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Hitachi Storage Advisor

Getting Started Guide

Hitachi Data Systems

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Contents

Preface 5

Intended Audience 6
Product version 6
Release notes 6
Document conventions 6
Conventions for storage capacity values 7
Accessing product documentation 8
Getting help 8
Comments 9

1 Hitachi Storage Advisor environment 11

Minimum system requirements 12
Supported storage systems 13
Supported file server 13
Supported fabric switch models 13
Supported servers 14

2 Installing Storage Advisor 17

Installing Storage Advisor with the application installer 18
Installing Storage Advisor with the virtual appliance 19
    Installing Hitachi Storage Advisor in a DHCP environment 19
    Installing Hitachi Storage Advisor in a static environment 22
Changing the root password immediately after installation 24
Logging in to Storage Advisor 25
Logging in when Storage Advisor is not available 25
Generating and installing a signed SSL certificate 26

3 Onboarding and configuring a storage system 29

Overview 30
Adding the first storage system 30
Adding a fabric switch 32
Adding servers 33

Creating parity groups..... 34

Preface

Hitachi Storage Advisor is an infrastructure management solution that unifies storage management solutions such as storage provisioning, data protection, and storage management; simplifies the management of large scale data centers by providing smarter software services; and is extensible to provide better programmability and better control.

- Intended Audience
- Product version
- Release notes
- Document conventions
- Conventions for storage capacity values
- Accessing product documentation
- Getting help
- Comments

Intended Audience

This document is intended for system administrators, Hitachi Data Systems representatives, and authorized service providers who configure and operate the Hitachi Virtual Storage Platform G200, G400, G600, G800, VSP G1000, VSP G1500 and VSP F400, F600, F800, F1500 storage systems with Hitachi Storage Advisor.

Readers of this document should be familiar with the following:

- RAID storage systems and their basic functions.
- Volume creation and management.
- Pool creation and management.
- Parity group creation and management.

Product version

This document revision applies to Hitachi Storage Advisor version 2.1.0 or later.

Release notes

Read the release notes before installing and using this product. They may contain requirements or restrictions that are not fully described in this document or updates or corrections to this document.

Release notes are located on Support Connect at https://knowledge.hds.com/Documents.

Document conventions

This document uses the following typographic conventions:

Convention	Description
Bold	• Indicates text in a window, including window titles, menus, menu options, buttons, fields, and labels. Example: Click **OK**. • Indicates emphasized words in list items.
Italic	• Indicates a document title or emphasized words in text. • Indicates a variable, which is a placeholder for actual text provided by the user or for output by the system. Example: `pairdisplay -g group` (For exceptions to this convention for variables, see the entry for angle brackets.)

Convention	Description
`Monospace`	Indicates text that is displayed on screen or entered by the user. Example: `pairdisplay -g oradb`
< > angle brackets	Indicates variables in the following scenarios: • Variables are not clearly separated from the surrounding text or from other variables. Example: `Status-<report-name><file-version>.csv` • Variables in headings.
[ ] square brackets	Indicates optional values. Example: [a | b] indicates that you can choose a, b, or nothing.
{ } braces	Indicates required or expected values. Example: { a | b } indicates that you must choose either a or b.
| vertical bar	Indicates that you have a choice between two or more options or arguments. Examples: [a | b] indicates that you can choose a, b, or nothing. { a | b } indicates that you must choose either a or b.

This document uses the following icons to draw attention to information:

Icon	Label	Description
	Note	Calls attention to important or additional information.
	Tip	Provides helpful information, guidelines, or suggestions for performing tasks more effectively.
	Caution	Warns the user of adverse conditions and/or consequences (for example, disruptive operations, data loss, or a system crash).
	WARNING	Warns the user of a hazardous situation which, if not avoided, could result in death or serious injury.

Conventions for storage capacity values

Physical storage capacity values (for example, disk drive capacity) are calculated based on the following values:

Physical capacity unit	Value
1 kilobyte (KB)	1,000 (10^3) bytes
1 megabyte (MB)	1,000 KB or $1,000^2$ bytes
1 gigabyte (GB)	1,000 MB or $1,000^3$ bytes
1 terabyte (TB)	1,000 GB or $1,000^4$ bytes
1 petabyte (PB)	1,000 TB or $1,000^5$ bytes

Physical capacity unit	Value
1 exabyte (EB)	1,000 PB or $1{,}000^6$ bytes

Logical capacity values (for example, logical device capacity) are calculated based on the following values:

Logical capacity unit	Value
1 block	512 bytes
1 cylinder	Mainframe: 870 KB Open-systems: • OPEN-V: 960 KB • Others: 720 KB
1 KB	1,024 (2^{10}) bytes
1 MB	1,024 KB or $1{,}024^2$ bytes
1 GB	1,024 MB or $1{,}024^3$ bytes
1 TB	1,024 GB or $1{,}024^4$ bytes
1 PB	1,024 TB or $1{,}024^5$ bytes
1 EB	1,024 PB or $1{,}024^6$ bytes

Accessing product documentation

Product user documentation is available on Hitachi Data Systems Support Connect: https://knowledge.hds.com/Documents. Check this site for the most current documentation, including important updates that may have been made after the release of the product.

Getting help

Hitachi Data Systems Support Connect is the destination for technical support of products and solutions sold by Hitachi Data Systems. To contact technical support, log on to Hitachi Data Systems Support Connect for contact information: https://support.hds.com/en_us/contact-us.html.

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Comments

Please send us your comments on this document to doc.comments@hds.com. Include the document title and number, including the revision level (for example, -07), and refer to specific sections and paragraphs whenever possible. All comments become the property of Hitachi Data Systems Corporation.

Thank you!

1

Hitachi Storage Advisor environment

The Storage Advisor environment must meet minimum requirements to support management of various storage systems, servers, and fabric switches.

- ☐ Minimum system requirements
- ☐ Supported storage systems
- ☐ Supported file server
- ☐ Supported fabric switch models
- ☐ Supported servers

Minimum system requirements

Verify that the Storage Advisor server meets or exceeds the minimum requirements to take advantage of all the features of Storage Advisor.

Server	Minimum requirements
Hypervisor operating system	VMware® ESXi 5.0 or higher
Docker version for installation from tar file	v1.11.2
Operating system for installation from tar file	Linux
Access for installation from tar file	Root user
Available disk space	40 GB
	100 GB for installation using the application installer. This is due to the additional capacity required for the installer file and Docker requirements for image installation. After installation is complete, the required space is reduced to 40 GB.
Memory	16 GB RAM
CPU	4 vCPUs
A client computer that can run a supported browser	At least one of the following: • Internet Explorer 10 or later • Firefox 31.3.0 ESR, 34.0.5, or later • Chrome v38.0.2125.122 or later

Verify that Storage Advisor ports do not overlap with those used by other programs in your environment.

Service	Port number
CCI	31001
HTTP	80
HTTPS	443
Reserved	1099, 8843, 8080, 8082, 8083, 8084, 8085, 8090, 8888, 51099, 51100
SNMP	161, 162

Requirements for using program products

In order to use Hitachi Dynamic Tiering for pools and Hitachi Thin Image for snapshots, make sure that the licenses are available and shared memory is installed.

Supported storage systems

Hitachi Storage Advisor supports the storage systems of the Virtual Storage Platform family.

Initial startup and initial setup of any supported storage system must be completed by a Hitachi Data Systems representative or an authorized service provider.

Hitachi Storage Advisor supports the following storage systems:

- Hitachi Virtual Storage Platform G200
- Hitachi Virtual Storage Platform G400
- Hitachi Virtual Storage Platform G600
- Hitachi Virtual Storage Platform G800
- Hitachi Virtual Storage Platform G1000
- Hitachi Virtual Storage Platform G1500
- Hitachi Virtual Storage Platform F400
- Hitachi Virtual Storage Platform F600
- Hitachi Virtual Storage Platform F800
- Hitachi Virtual Storage Platform F1500
- Hitachi Virtual Storage Platform G400 with optional NAS modules
- Hitachi Virtual Storage Platform G600 with optional NAS modules
- Hitachi Virtual Storage Platform G800 with optional NAS modules

Firmware and microcode versions

Storage Advisor supports the following:

- Hitachi VSP Gx00 and Fx00 models with firmware v83-*04-0x* or later.
- Hitachi VSP G1000, VSP G1500, and VSP F1500 with microcode v80-05-0*x* or later.

Supported file server

Hitachi Storage Advisor requires minimum file server firmware and system management unit software versions.

Hitachi Storage Advisor supports the following file server configuration:

- **Hitachi NAS platform (HNAS) firmware version:** 13.0
- **System management unit (SMU) software:** version 13.0

Supported fabric switch models

Storage Advisor supports a variety of Brocade® and Cisco® fabric switches.

System requirements for Brocade switches

Model	Fiber OS version	Type
300	7.0 7.1 7.2	71
5300	7.0 7.1 7.2	64
6505	7.0 7.1 7.2	118
6510	7.0 7.1 7.2	109
6520	7.0 7.1 7.2	133
7800	7.0 7.1 7.2	83
DCX 8510-4	7.0 7.1 7.2	121
DCX 8510-8 with firmware v6.4	7.0 7.1 7.2	120

System requirements for Cisco switches

Storage Advisor supports the Cisco MDS 9000 Series of switches.

Cisco MDS NX-OS Release 6.2(9) or later is required.

Supported servers

Hitachi Storage Advisor can be used to provision storage to many servers running any one of various operating systems.

- VMware®
- Windows®
- HP-UX™
- Sun Solaris

- NetBSD®
- TRU64 UNIX®
- Novell NetWare®
- IBM® AIX®
- Linux®
- IRIX®

2

Installing Storage Advisor

Storage Advisor is deployed on a virtual machine and accessed by a client computer. Review the minimum requirements before installing.

- ☐ Installing Storage Advisor with the application installer
- ☐ Installing Storage Advisor with the virtual appliance
- ☐ Changing the root password immediately after installation
- ☐ Logging in to Storage Advisor
- ☐ Logging in when Storage Advisor is not available
- ☐ Generating and installing a signed SSL certificate

Installing Storage Advisor with the application installer

You can install Storage Advisor on Linux, where Docker v1.11.2 is already installed.

In order to enable maximum control of the environment, the application installer does not include Docker, an operating system, or a VM.

Before you begin

The following are required:

- Root access to the operating system where Storage Advisor will be installed.
- Docker v1.11.2 installed in a Linux environment.
- The recommended available space on the server at the time of installation is 100 GB. This is due to the additional capacity required for the installer file and Docker requirements for image installation. After installation is complete, the required space is reduced to 40 GB.
- 16 GB RAM



Note: It is recommended that the location where Storage Advisor is installed not include any other applications.

Procedure

1. On the Linux environment, configure the network interface that will be used to access Storage Advisor.

   Storage Advisor supports user interface and API access via an IPv4 address.
2. Copy the tar file `installer.tar.gz` from the installation media to any folder in the Linux environment and unzip it.
3. Navigate to the installer script: `HSA-2.1.0.xx-all-installer` and execute it.

   At the prompts, enter the following:

   1. `Enter the username for the installer`: Enter `sysadmin`
   2. `Enter the <users> password`: Enter `sysadmin`
   3. `Enter host's IP`: Enter the IP address that will be used to access Storage Advisor. This IP address will also be used for SNMP communications into the storage system.

   The installation may take a few minutes. At completion, messages will indicate the following:

   - The application was successfully added.
   - The API is ready.
   - Any pre-existing app manager containers have been removed.

4. Set the SNMP IP address in Virtual Appliance Manager:
   a. Open a browser and enter `https://ip-address/vam` in the address bar.
      - User name: sysadmin
      - Password: sysadmin
   b. In the **Network** tab, enter the SNMP IP address for the storage system.

Troubleshooting the installation

If the installation fails, try the following:

- If the installation fails with the (401) error code, the user name and password specified by the installer was incorrect. Retry the installation and ensure that `sysadmin` is entered for both user name and password.
- Delete all Storage Advisor containers and images and start the installation again.
- Check the Docker logs.
- Consult Docker documentation for more information on how to perform these actions.

If the installation produces any warnings, they may point to the cause of the problem. Correct any issues the installer identifies, delete any Storage Advisor containers and images and start the installation again.

Next steps

Change the root password.

If required, you can generate and install a signed SSL certificate.

Related tasks

- Generating and installing a signed SSL certificate on page 26
- Changing the root password immediately after installation on page 24

Installing Storage Advisor with the virtual appliance

Use the virtual appliance installation to install in either a static environment or in a DHCP environment.

Installing Hitachi Storage Advisor in a DHCP environment

If your environment includes DHCP servers, you can use the Virtual Appliance Manager to set up your Storage Advisor server.

Before you begin

The initial setup of a discovered supported storage system has been completed by an authorized service provider.

Procedure

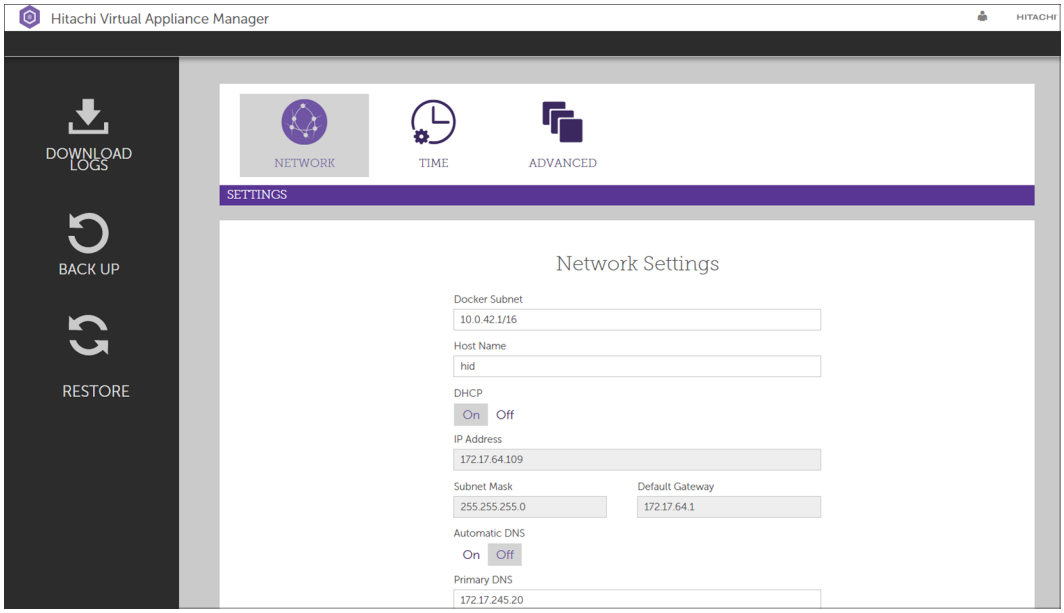
1. From the installation media, deploy the Storage Advisor OVF to the ESXi host.
2. Start the Storage Advisor virtual machine.
3. In the vSphere® client, wait for the **System status** to change to `Online`.

   The status is just below the banner in the virtual machine console.

   ```
   ****************************************
   *****Hitachi Storage Advisor*****
   ****************************************
   System status: Online
   Please wait for system to be online before using any
   services.
   ```
4. Open a browser and enter `https://`*`ip-address`*`/vam` in the address bar.

   User name: `service`
   Password: `Chang3Me!`
5. Change your password.

   a. Click and select **Change password**.
   b. Enter your new password.
6. From the Virtual Appliance Manager menu, click **Network** to configure the network settings.



a. (Optional) Enter the IP range in the **Docker Subnet** field in the format *ip-address\range*. This is the specified range used by Storage Advisor.

> **Note:** If your data center is using the IP address scheme `172.17.*.*`, make sure you provide another IP range that is not currently used in your environment.

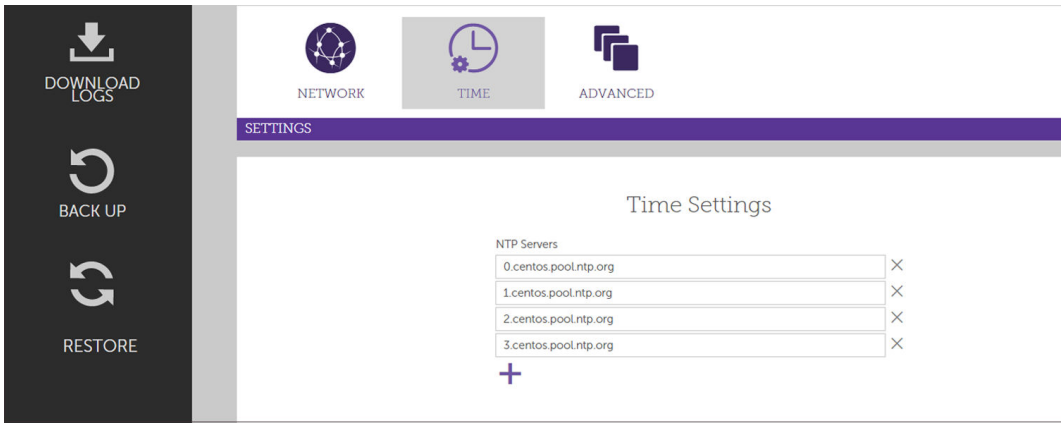
b. Set the host name for the virtual machine.
c. Set **DHCP** to `On`.
d. Enter the IP address of the Storage Advisor server.
e. Set **Automatic DNS** to `On` or `Off`.

   If you set this to `Off`, enter the IP address of at least one DNS server.

f. Click **Submit**.

7. (Optional) From the Virtual Appliance Manager menu, click **Time** and add Network Time Protocol (NTP) servers to the virtual machine.

Adding NTP servers verifies that the Storage Advisor servers are synchronized with the storage system environment.



a. Click **+** to add a field for an NTP Server.
b. Enter the host name of the NTP server.
c. Click **Submit**.

Next steps

- Change the root password.
- Log in to Storage Advisor and onboard a storage system.
- Get a digitally signed SSL certificate from a trusted certificate authority (CA) by sending the CA a certificate signing request (CSR). After you obtain the signed certificate, you can import it to the server. By default, the Storage Advisor installation package comes with a self-signed certificate that you can use to initially log in to Storage Advisor.

Related tasks

- Generating and installing a signed SSL certificate on page 26
- Changing the root password immediately after installation on page 24

Installing Hitachi Storage Advisor in a static environment

If you do not have a DHCP server, use the command line interface to indicate the static IP address of the Storage Advisor server.

Procedure

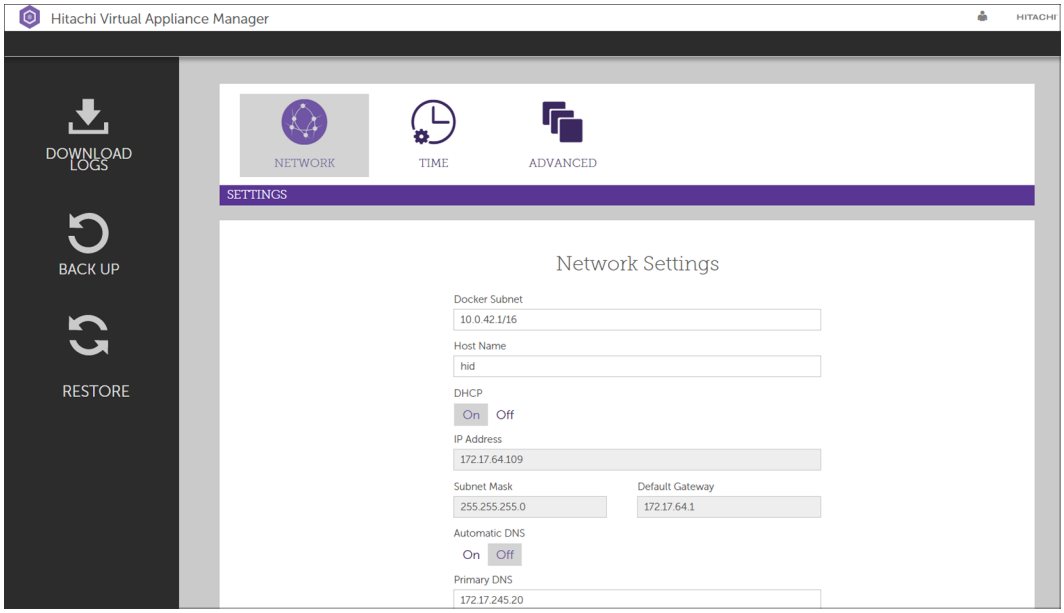
1. From the installation media, deploy the Storage Advisor OVF to the ESXi host.
2. Start the Storage Advisor virtual machine.
3. In the vSphere® client, wait for the **System status** to change to `Online`.
   The status is just below the banner in the virtual machine console.

   ```
   ****************************************
   *****Hitachi Storage Advisor*****
   ****************************************
   System status: Online
   Please wait for system to be online before using any
   services.
   ```
4. Press **Alt**+**F2**.
5. Log in with the service account.

   User name: `service`
   Password: `Chang3Me!`
6. Enter the command `ip-change`.
   The Change IP Address Utility opens.
7. Enter your settings at the prompts.
8. Reboot the VM to ensure that it has the IP address.
9. Open a browser and enter `https://`*`ip-address`*`/vam` in the address bar.

   User name: `service`
   Password: `Chang3Me!`
10. Change your password.

    a. Click and select **Change password**.
    b. Enter your new password.
11. From the Virtual Appliance Manager menu, click **Network** to configure the network settings.



a. (Optional) Enter the IP range in the **Docker Subnet** field in the format *ip-address\range*. This is the specified range used by Storage Advisor.

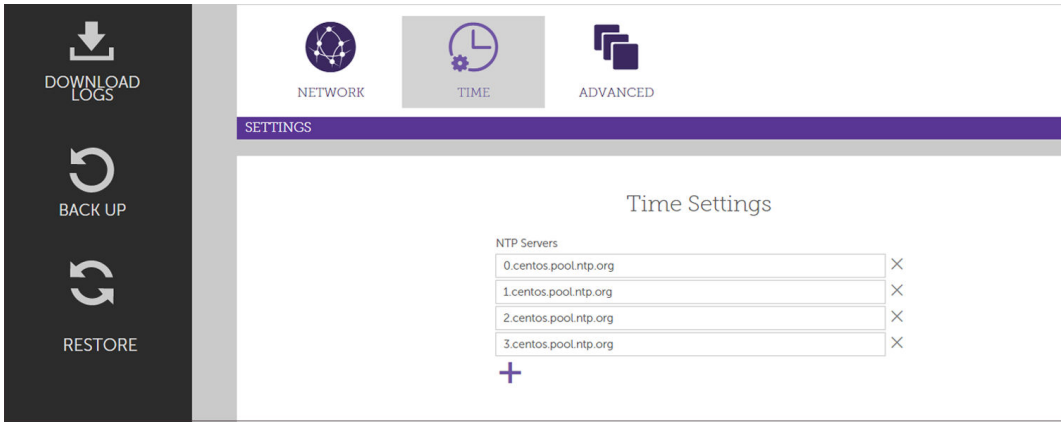
> **Note:** If your data center is using the IP address scheme `172.17.*.*`, make sure you provide another IP range that is not currently used in your environment.

b. Set the host name for the virtual machine.
c. Set **DHCP** to `Off`.
d. Enter the IP address of the Storage Advisor server.
e. Set **Automatic DNS** to `On` or `Off`.

   If you set this to `Off`, enter the IP address of at least one DNS server.
f. Click **Submit**.

12. (Optional) From the Virtual Appliance Manager menu, click **Time** and add Network Time Protocol (NTP) servers to the virtual machine.

Adding NTP servers verifies that the Storage Advisor servers are synchronized with the storage system environment.



a. Click **+** to add a field for an NTP Server.
b. Enter the host name of the NTP server.
c. Click **Submit**.

Next steps

- Change the root password.
- Log in to Storage Advisor and onboard a storage system.
- Get a digitally signed SSL certificate from a trusted certificate authority (CA) by sending the CA a certificate signing request (CSR). After you obtain the signed certificate, you can import it to the server. By default, the Storage Advisor installation package comes with a self-signed certificate that you can use to initially log in to Storage Advisor.

Related tasks

- Generating and installing a signed SSL certificate on page 26
- Changing the root password immediately after installation on page 24

Changing the root password immediately after installation

Change the root password immediately after installing Storage Advisor.

Procedure

1. Either open an SSH connection to the VM or open the VMware console and press `Alt+F2` to reach the console.
2. Login as root account using the default password:
   `3kO$Pe9dJyjy29HAi2mS`
3. Run the command `passwd root` in the terminal.
4. Enter the new password when prompted.

Logging in to Storage Advisor

Log in and verify that the installation is successful by accessing the Storage Advisor web interface from a browser.

Procedure

1. Open a web browser.
2. Enter the URL for Storage Advisor in the address bar:
   `https://`*`ip-address`*`:`*`port-number`*

   where:
   - *ip-address* is the IP address of the Storage Advisor server.
   - *port-number* is the port number of the Storage Advisor server. The default port number is 443.
3. In the login window, log in to Storage Advisor.

   User name: `sysadmin`
   Password: `sysadmin`

Logging in when Storage Advisor is not available

For the Virtual Storage Platform F400, F600, F800, Virtual Storage Platform G200, G400, G600, G800, and Virtual Storage Platform G1000, G1500, F1500 storage systems, if Storage Advisor is not available and you have an administrator login account with the required permissions, you can log in directly to Device Manager - Storage Navigator.

Before you begin

- You are managing VSP Fx00 models, VSP Gx00 models, VSP G1000, VSP G1500, or VSP F1500 storage systems.
- You must have an administrator login account with the required permissions. For information about creating user accounts in Hitachi Device Manager - Storage Navigator, see the *System Administrator Guide* for your storage system.

Procedure

1. Start a web browser.
2. Enter the URL:
   - For VSP G1000, VSP G1500, or VSP F1500 storage systems, enter: `https://`*`IP-address-or-host-name-of-the-SVP`*`/sanproject/emergency.do`
   - For VSP G200 storage systems, enter: `https://`*`IP-address-or-host-name-of-the-SVP`*`/dev/storage/8320004XXXXX/emergency.do`

(where the model number is '8320004' and '4XXXXX' indicates the system serial number)
- For VSP G400, G600 storage systems and VSP F400, F600 storage systems, enter: `https://IP-address-or-host-name-of-the-SVP/dev/storage/8340004XXXXX/emergency.do` (where the model number is '8340004' and '4XXXXX' indicates the system serial number)
- For VSP G800 and VSP F800 storage systems, enter: `https://IP-address-or-host-name-of-the-SVP/dev/storage/8360004XXXXX/emergency.do` (where the model number is '8360004' and '4XXXXX' indicates the system serial number)

3. The following actions might be required to open the login dialog box, depending on your environment:
   - If a message indicates that the enhanced security configuration is enabled on the computer, select **In the future, do not show this message** and click **OK**.
   - If the SVP is set to support SSL-encrypted communication and security messages appear, make sure the certificate is correct and follow the instructions in the dialog box.
   - If a messages indicates that certain web sites are blocked, make sure you have added the SVP to the trusted sites zone.
4. Enter the user ID and password for the account.
5. Click **Log In**.
6. If the Security Information dialog box appears, click **Yes**.
7. If an Adobe Flash Player local storage area pop-up dialog box appears, click **Allow** to open the Device Manager - Storage Navigator main window. The cache function of Flash Player optimizes the process of Device Manager - Storage Navigator. Denying the request might reduce processing speed.

Result

You are successfully logged in to Device Manager - Storage Navigator.

Note: If the login process fails three times by using the same user ID, Device Manager - Storage Navigator will stop responding for one minute. This is for security purposes and is not a system failure. Wait, and then try again.

Generating and installing a signed SSL certificate

By default, a self-signed certificate is used by the server. SSL certificates are used to verify the user's identity and to enhance security on the server. You can get a digitally signed SSL certificate from a trusted certificate authority (CA) by sending a certificate signing request (CSR). After you obtain the signed certificate, you can import it to the server.

The following is a sample procedure for generating and installing a signed SSL certificate. The process of obtaining a certificate may be different within each organization.

Procedure

1. Open the virtual machine console and log in with the service account.
2. Start the `openssl` program:

   ```
   openssl req –nodes –x509 -newkey rsa:2048 -sha1 -keyout /etc/
   nginx/certificates/server.key -out /etc/nginx/certificates/
   server.crt
   ```

   The system returns the message `Generating a 2048 bit RSA private key.`
3. Provide the information as prompted.
   - **Country Name** (two-letter code)
   - **State or Province Name** (two-letter code)
   - **Locality name** (City)
   - **Organization Name** (Company)
   - **Organizational Unit Name** (Section or department)
   - **Common Name** (Your name or the server host name)
   - **Email Address**
4. When you receive the CRT file, send it to a certificate authority to obtain an SSL certificate.

   If you need help with this step, consult with your Hitachi Data Systems representative or authorized service provider.
5. Open a browser and enter the Virtual Appliance Manager URL in the address bar.
   For example, `https://`*`ip-address`*`/vam`
6. Click **Advanced**.
7. Click the **Certificate Settings** tab.
8. Import the certificate into the server.
   a. Open the signed certificate (received from the certificate authority) in a text editor.
   b. Open the private key file (generated in step 2) in a text editor.
   c. Copy the certificate file contents into the **Certificate** text box.
   d. Copy the private key file contents into the **Private Key** text box.
   e. Click **Submit**.

3

Onboarding and configuring a storage system

Onboarding a storage system is the process of associating it with Storage Advisor. After the storage system is onboarded, manage it from the Storage Advisor dashboard.

If the storage system includes NAS modules, the file storage is automatically added with the block storage.

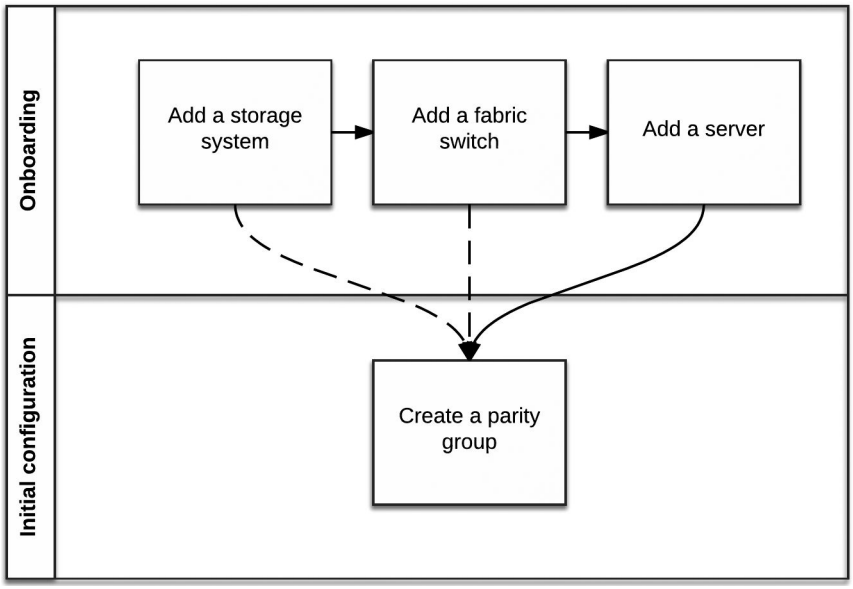
Storage Advisor requires access to all resources groups on the storage system so that the workflows function correctly. Verify that the service processor user name used to onboard a storage system in Storage Advisor has access to all custom resource groups and meta resource groups

- ☐ Overview
- ☐ Adding the first storage system
- ☐ Adding a fabric switch
- ☐ Adding servers
- ☐ Creating parity groups

Overview

Onboarding a storage system in Storage Advisor is more than adding a storage system to a list. At least one fabric switch and server must be added for the storage system to be able to provision volumes to the server.

In the following workflow, the recommended path is marked by the solid arrows. The dashed arrows indicate the optional paths. Before a storage system is available for use in the network, all of the tasks in the workflow must be complete.



Adding the first storage system

You must onboard a storage system the first time you start Storage Advisor.

Before you begin

Storage Advisor requires access to all resources groups on the storage system so that the workflows function correctly. Verify that the service processor (SVP) user name used to onboard a storage system in Storage Advisor has access to all custom resource groups and meta resource groups.

If a storage array includes block storage and NAS modules, the file storage is automatically added with the block storage. Then file pools and other file resources can be created in the Storage Advisor web interface or by using the API.

Storage Advisor also supports onboarding of 4-node clusters, which is a requirement for GAD Enhanced for NAS.

You can add multiple VSP Gx00 or VSP Fx00 storage systems at once by specifying an SVP IP address that has multiple storage systems. Storage systems with different credentials cannot be added in the same operation.

Procedure

1. On the Storage Advisor dashboard, click the plus sign (**+**) to add a storage system.
2. Enter values for the following parameters on the **Add Storage System** page.
   - **SVP IP Address:** Enter the IP address of the external service processor for the storage system you want to discover.
   - **User name and password:** Log in as a user that has administrator privileges on this storage system. For example, you can log in as the user `maintenance`.
3. Click **Submit**.
4. (Optional) Onboard other storage systems.

Result

The Jobs tab is updated with the job called `Create Storage System`. If multiple storage systems are being added, there will be a job for each one.

Wait a while for the storage system to be added. Refresh the Jobs tab to verify that storage system is onboarded.

When you successfully add a 4-node cluster, a message displays requesting that you ensure both storage systems in the global-active device pair are added before performing operations.

Next steps

- Verify the storage system initial settings.
- Create parity groups.

> **Note:** Parity groups are created by a service representative. Parity groups for a Hitachi Virtual Storage Platform G1000, VSP G1500, or VSP F1500 storage system are created outside of Storage Advisor.

Related tasks

- Adding a fabric switch on page 32
- Adding servers on page 33
- Creating parity groups on page 34

Adding a fabric switch

You can add a fabric switch after onboarding a storage system. Add, update, and delete fabric switches in the Storage Advisor interface.

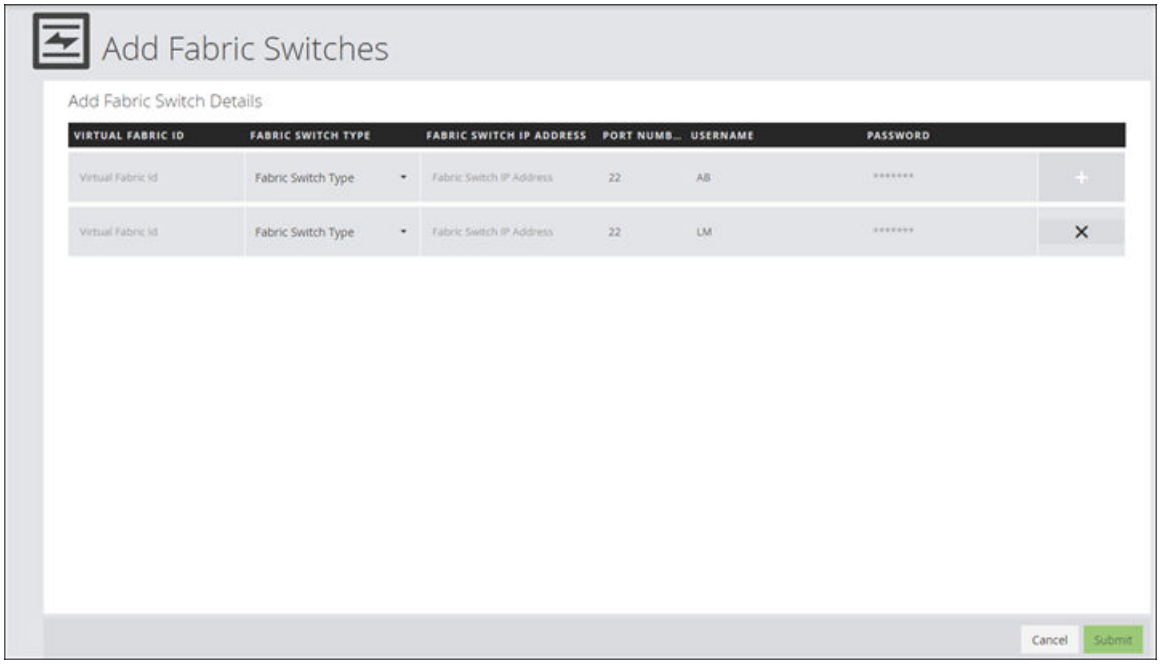
After a fabric switch is added, you can choose to auto-create zones during volume provisioning. A fabric switch is required for any operations that use auto-select, such as host group creation and auto-selection of ports while attaching volumes to servers.

Before you begin

- Verify that servers and ports are connected according to the manufacturer's instructions.
- Verify that there is an active zone set with at least one dummy zone available.
- The Storage Advisor server is connected to the same IP network and has access to SNMP broadcast of Fibre Channel switches.
- Verify the required information about the fabric switch: Virtual Fabric ID (required only for Cisco switches), Fabric Switch Type, Fabric Switch IP Address, Port Number, Username, and Password.
- Verify that you have the Admin role for the fabric switch.

Procedure

1. On the Storage Advisor dashboard, select **Fabric Switches** to open the **Fabric Switches** page.
2. Click the plus sign (**+**) to open the **Add Fabric Switches** page.



3. Enter the following information from the configuration of the switch you are adding:
   - **Virtual Fabric ID**: For Cisco switches, the VSAN ID. Not applicable to Brocade switches.
   - **Fabric Switch Type**: Select **Brocade** or **Cisco**.
   - **Fabric Switch IP Address**
     To add or update a core switch, use the Management IP address of the switch or the Active CP IP address.
   - **Port Number**
   - **Username**
   - **Password**
4. Click **Submit**.

Result

A job is created to add the fabric switch.

Related tasks

- Adding servers on page 33
- Creating parity groups on page 34

Adding servers

Add servers so you can attach volumes. You can add multiple server parameters from a file, or add one server at a time.

There are two methods of adding servers:

- Manually add information for one server at a time.
- Import a CSV (comma-separated values) file with information for one server in each row.
  The CSV file must have the following headings, in the order specified: Name, Description, IPAddress, OSType, WWNs (comma separated list of WWNs). All fields are required except Description and IPAddress. Valid OSType values are as follows:
  - AIX
  - HP_UX
  - LINUX
  - NETWARE
  - OVMS
  - SOLARIS
  - TRU64
  - VMWARE
  - VMWARE_EX
  - WIN
  - WIN_EX

Procedure

1. On the Storage Advisor dashboard, click **Servers**. Then click the plus sign (**+**) to open the **Add Server** page.
2. On the **Add Server** page, do one of the following:
   - Click the upper plus sign (**+**) to browse for the CSV file or drag the file to the plus sign. The values from the file will populate the page. Example:

     ```
     Name,Description,IPAddress,OSType,WWNS
     Esxi,ESXI HOST,10.30.90.200,VMWARE_EX,
     10:00:00:05:33:26:f7:21
     Win,WINDOWS HOST,
     10.30.91.80,WIN_EX,"10:00:00:05:33:26:f7:37,10:00:00:05:33:
     26:f7:36"
     ESXi_Cisco_1,ESXi HOST connected to Cisco
     Fabric,,VMWARE_EX,"10:00:00:05:33:26:e0:fc,
     10:00:00:05:33:26:e0:fd"
     ESXi_Cisco_2,ESXi HOST connected to Cisco
     Fabric,,VMWARE_EX,"100000053326df1a,100000053326df1b"
     ```

   - Click the plus sign (**+**) in the table to add a row and enter a **Name**, **Description** (optional), **IP Address** (optional), **OS Type**, and **WWN**. You can add more servers by clicking the plus sign.
3. Click **Submit** to add the servers.

Result

A job is started to add the servers.

Next steps

Create volumes and attach them to the server.

Related tasks

- Adding a fabric switch on page 32
- Creating parity groups on page 34

Creating parity groups

Note: Parity groups for VSP G1000, VSP G1500, and VSP F1500 storage systems are created outside Storage Advisor by an authorized service representative.

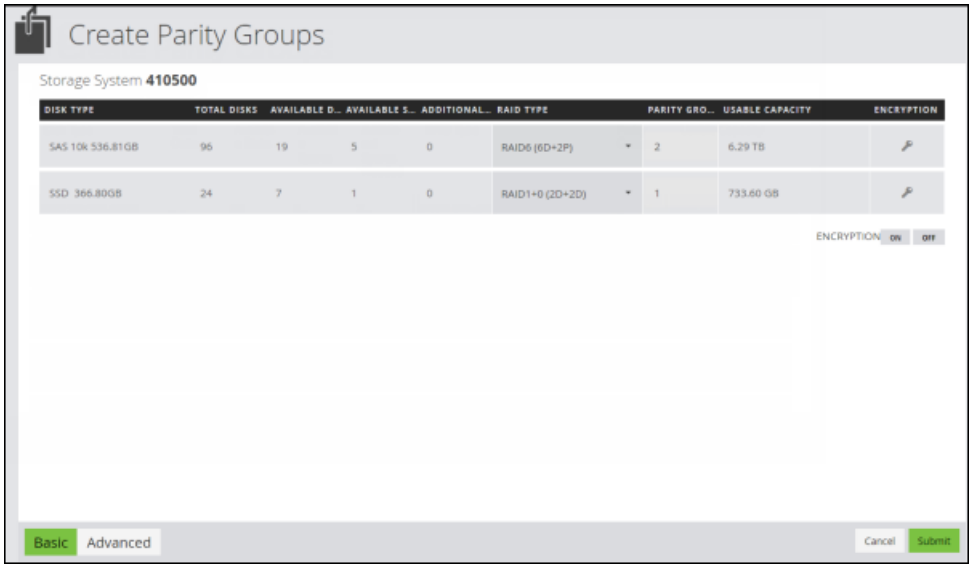
Before you begin

- Complete the initial setup of any discovered supported storage system.
- Register the storage system for which you will create a parity group.
- Verify the target storage system name.

- Verify the total capacity that you expect to use. Plan to use all of the available disks in the system when you create parity groups.

Procedure

1. On the Storage Advisor dashboard, select **Storage Systems** in the resource side panel to see the inventory of registered storage systems.
2. Click a storage system to create and configure the parity groups for it.
3. Click **Parity Groups** to see the inventory of all parity groups in the storage system.
4. Click the plus sign (**+**). In the **Create Parity Groups** window, review the list of unused disk types in the storage system. This information is grouped by disk type, disk speed, and disk capacity, and includes the following details:
   - Number of available disks.
   - Available spares detected for each disk type, disk speed, and capacity.
   - Number of new or additional spares to reserve. This calculation is based on the total spares needed based on recommended best practices, and the number of existing spares in the system.
   - The recommended RAID configuration for the disk type.
   - The number of parity groups that can be created.
   - The total usable capacity that is available based on the number of parity groups and the RAID configuration.



5. Choose one of the following options:
   - Accept the recommended RAID configuration, which uses the full capacity of the installed drives.
   - Change the RAID configuration or create fewer parity groups. If you make changes, you might not use the full capacity of the installed drives.
6. (Optional) Click Encryption **ON** if you want to use encryption.

Prerequisites for enabling encryption:

- The storage system must have an Encryption Disk Board.
- Encryption License Key must be installed.
- The Key Management Server must be configured on the SVP.

Note: Encryption cannot be disabled in Storage Advisor.

7. Click **Submit**.

Result

A job is started to create the parity group for the storage system. This job includes the following tasks:

- Identifies the appropriate number and position for the spare disk.
- Assigns a spare disk.
- Creates the required number of parity groups for the requested RAID layout.
- Creates and quick formats the necessary volumes on the parity group so that it is ready for pool creation.
- The job may create sub-jobs when multiple parity groups are being created. Each sub-job will show the status of the parity groups being created.

Note: If you are creating parity groups for the entire array, it may take several hours before the storage system is configured.

Next steps

- Create a pool.
- Create and attach volumes.

Note: For further information, access Help from within the Storage Advisor web interface.

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