

Configuring DE Series systems

Using System Manager to set up DE Series storage

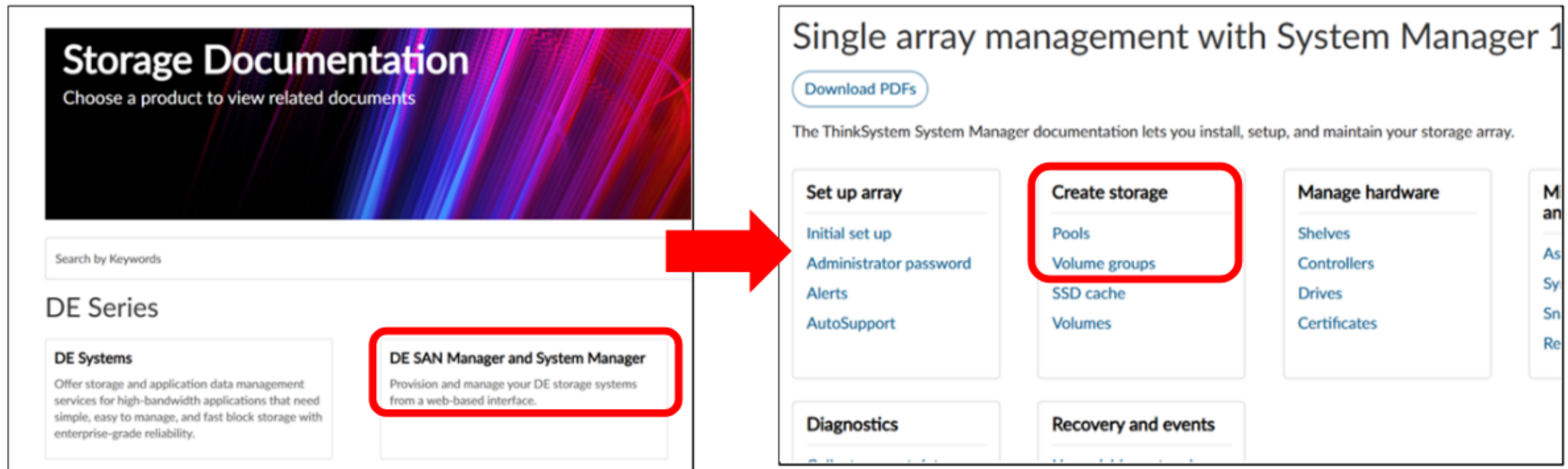
Lenovo

Pools and volume groups

For DE Series storage arrays, physical hardware is provisioned into logical components so that data can be organized and easily retrieved. Two types of grouping are supported:

- Pools
- RAID volume groups

For more information about the concept of pools and volume groups, refer to the documentations on <https://datacentersupport.lenovo.com/tw/en/storagepubs>:

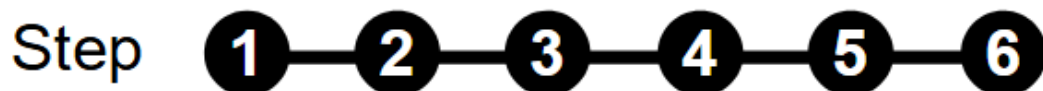


Pool configuration

Pool configuration guideline:

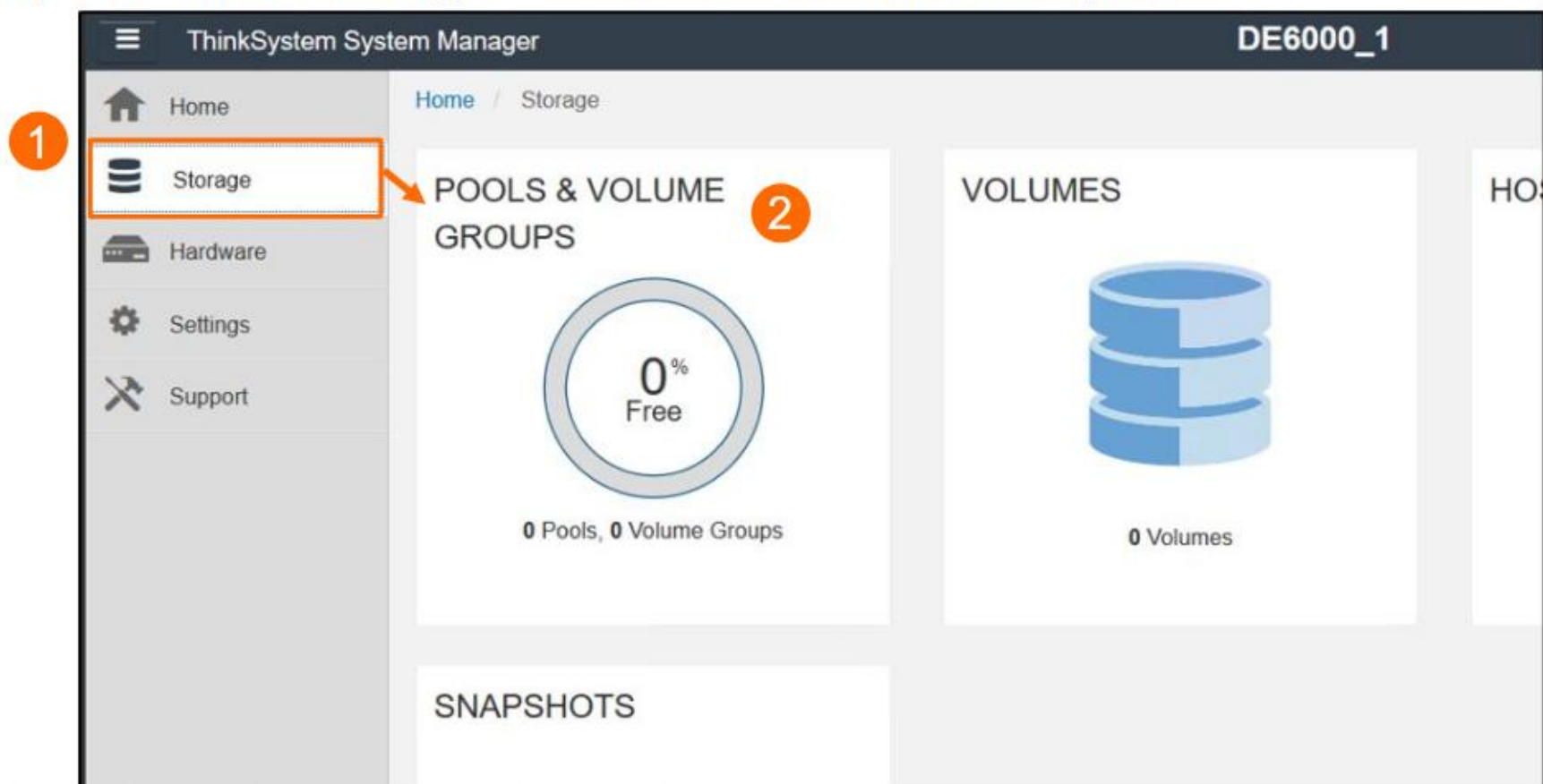
- To create a pool, the storage array must have a minimum of 11 drives, each with the same type of drive: HDD or SSD.
- Shelf loss protection requires that the drives comprising the pool are located in at least six different drive shelves and that there are no more than two drives in a single drive shelf.
- Drawer loss protection requires that the drives comprising the pool are located in at least five different drawers and that the pool includes an equal number of drive shelves from each drawer.

Click each number in turn to see the System Manager pool configuration process.



Pool configuration

To create a pool, select **Storage** → **Pools & Volume Groups**.

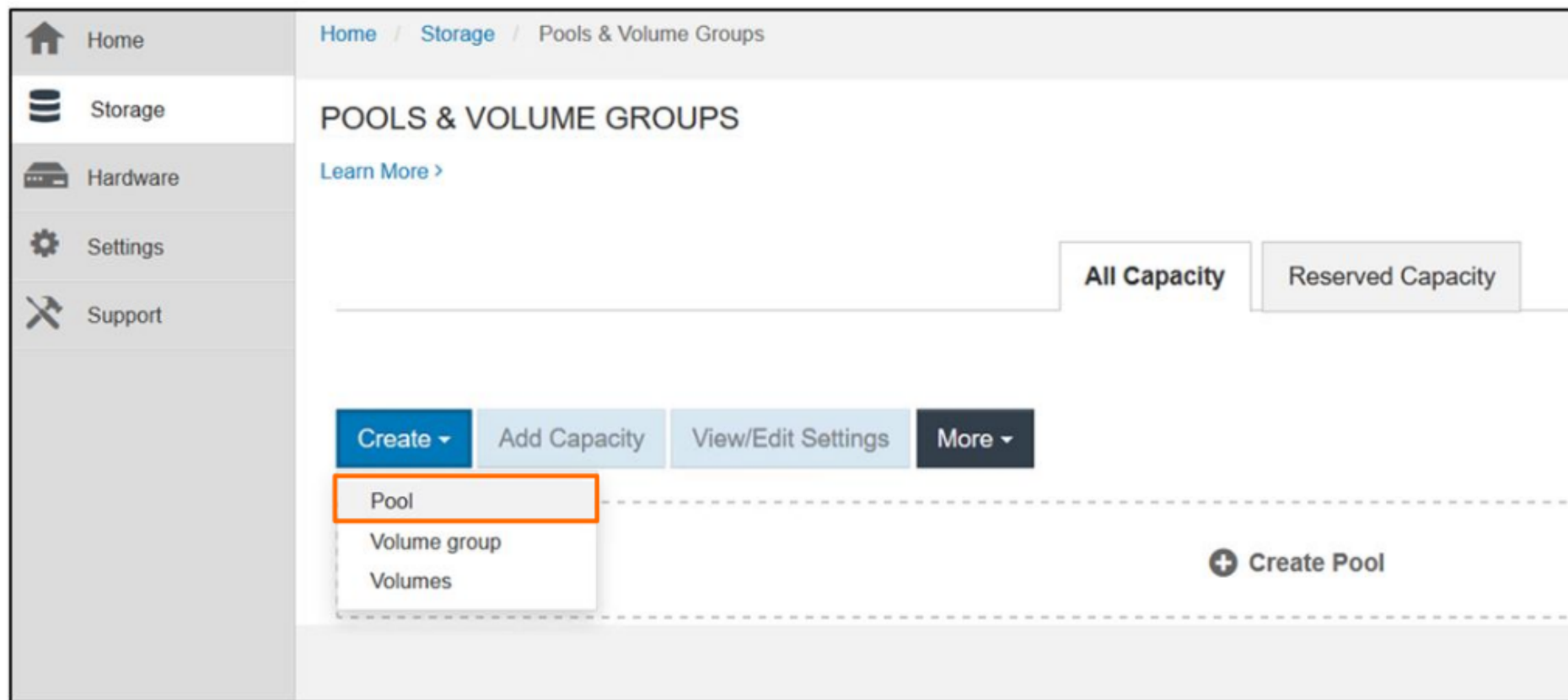


Step



Pool configuration

Select **Create** → **Pool**. The Create Pool dialog box will be displayed.



Step



Pool configuration

Enter a name and select a capacity for the pool, and then select **Create**. At least 11 drives are required for a pool.

Create Pool

What is shelf loss protection and drawer loss protection?

Name ?

TEST

Select a capacity for your pool ...

Free Capacity (GiB)	Total Drives ▾	Secure-Capable	DA Capable	Shelf Loss Protection	Drawer Loss Protection
46884.00	18	No	Yes	No	No
43952.00	17	No	Yes	No	No
41024.00	16	No	Yes	No	No
38092.00	15	No	Yes	No	No
35160.00	14	No	Yes	No	No
32232.00	13	No	Yes	No	No
29304.00	12	No	Yes	No	No
29300.00	11	No	Yes	No	No

Create

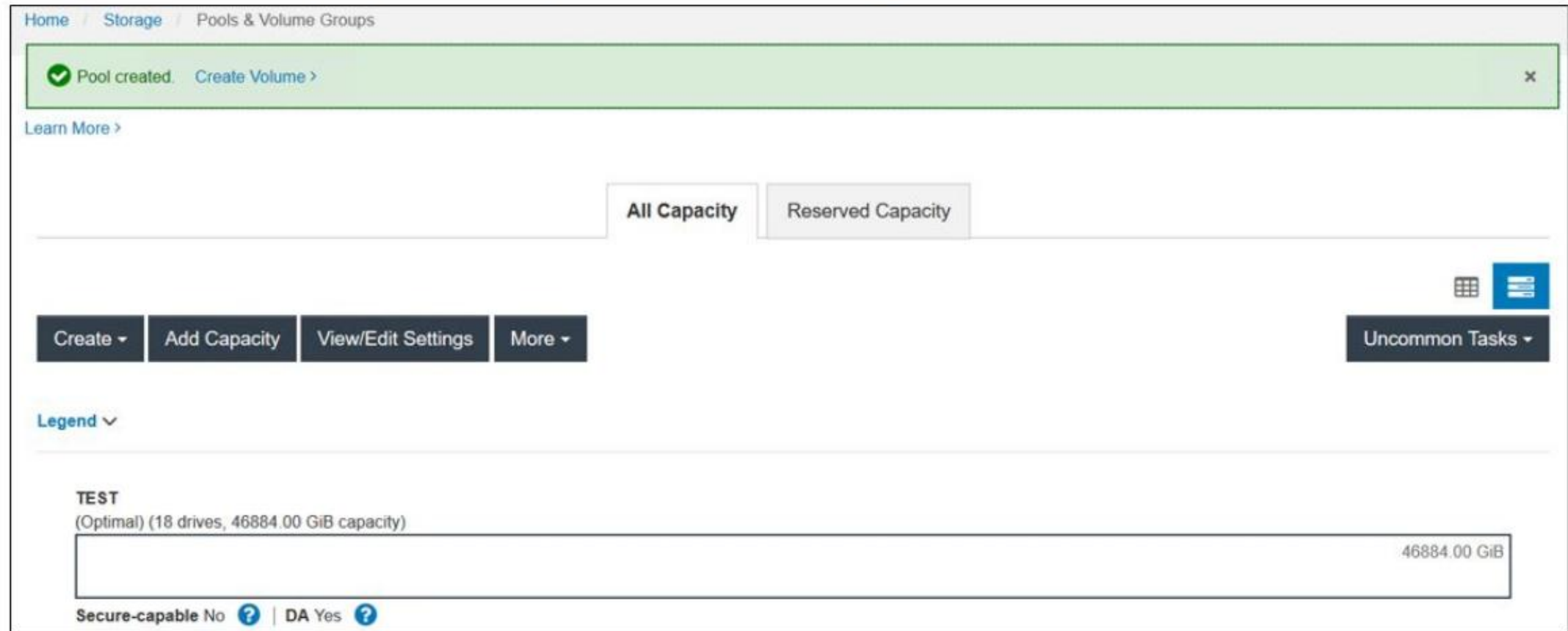
Cancel

Step



Pool configuration

A message will be displayed to let you know that the pool has been created.



Step **1** — **2** — **3** — **4** — **5** — **6** 

Pool configuration

By selecting **View/Edit Settings**, users can edit the existing pool settings.

Step



Pool Settings

Properties Settings

Name ?

TEST

Capacity alerts

☒ Send me a critical alert when...
- 85 % + of capacity has been allocated.

☐ Send me an early alert when...
- 50 % + of capacity has been allocated.

Modification priorities

Critical reconstruction priority ?
Highest (default)

Degraded reconstruction priority ?
High (default)

Background operation priority ?
Low (default)

Preservation capacity ?

Why can't I increase my preservation capacity?

Update preservation capacity to...
- 2 + drive(s)

Save Cancel

Pool configuration

To delete an existing pool, select the pool, and then select **Uncommon Tasks** → **Delete**. A **Confirm Delete** window will be displayed with a message asking users to confirm that they want to delete the pool.

The screenshot displays the pool configuration interface. At the top, there are tabs for 'All Capacity' and 'Reserved Capacity'. Below these are buttons for 'Create', 'Add Capacity', 'View/Edit Settings', and 'More'. A red 'Uncommon Tasks' button is also visible, with a dropdown menu open showing options: 'Check volume redundancy', 'Delete' (highlighted with an orange border), and 'Consolidate volume group free capacity'. The main area shows two pools: 'TEST' (Optimal) (11 drives, 29300.00 GiB capacity) (Pool) and 'TEST_Volume_group' (Optimal) (2 drives, 3720.52 GiB capacity) (RAID 1). Each pool has a progress bar and a 'Secure-capable No' / 'DA Yes' status indicator.

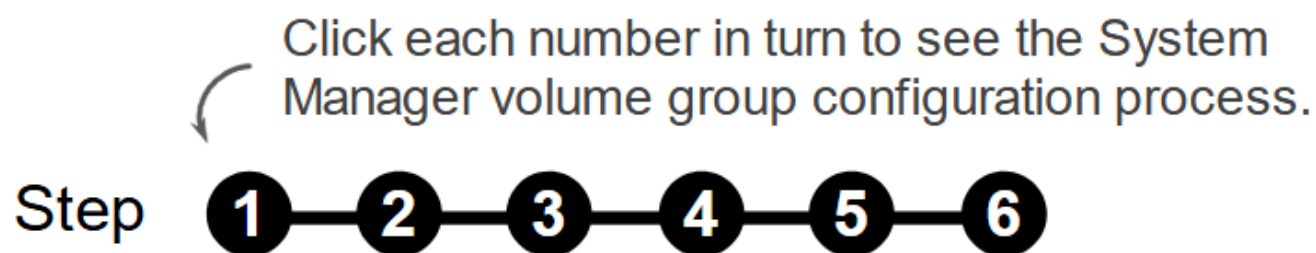
Step



Volume group configuration

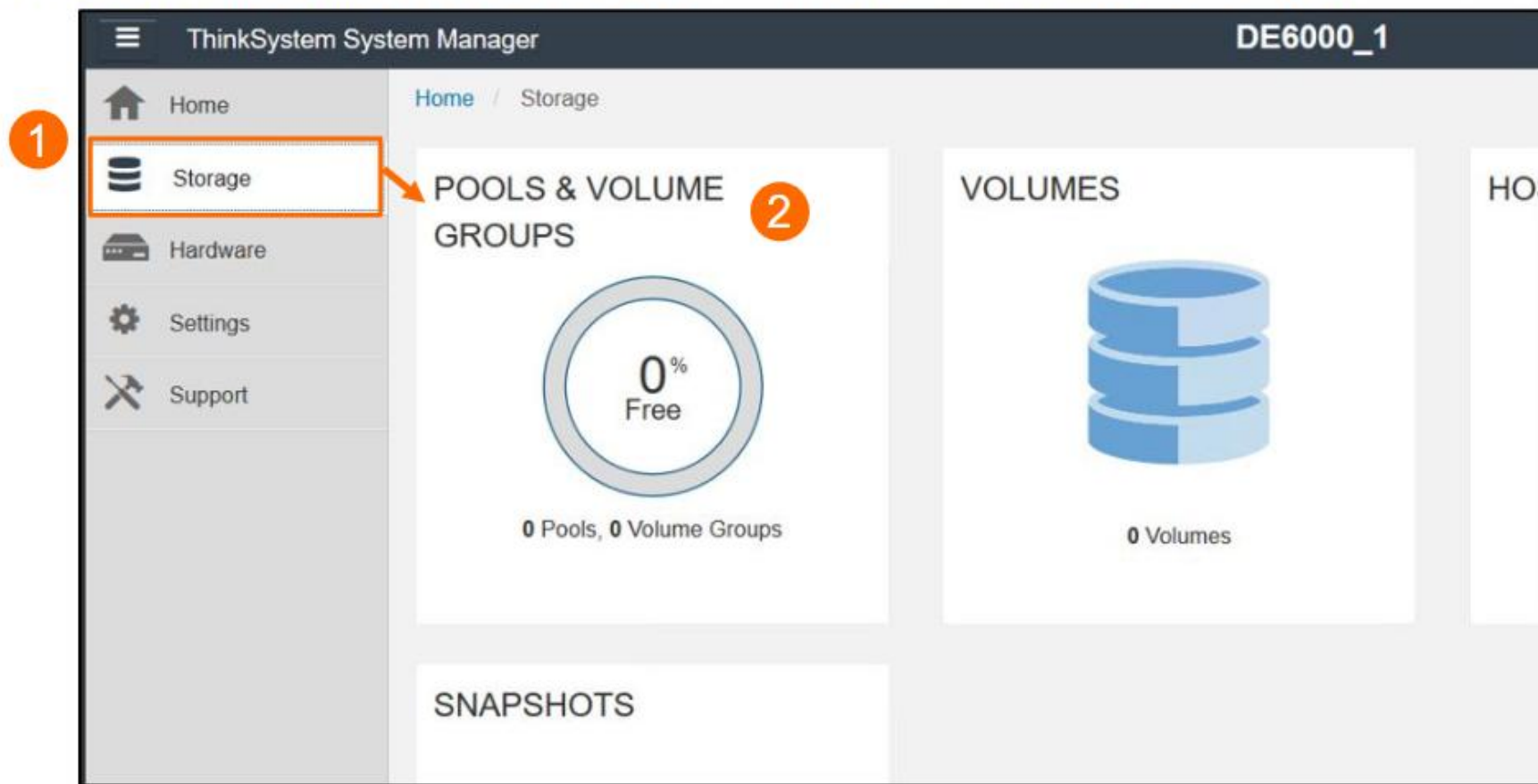
Users must follow the following guidelines to create a volume group:

- A volume group requires at least one unassigned drive.
- Limits exist as to how much drive capacity users can have in a single volume group. These limits vary according to the user's host type.
- To enable shelf/drawer loss protection, users must create a volume group that uses drives located in at least three shelves or drawers unless they are using RAID 1, in which case, two shelves or drawers is the minimum.



Volume group configuration

To create a volume group, select **Storage** → **Pools & Volume Groups**.

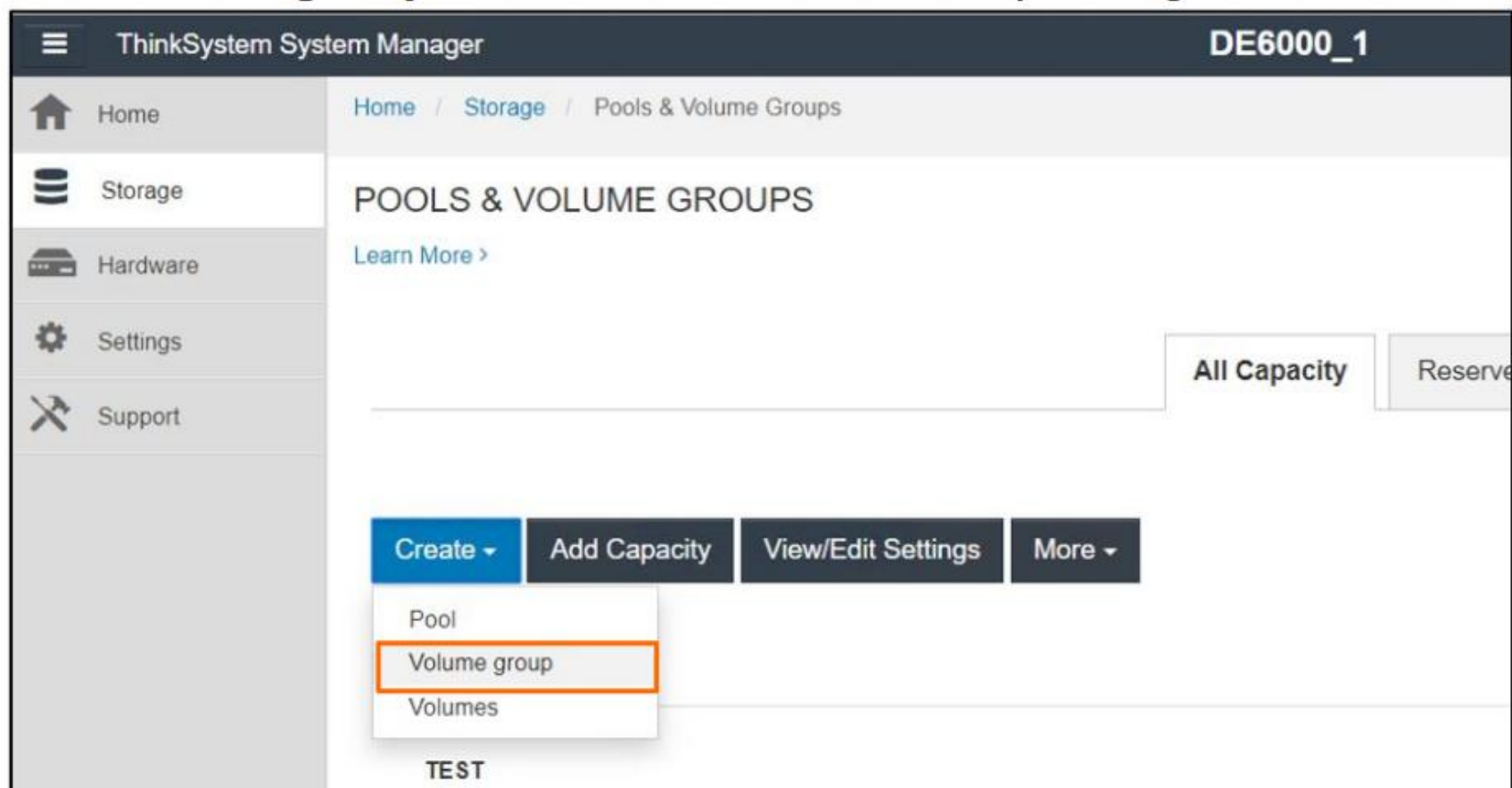


Step



Volume group configuration

Select **Create** → **Volume group**. The Create Volume Group dialog box will be displayed.



Step



Volume group configuration

Enter a name for the volume group, and then select the RAID level that best meets data storage and protection requirements.

The volume group candidate table will be displayed. It will only contain the candidates that support the selected RAID level.

Create Volume Group

What RAID level is best for my application?

What is shelf loss protection and drawer loss protection?

Name

TEST_VG

RAID level

1

RAID 1 (or "disk mirroring") offers high performance and the best data availability. Select four or more drives to achieve mirroring and striping (known as RAID 10 or RAID 1+0). Free capacity equals half of the drives in the volume group.

Select a capacity for your volume group ...

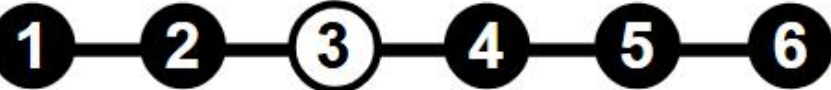
Manually select drives (advanced)

Free Capacity (GiB)	Total Drives	Secure-Capable	DA Capable	Shelf Loss Protection	Drawer Loss Protection
11161.56	6	No	Yes	No	Yes
7441.04	4	No	Yes	No	Yes
3720.52	2	No	Yes	No	Yes

Create

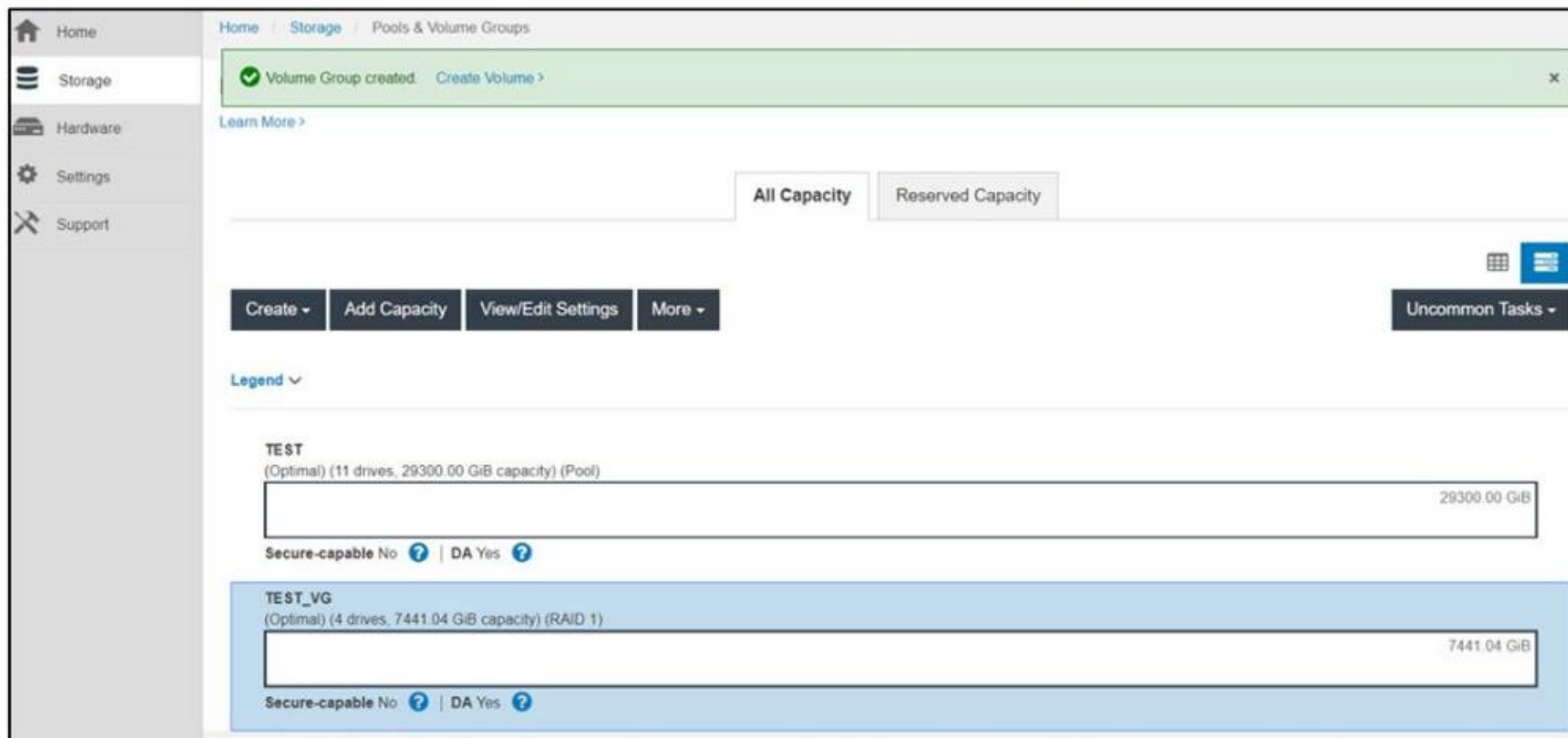
Cancel

Step



Volume group configuration

A message will be displayed to let you know that the volume group has been created.



Step



Volume group configuration

By selecting **View/Edit Settings**, users can edit the existing volume group settings.

Step



Volume Group Settings

Name:

TEST_VG

RAID level:

1 (or 10)

Status:

Optimal

Free capacity (GiB):

7441.04 ?

Total drives:

4

Drive type:

HDD (SAS)

Drive capacities (GiB):

All 3720.52

Hot spare protected:

Yes ?

Secure-capable:

No ?

Secure-enabled:

No ?

Data Assurance (DA) capable:

Yes ?

Shelf loss protection:

No ?

Drawer loss protection:

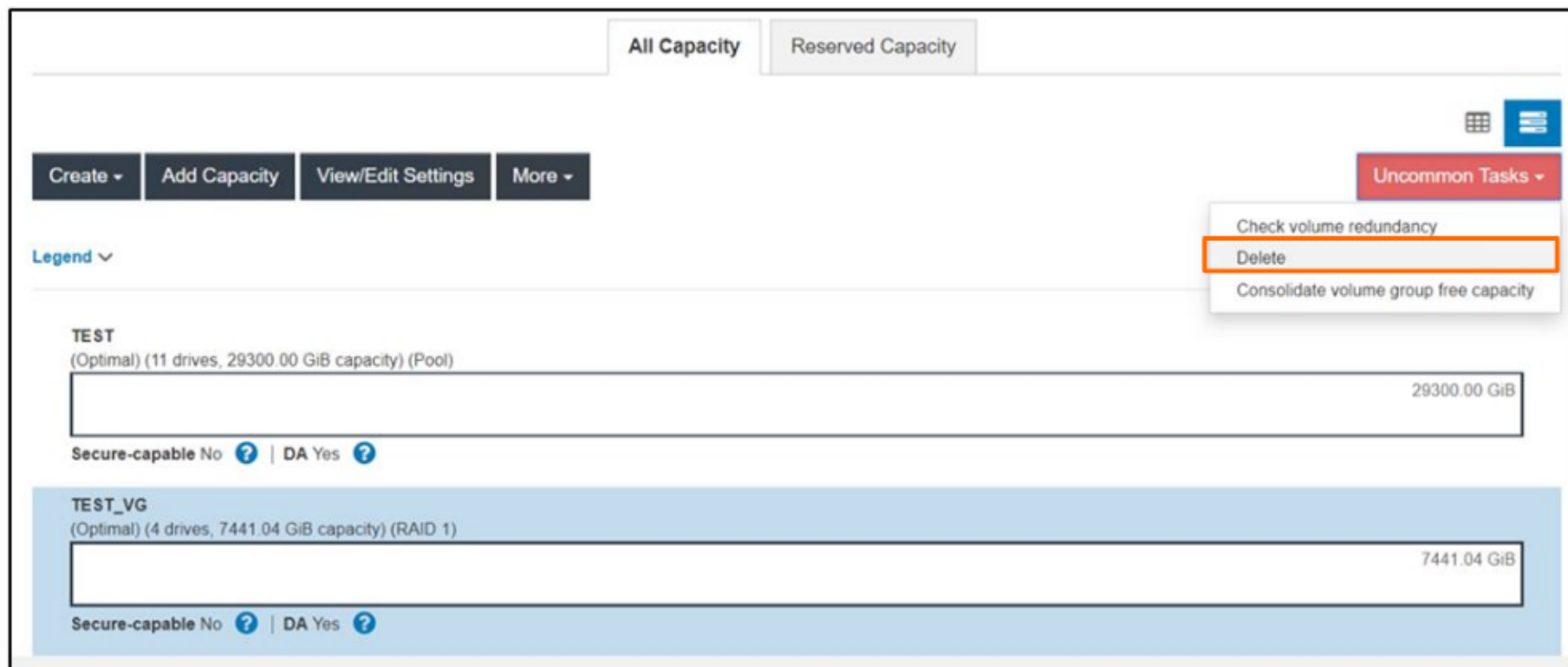
Yes ?

Save

Cancel

Volume group configuration

To delete an existing volume group, select the group, and then select **Uncommon Tasks** → **Delete**. A **Confirm Delete** window will be displayed with a message asking users to confirm that they want to delete the group.



Step



Volume configuration

Volumes are data containers that manage and organize storage space on the storage array. Volumes are created from the storage capacity available on the storage array, and they make it easy to organize and use the system's resources. This concept is similar to the use of folders and directories on a computer to organize files for easy and quick access.

Volumes are the only data layer visible to hosts. In a SAN environment, volumes are mapped to logical unit numbers (LUNs), which are visible to hosts. LUNs hold accessible user data using one or more of the host access protocols supported by the storage array – for example, FC, iSCSI, and SAS.

For more information about the concept of volumes in DE Series storage arrays, refer to the following

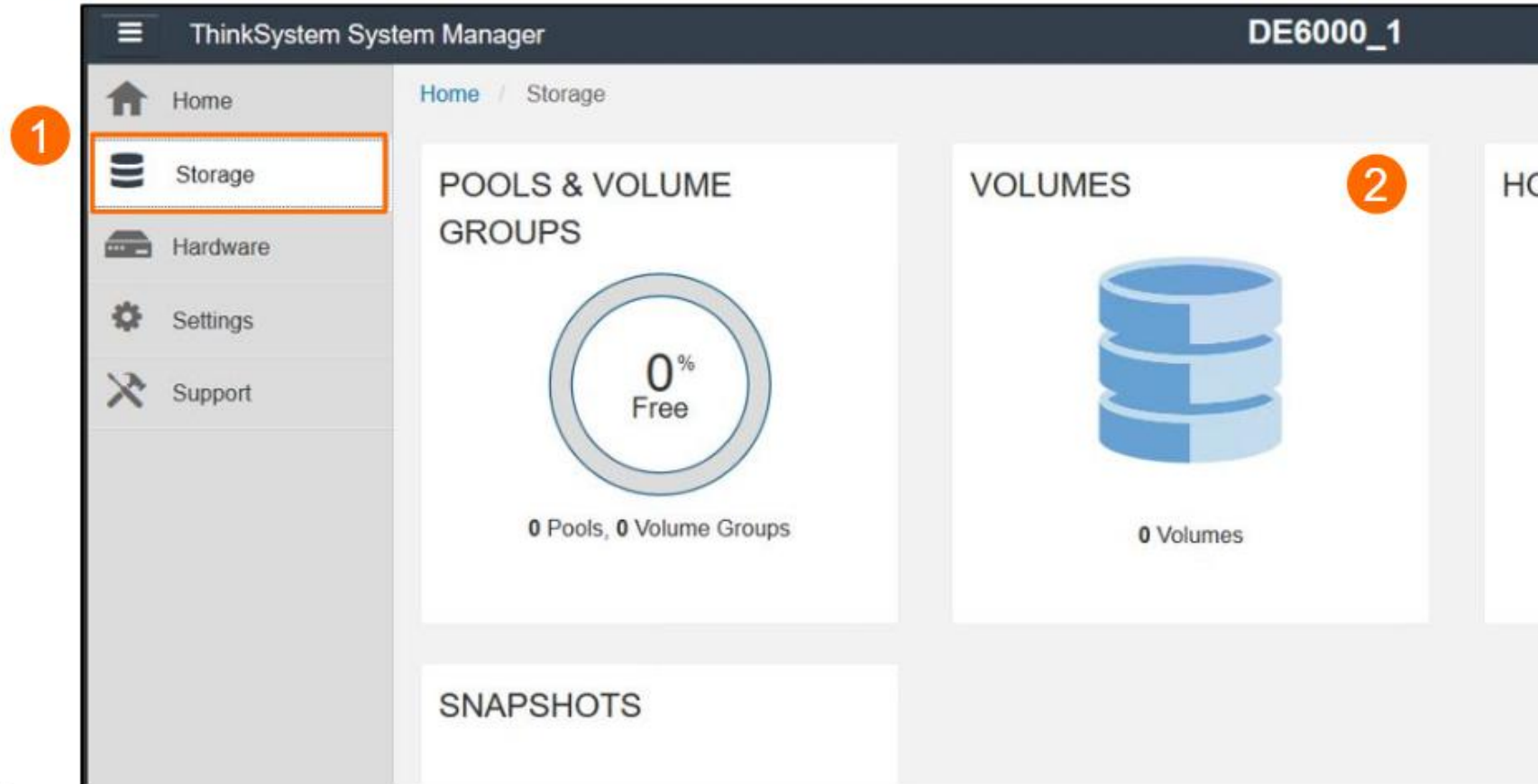
DE Series documentation: https://thinksystem.lenovofiles.com/help/index.jsp?topic=%2Fthinksystem_system_manager_11.50.3%2FGUID-A1AC7A71-25D6-4C3D-B801-88C7406BC471-VOLUMES.html&cp=7_0_7_2_1_0

Click each number in turn to see the System Manager volume configuration process.



Volume configuration

To create a volume, go to **Storage** → **VOLUMES**.

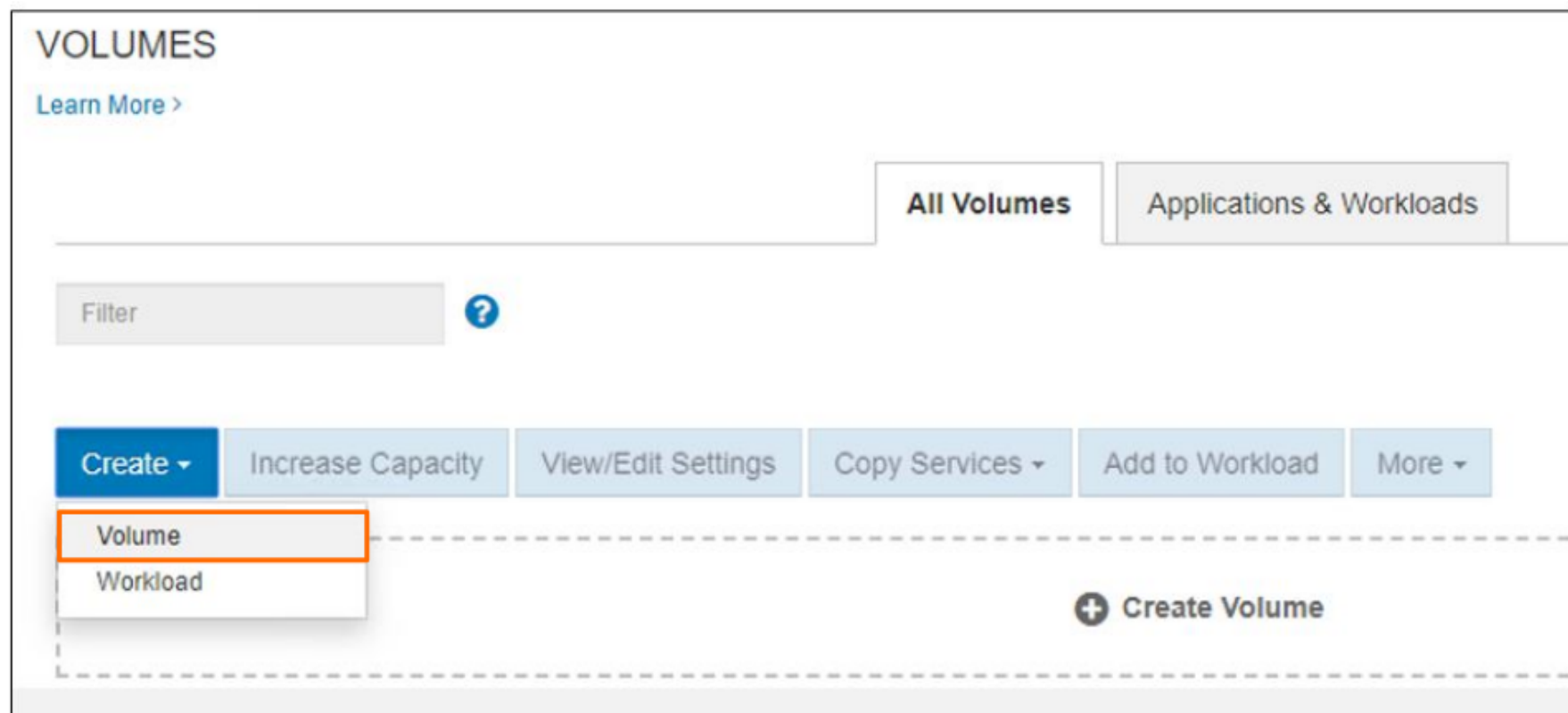


Step

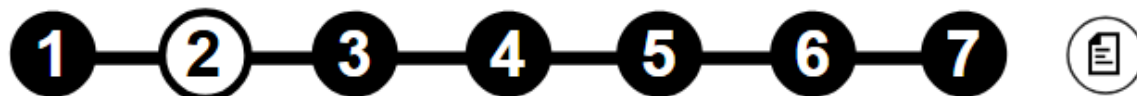


Volume configuration

Select **Create** → **Volume**. The Create Volumes dialog box will be displayed.



Step



Volume configuration

Select a specific host or host cluster to assign it to a volume. This assignment grants a host or a host cluster access to one or more volumes for I/O operations. If necessary, users can choose to assign a host later.

Create Volumes

1 Select Host

2 Select Workload

3 Add/Edit Volumes

4 Review

Make my created volumes visible to the following host or host cluster...

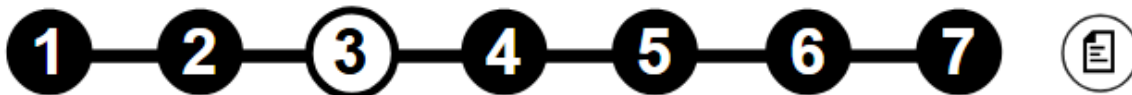
Select a host or host cluster: ?

Assign host later

Cancel

Next >

Step

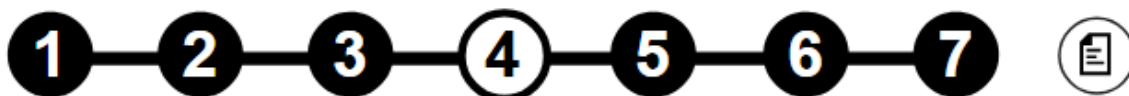


Volume configuration

Select a workload to customize the storage array configuration for a specific application, such as Microsoft SQL Server, Microsoft Exchange, Video Surveillance applications, or VMware. Users can select **Other application** if the application they intend to use on the storage array is not listed.

The screenshot shows the 'Create Volumes' wizard with four steps: 1 Select Host, 2 Select Workload (current), 3 Add/Edit Volumes, and 4 Review. The 'Select a workload for the created volumes...' section has a link 'How does my workload impact volume creation?'. There are two radio button options: 'Create volumes for an existing workload' (unselected) and 'Create a new workload' (selected). Under 'Create a new workload', there is a link 'How do application-specific workloads help me manage my storage array?'. A dropdown menu 'Select the application you would like to create a new workload for...' is set to 'SAP HANA'. Below this, the 'Workload Name' field with a help icon contains the text 'sap_hana_TEST_workload_1'. At the bottom are '< Back', 'Cancel', and 'Next >' buttons.

Step



Volume configuration

System Manager may suggest a volume configuration based on the selected application or workload. This volume configuration will be optimized to the type of application the workload supports. Users can accept the recommended volume configuration or edit it as needed.

If users selected **Other application**, they must manually specify the volumes and characteristics they want to create.

Create Volumes

1 Select Host 2 Select Workload 3 Add/Edit Volumes 4 Review

I want to create volumes from the following pool(s) and/or volume group(s)...

TEST (Optimal) (11 drives, 29300.00 GiB capacity) (Pool) ☒ Allocated ☒ Proposed ☐ Free

10000.00 GiB 19300.00 GiB

Secure-capable No ? | DA Yes ?

Volume Name	Reported Capacity
1	1000d GiB

+ Add new volume

TEST_VG (Optimal) (4 drives, 7441.04 GiB capacity) (RAID 1) ☒ Allocated ☒ Proposed ☐ Free

7441.04 GiB

Secure-capable No ? | DA Yes ?

+ Add new volume

< Back Cancel Next >

Step 1 2 3 4 5 6 7

Volume configuration

Review the summary of the volumes users intend to create. Click **Finish** to complete the creation process, or click **Cancel** to edit the volume settings again.

Create Volumes ✕

1 Select Host

2 Select Workload

3 Add/Edit Volumes

4 Review

Name	Pool/ Volume Group	Assigned To	Associated Workload	Volume Type	Reported Capacity (GiB)	Segment Size (KiB)
1	TEST	Unassigned	sap_hana_TEST_workload_1	SAP HANA	10000.00	Not Applicable

< Back

Cancel

Finish

Step



Volume configuration

The volume has been created.

VOLUMES

[Learn More >](#)

All Volumes

Applications & Workloads

Filter

?

Create ▾

Increase Capacity


View/Edit Settings

Copy Services ▾



Add to Workload

More ▾

Delete

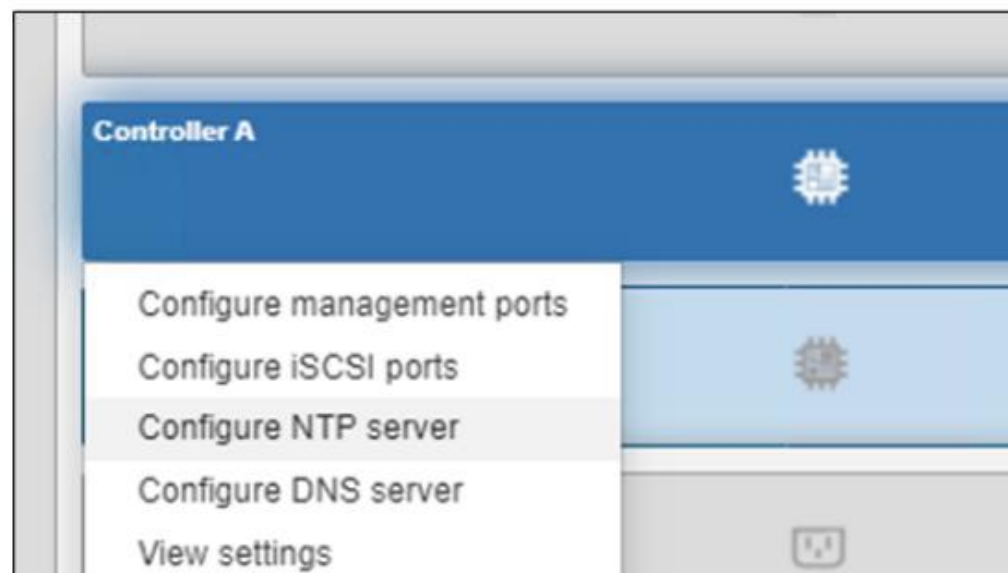
Name	Status	Assigned To	LUN	Pool/ Volume Group	Reported Capacity (GiB)	Allocated Capacity (GiB)	Edit
1	Optimal	Unassigned	None	Pool TEST	10000.00	10000.00	

Total rows: 1



NTP server configuration

Network Time Protocol (NTP) enables the storage array to use Simple Network Time Protocol (SNTP) to automatically synchronize the controller clocks with an external host.



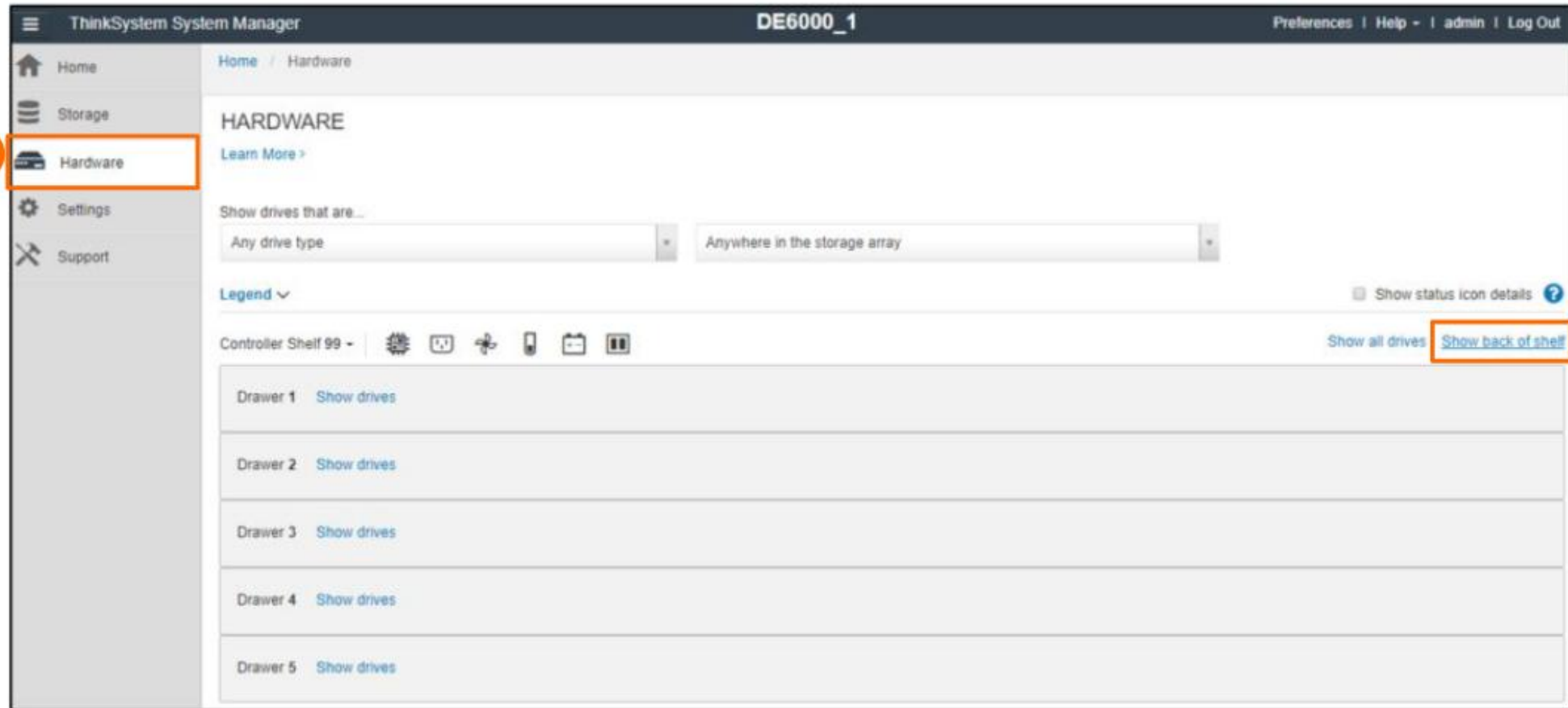
Click each number in turn to see the NTP server address configuration process.

Step



NTP server configuration

Go to **Hardware** → **Show back of shelf**.

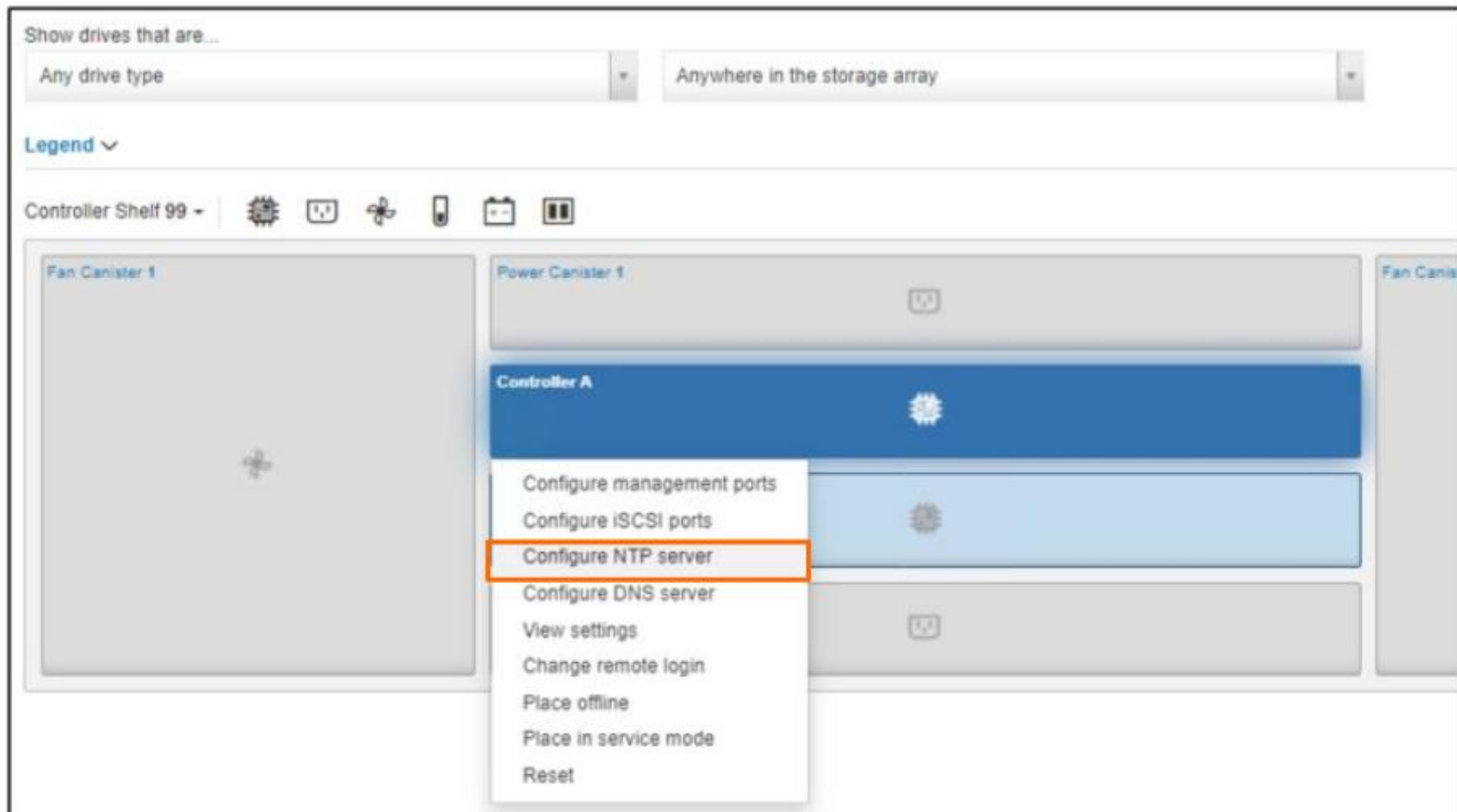


Step



NTP server configuration

Select one of the controllers
→ **Configure NTP server.**

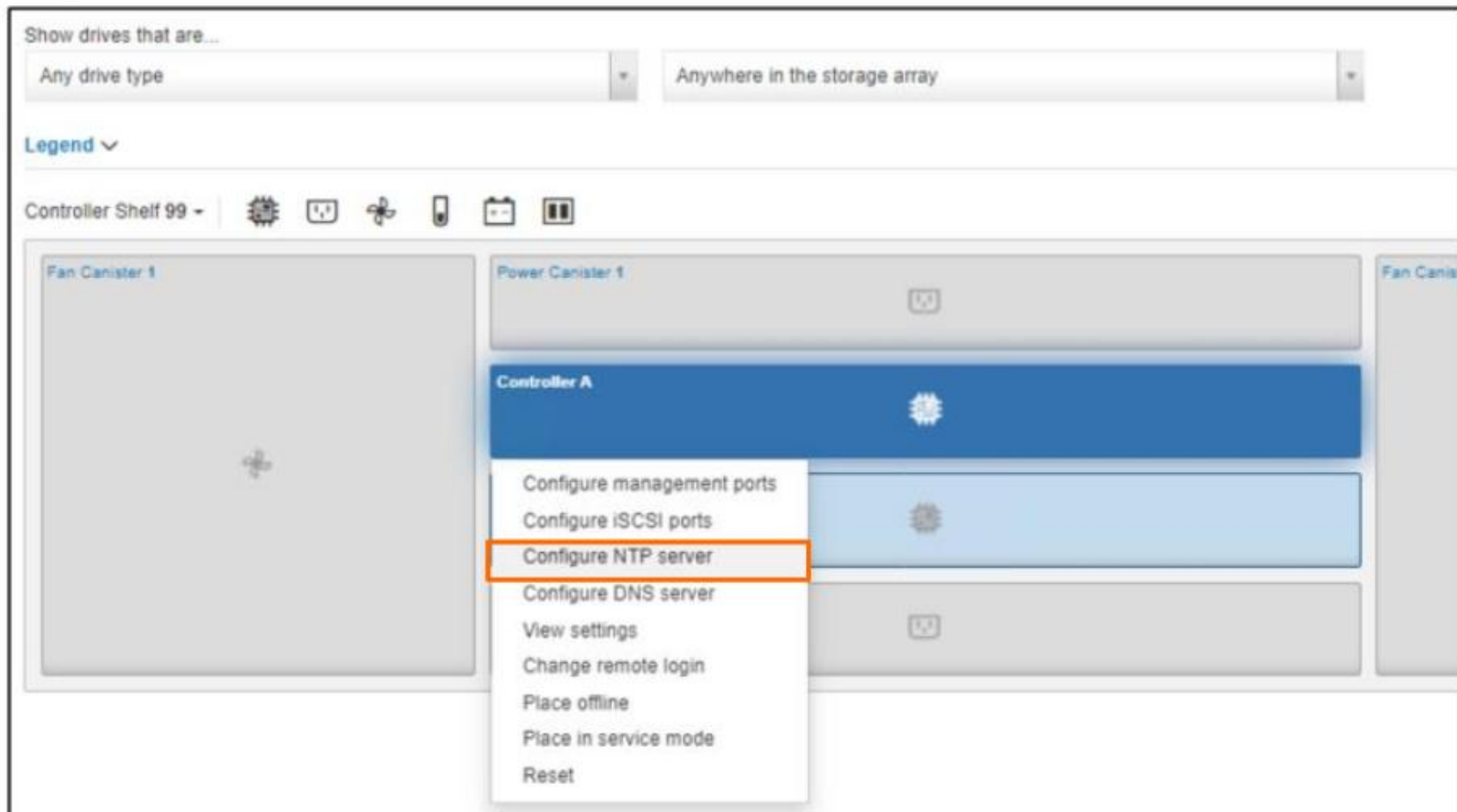


Step



NTP server configuration

Select one of the controllers
→ **Configure NTP server.**



Step



NTP server configuration

Go to the **Controller** → **View Settings** → **DNS / NTP** tab to verify the current NTP settings on the controller.

Controller A Settings

Base

Cache

Host Interfaces

Drive Interfaces

Management Ports

DNS / NTP

Domain name system (DNS) server settings

DNS configuration:

Automatic

Primary DNS server:

None

Backup DNS server:

None

Network time protocol (NTP) server settings

NTP service:

Enabled

NTP configuration:

Automatic

Primary NTP server:

None

Backup NTP server:

None

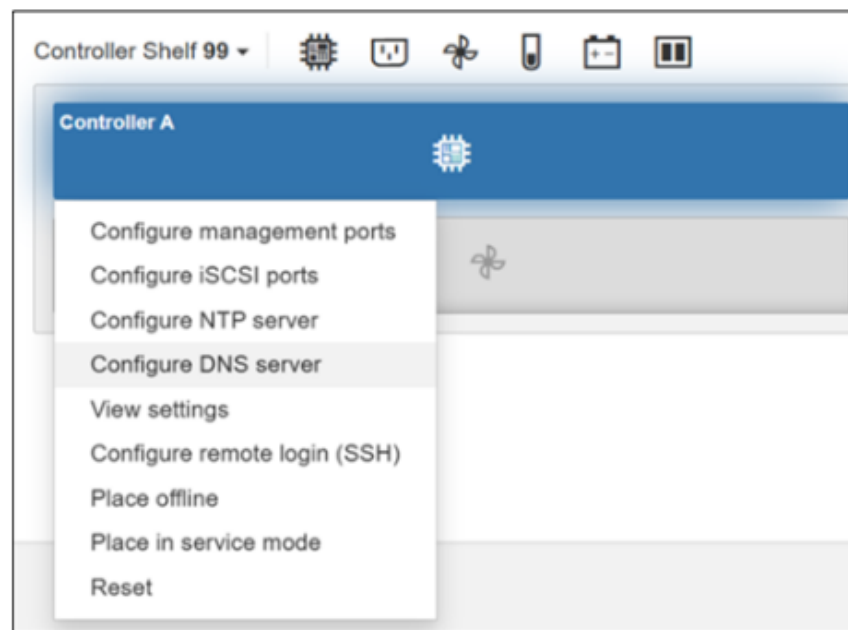
Close

Step



DNS server configuration

Domain Name System (DNS) is used to resolve fully qualified domain names (FQDN) for the controllers and an NTP server. The management ports on the storage array can simultaneously support IPv4 and IPv6 protocols.



Click each number in turn to see the DNS server address configuration process.

Step



DNS server configuration

Go to **Hardware** → **Controllers & Components**

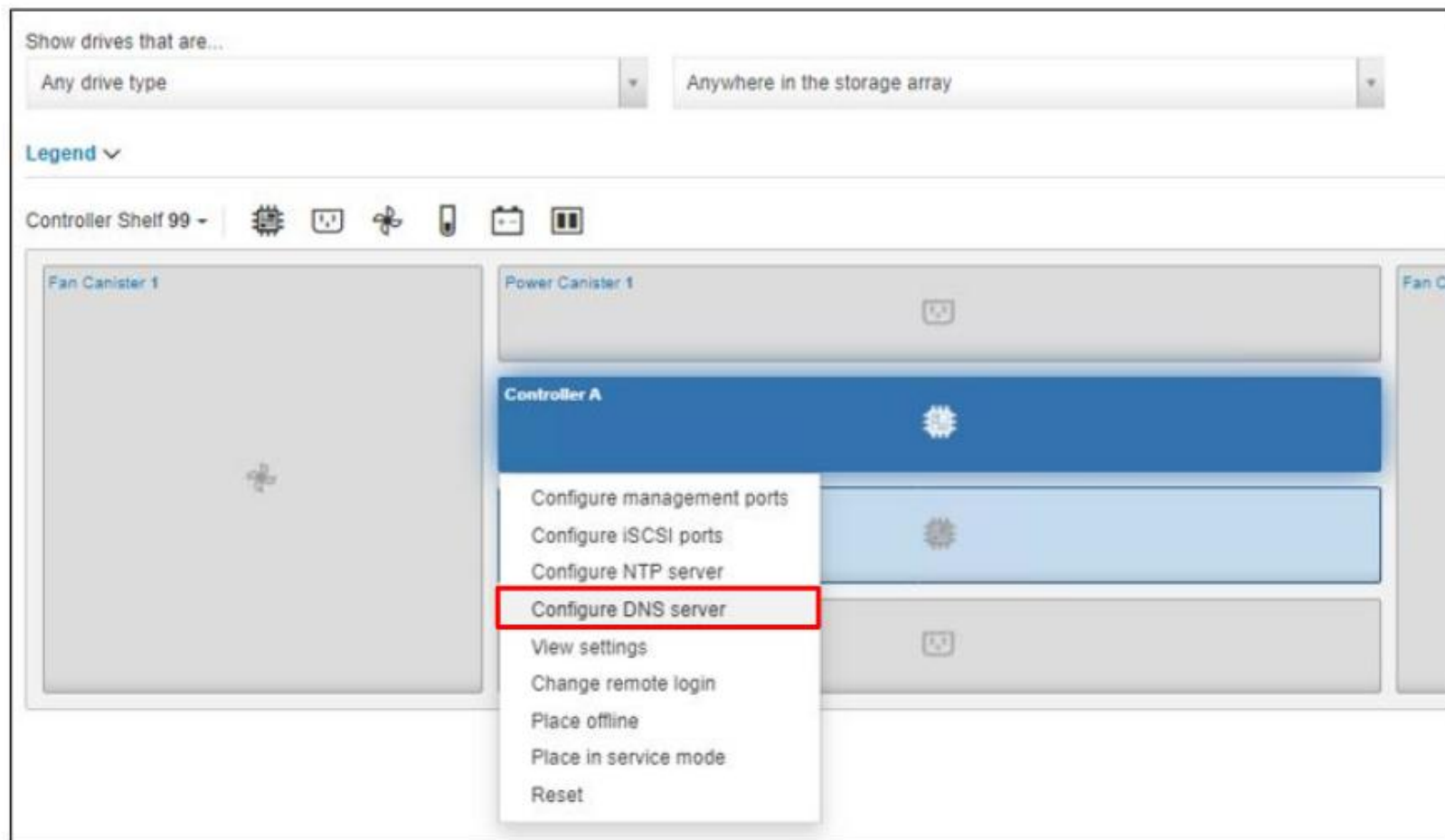
The screenshot shows the ThinkSystem System Manager web interface. The top navigation bar includes the title 'ThinkSystem System Manager', the system name 'DE4000H_Branded', and links for 'Preferences', 'Help', 'admin', and 'Log Out'. The left sidebar contains navigation links: 'Home', 'Storage', 'Hardware' (selected), 'Settings', and 'Support'. The main content area is titled 'HARDWARE' with a 'Learn More >' link. Below this, there are two tabs: 'Drives' and 'Controllers & Components', with the latter being highlighted by a red rectangle. A 'Legend' dropdown and a 'Show status icon details' checkbox are also visible. At the bottom, there is a 'Controller Shelf 99' section with a row of 24 numbered slots (0-23) and a row of status icons below them.

Step



DNS server configuration

Select one of the controllers
→ **Configure DNS server.**



Step



DNS server configuration

Depending on the users' requirements, select either **Automatically obtain DNS server from DHCP server** or **Manually specify DNS server address**.

Configure Domain Name System (DNS) Server

DNS server configuration for Controller A

☐ Automatically obtain DNS server addresses from DHCP server

☒ Manually specify DNS server addresses

Primary DNS server

Backup DNS server (Optional)

Save

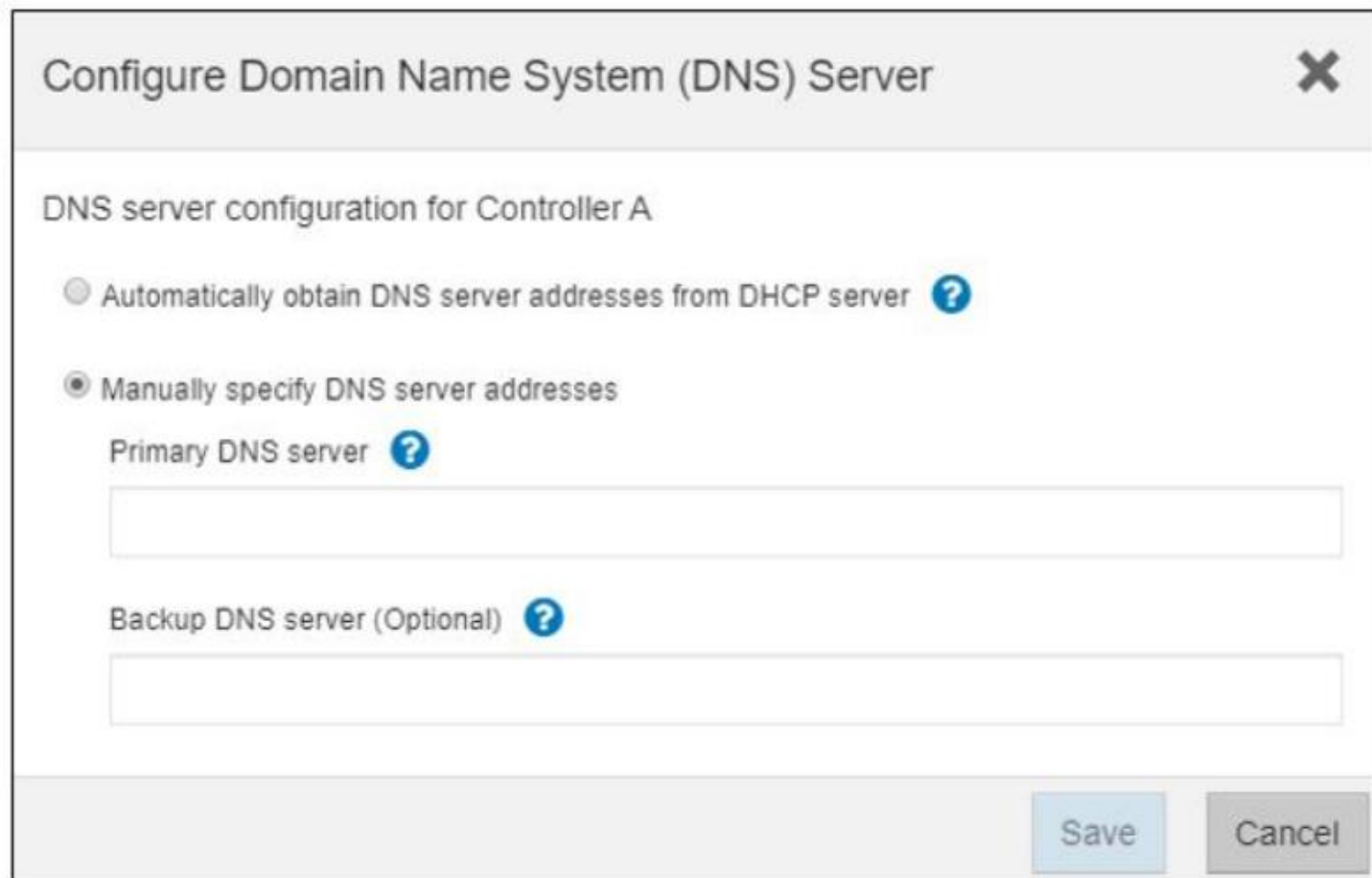
Cancel

Step



DNS server configuration

Depending on the users' requirements, select either **Automatically obtain DNS server from DHCP server** or **Manually specify DNS server address**.



Configure Domain Name System (DNS) Server

DNS server configuration for Controller A

☐ Automatically obtain DNS server addresses from DHCP server ?

☒ Manually specify DNS server addresses

Primary DNS server ?

Backup DNS server (Optional) ?

Save Cancel

Step



DNS server configuration

Go to the **Controller** → **View Settings** → **DNS / NTP** tab to verify the current DNS settings on the controller.

Controller A Settings

Base Cache Host Interfaces Drive Interfaces Management Ports **DNS/NTP**

Domain name system (DNS) server settings

DNS configuration: Automatic

Primary DNS server: None

Backup DNS server: None

Network time protocol (NTP) server settings

NTP service: Disabled

Close

Step

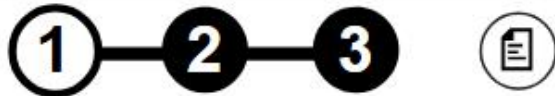


Enabling or disabling remote login

Go to the **Hardware** page and click **Show back of shelf**.

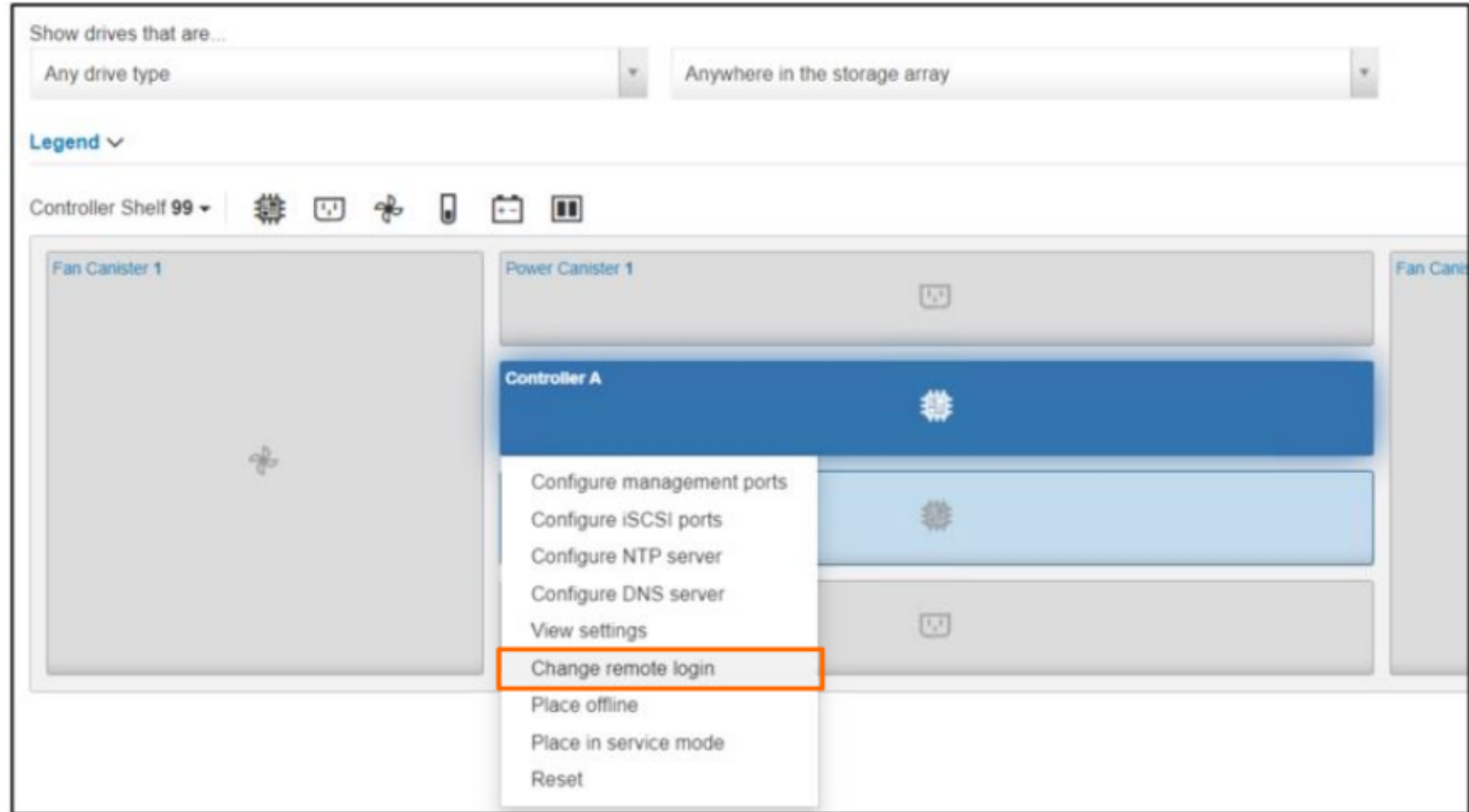
The screenshot shows the ThinkSystem System Manager interface for a DE6000_1 system. The left sidebar contains navigation links: Home, Storage, Hardware (highlighted with an orange box and a circled '1'), Settings, and Support. The main content area is titled 'HARDWARE' and includes a 'Learn More' link. Below this, there are two dropdown menus: 'Show drives that are...' with 'Any drive type' selected, and 'Anywhere in the storage array'. A 'Legend' section is visible, followed by a row of icons. To the right of these icons are links for 'Show all drives' and 'Show back of shelf' (highlighted with an orange box and a circled '2'). Below these links is a list of five drawers, each with a 'Show drives' link.

Step



Enabling or disabling remote login

Select the controller you want to change the remote login setting on, and then select **Change remote login**.



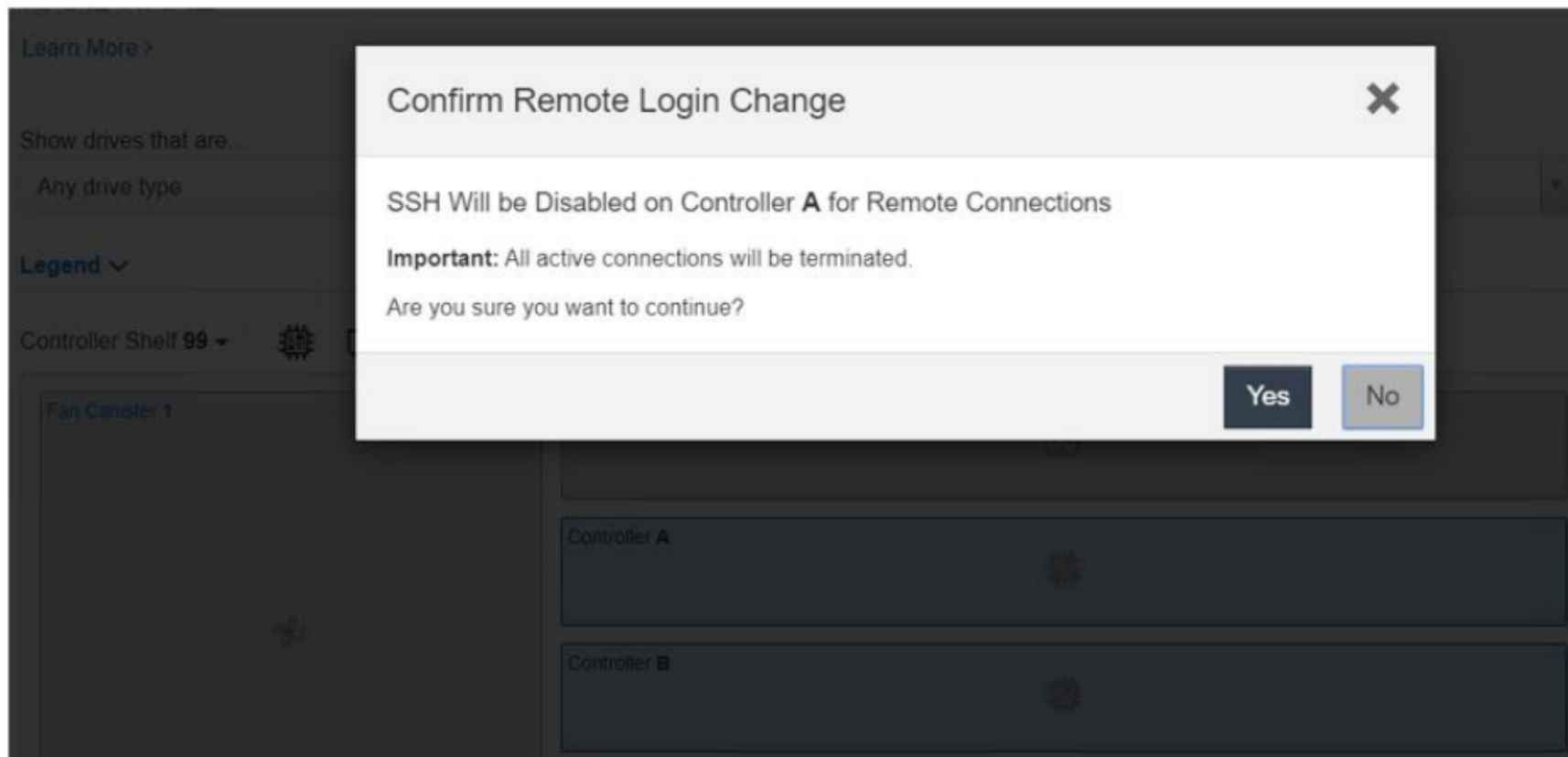
Step

1 — 2 — 3



Enabling or disabling remote login

Click **Yes** to change the remote login setting status.



Step

1

2

3



MIB file

For DE Series storage array SNMP alerts, users can configure the Management Information Base (MIB) variables that appear in SNMP traps. These variables can return the storage array name, array location, and a contact person.

To download the DE Series array MIB file, go to the system's [Lenovo Support](#) page, and select Driver & Software for download links. (A system serial number will be required.) Click [HERE](#) to see an example.


For more information about how to define MIB variables for SNMP traps, refer to the following DE Series documentation:

https://thinksystem.lenovofiles.com/help/index.jsp?topic=%2Fthinksystem_system_manager_11.50.0%2F42399351-6DD9-4F8A-B625-D6BAC7A8F722_.html

MIB file

For DE Series storage array SNMP alerts, users can configure the Management Information





DE4000H (ThinkSystem)

[Change Product](#)

Product Home

Drivers & Software

Documentation

Warranty

Repair Status

Drivers & Software

[← Back to Downloads](#)

Lenovo ThinkSystem DE2000/DE4000 MIB

[File Naming Guide](#)

Individual Downloads	Operating System	Version	Released	Size	Severity	Download
Invgy_sw_mib_08.51.00.00-2000-4000_anyos_noarch.chg CHECKSUM	OS Independent	1.01	04 Mar 2019	3 KB	Recommended	
Invgy_sw_mib_08.51.00.00-2000-4000_anyos_noarch.txt CHECKSUM	OS Independent	1.01	04 Mar 2019	5 KB	Recommended	
Invgy_sw_mib_08.51.00.00-2000-4000_anyos_noarch.zip CHECKSUM	OS Independent	1.01	04 Mar 2019	3 KB	Recommended	


Recommended practices for DE Series configuration

- Use the most recent version of TSM.
- Create an even number of LUNs on both storage controllers.
- For iSCSI Ethernet ports, use large frames with a maximum transmission unit (MTU) of 9000.

Reference

For more information about configuring DE Series storage arrays, refer to the DE-Series systems documentation on Lenovo storage pubs site:

<https://datacentersupport.lenovo.com/tw/en/storagepubs>

SHOP SUPPORT LENOVO SERVICE UTILITIES

syang7@lenovo.com

Taiwan Region English Cart

DE Series

DE Systems

Offer storage and application data management services for high-bandwidth applications that need simple, easy to manage, and fast block storage with enterprise-grade reliability.

DE SAN Manager and System Manager

Provision and manage your DE storage systems from a web-based interface.

DE Commands

Configure and monitor your DE-Series storage systems from an operating system prompt.

Changing the host ports protocol – overview

For controller HIC ports on non-SAS ports controller models, users can change the controller ports protocol – for example, from Fibre Channel to iSCSI – by downloading the feature activation key from the Lenovo Features on Demand (FoD) website: <https://fod.lenovo.com/>. Changing the host ports protocol does not require an additional license fee.

Each DE Series storage controller contains the submodel ID, which defines the host ports protocol for the controller. Locate the submodel ID through the System Manager to determine the current host ports protocol for the controller.

How to locate the submodel ID

Drive media types:	SSD
Number of controllers:	2
Controller board ID:	5700
Current sub-model ID:	432
Controller firmware version:	98.50.00.05
Controller NVSRAM version:	N5700-841834-D01

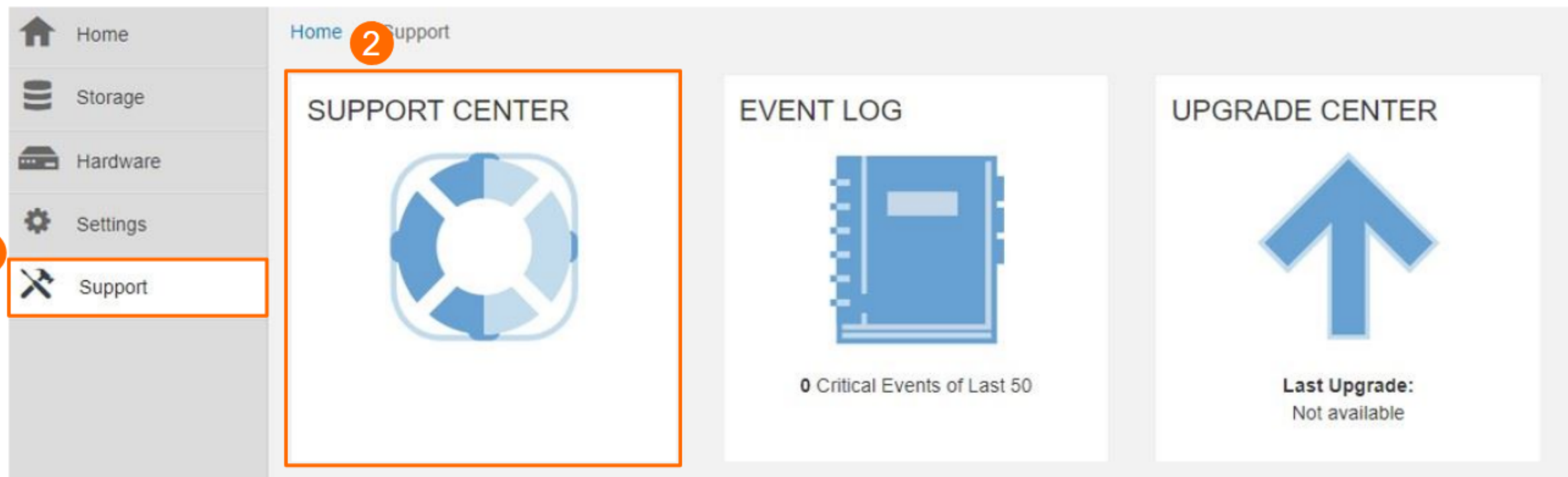
Click each number in turn to see the procedure used to locate the submodel ID on the storage system.

Step



How to locate the submodel ID

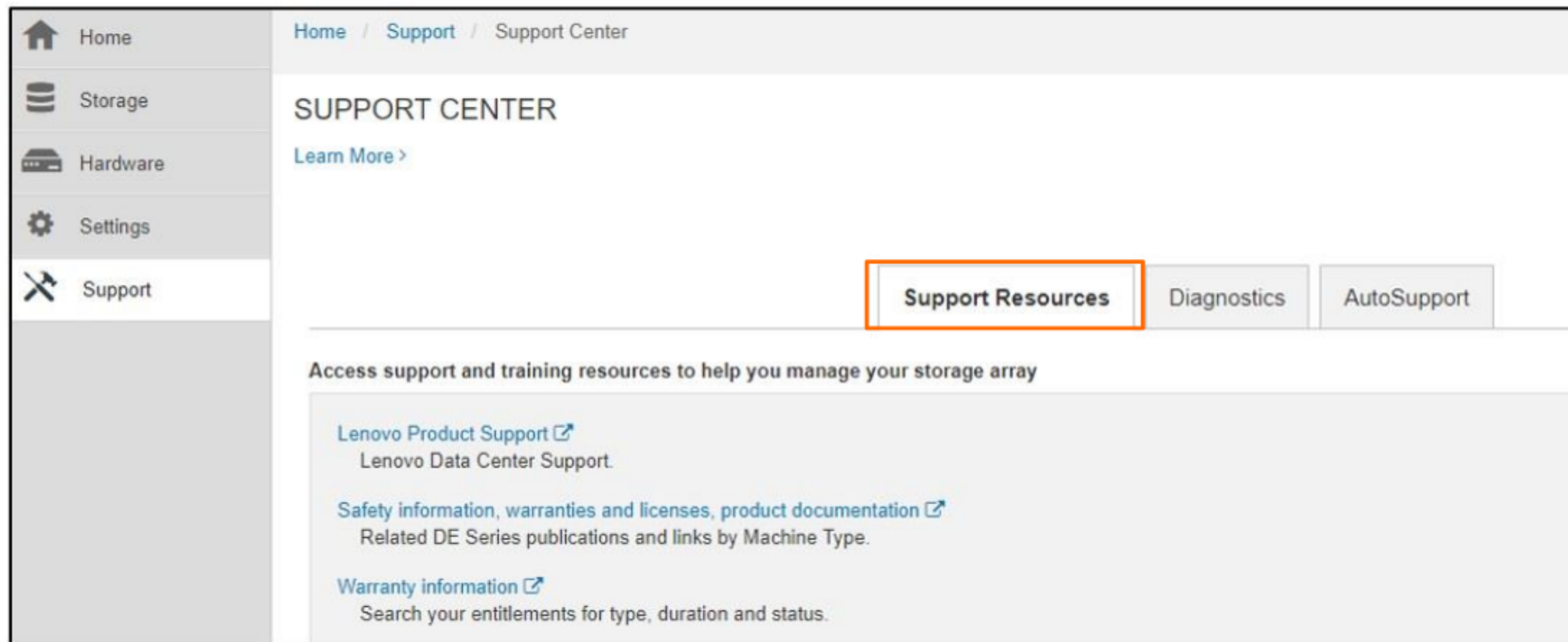
Log in to System Manager and go to **Support** → **SUPPORT CENTER**.



Step 1 — 2 — 3

How to locate the submodel ID

In the SUPPORT CENTER, go to the **Support Resources** tab.



Step



How to locate the submodel ID

The sub-model ID is located in the **View top storage array properties** section.

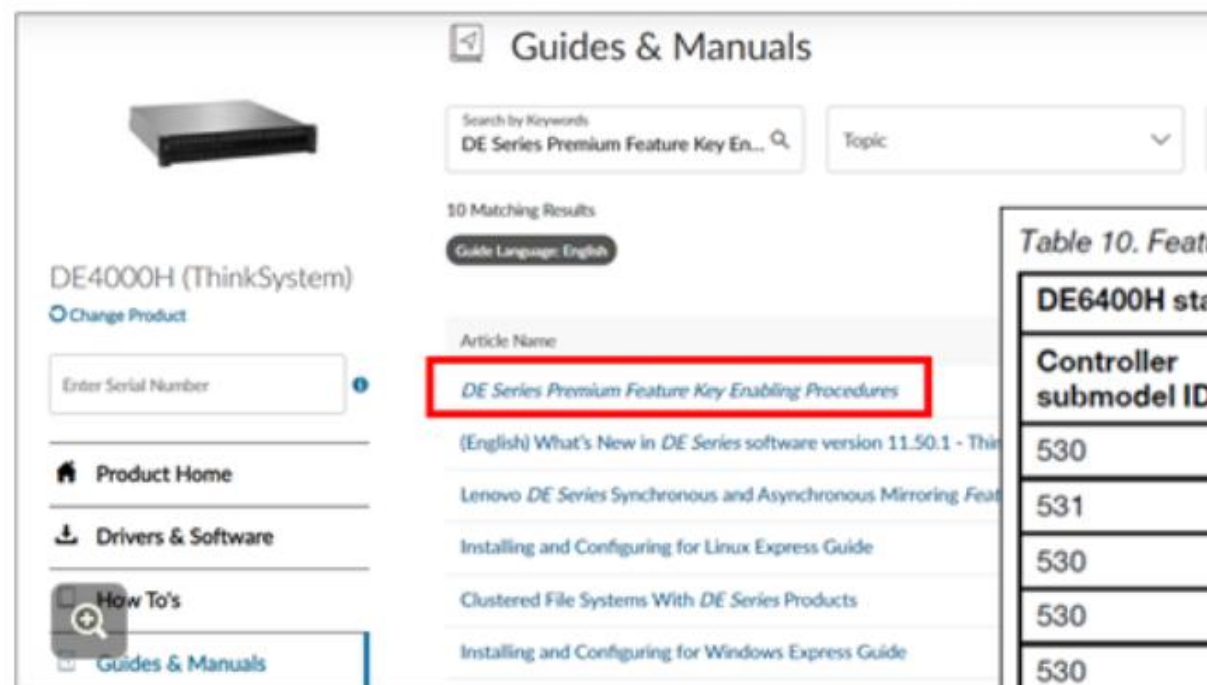
View top storage array properties	
Storage array world-wide identifier (ID):	600A098000D66454000000005B57D91C
Chassis serial number:	721820500149
Number of shelves:	1
Number of drives:	24
Drive media types:	SSD
Number of controllers:	2
Controller board ID:	5700
Current sub-model ID:	432
Controller firmware version:	98.50.00.05
Controller NVSRAM version:	N5700-841834-D01
Automatic load balancing:	Disabled
System Manager version:	91.50.0G54.0002

Step **1** — **2** — **3**

DE Series submodel IDs and feature codes

For the latest DE Series submodel ID and feature code list, refer to the *Premium Feature Key Enabling Procedure* document on the Guides and Manuals page of the DE Series Product Support Site:

<https://datacentersupport.lenovo.com/products/storage/DEseries>.



Guides & Manuals

Search by Keywords
DE Series Premium Feature Key En... Q

Topic

10 Matching Results

Guide Language: English

Article Name

DE Series Premium Feature Key Enabling Procedures

(English) What's New in DE Series software version 11.50.1 - Thin

Lenovo DE Series Synchronous and Asynchronous Mirroring Feat

Installing and Configuring for Linux Express Guide

Clustered File Systems With DE Series Products

Installing and Configuring for Windows Express Guide

DE4000H (ThinkSystem)

Change Product

Enter Serial Number

Product Home

Drivers & Software

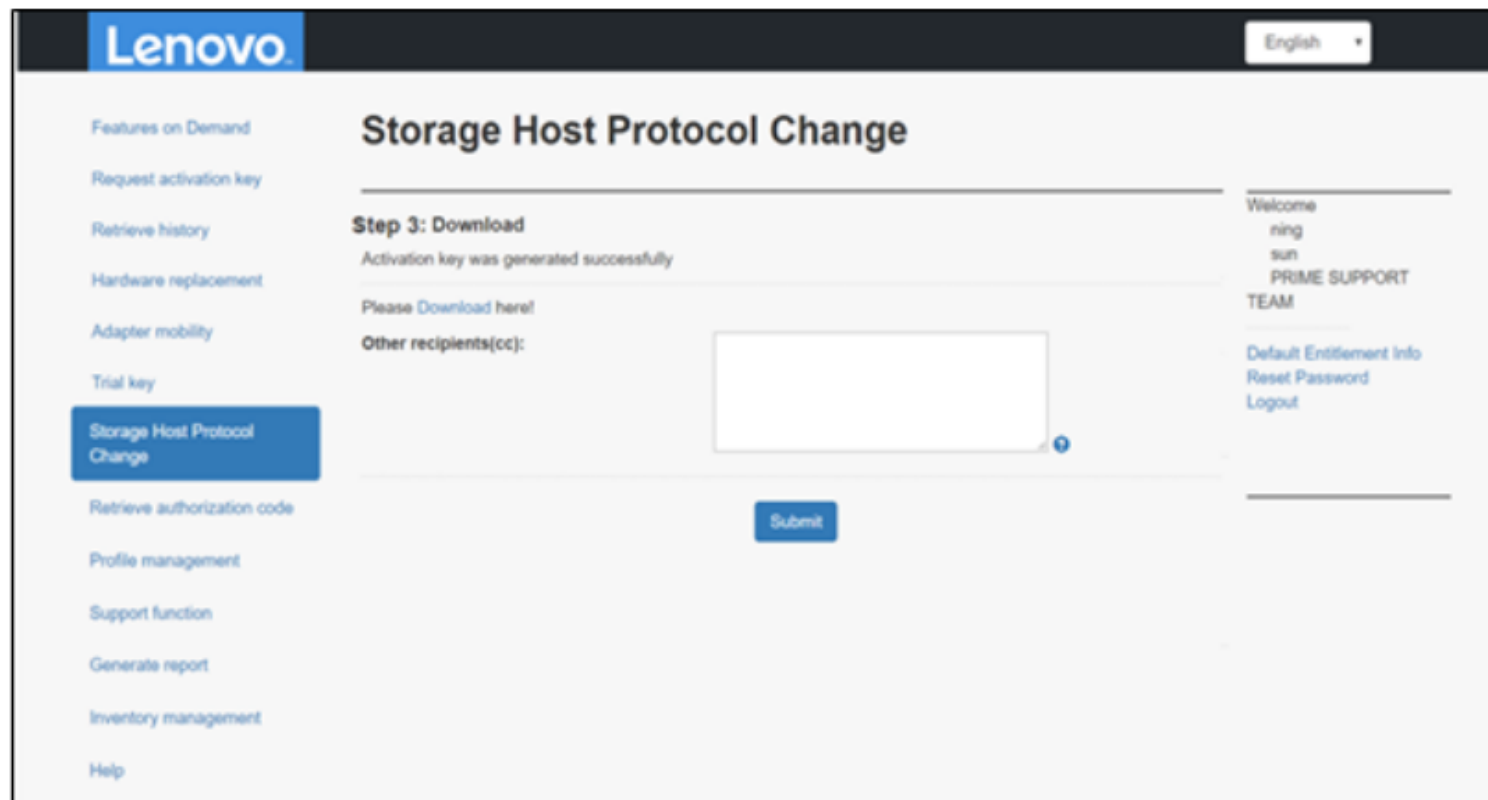
How To's

Guides & Manuals

Table 10. Feature codes for DE6400H (7DB6CTO2WW)

DE6400H starting configuration		DE6400H ending configuration		Feature code
Controller submodel ID	HIC ports	Controller submodel ID	HIC ports	
530	FC	531	NVMe/FC	BT7H
531	NVMe/FC	530	FC	BT7J
530	NVMe/RoCE	531	NVMe/IB	BS87
530	NVMe/RoCE	532	iSER	BS88
530	NVMe/RoCE	533	SRP	BS89
531	NVMe/IB	530	NVMe/RoCE	BSV1
531	NVMe/IB	532	iSER	BSV2
531	NVMe/IB	533	SRP	BSV3
532	iSER	530	NVMe/RoCE	BSV4

Changing the host ports protocol through System Manager



The screenshot shows the 'Storage Host Protocol Change' page on the Lenovo website. The page has a dark header with the 'Lenovo' logo and a language dropdown set to 'English'. On the left is a sidebar menu with options: 'Features on Demand', 'Request activation key', 'Retrieve history', 'Hardware replacement', 'Adapter mobility', 'Trial key', 'Storage Host Protocol Change' (highlighted in blue), 'Retrieve authorization code', 'Profile management', 'Support function', 'Generate report', 'Inventory management', and 'Help'. The main content area is titled 'Storage Host Protocol Change' and shows 'Step 3: Download'. It states 'Activation key was generated successfully' and 'Please Download here!'. Below this is a text input field labeled 'Other recipients(cc):' with a blue information icon. A 'Submit' button is at the bottom right of the form. On the right side of the page, there is a user profile section with 'Welcome [name]', 'PRIME SUPPORT TEAM', and links for 'Default Entitlement Info', 'Reset Password', and 'Logout'.

Click each number in turn to see the processes used to obtain the feature code from the Lenovo FoD site and change the host ports protocol with the feature code.

Step



Changing the host ports protocol through System Manager

Log in to <https://fod.lenovo.com/> and go to the **Storage Host Protocol Change** page. Enter the necessary information to get the feature pack key file.

Click [HERE](#) for more details about how to locate the UID (Feature enable identifier) in System Manager.

The screenshot shows the 'Storage Host Protocol Change' page on the Lenovo FOD website. The page has a sidebar with various service options, including 'Storage Host Protocol Change' which is highlighted. The main content area is titled 'Storage Host Protocol Change' and 'Step 1: Feature selection'. It contains a form with the following fields: 'Feature*' (a dropdown menu), 'Machine type*' (a dropdown menu), 'Machine serial*' (a text input field), 'UID*' (a text input field), and 'Email' (a text input field containing 'sunning2@lenovo.com'). There are 'Continue' and 'Cancel' buttons at the bottom. On the right side of the page, there is a user profile section with the text 'Welcome ning sun PRIME SUPPORT TEAM' and links for 'Default Entitlement Info', 'Reset Password', and 'Logout'. Five orange arrows point from labels on the right to specific fields in the form: 'Desired Feature Code' points to the 'Feature*' dropdown, 'Machine Type' points to the 'Machine type*' dropdown, 'Serial Number' points to the 'Machine serial*' text field, 'UID (Feature Enable Identifier)' points to the 'UID*' text field, and 'Email' points to the 'Email' text field.

Lenovo

English

Features on Demand

Request activation key

Retrieve history

Hardware replacement

Adapter mobility

Trial key

Storage Host Protocol Change

Retrieve authorization code

Profile management

Support function

Generate report

Inventory management

Help

Storage Host Protocol Change

Step 1: Feature selection

Select a feature and enter your company name, contact name, email, phone number. (Phone number is optional)

Feature*

Please select a feature...

Machine type*

Please select a machine type...

Machine serial*

UID*

Email

sunning2@lenovo.com

Continue

Cancel

Welcome ning sun PRIME SUPPORT TEAM

Default Entitlement Info

Reset Password

Logout

Desired Feature Code

Machine Type

Serial Number

UID (Feature Enable Identifier)

Email

Step

1

2

3

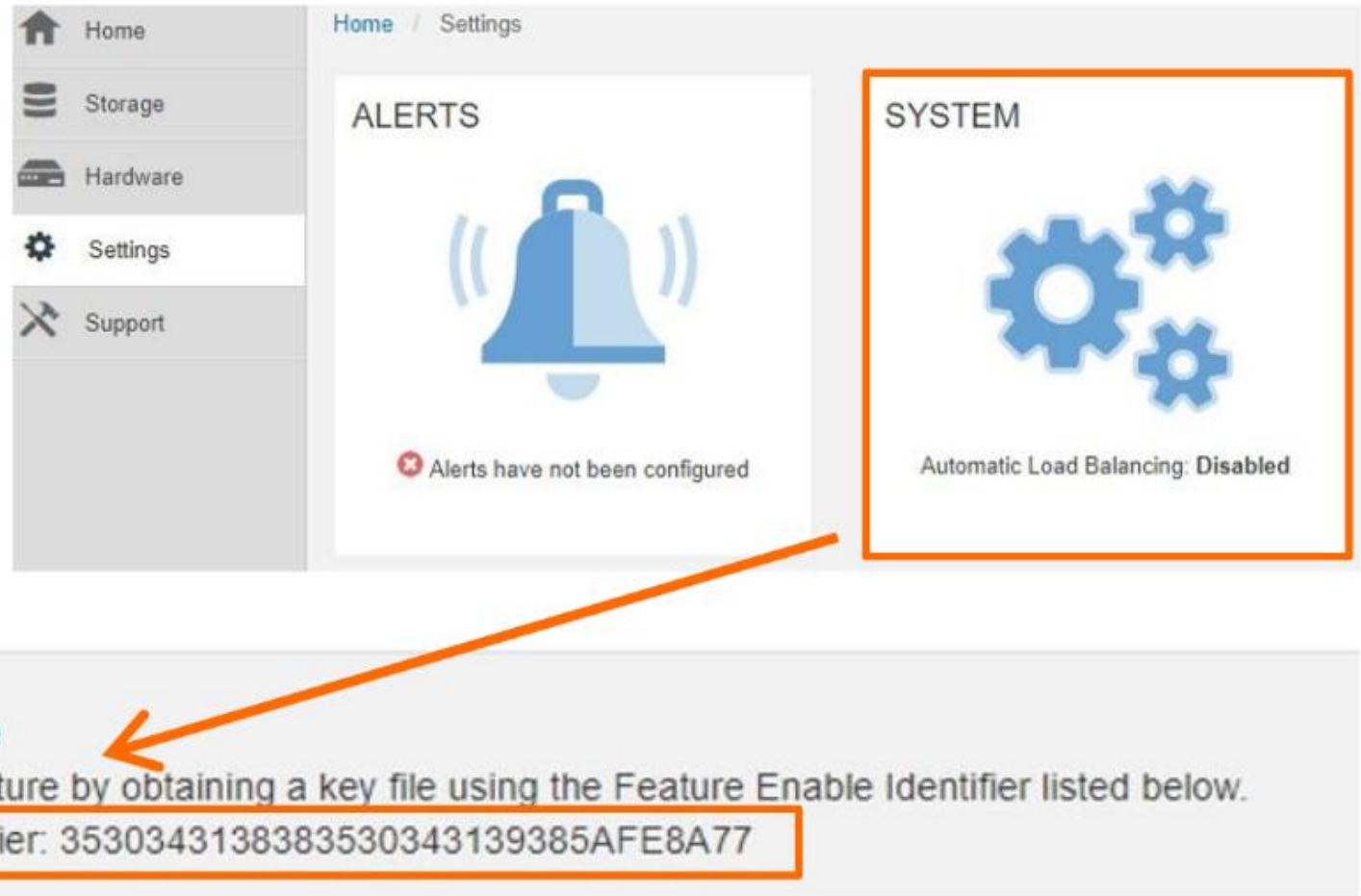
4

5

Changing the host ports protocol through System Manager

Go to **Settings** → **SYSTEM**.

The Feature Enable Identifier is under the **Add-ons** section.

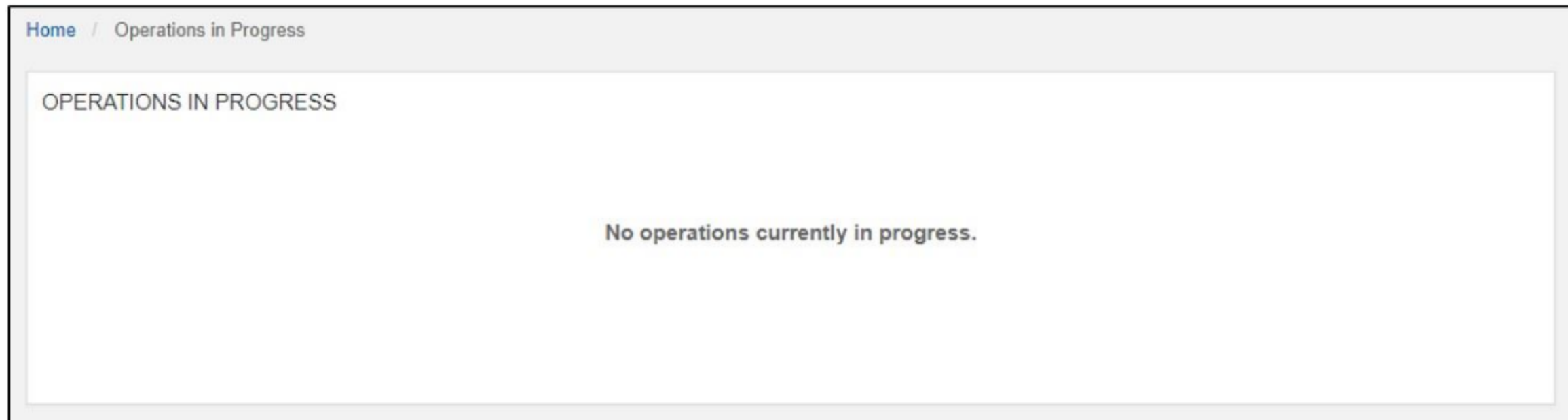


Step



Changing the host ports protocol through System Manager

Users must stop all I/O operations through System Manager before converting the protocol of the host ports. Users cannot access data on the storage array until the controller successfully completes the host ports protocol conversion.

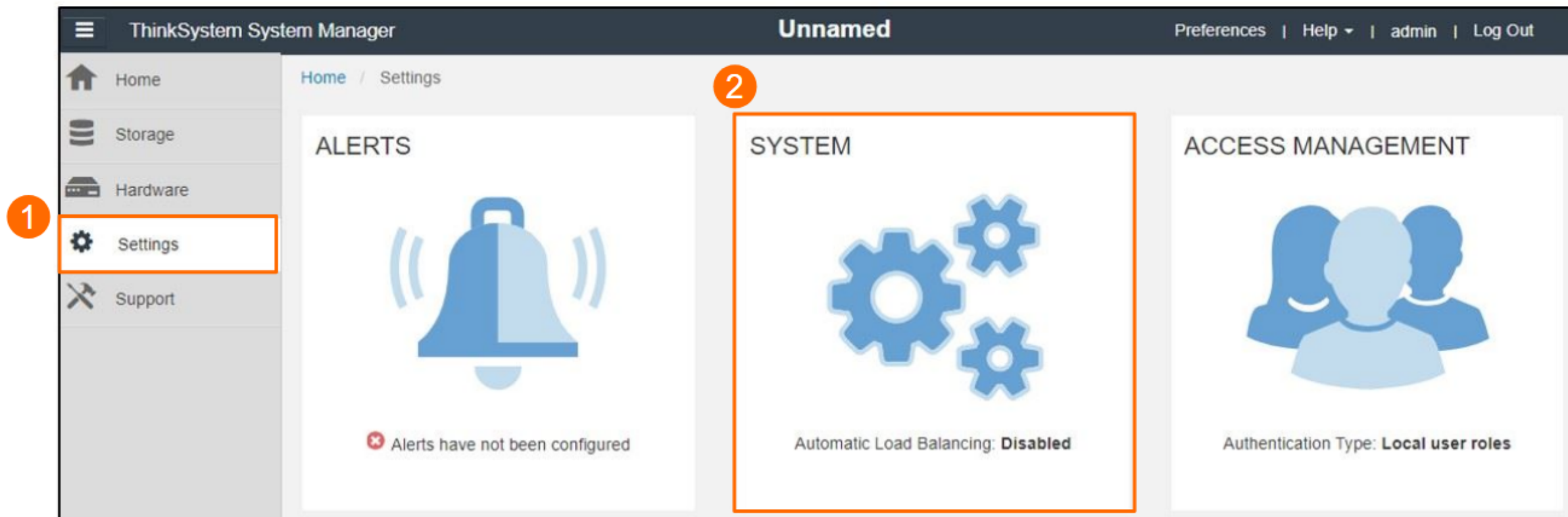


Step



Changing the host ports protocol through System Manager

Log in to System Manager, and go to **Settings** → **System** page.



Step



Changing the host ports protocol through System Manager

Select **Change Feature Pack**, and then browse and select the downloaded feature pack key to change the host ports protocol.

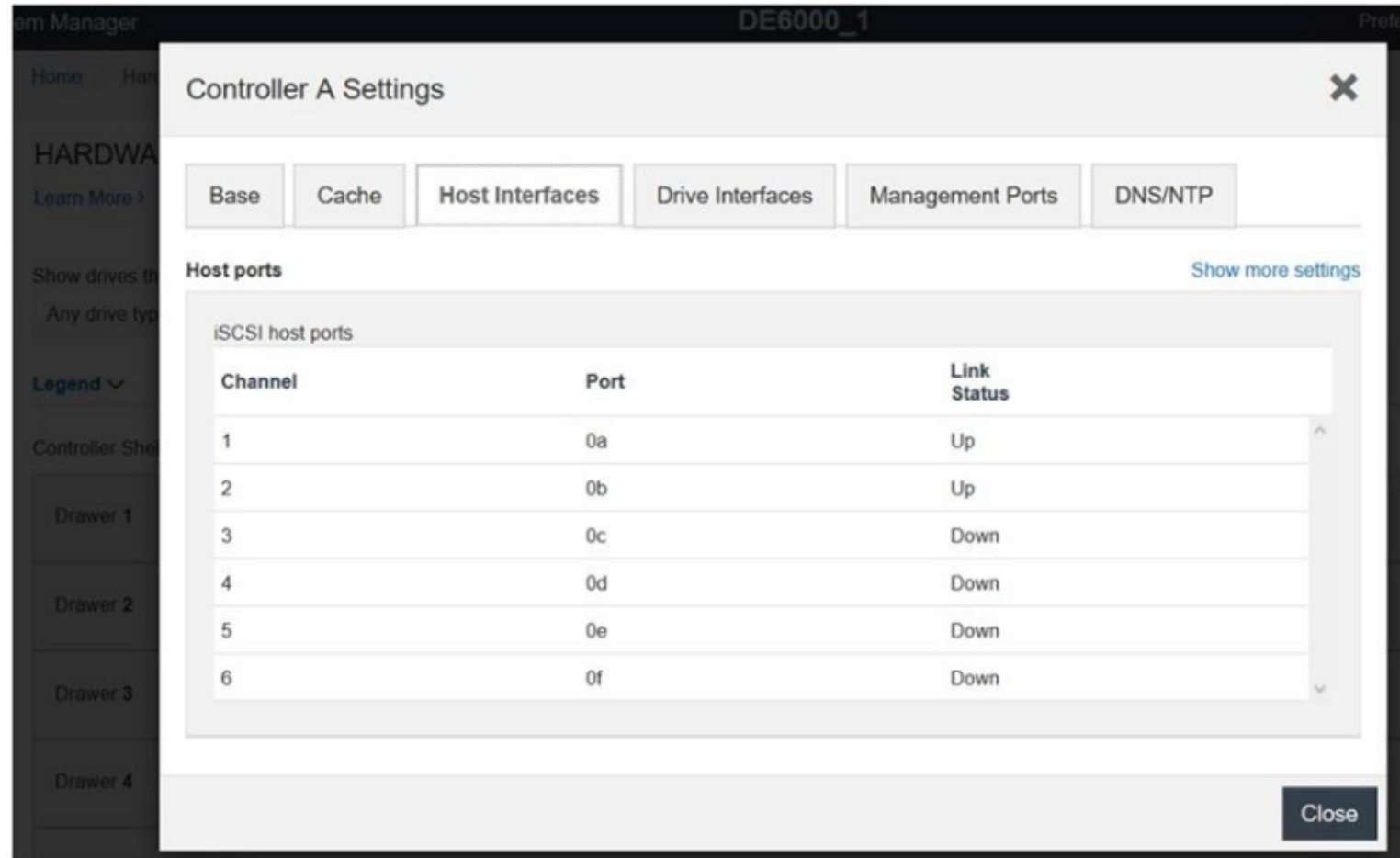


Step



Changing the host ports protocol through System Manager

Go to the **Hardware** page, and then go to **Controller** → **Host Interfaces** to verify that the change has been made.



Step



Premium feature key overview

Some capabilities of the DE Series storage array can be expanded with optional licensed functions. Optional licensed functions include:

- Snapshot upgrade: Increases the supported number of snapshot targets.
- Synchronous mirroring: Provides storage system-based, online, real-time data replication between the storage systems containing primary (local) and secondary (remote) volumes by using synchronous data transfers over Fibre Channel communication links. (Both storage systems must have licenses for synchronous mirroring.)
- Asynchronous mirroring: Provides storage system-based data replication between the storage systems containing primary (local) and secondary (remote) volumes by using asynchronous data transfers over iSCSI or Fibre Channel links at set intervals. (Both storage systems must have licenses for asynchronous mirroring.)
- DE6000H only: Increases maximum drive count from 240 to 480 drives.

Note: Async Mirroring on DE4200/DE4800 supports Fibre Channel protocol only.

How to enable premium features

Add-ons

Enable Premium Feature

Enable a premium feature by obtaining a key file using the Feature Enable Identifier listed below.

Feature Enable Identifier: 3530343138383530343139385AFE8A77

Click each number in turn to see the procedures used to obtain the premium feature key from the Lenovo FoD site and enable the key through System Manger.

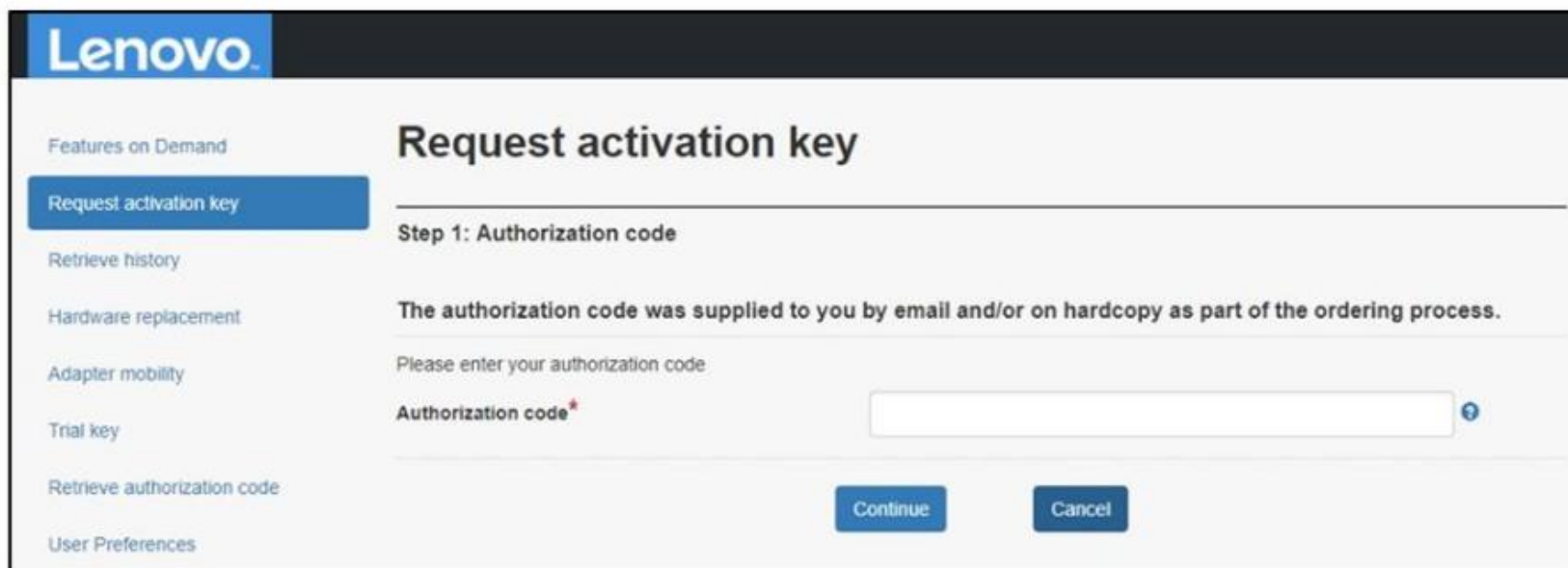
Step



How to enable premium features

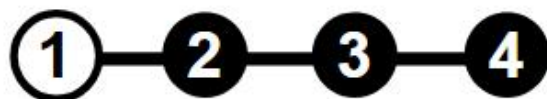
Log in to the Lenovo FoD website <https://fod.lenovo.com>. Click **Request activation key** and follow the instructions on the screen to enter the authorization code and other information needed to obtain the premium feature key.

The premium feature key can be downloaded or sent to a specified email address after the authorization process is completed on the Lenovo FoD website.



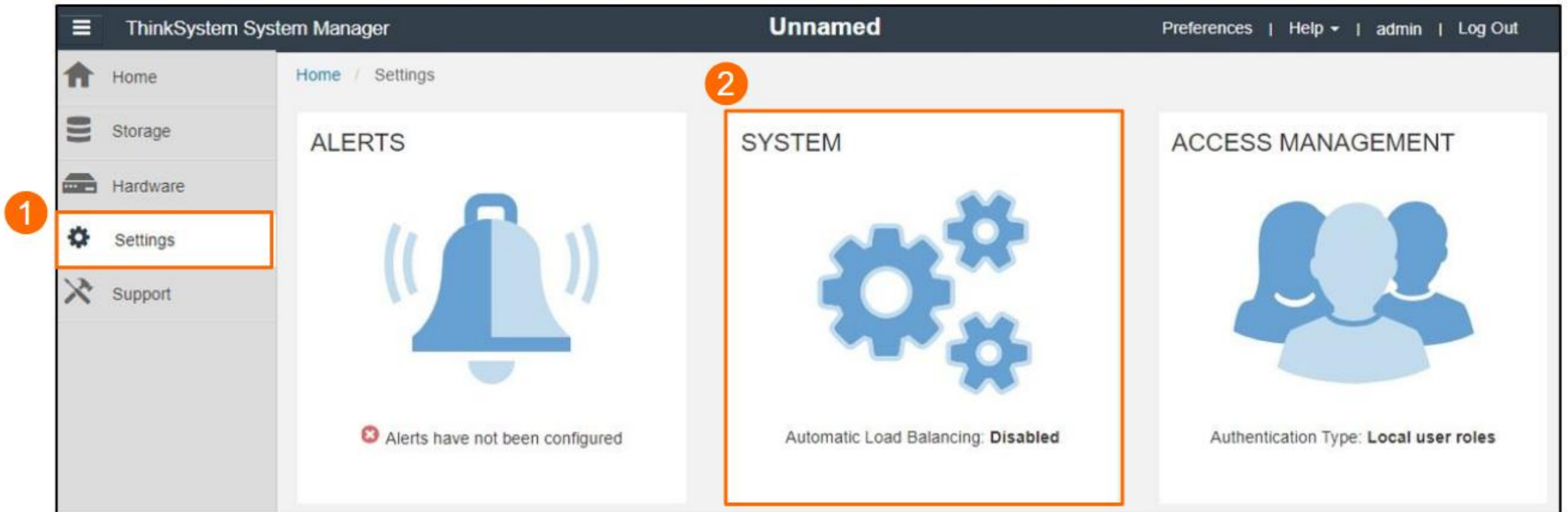
The screenshot shows the Lenovo FoD website interface. On the left is a sidebar menu with the following items: 'Features on Demand', 'Request activation key' (highlighted in blue), 'Retrieve history', 'Hardware replacement', 'Adapter mobility', 'Trial key', 'Retrieve authorization code', and 'User Preferences'. The main content area is titled 'Request activation key' and contains the following text: 'Step 1: Authorization code', 'The authorization code was supplied to you by email and/or on hardcopy as part of the ordering process.', and 'Please enter your authorization code'. Below this text is a text input field labeled 'Authorization code*' with a red asterisk and a blue help icon to its right. At the bottom right of the form are two buttons: 'Continue' and 'Cancel'.

Step



How to enable premium features

Log in to System Manager, and go to **Settings** → **System**.



Step **1** — **2** — **3** — **4**

How to enable premium features

Go to the Add-ons section, select **Enable Premium Feature**, and then browse and select the downloaded premium feature key file to enable the premium feature on the storage array.

Add-ons

Enable Premium Feature

Enable a premium feature by obtaining a key file using the Feature Enable Identifier listed below.

Feature Enable Identifier: 3530343138383530343139385AFE8A77

Change Feature Pack

Change the feature pack that is currently installed by obtaining a feature pack file using the Feature Enable Identifier listed below.

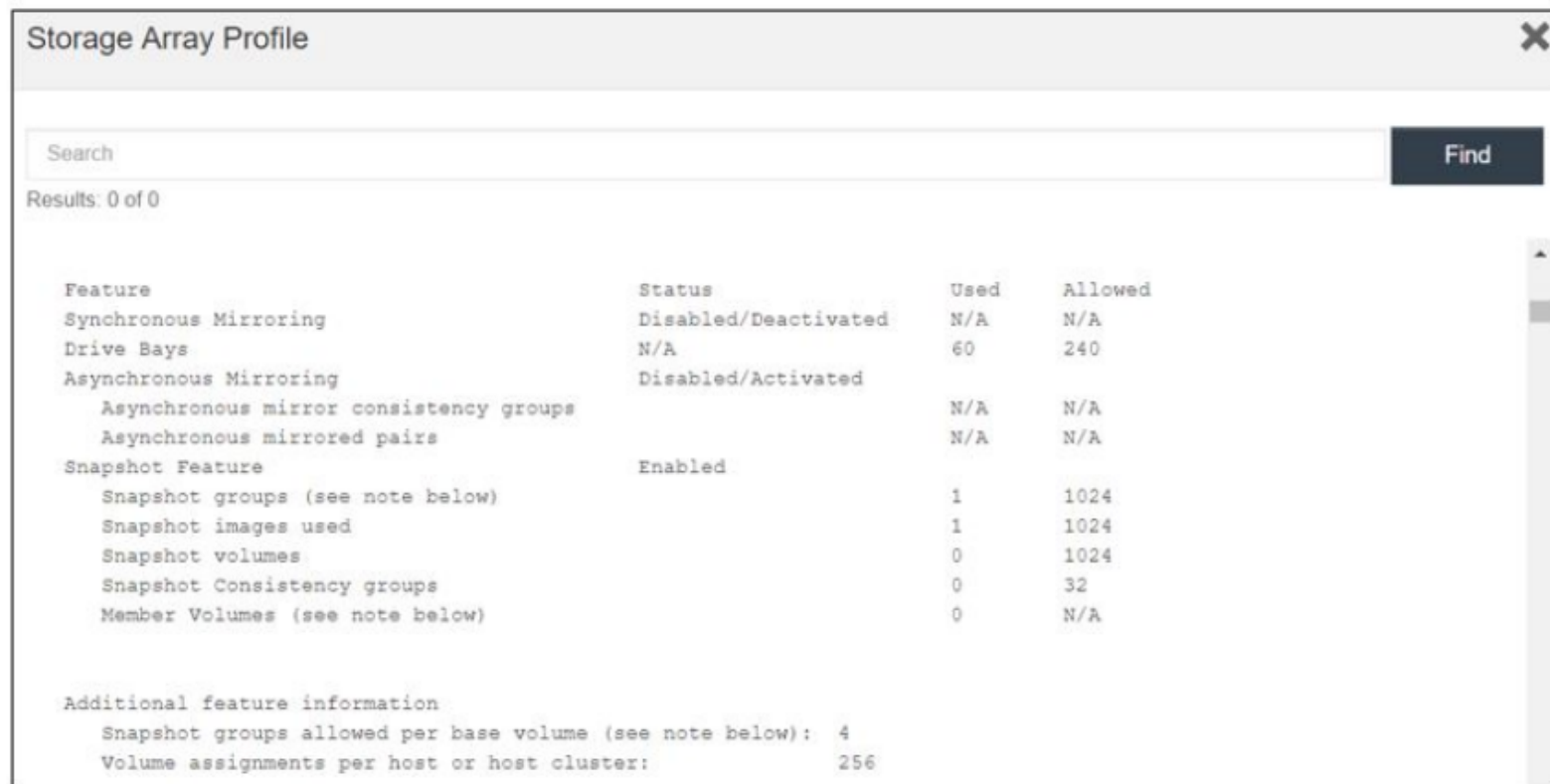
Feature Enable Identifier: 3530343138383530343139385AFE8A77

Step



How to enable premium features

Go to **Support** → **SUPPORT CENTER** → **Support Resources** → **Launch detailed storage array information** → **Storage Array Profile** to verify that the premium feature key has been enabled.



The screenshot shows a window titled "Storage Array Profile" with a search bar and a "Find" button. Below the search bar, it says "Results: 0 of 0". The main content is a table with four columns: Feature, Status, Used, and Allowed. The table lists various features and their current status and usage. At the bottom, there is a section for "Additional feature information" with two rows of data.

Feature	Status	Used	Allowed
Synchronous Mirroring	Disabled/Deactivated	N/A	N/A
Drive Bays	N/A	60	240
Asynchronous Mirroring	Disabled/Activated		
Asynchronous mirror consistency groups		N/A	N/A
Asynchronous mirrored pairs		N/A	N/A
Snapshot Feature	Enabled		
Snapshot groups (see note below)		1	1024
Snapshot images used		1	1024
Snapshot volumes		0	1024
Snapshot Consistency groups		0	32
Member Volumes (see note below)		0	N/A

Additional feature information

Snapshot groups allowed per base volume (see note below):	4
Volume assignments per host or host cluster:	256

Step

