu showing '10.0.4.0/24'.
- Node 2:**
 - Availability Zone:** A dropdown menu showing 'us-east-2c'.
 - Subnet:** A dropdown menu showing '10.0.3.0/24'.

At the bottom of the form, there are two buttons: 'Previous' (disabled) and 'Next' (active).

6. Leave *CIDR Range* empty and click **Next** to automatically set an available range. Optionally, you can use [AWS Transit Gateway](#) to manually configure a range.

Add FSx for ONTAP
Floating IP

Floating IP addresses are required for cluster and SVM access and for NFS and CIFS data access.

Floating IPs can migrate between HA nodes if failures occur. To access the data from outside the VPC, you can set up an [AWS transit gateway](#).

CIDR Range

Optional

Example: 10.10.10.10/24

Notice: You must specify a CIDR block that is outside of the CIDR blocks for all VPCs in the selected AWS region.

Previous

Next

- Select route tables that include routes to the floating IP addresses. If you have just one route table for the subnets in your VPC (the main route table), Cloud Manager automatically adds the floating IP addresses to that route table. Click **Next** to continue.

Add FSx for ONTAP
Route Tables

Select the route tables that should include routes to the floating IP addresses. This enables client access to volumes. Clients associated with unselected route tables won't have access to volumes.

[Learn More](#)

2 Route table

<input type="checkbox"/>	Name	Main	ID	Associate with Subnets	Tags	
<input checked="" type="checkbox"/>	VPC4QA	Yes	rtb-0880ec9d aeb55d630	2 Subnets	2	▼
<input type="checkbox"/>	No tag name	No	rtb-0e0c7d9e a4cf05d66	1 Subnet	1	▼

Notice: The main route table is the default for the VPC

Previous

Next

- Accept the default AWS master key or click **Change Key** to select a different AWS Customer Master Key (CMK). For more information on CMK, see [Setting up the AWS KMS](#). Click **Next** to continue.

Add FSx for ONTAP
Data Encryption

AWS Managed Encryption

AWS is responsible for data encryption and decryption operations. Key management is handled by AWS key management services.

Default Master Key: aws/fsx [Change Key](#)

Previous
Next

9. Configure your storage:

- Select the throughput, capacity, and unit.
- You can optionally specify an IOPS value. If you don't specify an IOPS value, Cloud Manager will set a default value based on 3 IOPS per GiB of the total capacity entered. For example, if you enter 2000 GiB for the total capacity and no value for the IOPS, the effective IOPS value will be set to 6000.

If you specify an IOPS value that does not meet the minimum requirements, you'll receive an error when adding the working environment.



Failed to create FSx for ONTAP systems [Show Less](#)

Invalid SSD IOPS provided: 400 IOPS. Amazon FSx does not support provisioning fewer than 3 IOPS per GB of SSD storage capacity on a ONTAP file system.

c. Click **Next**.

Add FSx for ONTAP
Storage Configuration

SSD Disk Properties

Throughput
Capacity
Unit

512 MBps
3
TiB

IOPS Value
Optional ⓘ

400

Notice: The current version of FSx does not allow changing the capacity after creation. Also, note that the capacity drives the cost of the service.

Previous
Next

10. Review your configuration:

- Click the tabs to review your ONTAP properties, provider properties, and networking configuration.
- Click **Previous** to make changes to any settings.
- Click **Add** to accept the settings and create your Working Environment.

Review

**myfsxenvironment**
FSx for ONTAP | HA | Multiple AZs

Overview

ONTAP Properties	Provider Properties	Networking
HA Deployment Model	Multiple Availability Zone	
Capacity	3 TiB	
Throughput	512 MBps	

PreviousAdd

Result

Cloud Manager displays your FSx for ONTAP configuration on the Canvas page.



You can now add volumes to your FSx for ONTAP working environment using Cloud Manager.

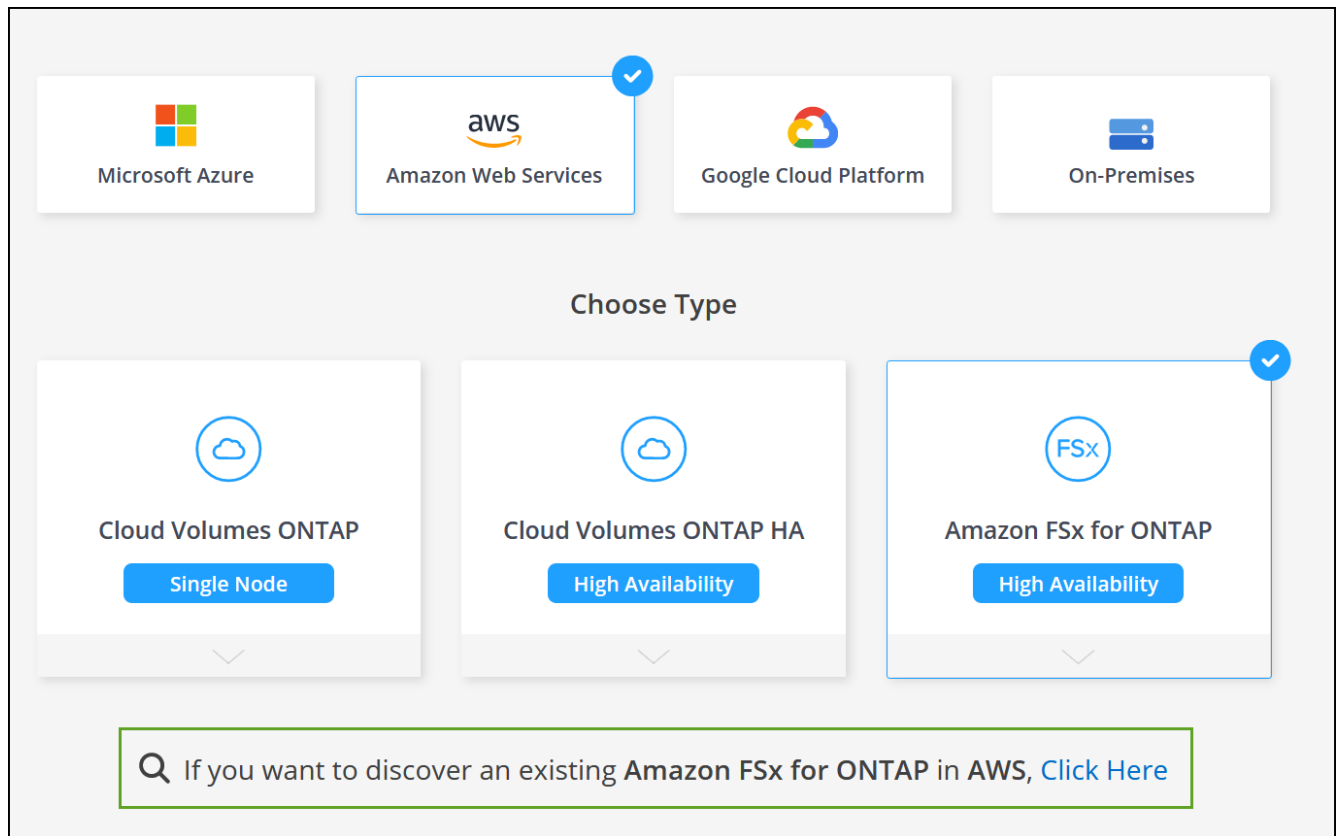
Discover an existing FSx for ONTAP file system

If you created an FSx for ONTAP file system using the AWS Management Console or if you want to restore a working environment you previously removed, you can discover it using Cloud Manager.

Steps

- In Cloud Manager, click **Add Working Environment**, select **Amazon Web Services**.

2. Select **Amazon FSx for ONTAP** and click **Click Here**.



3. Select existing credentials or create new credentials. Click **Next**.
4. Select the AWS region and the working environment you want to add.



5. Click **Add**.

Result

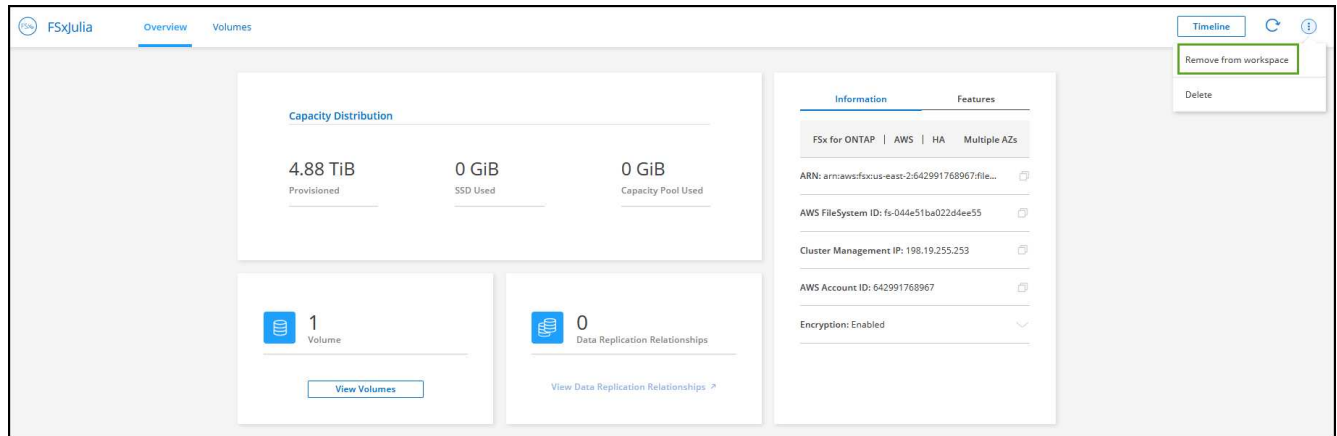
Cloud Manager displays your discovered FSx for ONTAP file system.

Remove FSx for ONTAP from the workspace

You can remove FSx for ONTAP from Cloud Manager without deleting your FSx for ONTAP account or volumes. You can add the FSx for ONTAP working environment back to Cloud Manager at any time.

Steps

1. Open the working environment. If you don't have a Connector in AWS, you will see the prompt screen. You can ignore this and proceed with removing the working environment.
2. At the top right of the page, select the actions menu and click **Remove from workspace**.



3. Click **Remove** to remove FSx for ONTAP from Cloud Manager.

Delete the FSx for ONTAP working environment

You can delete the FSx for ONTAP from Cloud Manager.

Before you begin

- You must [delete all volumes](#) associated with the file system.



You will need an active Connector in AWS to remove or delete volumes.

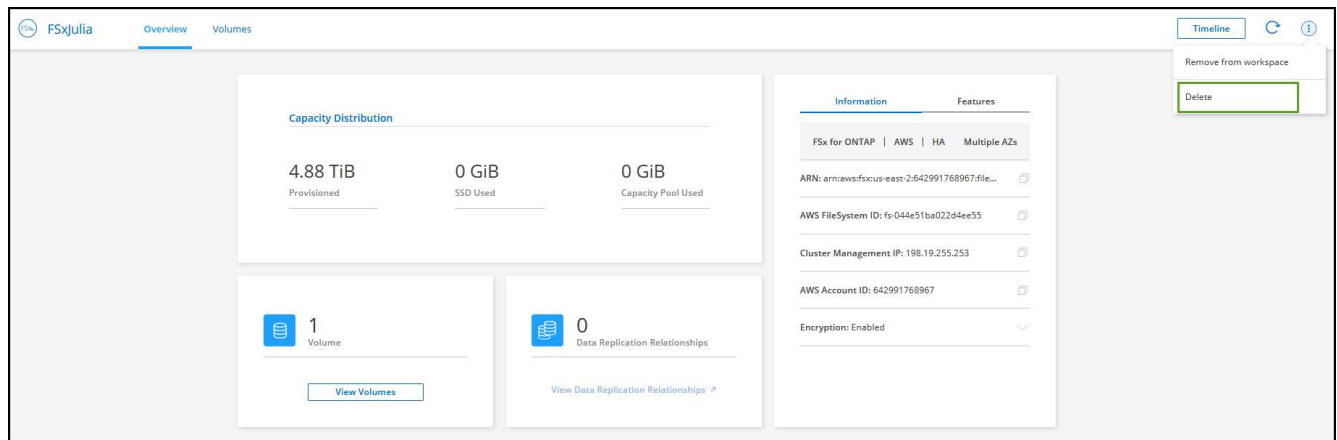
- You cannot delete a working environment that contains failed volumes. Failed volumes must be deleted using the AWS Management Console or CLI prior to deleting FSx for ONTAP files system.



This action will delete all resources associated with the working environment. This action cannot be undone.

Steps

1. Open the working environment. If you don't have a Connector in AWS, you will see the prompt screen. You can ignore this and proceed to deleting the working environment.
2. At the top right of the page, select the actions menu and click **Delete**.



3. Enter the name of the working environment and click **Delete**.

Create volumes for Amazon FSx for ONTAP

After you set up your working environment, you can create and mount FSx for ONTAP volumes.

Create volumes

You can create and manage NFS and CIFS volumes from your FSx for ONTAP working environment in Cloud Manager. NFS and CIFS volumes created using ONTAP CLI will also be visible in your FSx for ONTAP working environment.

You can create iSCSI volumes using ONTAP CLI, ONTAP API, or Cloud Manager API and manage them using Cloud Manager in your FSx for ONTAP working environment.

Before you begin

You need:

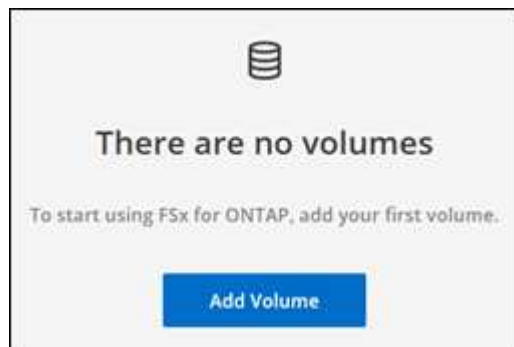
- An active [Connector in AWS](#).
- If you want to use SMB, you must have set up DNS and Active Directory. For more information on DNS and Active Directory network configuration, see [AWS: Prerequisites for using a self-managed Microsoft AD](#).

Steps

1. Open the FSx for ONTAP working environment.
2. If you don't have a Connector enabled, you'll be prompted to add one.



3. Click the **Volumes** tab
4. Click **Add Volume**.



5. **Volume Details and Protection:**
 - a. Enter a name for your new volume.
 - b. The Storage VM (SVM) fields auto-populates the SVM based on the name of your working environment.
 - c. Enter the volume size and select a unit (GiB or TiB). Note that the volume size will grow with usage.
 - d. Select a snapshot policy. By default, a snapshot is taken every hour (keeping the last six copies), every day (keeping the last two copies), and every week (keeping the last two copies).
 - e. Click **Next**.

Volume Details & Protection

Volume Name i

Storage VM (SVM)

Volume Size i Unit

Snapshot Policy

default policy i

6. **Protocol:** Select the an NFS or CIFS volume protocol.

a. For NFS:

- Select an Access Control policy.
- Select the NFS versions.
- Select a Custom Export Policy. Click the information icon for valid value criteria.

Volume Protocol

Select the volume's protocol: ☒ NFS Protocol ☐ CIFS Protocol

Access Control

Select NFS Version

Custom Export Policy i

b. For CIFS:

- Enter a Share Name.
- Enter users or groups separated by a semicolon.
- Select the permission level for the volume.

✓ Details & Protection
2 Protocol
3 Usage Profile & Tiering Policy
4 Review

Volume Protocol

Select the volume's protocol: ☐ NFS Protocol ☒ CIFS Protocol

Share Name

Users/Groups i

Permissions



If this is the first CIFS volume for this working environment, you will be prompted to configure CIFS connectivity using an *Active Directory* or *Workgroup* setup.

- If you select an Active Directory setup, you'll need to provide the following configuration information.

Field	Description
DNS Primary IP Address	The IP addresses of the DNS servers that provides name resolution for the CIFS server. The listed DNS server must contain the service location records (SRV) needed to locate the Active Directory LDAP servers and domain controllers for the domain the CIFS server will join.
Active Directory Domain to join	The FQDN of the Active Directory (AD) domain you want the CIFS server to join.
Credentials authorized to join the domain	The name and password of a Windows account with sufficient privileges to add computers to the specified Organizational Unit (OU) within the AD domain.
CIFS server NetBIOS name	A CIFS server name that is unique in the AD domain.
Organizational Unit	The organizational unit within the AD domain to associate with the CIFS server. The default is CN=Computers.
DNS Domain	The DNS domain for the storage virtual machine (SVM). In most cases, the domain is the same as the AD domain.
NTP Server	Select Enable NTP Server Configuration to configure an NTP server using the Active Directory DNS. If you need to configure an NTP server using a different address, then you should use the API. See the Cloud Manager automation docs for details.

- If you select a Workgroup setup, enter the server and workgroup name for a workgroup configured

for CIFS.

c. Click **Next**.

7. Usage Profile and Tiering:

- By default, **Storage Efficiency** is disabled. You can change this setting to enable deduplication and compression.
- By default, **Tiering Policy** is set to **Snapshot Only**. You can select a different tiering policy based on your needs.
- Click **Next**.

The screenshot shows a configuration window titled "Usage Profile & Tiering Policy". It contains two main sections: "Usage Profile" and "Tiering data to object storage".

Usage Profile

- Storage Efficiency** (with an information icon and a collapse arrow):
 - ☐ Enabled - Deduplication, compression and compaction
 - ☒ Disabled - No Efficiency

Tiering data to object storage

- Tiering policy** (with an information icon and a collapse arrow):
 - ☐ Auto - Tiers cold Snapshot copies and cold user data from the active file system to object storage.
 - ☒ Snapshot Only - Tiers cold Snapshot copies to object storage.
 - ☐ None - Data tiering is disabled.
 - ☐ All - Immediately tiers all data (not including metadata) to object storage.

- Review:** Review your volume configuration. Click **Previous** to change settings or click **Add** to create the volume.

Result

The new volume is added to the working environment.

Mount volumes

Access mounting instructions from within Cloud Manager so you can mount the volume to a host.

Steps

- Open the working environment.
- Open the volume menu and select **Mount the volume**.



3. Follow the instructions to mount the volume.

Manage volumes for Amazon FSx for ONTAP

You can manage volumes, clones, and snapshots, and change tiering policies for FSx for ONTAP using Cloud Manager.

Edit volumes

After you create a volume, you can modify it at any time.

Steps

1. Open the working environment.
2. Open the volume menu and select **Edit**.
 - a. For NFS, you can modify the size and tags.
 - b. For CIFS, you can modify the share name, users, permissions, and Snapshot policy as needed.
3. Click **Apply**.

Clone volumes

After you create a volume, you can create a new read-write volume from a new Snapshot.

Steps

1. Open the working environment.
2. Open the volume menu and select **Clone**.
3. Enter a name for the cloned volume.
4. Click **Clone**.

Manage Snapshot copies

Snapshot copies provide a point-in-time copy of your volume. Create Snapshot copies and restore the data to a new volume.

Steps

1. Open the working environment.
2. Open the volume menu and choose one of the available options to manage Snapshot copies:
 - **Create a Snapshot copy**

- **Restore from a Snapshot copy**

3. Follow the prompts to complete the selected action.

Change the tiering policy

Change the tiering policy for the volume.

Steps

1. Open the working environment.
2. Open the volume menu and select **Change Tiering policy**.
3. Select a new volume tiering policy and click **Change**.

Replicate and sync data

You can replicate data between storage environments using Cloud Manager. To configure FSx for ONTAP replication, see [replicating data between systems](#).

You can create sync relationships using Cloud Sync in Cloud Manager. To configure sync relationships, see [create sync relationships](#).

Delete volumes

Delete the volumes that you no longer need.

Before you begin

You cannot delete a volume that was previously part of a SnapMirror relationship using Cloud Manager. SnapMirror volumes must be deleted using the AWS Management Console or CLI.

Steps

1. Open the working environment.
2. Open the volume menu and select **Delete**.
3. Enter the working environment name and confirm that you want to delete the volume. It can take up to an hour before the volume is completely removed from Cloud Manager.



If you try to delete a cloned volume, you will receive an error.

Copyright Information

Copyright © 2022 NetApp, Inc. All rights reserved. Printed in the U.S. No part of this document covered by copyright may be reproduced in any form or by any means-graphic, electronic, or mechanical, including photocopying, recording, taping, or storage in an electronic retrieval system-without prior written permission of the copyright owner.

Software derived from copyrighted NetApp material is subject to the following license and disclaimer:

THIS SOFTWARE IS PROVIDED BY NETAPP "AS IS" AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL NETAPP BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

NetApp reserves the right to change any products described herein at any time, and without notice. NetApp assumes no responsibility or liability arising from the use of products described herein, except as expressly agreed to in writing by NetApp. The use or purchase of this product does not convey a license under any patent rights, trademark rights, or any other intellectual property rights of NetApp.

The product described in this manual may be protected by one or more U.S. patents, foreign patents, or pending applications.

RESTRICTED RIGHTS LEGEND: Use, duplication, or disclosure by the government is subject to restrictions as set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.277-7103 (October 1988) and FAR 52-227-19 (June 1987).

Trademark Information

NETAPP, the NETAPP logo, and the marks listed at <http://www.netapp.com/TM> are trademarks of NetApp, Inc. Other company and product names may be trademarks of their respective owners.