

NetApp® FAS/V-Series VASA Provider 1.0

Installation and Administration Guide

NetApp, Inc.
495 East Java Drive
Sunnyvale, CA 94089 USA
Telephone: +1 (408) 822-6000
Fax: +1 (408) 822-4501
Support telephone: +1 (888) 4-NETAPP
Documentation comments: doccomments@netapp.com
Information Web: www.netapp.com
Part number: 215-06274_B0
May 2012

Contents

What FAS/V-Series VASA Provider is	5
FAS/V-Series VASA Provider architecture	5
Overview of FAS/V-Series VASA Provider installation and configuration process	6
System requirements for FAS/V-Series VASA Provider	7
Required RBAC capabilities for FAS/V-Series VASA Provider	7
Installation and configuration of FAS/V-Series VASA Provider	9
Downloading FAS/V-Series VASA Provider	9
Installing FAS/V-Series VASA Provider	10
Configuring FAS/V-Series VASA Provider	11
Adding storage systems	11
Registering FAS/V-Series VASA Provider with the vCenter Server	12
Editing storage system information	13
Removing storage systems	14
What alarms are	15
What storage capabilities are	17
Uninstalling FAS/V-Series VASA Provider	19
Troubleshooting FAS/V-Series VASA Provider installation and configuration	21
FAS/V-Series VASA Provider GUI and server logs	21
Storage capabilities for all storage systems do not display in the vCenter Server	21
Attempting to open a file of type Application extension (.dll)	22
Copyright information	23
Trademark information	25
How to send your comments	27
Index	29

What FAS/V-Series VASA Provider is

FAS/V-Series VASA Provider is a software component that supports the VMware VASA (vStorage APIs for Storage Awareness) framework, first introduced in vSphere 5. It acts as an information pipeline between NetApp storage systems and the vCenter Server, enabling you to monitor relevant storage system status.

FAS/V-Series VASA Provider collects data from your storage systems and delivers information about storage topology, LUN and volume attributes, and events and alarms to the vCenter Server.

Although FAS/V-Series VASA Provider is transparent to you after installation and configuration are completed, the information sent by FAS/V-Series VASA Provider to the vCenter Server can help you make key decisions regarding the placement of virtual machines into datastores in the vCenter Server.

Related concepts

[*System requirements for FAS/V-Series VASA Provider*](#) on page 7

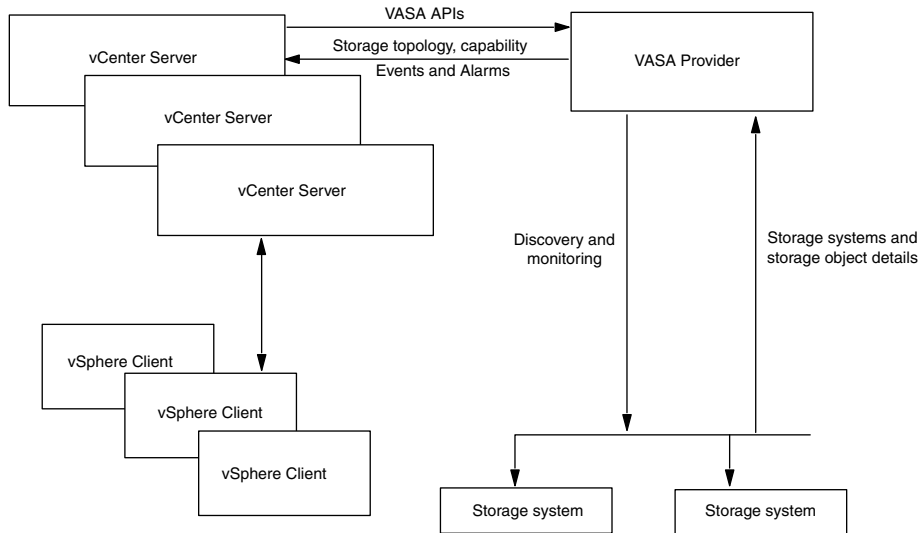
Related tasks

[*Overview of FAS/V-Series VASA Provider installation and configuration process*](#) on page 6

[*Installing FAS/V-Series VASA Provider*](#) on page 10

FAS/V-Series VASA Provider architecture

FAS/V-Series VASA Provider architecture includes the storage systems running Data ONTAP, the host system running FAS/V-Series VASA Provider, and the vCenter Server that requests storage information from the NetApp storage systems. The architecture diagram shows how FAS/V-Series VASA Provider collects data and delivers this information to the vCenter Server.



Related concepts

[Installation and configuration of FAS/V-Series VASA Provider](#) on page 9

Overview of FAS/V-Series VASA Provider installation and configuration process

You can ensure a successful installation and configuration of FAS/V-Series VASA Provider by understanding the sequence of tasks that you are required to complete.

Steps

1. Verify that your storage systems meet the appropriate hardware and software requirements.
2. Download the installation package for FAS/V-Series VASA Provider from the NetApp Support Site.
3. Install FAS/V-Series VASA Provider.
4. Configure FAS/V-Series VASA Provider by providing FAS/V-Series VASA Provider registration information, vCenter Server information (if you did not register FAS/V-Series VASA Provider using the vSphere Client), and storage system information.

Related concepts

[System requirements for FAS/V-Series VASA Provider](#) on page 7

Related tasks

[Downloading FAS/V-Series VASA Provider](#) on page 9

[Installing FAS/V-Series VASA Provider](#) on page 10

System requirements for FAS/V-Series VASA Provider

Before you install FAS/V-Series VASA Provider software, you must ensure that your storage systems conform to all supported system requirements. The server running FAS/V-Series VASA Provider must meet specific software, hardware, and operating system requirements.

Your Microsoft Windows host must have a minimum of 2 GB RAM and 250 MB temporary disk space for installation of FAS/V-Series VASA Provider.

Before you install and use FAS/V-Series VASA Provider, you should be aware of the following requirements:

- Data ONTAP requirements
- Supported Windows software
- vCenter Server requirements
- ESX host software requirements

See the Interoperability Matrix at support.netapp.com/NOW/products/interoperability to confirm the appropriate software and hardware.

Required RBAC capabilities for FAS/V-Series VASA Provider

Although you can use the root account, it is better to create a custom account with limited capabilities using the role based access control (RBAC) feature of the Data ONTAP software. You can use an existing RBAC account so that FAS/V-Series VASA Provider can access the data on your storage system.

For information about configuring RBAC, see Knowledge base article 1013766 *How to configure storage and vCenter RBAC for FAS/V-Series VASA Provider 1.0 for vCenter 5.0* at kb.netapp.com/support/index?page=content&id=1013766.

Installation and configuration of FAS/V-Series VASA Provider

You can launch the FAS/V-Series VASA Provider installer and respond to the installer prompts to install FAS/V-Series VASA Provider on a Windows machine. After you complete the installation, you can configure FAS/V-Series VASA Provider to collect data from your storage systems.

Downloading FAS/V-Series VASA Provider

Before installing FAS/V-Series VASA Provider, you must download the software package from the NetApp Support Site.

Before you begin

- You must have an account for the NetApp Support Site.

Steps

1. Go to the NetApp Support Site at support.netapp.com.
2. Locate and select FAS/V-Series VASA Provider.
3. From the drop-down list, select the operating system on which you are installing FAS/V-Series VASA Provider and click **Go!**
4. Click **View & Download** for the software version you want to install.
5. On the Description page, click **Continue**.
6. Review and accept the license agreement.
7. On the Download page, click the link for the installation file.
8. Click **netappvp-1-0-winx64.exe**.
9. Click **Save File**.

Installing FAS/V-Series VASA Provider

After you have downloaded FAS/V-Series VASA Provider, you can run the installation wizard to install the software.

Before you begin

- You must have administrator privileges for the Windows computer on which you are installing FAS/V-Series VASA Provider.
- You must have a Windows system account user name and password.
- You must know the path of the directory to which you want to install, if different from the default location.

About this task

You must install FAS/V-Series VASA Provider on a separate Windows server instead of the server on which the vCenter Server is installed.

Steps

1. Double-click the `netappvp-1-0-winx64.exe` executable file to launch the FAS/V-Series VASA Provider installer.
2. Select the installation location.
3. Click **Install** on the Ready to Install page.
4. Click **Finish**.

After you finish

If you install FAS/V-Series VASA Provider to a nondefault location, you must replace the directory path for the desktop icon. You can find and select the NetApp logo by opening the Change Icon dialog box from the Windows Properties dialog box for the icon.

Related concepts

[What FAS/V-Series VASA Provider is](#) on page 5

[System requirements for FAS/V-Series VASA Provider](#) on page 7

Related tasks

[Downloading FAS/V-Series VASA Provider](#) on page 9

Configuring FAS/V-Series VASA Provider

After you install FAS/V-Series VASA Provider, you must configure it to communicate with the vCenter Server and retrieve storage system data. During configuration, you must specify a user name and password to register FAS/V-Series VASA Provider with the vCenter Server. Then add storage systems prior to completing the process.

Steps

1. [Add storage systems](#) on page 11

You can use the NetApp FAS/V-Series VASA Provider dialog box to add storage systems from which FAS/V-Series VASA Provider collects storage information. You can add storage systems at any time.

2. [Register FAS/V-Series VASA Provider with the vCenter Server](#) on page 12

To establish a connection between the vCenter Server and FAS/V-Series VASA Provider, you must register FAS/V-Series VASA Provider with the vCenter Server. The vCenter Server communicates with the FAS/V-Series VASA Provider to obtain information that the FAS/V-Series VASA Provider collects from registered storage systems.

Adding storage systems

You can use the NetApp FAS/V-Series VASA Provider dialog box to add storage systems from which FAS/V-Series VASA Provider collects storage information. You can add storage systems at any time.

About this task

To view the NetApp FAS/V-Series VASA Provider dialog box clearly, you should use a minimum display setting of 1200 by 800 pixels.

If you add a physical storage system that has vFiler units, the NetApp FAS/V-Series VASA Provider dialog box displays the number of vFiler units, as well as the host name and IP address of the physical storage system.

Steps

1. Double-click the **VASA Configuration** icon on your Windows desktop or right-click the icon and select **Open** to open the **NetApp FAS/V-Series VASA Provider** dialog box.
2. Click **Add** to open the **Add Storage System** dialog box.
3. To add a new storage system, type the host name or IP address, port number, and user name and password for the storage system in the **User Name** and **Password** text boxes.

Note: FAS/V-Series VASA Provider automatically discovers vFiler units hosted on the physical storage system.

4. Click **OK**.

Registering FAS/V-Series VASA Provider with the vCenter Server

To establish a connection between the vCenter Server and FAS/V-Series VASA Provider, you must register FAS/V-Series VASA Provider with the vCenter Server. The vCenter Server communicates with the FAS/V-Series VASA Provider to obtain information that the FAS/V-Series VASA Provider collects from registered storage systems.

About this task

To view the NetApp FAS/V-Series VASA Provider dialog box clearly, you should use a minimum display setting of 1200 by 800 pixels.

You can register only one FAS/V-Series VASA Provider instance with a vCenter Server system.

You must provide the vCenter Server user account that has the required privileges for registering FAS/V-Series VASA Provider with the vCenter Server. The required privileges are **StorageViews**.

If you have already registered FAS/V-Series VASA Provider using the vSphere Client, and then attempt to register it again using the NetApp FAS/V-Series VASA Provider dialog box, you get an error message telling you that FAS/V-Series VASA Provider is already registered. You can ignore the message and continue.

If you want to use the vSphere Client to register FAS/V-Series VASA Provider with the vCenter Server, you must copy the URL in the **VASA URL** field and paste it in the vCenter Server.

Steps

1. Double-click the **VASA Configuration** icon on your Windows desktop or right-click the icon and select **Open** to open the **NetApp FAS/V-Series VASA Provider** dialog box.
2. Type a user name and password that you want to use to register FAS/V-Series VASA Provider with the vCenter Server in the **User Name** and **Password** text boxes and click **Save**.

The user name and password specified here are used for the initial communication between FAS/V-Series VASA Provider and the vCenter Server.

3. If you want to change the user name and password, click **Edit**.

You must specify the user name and password each time you register a FAS/V-Series VASA Provider instance using the vSphere Client.

4. Accept or change the default aggregate and volume threshold values.

These values specify the percentages at which a volume or aggregate is full or nearly full. The default values are the following:

- 90 percent for a full volume
- 95 percent for a full aggregate
- 85 percent for a nearly full volume

- 90 percent for a nearly full aggregate

Note: After you finish registering FAS/V-Series VASA Provider with the vCenter Server, any changes made to the default threshold values are only saved when you click **OK**.

5. Type the host name or IP address of your vCenter Server machine in the **Server Address** text box and the user name and password for the vCenter Server in the **User Name** and **Password** text boxes.
6. Specify the port number that you want to use or accept the default port number for the vCenter Server.
7. Click **Register Provider**.

When you register or unregister FAS/V-Series VASA Provider from the vCenter Server, it might take a few minutes to update the FAS/V-Series VASA Provider information in the vCenter Server.

8. Click **OK**.

After you finish

If you want to change the default SSL certificate used by FAS/V-Series VASA Provider, you can create your own certificate using the Java keytool utility. After you generate a new certificate, you must import it into the `vasa.keystore` file. If there is a new password for the `vasa.keystore` file, you must change the password in the `vasa.properties` file.

Editing storage system information

You can edit the user credentials for a storage system configured for use with FAS/V-Series VASA Provider at any time by typing new values in the NetApp FAS/V-Series VASA Provider dialog box. You can change the host name or IP address, port number and user name and password.

About this task

To view the NetApp FAS/V-Series VASA Provider dialog box clearly, you should use a minimum display setting of 1200 by 800 pixels.

Steps

1. Double-click the **VASA Configuration** icon on your Windows desktop or right-click the icon and select **Open** to open the **NetApp FAS/V-Series VASA Provider** dialog box.
2. Select a storage system and click **Edit** to open the **Edit Storage System** dialog box.
3. To change the user credentials of the selected storage system, type the host name or IP address, port number, user name and password for the storage system in the **User Name** and **Password** text boxes.

4. Click **OK**.

Removing storage systems

You can delete storage systems when you no longer need to monitor a system or you have removed a system from the network and it is no longer in use. When you delete a storage system, it is removed from the list of registered systems.

About this task

To view the NetApp FAS/V-Series VASA Provider dialog box clearly, you should use a minimum display setting of 1200 by 800 pixels.

Steps

1. Double-click the **VASA Configuration** icon on your Windows desktop or right-click the icon and select **Open** to open the **NetApp FAS/V-Series VASA Provider** dialog box.
2. Select a storage system name from those displayed and click **Remove**.
3. Click **Yes** on the confirmation prompt to delete the storage system.

What alarms are

An alarm notifies you of storage system changes that could invalidate the service level agreement for a virtual machine as specified in the storage capability associated with the virtual machine storage profile.

Two types of alarms are supported in this release of FAS/V-Series VASA Provider:

- A *thin provisioning alarm*, which is set when a thinly provisioned datastore reaches its defined threshold
- A *capability alarm*, which is set when a published storage capability for a volume or LUN changes

Alarms have one of the following statuses:

- Green (Normal)
- Yellow (Warning)
- Red (Alert)

Related concepts

[What FAS/V-Series VASA Provider is](#) on page 5

[FAS/V-Series VASA Provider architecture](#) on page 5

What storage capabilities are

A storage capability is a set of storage system attributes that identifies a specific level of storage availability, capacity, and performance (storage service level) for the storage object associated with this storage capability.

FAS/V-Series VASA Provider generates a storage capability that defines the storage service level for each LUN or volume that matches the vCenter Server list of registered objects attached to an ESX or ESXi host and sends it to the vCenter Server. Storage capabilities can be either system-defined, which are generated by FAS/V-Series VASA Provider, or user-defined, which are manually created in the vCenter Server.

The vCenter Server then associates a LUN or volume's storage capability with the datastore that is provisioned on that LUN or volume. This enables you to provision a virtual machine into a datastore that matches the virtual machine's storage profile and to ensure that all datastores in a datastore cluster have the same storage service levels.

Note: The storage capabilities list displayed in the vCenter Server includes the datastore type, either NFS or VMFS, that is associated with each of the capabilities.

Note: FAS/V-Series VASA Provider does not check the state of the SnapMirror or SnapVault relationship when generating a storage capability.

FAS/V-Series VASA Provider generates the following storage capabilities:

Name	Description	Characteristics
Hybrid	Hybrid storage	Storage using SSD and any other disk type
Hybrid; Replication	Replicated hybrid storage	Hybrid and SnapMirror or SnapVault
Value	Storage on cost-efficient disks	Storage using only SATA disks
Value; Replication	Replicated storage on cost-efficient disks	Value and SnapMirror or SnapVault
Performance	Storage using high-performance disks	Storage using non-SATA or non-hybrid disks
Performance; Replication	High-performance disks and replicated storage	Performance and SnapMirror or SnapVault

Related concepts

[What FAS/V-Series VASA Provider is](#) on page 5

[FAS/V-Series VASA Provider architecture](#) on page 5

Uninstalling FAS/V-Series VASA Provider

You can uninstall FAS/V-Series VASA Provider from the server using the Control Panel uninstall application for your operating system. You can uninstall and reinstall if necessary to troubleshoot any issues with the application.

Before you begin

You should have unregistered FAS/V-Series VASA Provider from the vCenter Server.

Steps

1. On the Windows server where you installed FAS/V-Series VASA Provider, navigate to the Control Panel and select **Control Panel > Programs and Features**.
2. Scroll through the list of installed programs to find FAS/V-Series VASA Provider.
3. Click the name of the program and then click **Uninstall**.
4. When prompted to confirm uninstallation, click **Yes**.

Related tasks

[*Installing FAS/V-Series VASA Provider*](#) on page 10

Troubleshooting FAS/V-Series VASA Provider installation and configuration

If you encounter unexpected behavior during the installation or configuration of FAS/V-Series VASA Provider, you can follow specific troubleshooting procedures to identify and resolve the cause of such issues.

FAS/V-Series VASA Provider GUI and server logs

You can control how FAS/V-Series VASA Provider log files are generated by updating the `log4j.properties` file. Reviewing these logs helps you determine if any log file settings need to be changed.

The level of events recorded in the log file is determined by parameters set in the log configuration file. You can change settings, such as the log file size, or specify when to recycle the log files by updating the `log4j.properties` file.

There are two separate log files for FAS/V-Series VASA Provider GUI and server. The `gui\log` and `server\log` log files are created under the installation directory. By default, FAS/V-Series VASA Provider is installed at `C:\Program Files\NetApp\VASA`.

Storage capabilities for all storage systems do not display in the vCenter Server

Issue	Storage capabilities for all storage systems are not visible in the vCenter Server.
Cause	This problem occurs when FAS/V-Series VASA Provider is unable to collect all the data from all registered storage systems within the default time period that is defined in the <code>vasa.properties</code> file.
Corrective action	Modify the time interval used to refresh the data, as follows: 1. Open the <code>vasa.properties</code> file. 2. Increase the default value of 120,000 milliseconds. Note: You must type a new value without a comma in the <code>vasa.properties</code> file. 3. Unregister FAS/V-Series VASA Provider from all vCenter Servers to which it is registered. 4. Restart the FAS/V-Series VASA Provider service.

5. Wait approximately 15 minutes and then register FAS/V-Series VASA Provider with the vCenter Server.

Attempting to open a file of type Application extension (.dll)

Description	This message occurs when you successfully install and register FAS/V-Series VASA Provider, then make changes to the default User Account Control (UAC) settings in Windows Server 2008 or Windows Server 2008 R2.
Corrective action	1. Navigate to the Control Panel and select Control Panel > User Accounts. 2. Change the setting from Always notify to Notify me only when programs try to make changes to my computer. 3. Click OK. 4. Restart your system. 5. Install FAS/V-Series VASA Provider and register it with the vCenter Server. 6. If this error message appears, click Cancel and continue.

Copyright information

Copyright © 1994–2012 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, Network Appliance, the Network Appliance logo, Akorri, ApplianceWatch, ASUP, AutoSupport, BalancePoint, BalancePoint Predictor, Bycast, Campaign Express, ComplianceClock, Cryptainer, CryptoShred, Data ONTAP, DataFabric, DataFort, Decru, Decru DataFort, DenseStak, Engenio, Engenio logo, E-Stack, FAServer, FastStak, FilerView, FlexCache, FlexClone, FlexPod, FlexScale, FlexShare, FlexSuite, FlexVol, FPolicy, GetSuccessful, gFiler, Go further, faster, Imagine Virtually Anything, Lifetime Key Management, LockVault, Manage ONTAP, MetroCluster, MultiStore, NearStore, NetCache, NOW (NetApp on the Web), Onaro, OnCommand, ONTAPI, OpenKey, PerformanceStak, RAID-DP, ReplicatorX, SANscreen, SANshare, SANtricity, SecureAdmin, SecureShare, Select, Service Builder, Shadow Tape, Simplicity, Simulate ONTAP, SnapCopy, SnapDirector, SnapDrive, SnapFilter, SnapLock, SnapManager, SnapMigrator, SnapMirror, SnapMover, SnapProtect, SnapRestore, Snapshot, SnapSuite, SnapValidator, SnapVault, StorageGRID, StoreVault, the StoreVault logo, SyncMirror, Tech OnTap, The evolution of storage, Topio, vFiler, VFM, Virtual File Manager, VPolicy, WAFL, Web Filer, and XBB are trademarks or registered trademarks of NetApp, Inc. in the United States, other countries, or both.

IBM, the IBM logo, and ibm.com are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both. A complete and current list of other IBM trademarks is available on the web at www.ibm.com/legal/copytrade.shtml.

Apple is a registered trademark and QuickTime is a trademark of Apple, Inc. in the United States and/or other countries. Microsoft is a registered trademark and Windows Media is a trademark of Microsoft Corporation in the United States and/or other countries. RealAudio, RealNetworks, RealPlayer, RealSystem, RealText, and RealVideo are registered trademarks and RealMedia, RealProxy, and SureStream are trademarks of RealNetworks, Inc. in the United States and/or other countries.

All other brands or products are trademarks or registered trademarks of their respective holders and should be treated as such.

NetApp, Inc. is a licensee of the CompactFlash and CF Logo trademarks.

NetApp, Inc. NetCache is certified RealSystem compatible.

How to send your comments

You can help us to improve the quality of our documentation by sending us your feedback.

Your feedback is important in helping us to provide the most accurate and high-quality information. If you have suggestions for improving this document, send us your comments by email to doccomments@netapp.com. To help us direct your comments to the correct division, include in the subject line the product name, version, and operating system.

You can also contact us in the following ways:

- NetApp, Inc., 495 East Java Drive, Sunnyvale, CA 94089 U.S.
- Telephone: +1 (408) 822-6000
- Fax: +1 (408) 822-4501
- Support telephone: +1 (888) 463-8277

Index

A

- access
 - configuring using RBAC 7
- add a storage system 11
- alarm status 15
- alarms
 - defined 15
- architecture 5

C

- changing UAC settings 22
- configuration
 - task summary 6
 - troubleshooting 21
- credentials
 - changing 13
 - editing storage system information 13

D

- data
 - retrieving from storage system 11
- display problems for all storage systems
 - troubleshooting 21

E

- error messages
 - Attempting to open a file of type Application extension 22
- events and alarms 5

H

- hardware requirements 7
- host systems
 - and VASA Provider architecture 5

I

- installation
 - task summary 6
 - troubleshooting 21
- installation and configuration 9

- installation file
 - downloading 9
- installation overview 6
- installation requirements 7

L

- location of log files 21
- logs
 - generating 21
- LUN and volume attributes 5

O

- operating system requirements 7

P

- platform requirements 7

R

- RBAC
 - configuring 7
 - creating a custom account 7
- remove a storage system 14
- role based access control (RBAC)
 - configuring 7

S

- servers
 - and VASA Provider architecture 5
- software
 - downloading 9
 - installing 10
- software requirements 7
- software setup
 - See configuration
- storage attributes 17
- storage capabilities 17
- storage capabilities for all storage systems do not display in vCenter Server 21
- storage service levels
 - defining 17
- storage system deployment 5

storage systems

- accessing vSphere Client 5
- adding 11
- changing user credentials 13
- configuring 11
- editing system information 13
- removing 14
- retrieving data 11

storage topology 5

system requirements 7

T

task summary for configuration 6

task summary for installation 6

threshold values 11

types of alarms 15

U

uninstallation of VASA Provider 19

user accounts

- configuring using RBAC 7

user credentials

- editing 13

V

vCenter Server

- and VASA Provider architecture 5

registering 12

- storage capabilities 17

W

Windows server

- installing on 10