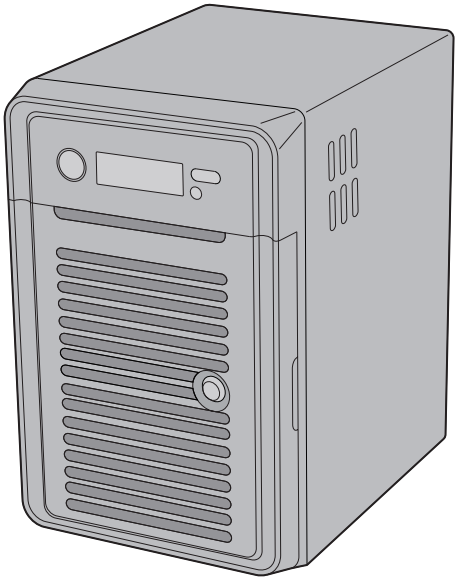
Network Attached Storage

TeraStation WSS HR WSH5000N2 Series

User Manual



Americas: www.buffaloamericas.com

Europe: www.buffalo-technology.com

Please make sure to read this manual before using and follow the instructions. If you have any inquiries about the product, contact the number on the warranty statement or the packing box. Do not discard this manual, the warranty statement, or the packing box.

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2016.09

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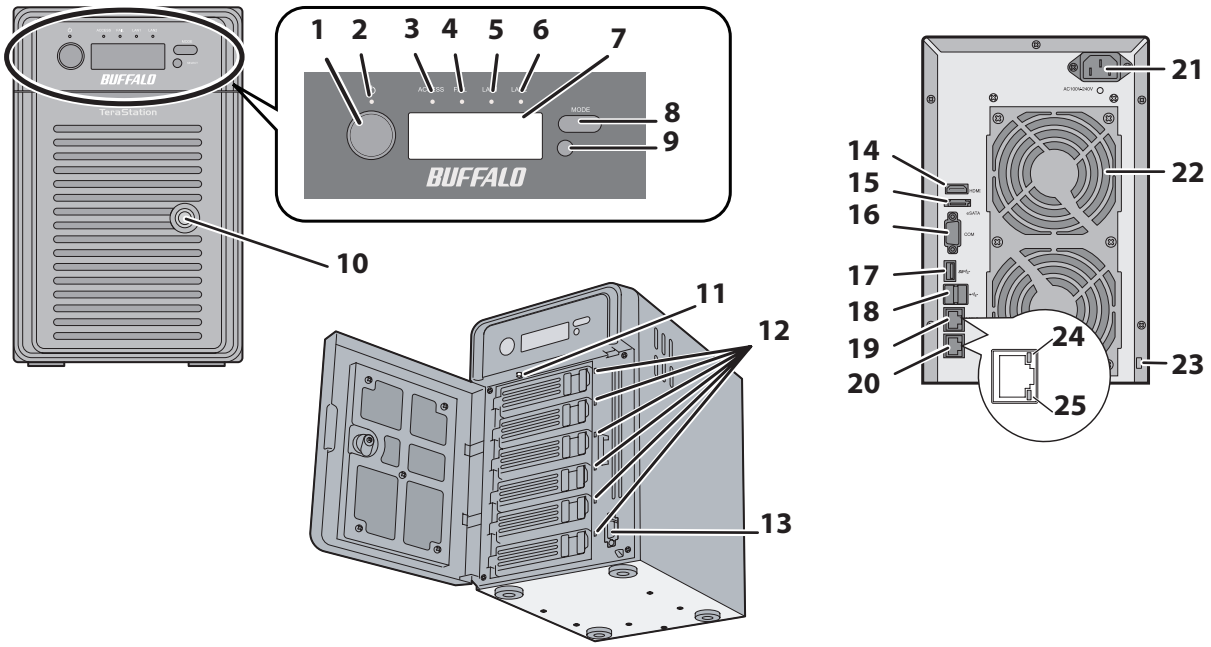
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Chapter 1 Getting Started

Diagrams

WSH5610DN2



1 Power Button

To power on, connect the power cable and wait for 10 seconds, then press the power button. To power off, press the power button.

2 Power LED

The LED glows blue when power is on.

3 Access LED

Shows network activity. This LED blinks green when hard drives are being accessed.

4 Fail LED

If there is an error on the drives, this LED glows amber.
Open Buffalo Dashboard to see error messages.

5 LAN1 LED

When LAN port 1 is connected, this LED glows green. It blinks when the connection is active.

6 LAN2 LED

When LAN port 2 is connected, this LED glows green. It blinks when the connection is active.

7 LCD Panel

This display shows the status of many TeraStation settings.

8 Mode Button

Not in use normally; if the TeraStation beeps, press this button to stop the beeping.

9 Select Button

Not in use normally.

10 Drive Lock

Open the front panel with the key to replace hard drives or access the reset button.

11 Reset Button

To shut down and reboot the TeraStation, hold down the reset button. Do not press this button normally.

12 Status LEDs

Normally, these LEDs blink green when hard drives are accessed. If a drive fails or dismounts, its LED will turn amber.

13 VGA Port

You can connect a VGA monitor to this port. Connecting a monitor directly to the TeraStation is only supported for monitoring the progress of Windows Update.

14 HDMI Port

You can connect a HDMI monitor to this port. Connecting a monitor directly to the TeraStation is only supported for monitoring the progress of Windows Update.

15 eSATA Port

eSATA-compatible hard drives are available with this port. Turn the TeraStation off before connecting the drives.

16 UPS Port

Connect to a UPS.

17 USB 3.0 Port

Compatible Buffalo USB 3.0 hard drives, USB memory devices, and USB UPSs can be connected. USB hubs are not supported.

18 USB 2.0 Port

Compatible Buffalo USB hard drives, USB memory devices, and USB UPSs can be connected. USB hubs are not supported.

19 LAN Port 2

This second Ethernet port may be used for network redundancy or backup. You may connect a second TeraStation directly to this port for backup.

20 LAN Port 1

Use an Ethernet cable to connect this port to your network.

21 Power Connector

Use the included power cable to connect to an UPS, surge protector, or outlet.

22 Fan

Spins to avoid overheating inside. Do not block the fan.

23 Anti-Theft Security Slot

Use this slot to secure your TeraStation with a cable lock (not included).

24 Link LED

Glows amber when the unit is connected to a network.

25 Act LED

This LED shows network activity. It blinks amber when the TeraStation is accessed over the network.

Opening Windows Storage Server

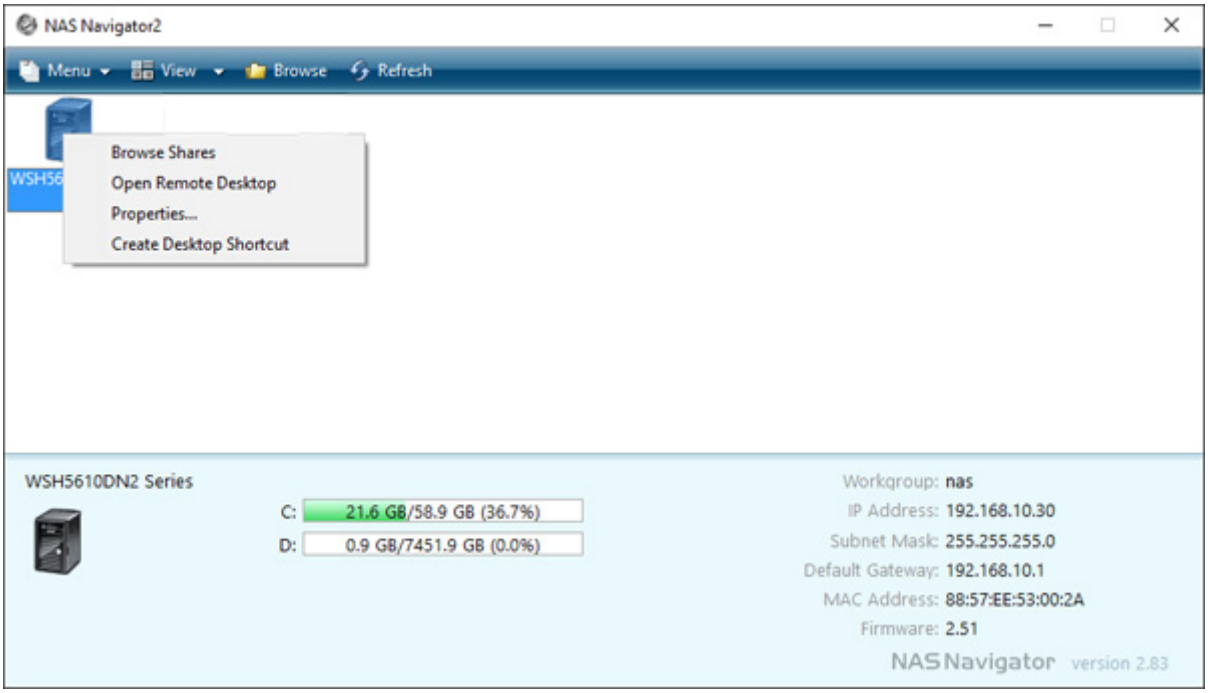
To connect Windows Storage Server, follow the procedure below.

Note: If using Mac OS, download and install "Remote Desktop Connection Client for Mac 2" from the Microsoft website.

1 Double-click the  icon to start NAS Navigator2.

2 Right-click on your TeraStation's icon and choose *Open Remote Desktop*. For Mac OS, click the TeraStation's icon while holding down the control key, then click *Open Remote Desktop*.

If the message "The identity of the remote computer cannot be verified. Do you want to connect anyway?" is displayed, click *Yes* or *Continue*.



3 Enter the admin username and password and press the Enter key. The default username and password are "Administrator" and "password".

Windows Storage Server will open in the remote desktop.

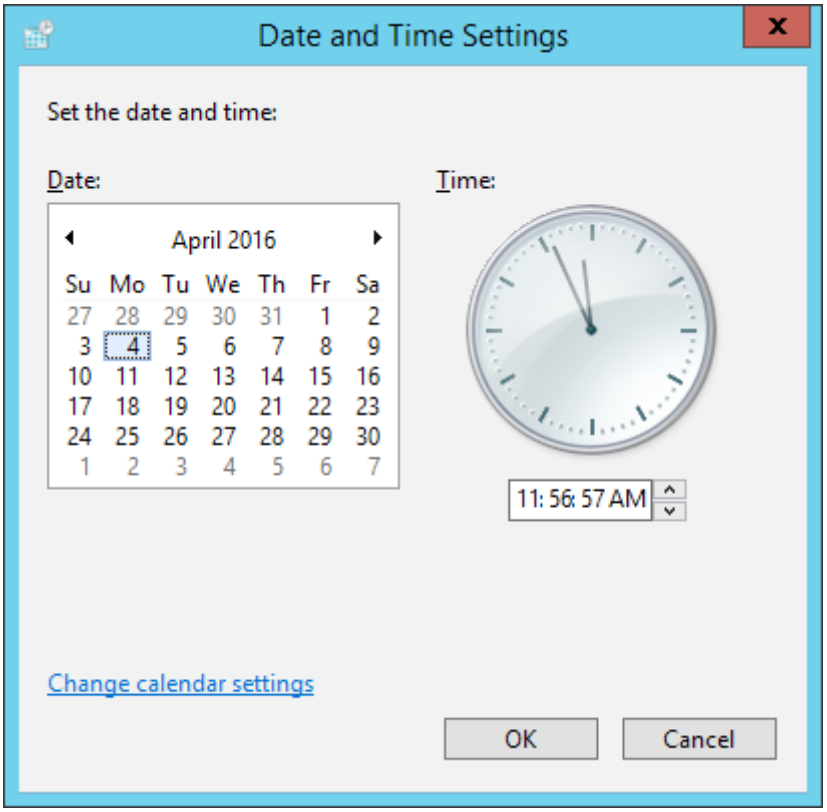
Changing Settings

Configuring Date and Time

1 Click the time in the system tray of Windows Storage Server.



2 Click *Change date and time settings - Change date and time*, select the current date and time, and click *OK*.



Note: In the *Internet Time* tab, click *Change settings*, then select *Synchronize with an Internet time server*. The date and time can be obtained automatically.

Creating a Shared Folder

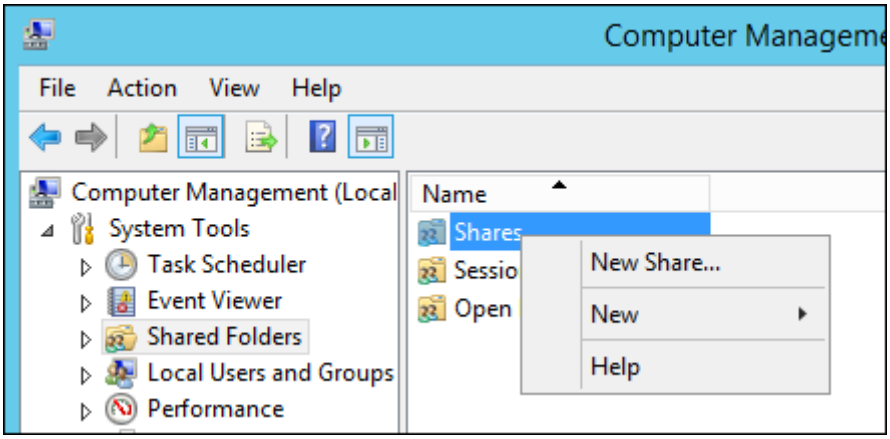
No shared folders are configured by default. Before using the TeraStation, follow the procedure below to create one or more shared folders.

This is an example to create a shared folder named "Share" in drive D, which anyone can access.

1 From the Windows Storage Server Start menu, open *Administrative Tools*, then double-click *Computer Management*.

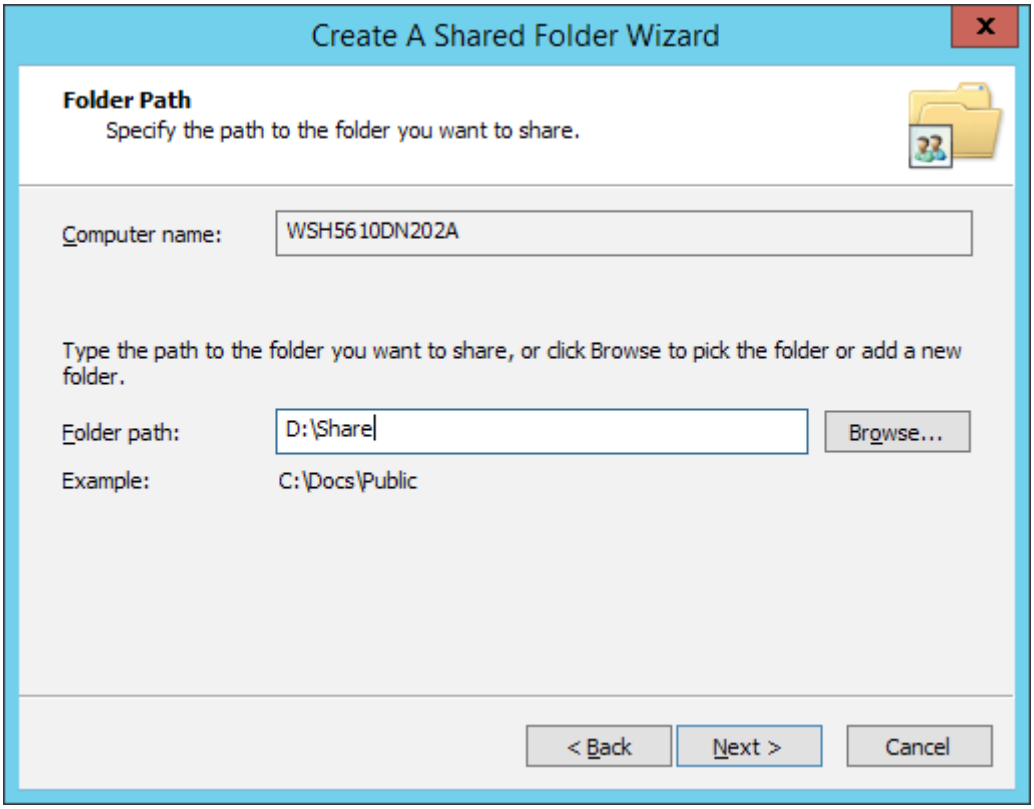
2 Click *Shared Folders*.

3 Right-click *Shares* and click *New Share*.



4 Click *Next*.

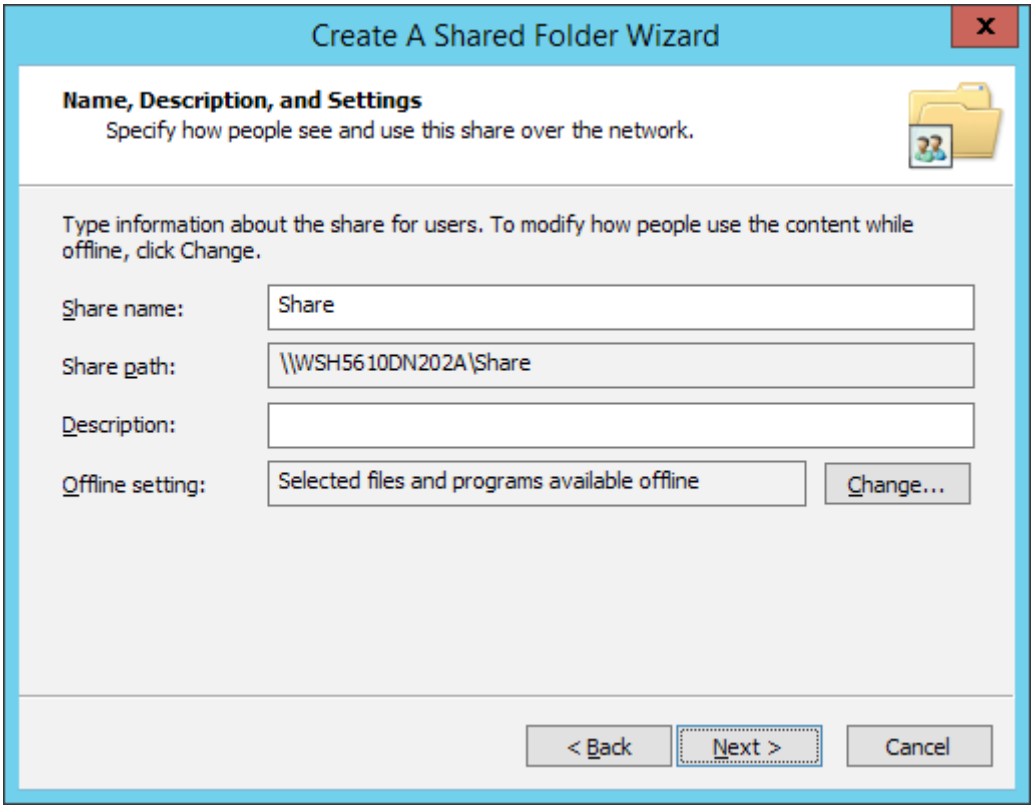
5 Enter the path of an existing folder or a new folder, then click *Next*.



Notes:

- Enter "D:\Share" into the folder path to create the shared folder for the first time.
- If the message "The system cannot find the specified path. Do you want to create it?" is displayed, click *Yes*.

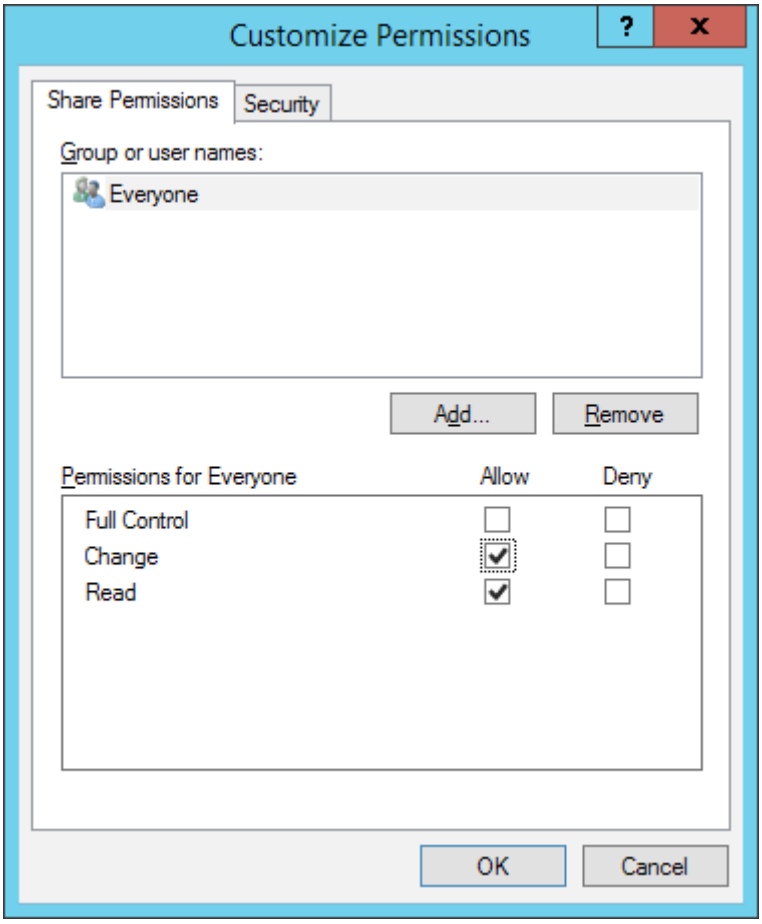
6 Enter a name for the share and a description (optional), then click *Next*.



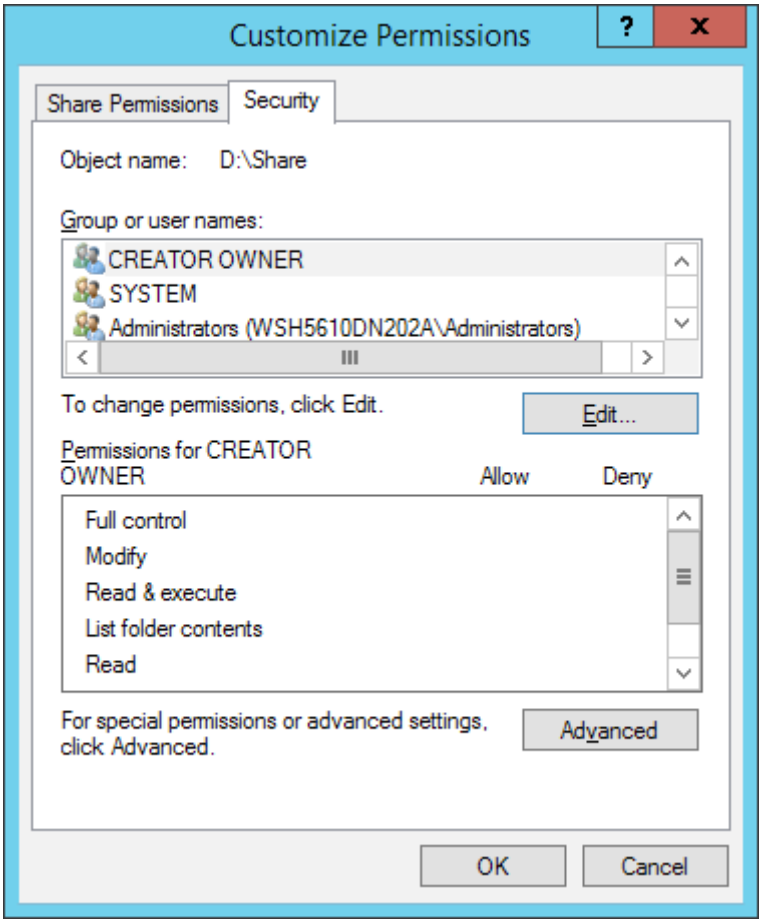
7 Click *Customize permissions*, then *Custom*.



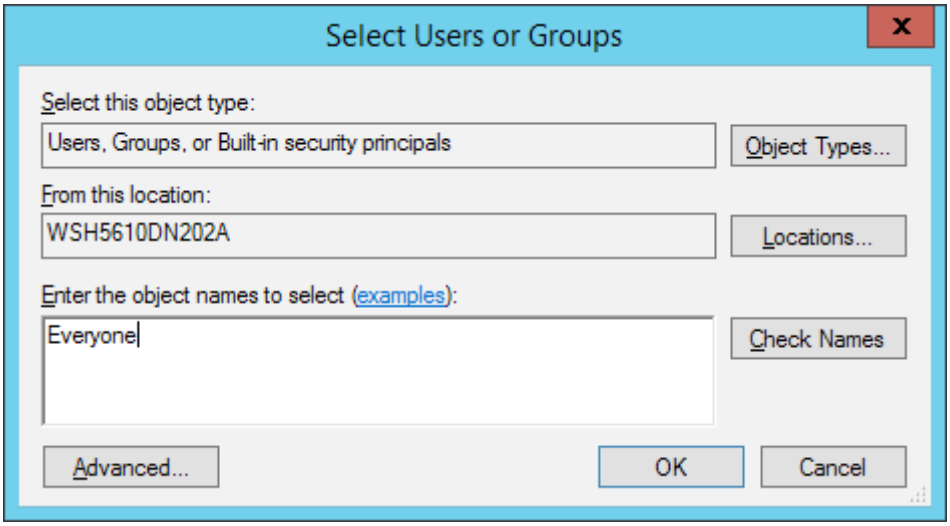
8 Choose *Everyone* and select the "Allow" checkbox for "Change".



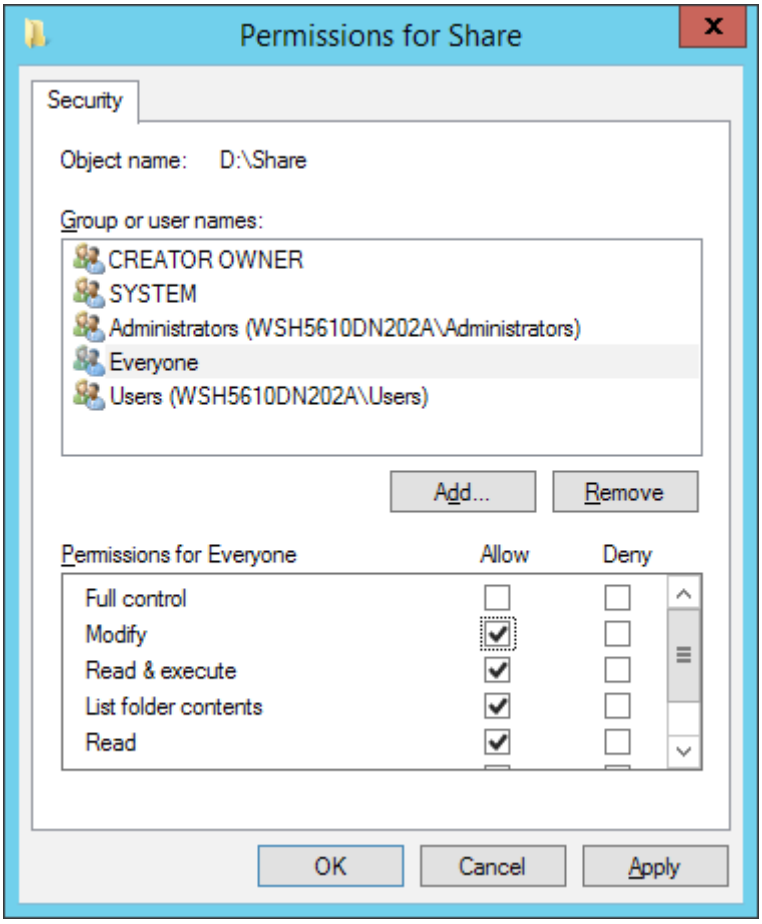
9 In the *Security* tab, click *Edit - Add*.



10 Enter "Everyone" under "Enter the object names to select", then click *OK*.



11 Choose "Everyone", then select the "Allow" checkbox for *Modify*.



12 Click *OK* - *OK* - *Finish* - *Finish*.

13 Click *Local Users and Groups* in *Computer Management*.

14 Double-click *Users* - *Guest*.

15 In the *General* tab, clear the "Account is disabled" checkbox, then click *OK*.

Notes:

Enable a guest account:

(1) From the Windows Storage Server Start menu, open *Administrative Tools*, then double-click *Computer Management*.

(2) Click *Local Users and Groups*.

(3) Double-click *Users* - *Guest*.

(4) In the *General* tab, clear the "Account is disabled" checkbox, then click *OK*.

Enable access permissions:

(1) From the Windows Storage Server Start menu, open *Administrative Tools*, then double-click *Computer Management*.

(2) Click *Shared Folders*.

(3) Double-click *Shared*, then the shared folder.

(4) In the *Security* tab, click *Edit*.

(5) From the *Local Users and Groups* list, add the users or groups that will be allowed access (the groups and users must be created beforehand). To allow access for all users, add a guest and change Administrator's "Access Permission" to "Full Control".

Turning the TeraStation On and Off

Press the power button on the TeraStation to turn it on and off. Or you can turn off your TeraStation by following the procedure below.

1 From the Windows Storage Server Start menu, point the cursor to the upper-right hand corner of the screen, then click the  icon.

2 Click the  icon - *Shut down*.

3 Select the reason why you want to shut down, then click *Continue*.

When all the LEDs on the front of the TeraStation turn off, the shutdown process is complete.

Note: Always shut down the TeraStation before unplugging it. The TeraStation can be damaged if it is suddenly unplugged without being powered down first.

Installing Antivirus Software

Installing antivirus software on the TeraStation is strongly recommended.
Connect a USB optical drive to the TeraStation's USB port, load the antivirus software CD into the optical drive, and install the software.

Chapter 2 Preinstalled Software

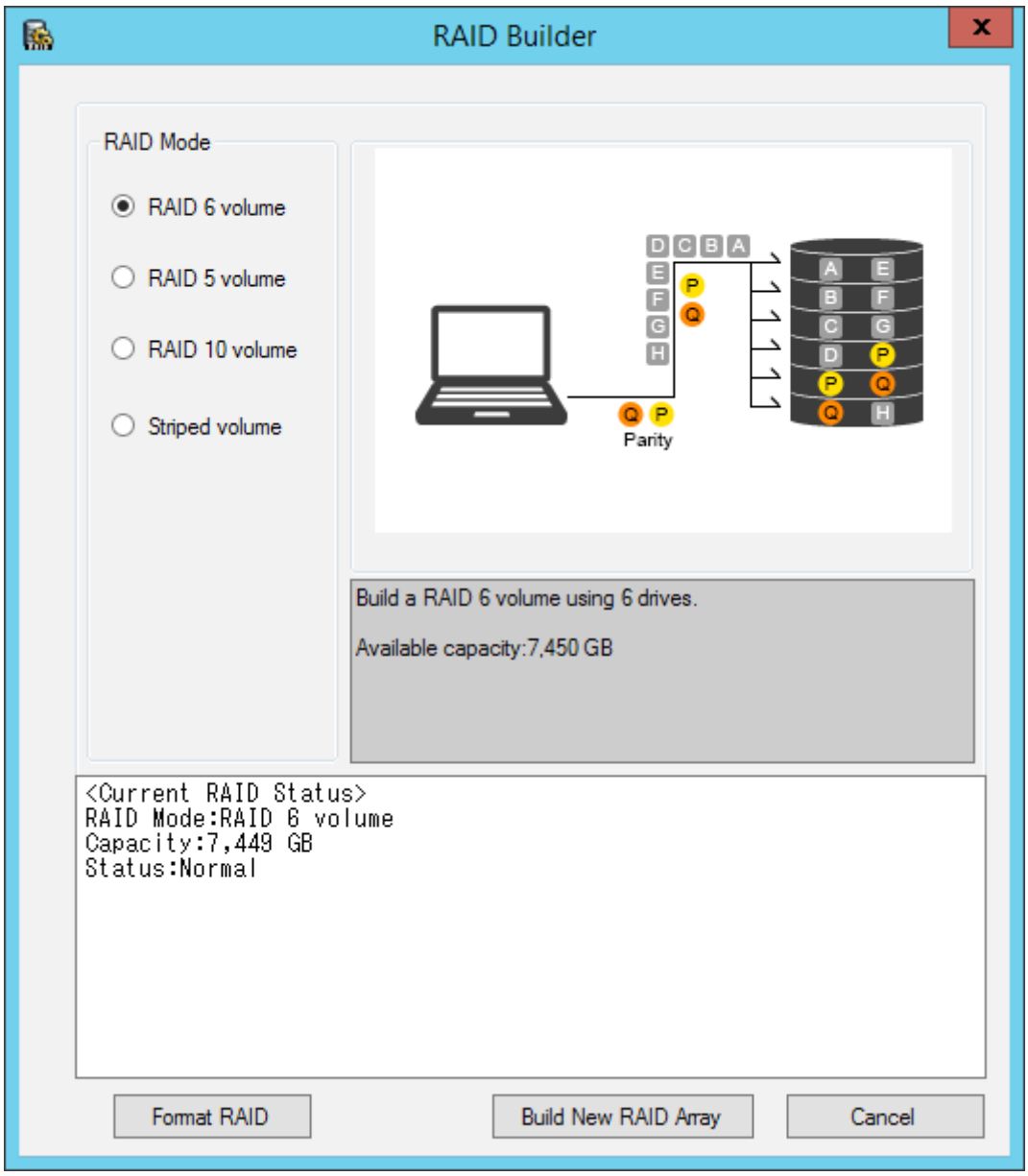
The following software is preinstalled on the TeraStation.

- RAID Builder
- Buffalo Dashboard
- Email Notification
- Buffalo Replication
- TeraStation Backup & Replication Folder Settings

RAID Builder

RAID Builder is used to create RAID arrays. See the "Managing Storage" section in chapter 3 for more details. To launch RAID Builder, you must be logged in as a member of the Administrators group in Windows Storage Server.

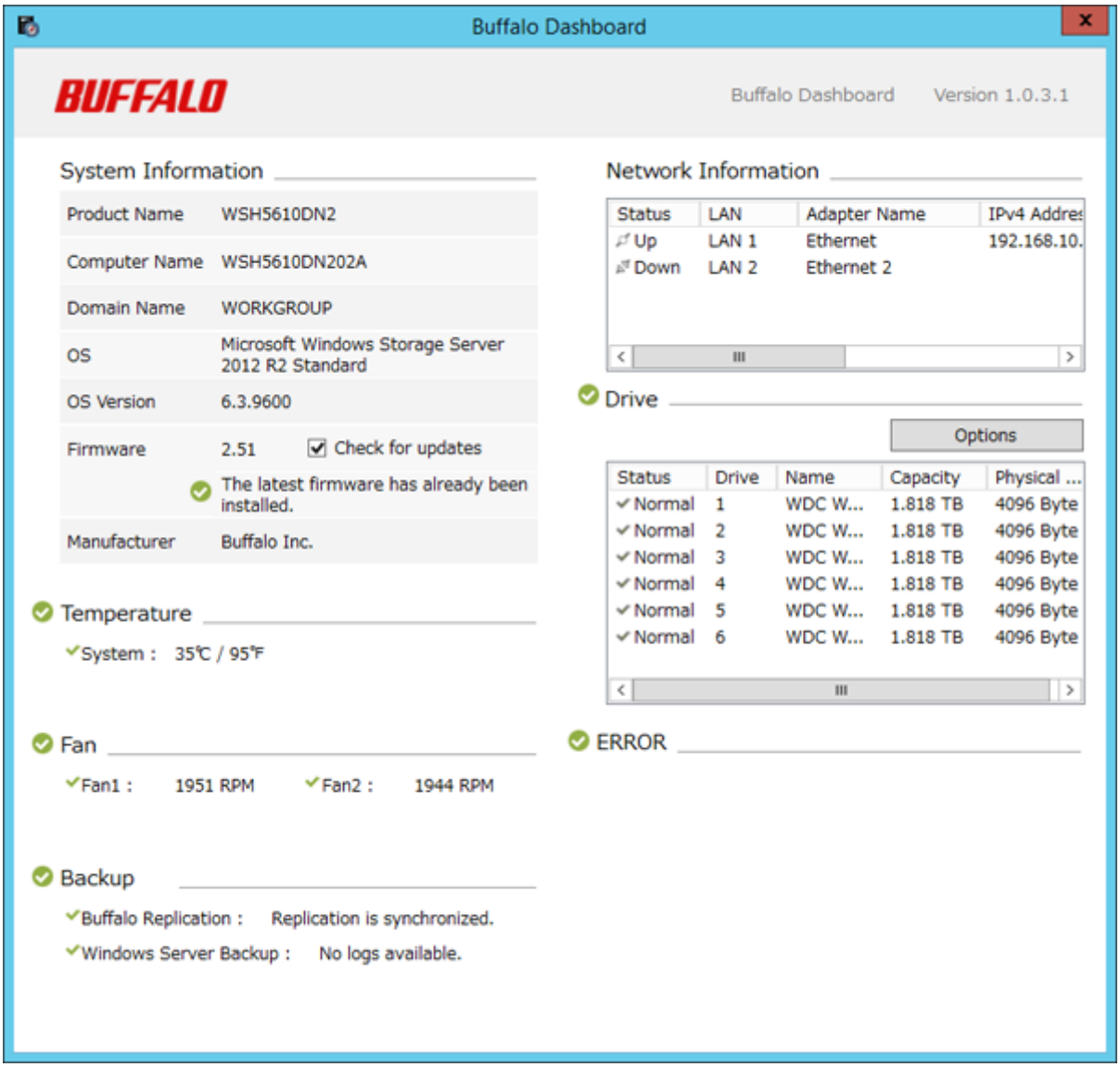
Note: This software cannot be accessed by multiple users at the same time. Before launching it, make sure that it is not being used by another user.



Buffalo Dashboard

Buffalo Dashboard displays system information and dismounts hard drives. To launch it, double-click the Buffalo Dashboard icon in the system tray.

Note: This software cannot be accessed by multiple users at the same time. Before launching it, make sure that it is not being used by another user.



Items	Descriptions
System Information	**Product Name**: Displays the model name of the TeraStation. **Computer Name**: Displays the hostname of the TeraStation. **Domain Name**: Displays the type of domain that the TeraStation is a member of. **OS**: Displays the type of Windows installed on the TeraStation. **OS Version**: Displays the version of the OS. **Firmware**: Displays the firmware version of the TeraStation. **Check for updates**: Enables or disables checking for new firmware releases. When a new firmware version is available, you will be notified here. **Manufacturer**: Displays "Buffalo Inc.".
Temperature	Displays the temperature of the system.
Fan	Displays the fan rpm.
Backup	Displays the status of backup and replication.

Items	Descriptions
Network Information	Displays IP addresses, subnet masks, default gateways, and link speed.
Drive	Displays the status, drive numbers, names, capacity, and physical sector sizes of each drive. **Options**: **Shut down when the drive's temperature becomes abnormally high**: The TeraStation will automatically shut down if the drive gets too hot.
ERROR	Displays error or information codes. For more detail information, refer to the "Errors and Statuses on Buffalo Dashboard" section below.

Note: "Options" and "Check for updates" functionalities are only available when logged in as an administrator.

Errors and Statuses on Buffalo Dashboard

Message	Description	Corrective Action
SYSTEM Error E11 Fan Failure	An error occurred in the fan speed.	Check that no foreign objects or dust are clogging the fan. If any foreign objects or dust are found, use a pair of tweezers, air duster, or another tool to remove them. If the error is displayed again, contact Buffalo technical support for assistance.
SYSTEM Error E12 Cooling Failure	A rise in the system temperature may have exceeded the allowable safety value.	Do not place objects in the area around the TeraStation. Also, move the TeraStation to a cool location. Make sure that the TeraStation's fan is working normally.
HDx Error E16 HDx Not Found	Unable to find hard drive X.	Hard drive may be disconnected or may have failed.
HDx Broken E30 Replace the DISK	An error occurred, so hard drive was removed from the RAID array.	Replace hard drive.
SYSTEM I10 TOO HOT !	A rise in the system temperature may have exceeded the allowable safety value.	Move the TeraStation to a cool location. Do not place objects in the area around the TeraStation.
Operation I12 DEGRADE MODE	Operating in degraded mode.	Check the drive where the error occurred and replace it with a new hard drive. For replacing method, refer to the "Hard Drive Replacement Procedure" section in chapter 6.
RAID I18 x Drive Rebuilding	Resynchronizing drive in the array. **Note:** Transfer speeds are slower during the resynchronizing process.	Wait until the RAID resynchronization finishes. It will take about 8–12 hours per terabyte for a RAID 5 volume and 3–6 hours per terabyte for a mirrored volume. This message will disappear when the RAID resynchronization finishes.
Replication I33 Replicate Failure	An error occurred during replication.	From Buffalo Replication, click *Sync* to execute resynchronization. If the error is displayed again, contact Buffalo technical support for assistance.
New Firmware I52 Available	A new firmware version has been released.	Update the firmware.

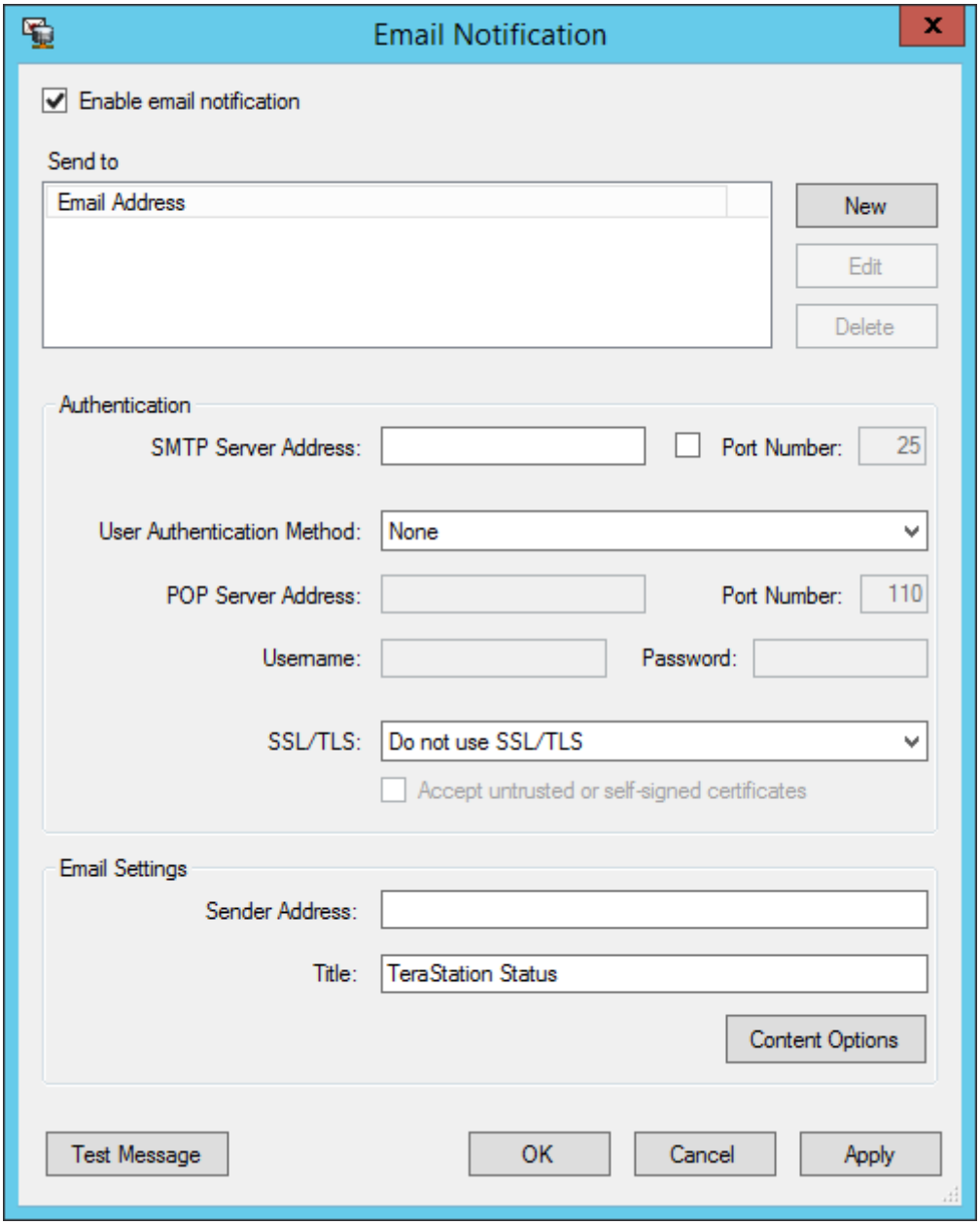
Message	Description	Corrective Action
I54 Backup Failure	A backup job has failed.	Make sure that the backup job is configured correctly, and that the NAS is on and not in standby mode. If the backup job still fails, check the status of NAS, the network, and the backup source and destination. Also, check the backup log to see if any errors were recorded.

Email Notification

Your TeraStation can send you email reports when settings are changed or an error occurs. See the "Email Notification" section in chapter 5 for more details.

To launch Email Notification, you must be logged in as a member of the Administrators group in Windows Storage Server.

Note: This software cannot be accessed by multiple users at the same time. Before launching it, make sure that it is not being used by another user.

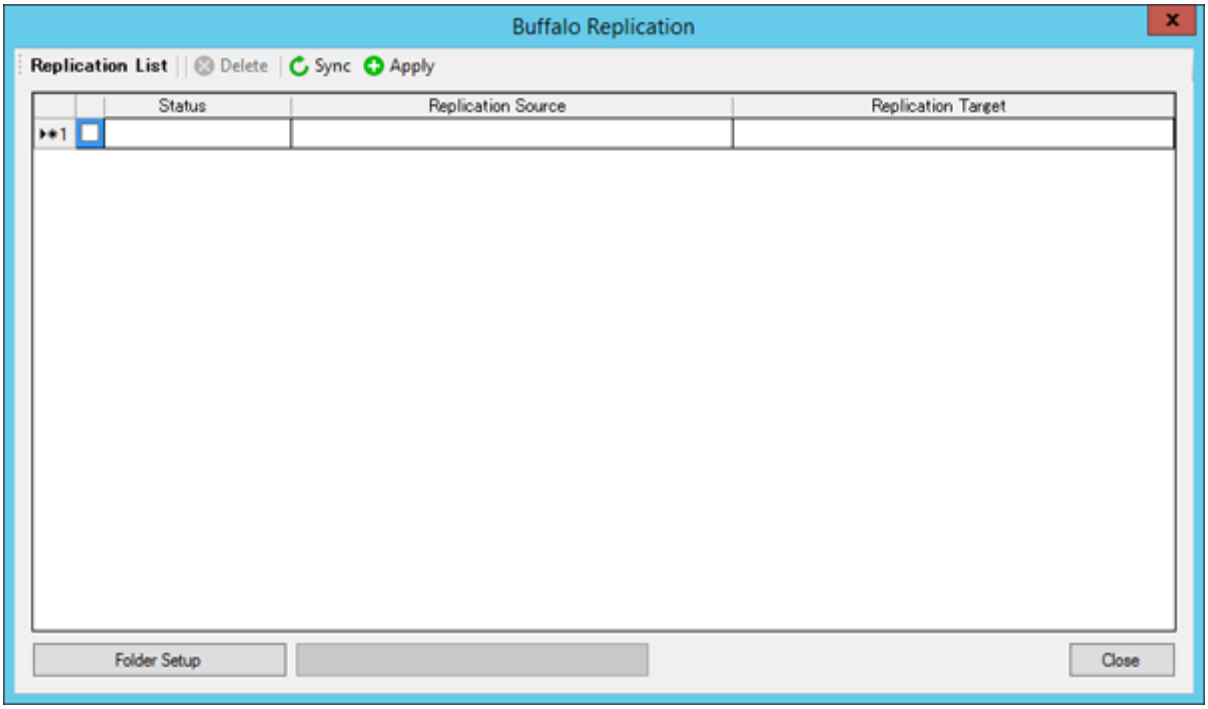


Buffalo Replication

Your TeraStation can be synchronized with another TeraStation, replicating most data. See the "Replication" section in chapter 4 for more details.

To launch Buffalo Replication, you must be logged in as a member of the Administrators group in Windows Storage Server.

Note: This software cannot be accessed by multiple users at the same time. Before launching it, make sure that it is not being used by another user.

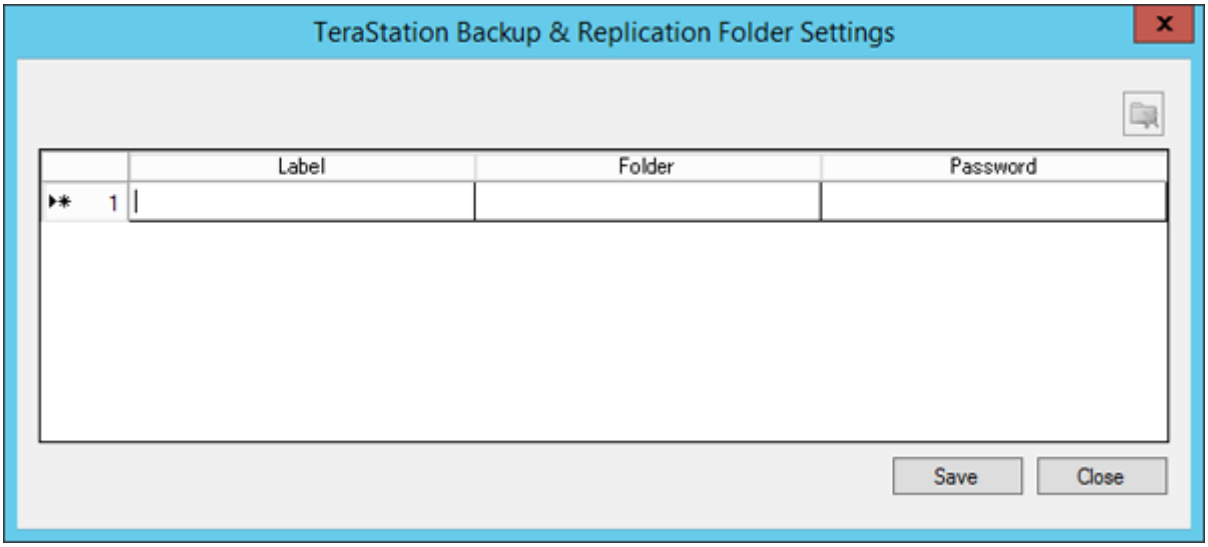


TeraStation Backup & Replication Folder Settings

Before using it as a backup device on the network, configure your TeraStation in "TeraStation Backup & Replication Folder Settings".

To launch TeraStation Backup & Replication Folder Settings, you must be logged in as a member of the Administrators group in Windows Storage Server.

Note: This software cannot be accessed by multiple users at the same time. Before launching it, make sure that it is not being used by another user.



Items	Descriptions
Label	Enter a name for the backup destination. When you search for backup devices on the network, this name will appear.
Folder	Specify a shared folder where backup data will be stored.
Password	If you enter a backup password (optional), this backup device will not appear on the list of available devices when users search for it, unless they search for it by the password.
	To remove a folder from the list of available backup targets, select the folder and click this button.
Save	Saves the settings.
Close	Exits TeraStation Backup & Replication Folder Settings.

Chapter 3 Managing Storage

Creating Volumes

Notes:

- To create a RAID volume, use RAID Builder instead of the Disk Management option in Windows Storage Server.
- When volumes are deleted or formatted, or the RAID mode is changed, all data stored on the volumes is erased. Before executing these operations, back up any important data.
- In this manual, "recover" means reverting the TeraStation (including the data) to its former state prior to the drive failure. It doesn't refer to reading data from a failed hard drive.

Volume Types

RAID 6 Volumes

RAID 6 distributes two parity blocks when writing data. The usable space is equal to the sum of the capacity of four drives. If two drives in a RAID 6 array fail, data on the array can be recovered after the failed drives are replaced. However, if three or more drives fail, all data is lost.

RAID 5 Volumes

RAID 5 distributes a parity block when writing data. The usable space is equal to the sum of the capacity of five drives. If one drive in a RAID 5 array fails, data on the array can be recovered after the failed drive is replaced. However, if two or more drives fail, all data is lost.

RAID 10 Volumes

Mirrored pairs of drives in RAID 1 arrays are combined into a RAID 0 array. The usable space is equal to the capacity of three drives. The same data is written to multiple drives so that if one drive from either or both RAID 1 array fails, data on the array can be recovered after the failed drives are replaced. However, if two drives on the same RAID 1 array or three drives in total fail, all data is lost.

Striped Volumes

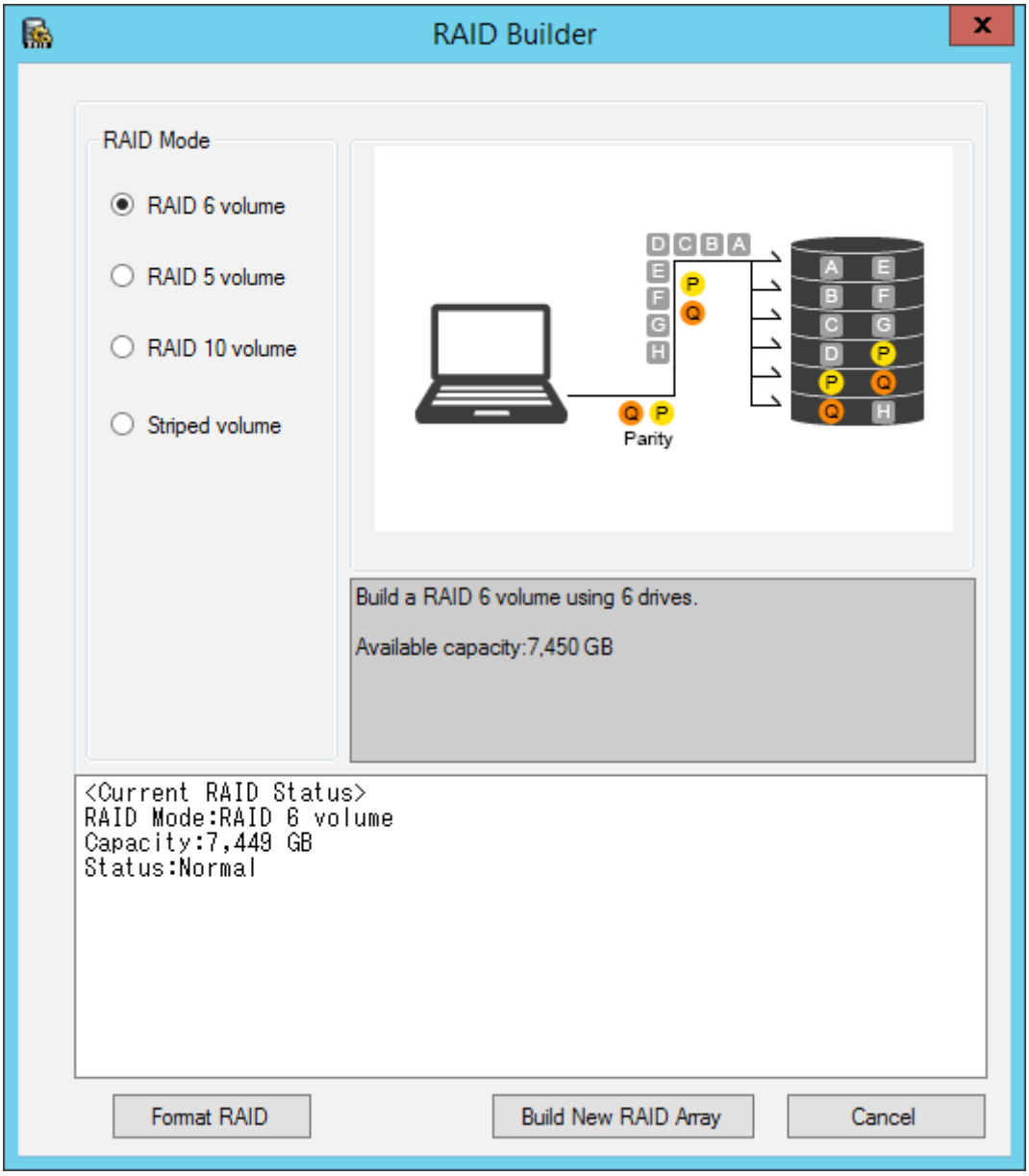
RAID 0 stripes data across the multiple drives, but lacks parity blocks like RAID 5 or RAID 6. The usable space is equal to the capacity of all drives on the TeraStation. RAID 0 doesn't have any redundancy so data cannot be recovered if even a single drive fails.

Creating a RAID Volumes

To build a new RAID array, follow the procedure below.

1 From the Windows Storage Server Start menu, click *RAID Builder*.

2 Select the desired RAID mode under "RAID Mode" and click *Build New RAID Array*.



3 Click *OK* when a warning message is displayed.

4 Click *OK* again. Creating RAID array will begin. The TeraStation will shut down automatically after about a minute.

5 When the remote desktop is disconnected, press the power button on the TeraStation to turn it on.

6 Connect the Windows Storage Server via the remote desktop.

7 From the Windows Storage Server Start menu, click *RAID Builder*.

8 Click *Format RAID* and *OK*.

When formatting is finished, the RAID array is now created.

You can also format the existing RAID array using *Format RAID* on RAID Builder.

Note: When the "Drive Rebuilding" message is displayed under "Error" on Buffalo Dashboard, a new RAID array cannot be created. Wait until the message disappears, then try again.

Chapter 4 Backup and Replication

Any data stored in the TeraStation may be lost through hard drive failure or wrong operation. To avoid losing data accidentally, back up your data regularly.
You can back up data using the following functions:

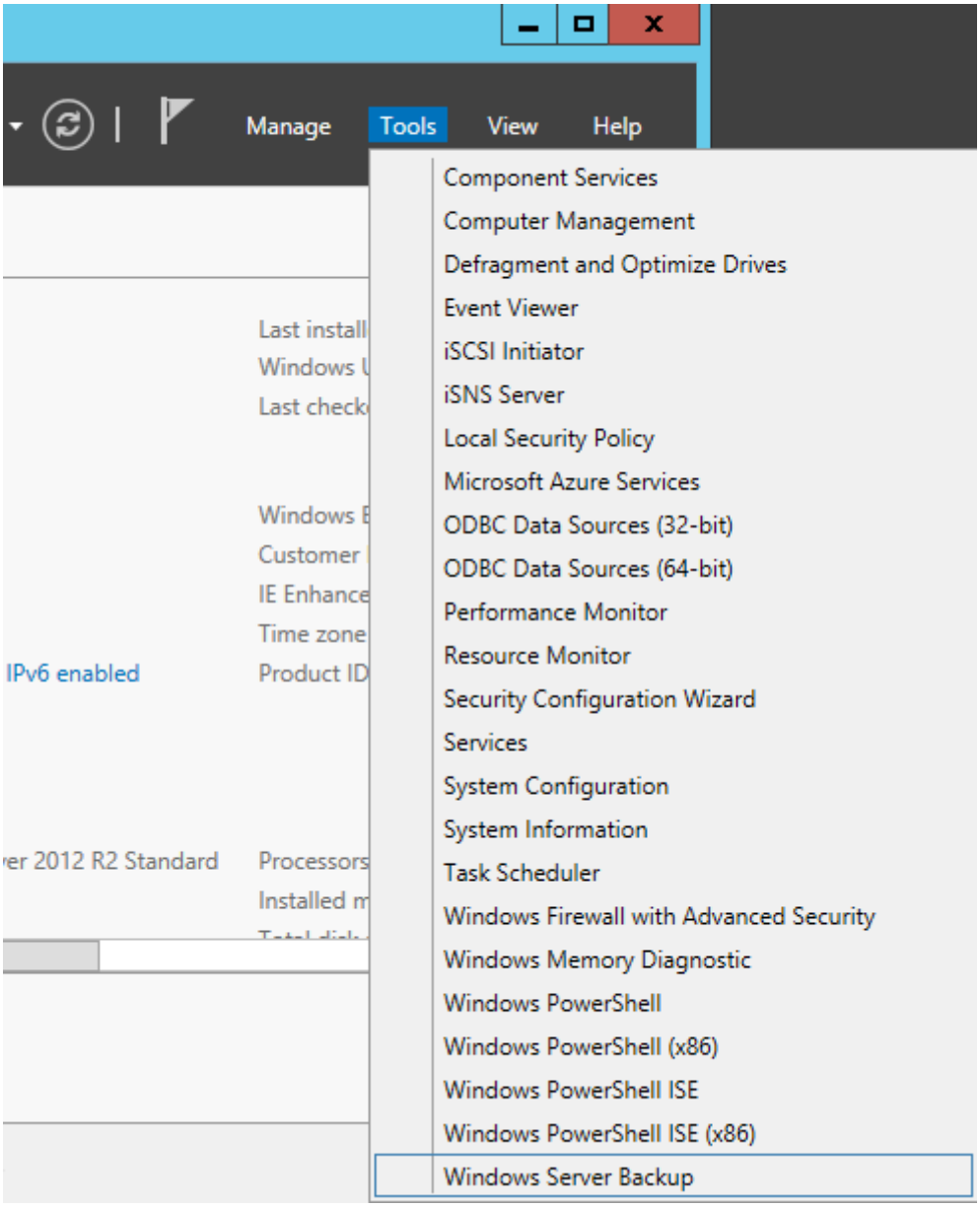
- Windows Server Backup
- Buffalo Replication
- DFS Replication

Back Up in Windows Storage Server

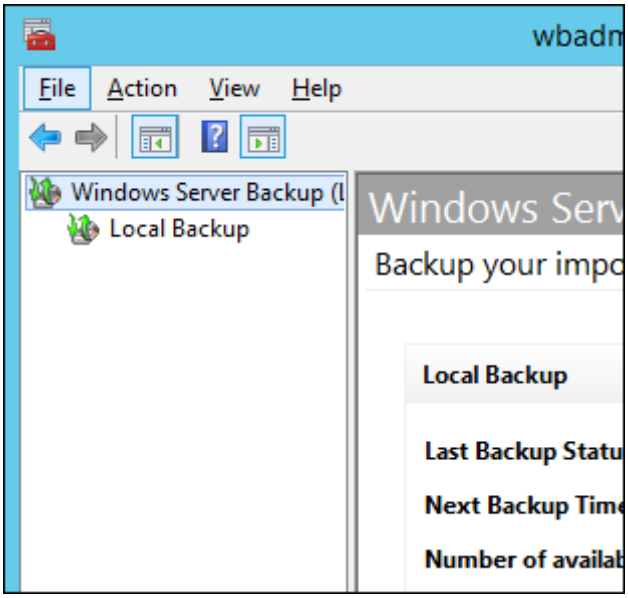
Preparing a Backup Destination

Follow the procedure below to set your backup schedule.

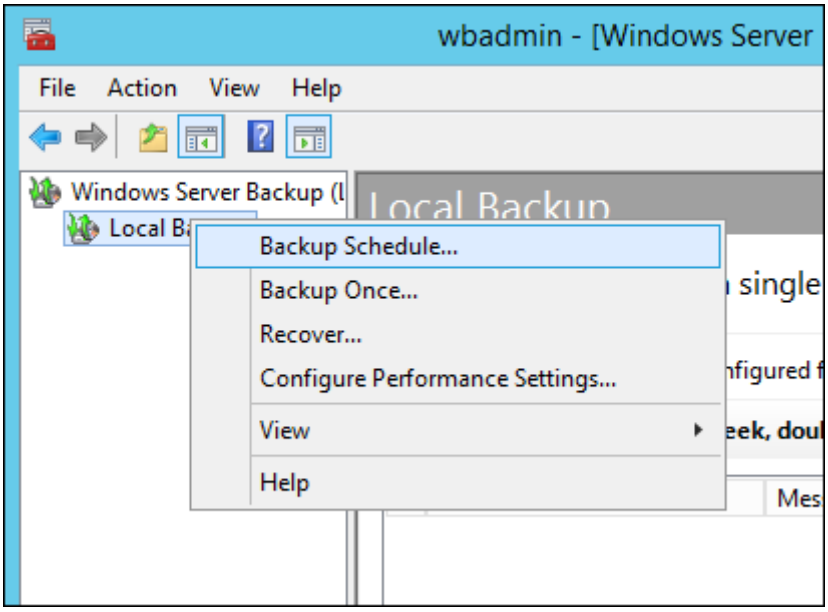
1 In Server Manager, click *Tools* - *Windows Server Backup*. The "Windows Server Backup" wizard will start.



2 Click *Local Backup*. If "Reading data; please wait..." is displayed, please wait until any messages disappear.

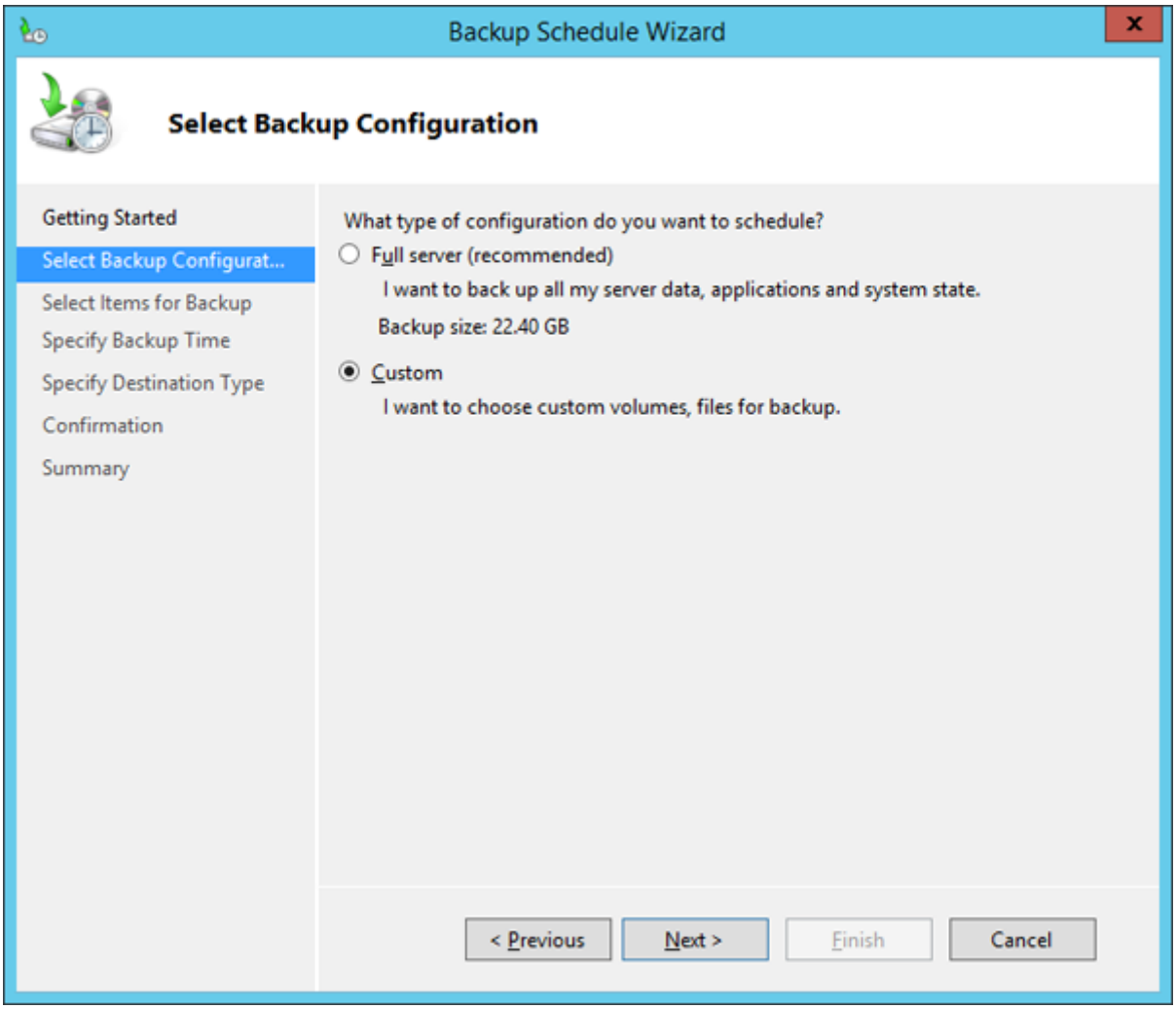


3 Right-click on "Local Backup" and select *Backup Schedule...*. The "Backup Schedule Wizard" will start.

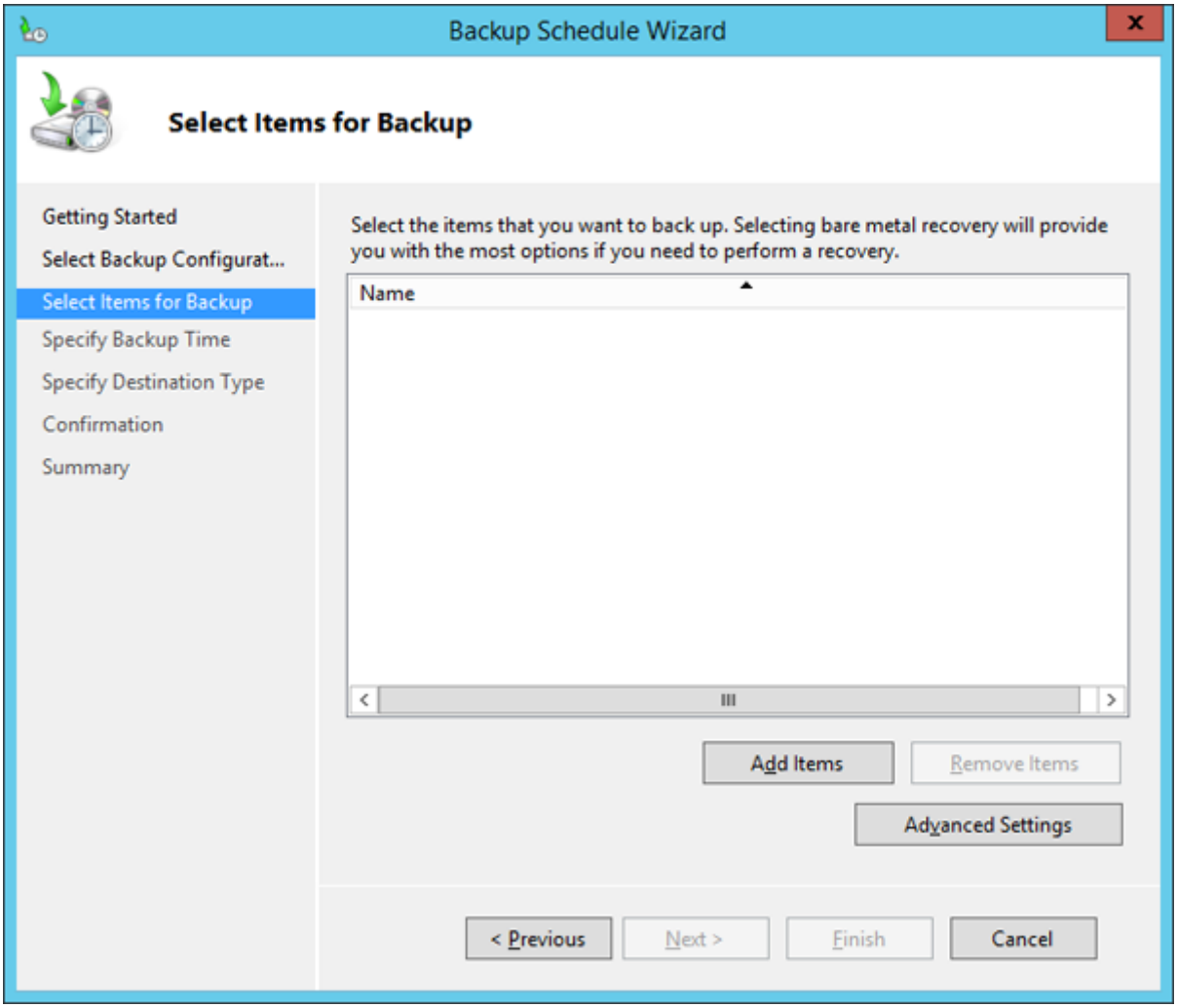


4 Click *Next*.

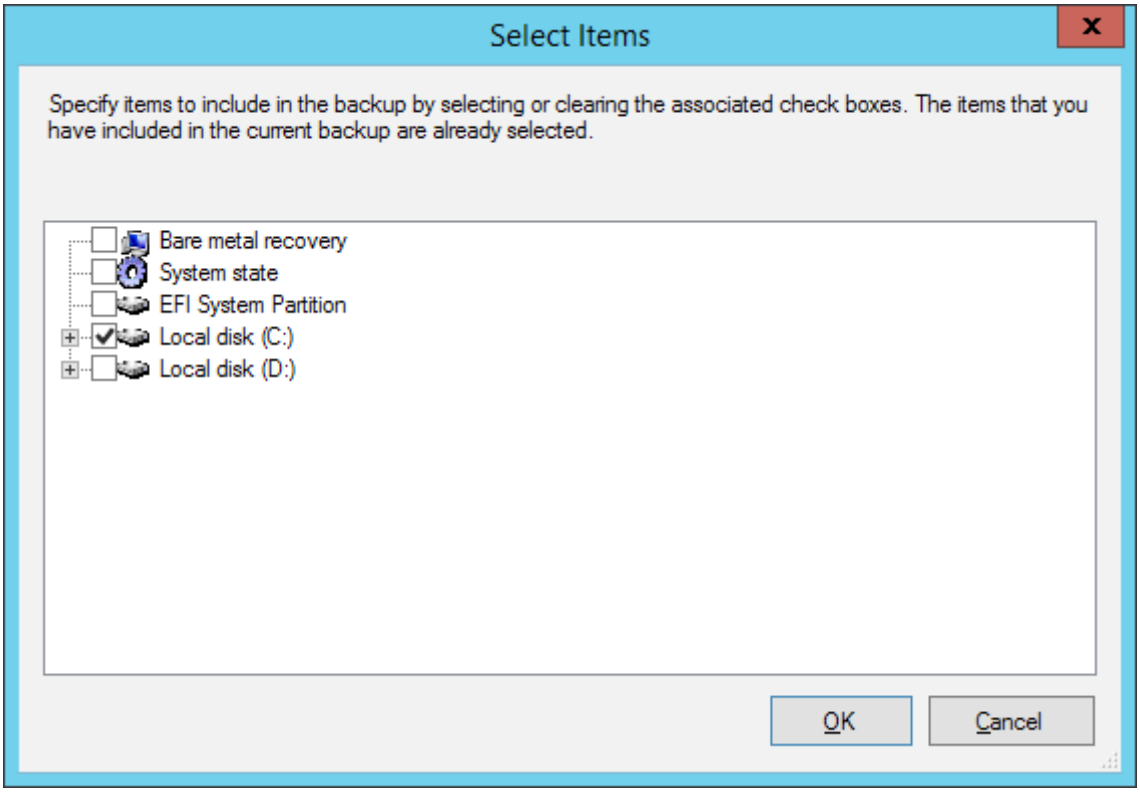
5 Select "Custom" and click *Next*.



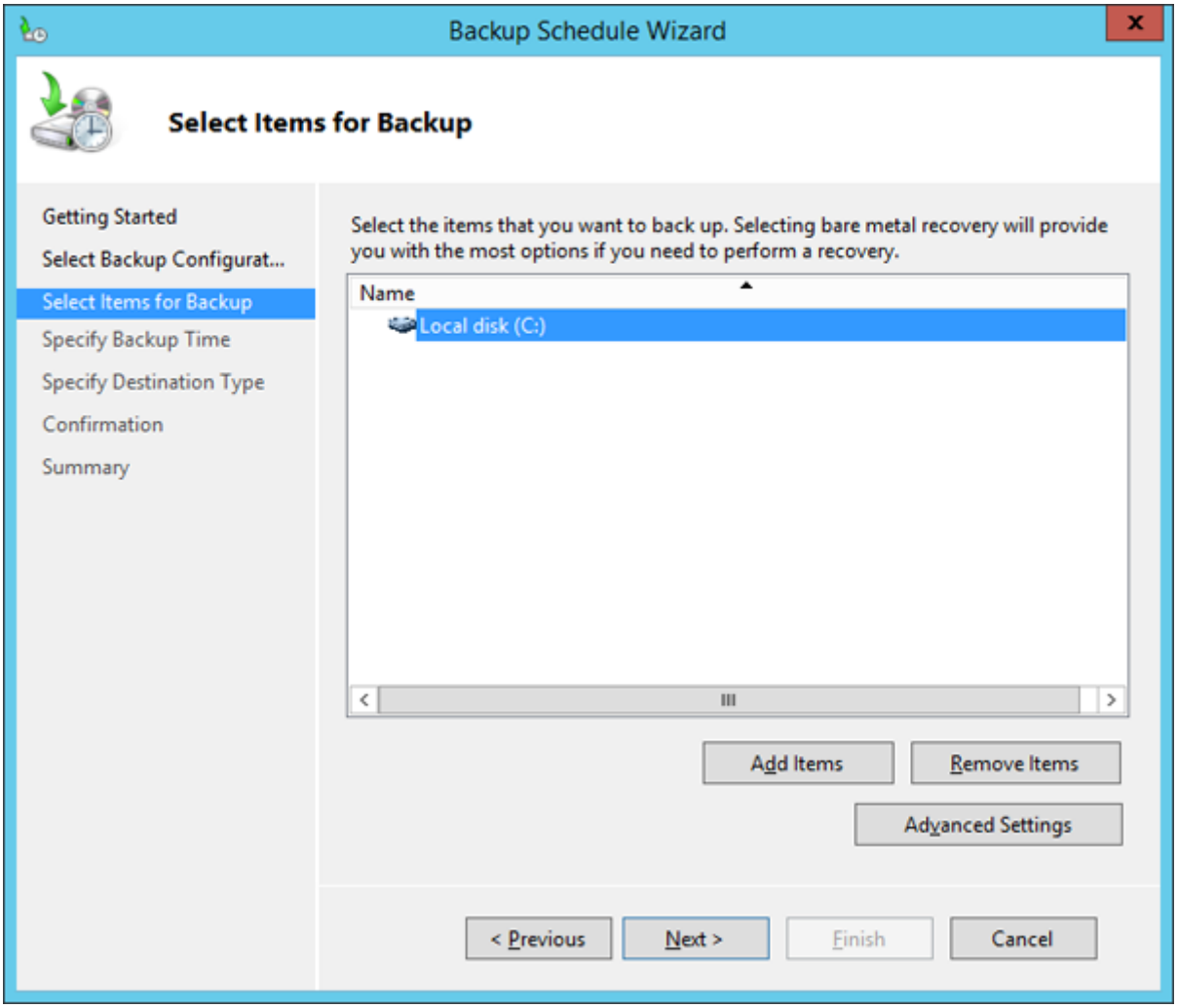
6 Click *Add Items*.



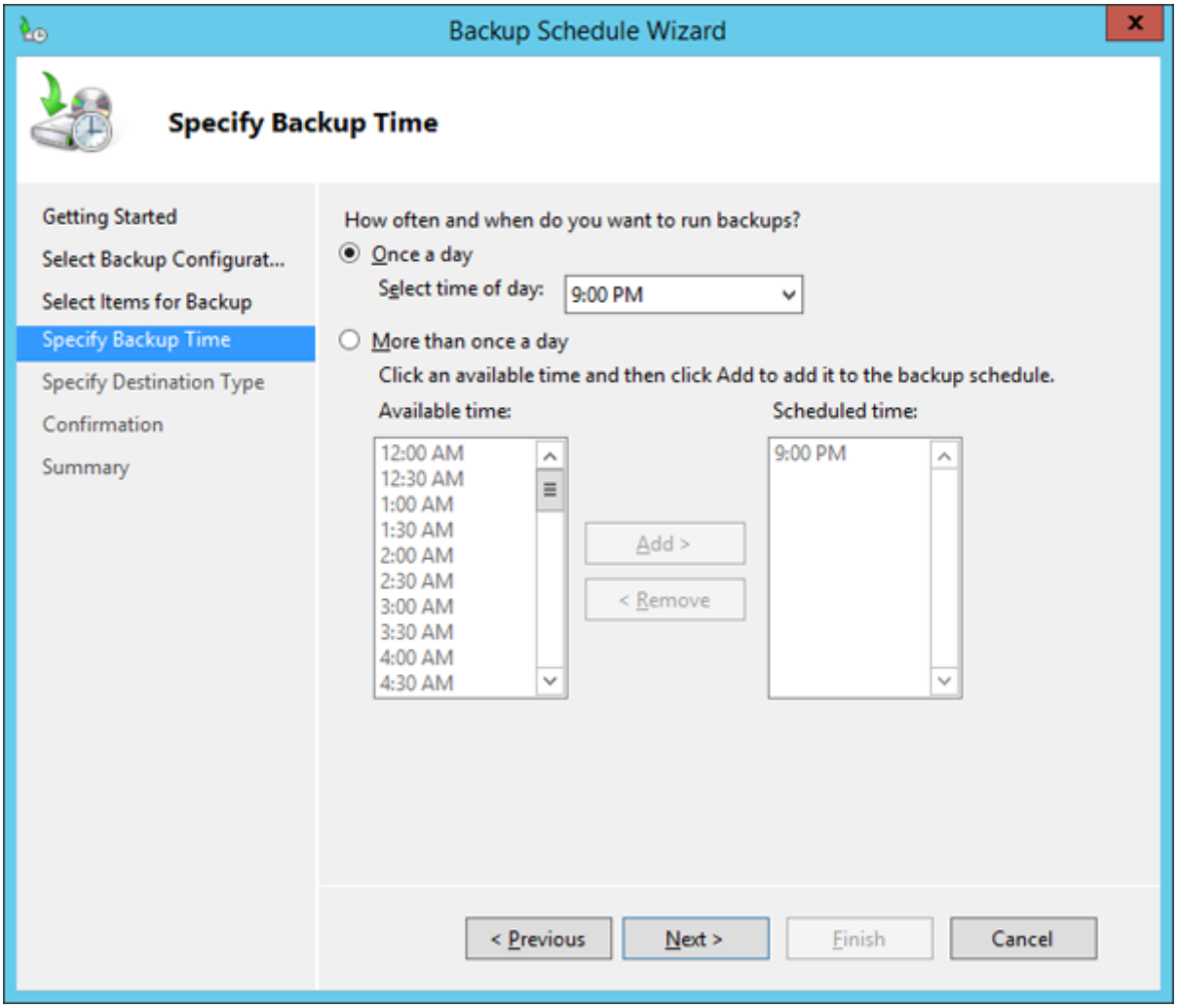
7 Select the backup source folders or drives and click *OK*.



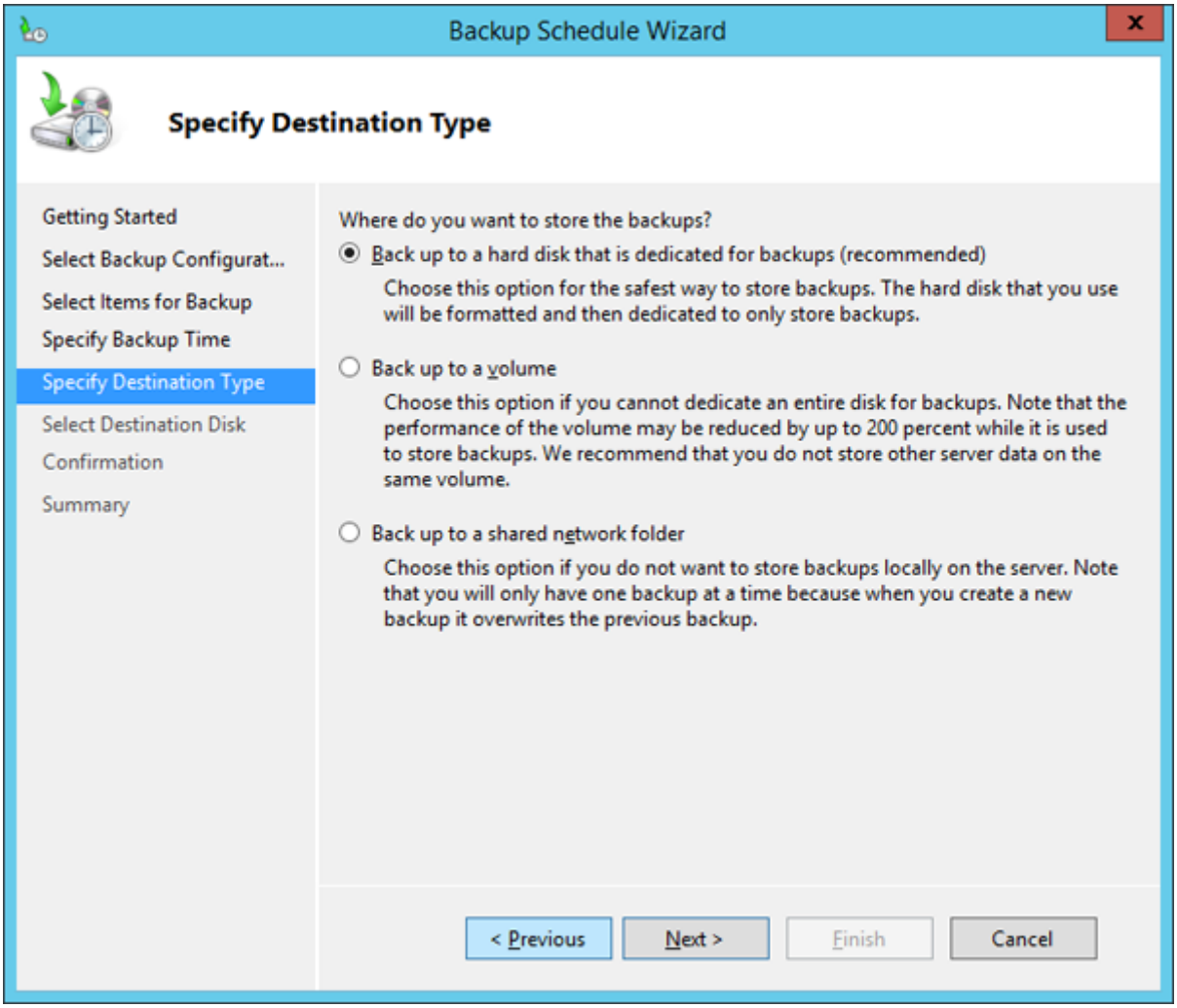
8 Click *Next*.


Backup Schedule Wizard
Select Items for Backup
Getting Started
Select Backup Configurat...
Select Items for Backup
Specify Backup Time
Specify Destination Type
Confirmation
Summary
Select the items that you want to back up. Selecting bare metal recovery will provide you with the most options if you need to perform a recovery.
Name
Local disk (C:)
Add Items
Remove Items
Advanced Settings
< Previous
Next >
Finish
Cancel

9 Specify the schedule to run the backup and click *Next*.



10 Select the backup destination and click *Next*.



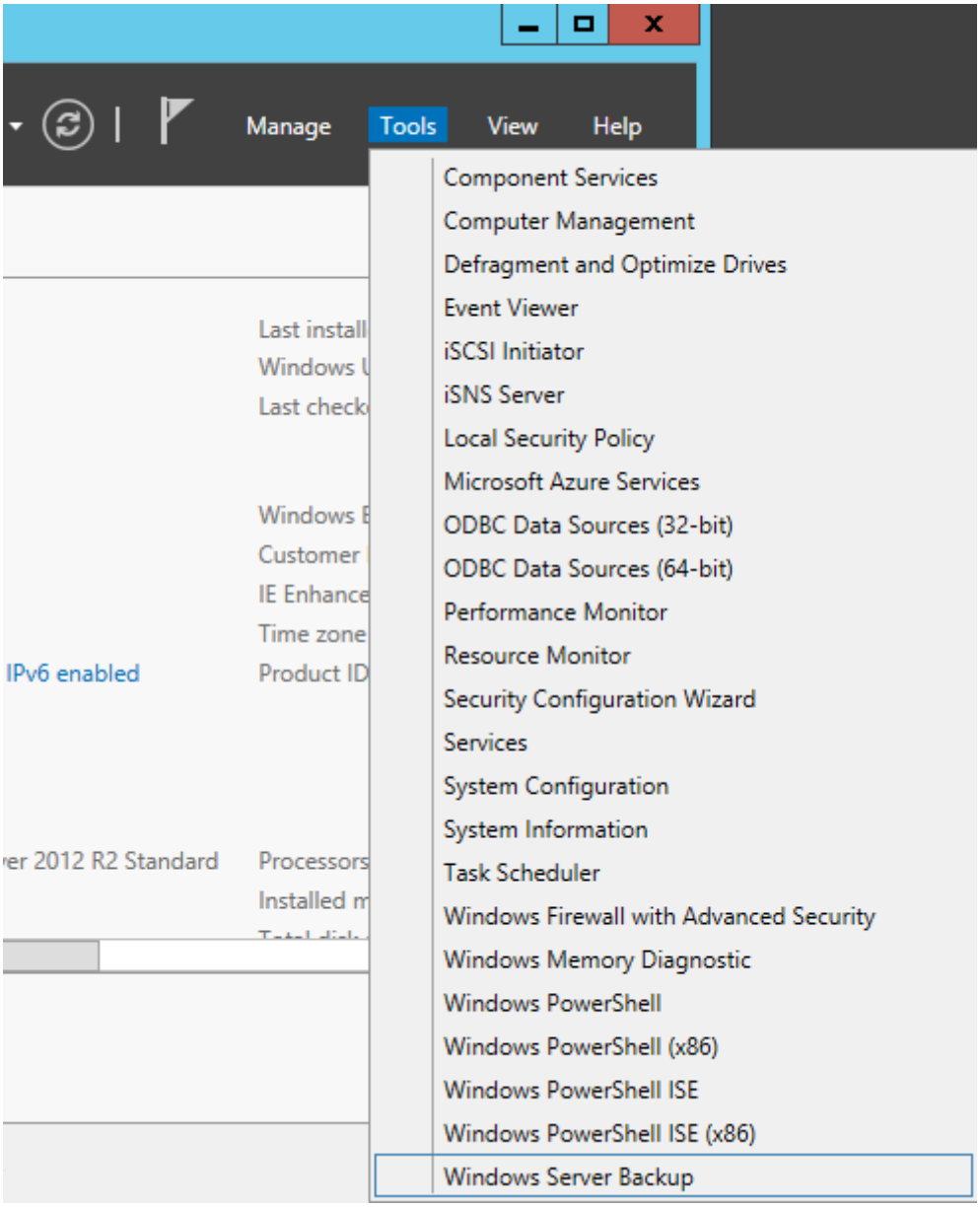
11 Step through the wizard to finish.

Recovering Backup Data

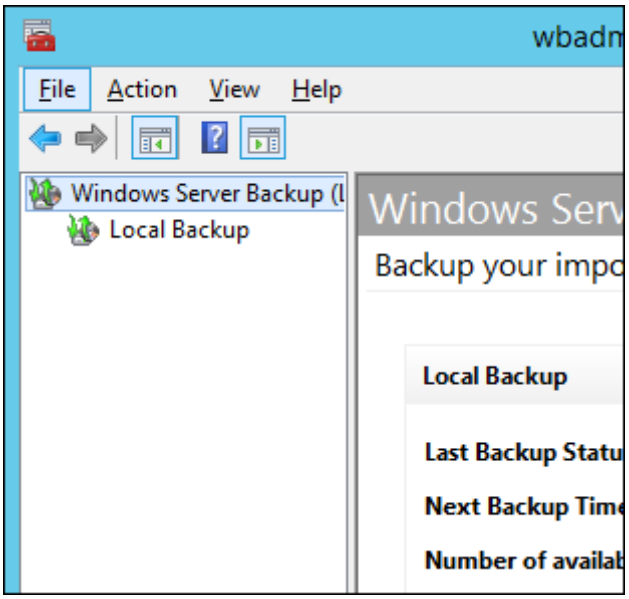
Follow the procedure below to recover the backup data to the TeraStation.

Note: Bare-metal recovery is not supported for the backup data stored using the backup function of Windows Storage Server.

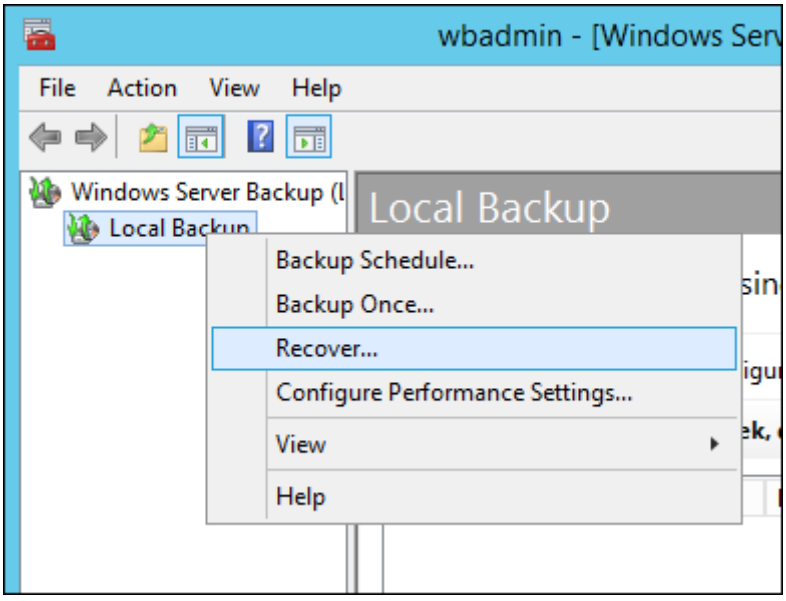
1 In Server Manager, click *Tools* - *Windows Server Backup*. The "Windows Server Backup" wizard will start.



2 Click *Local Backup*. If "Reading data; please wait..." is displayed, please wait until any messages disappear.

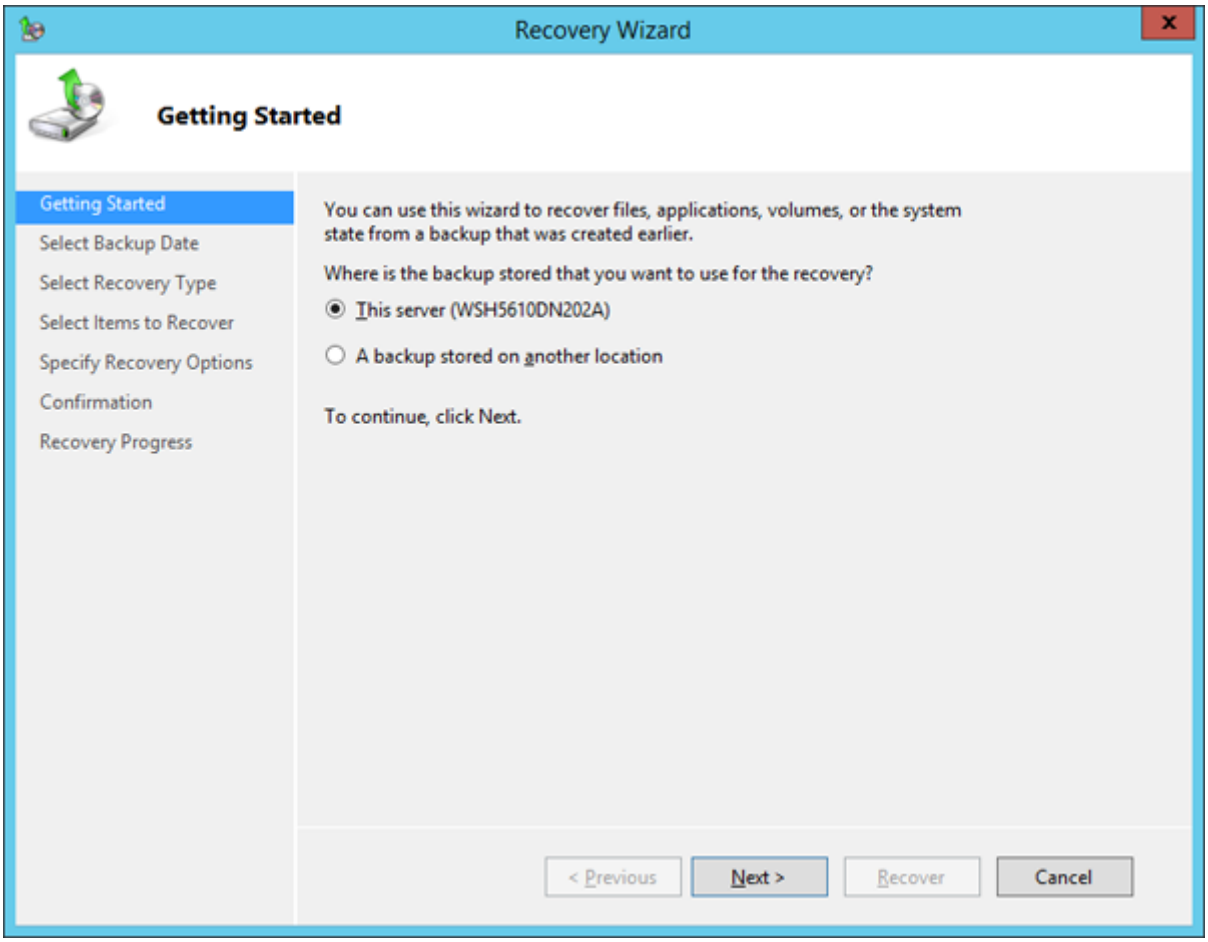


3 Right-click on "Local Backup" and click *Recover...*. The recovery wizard will start.

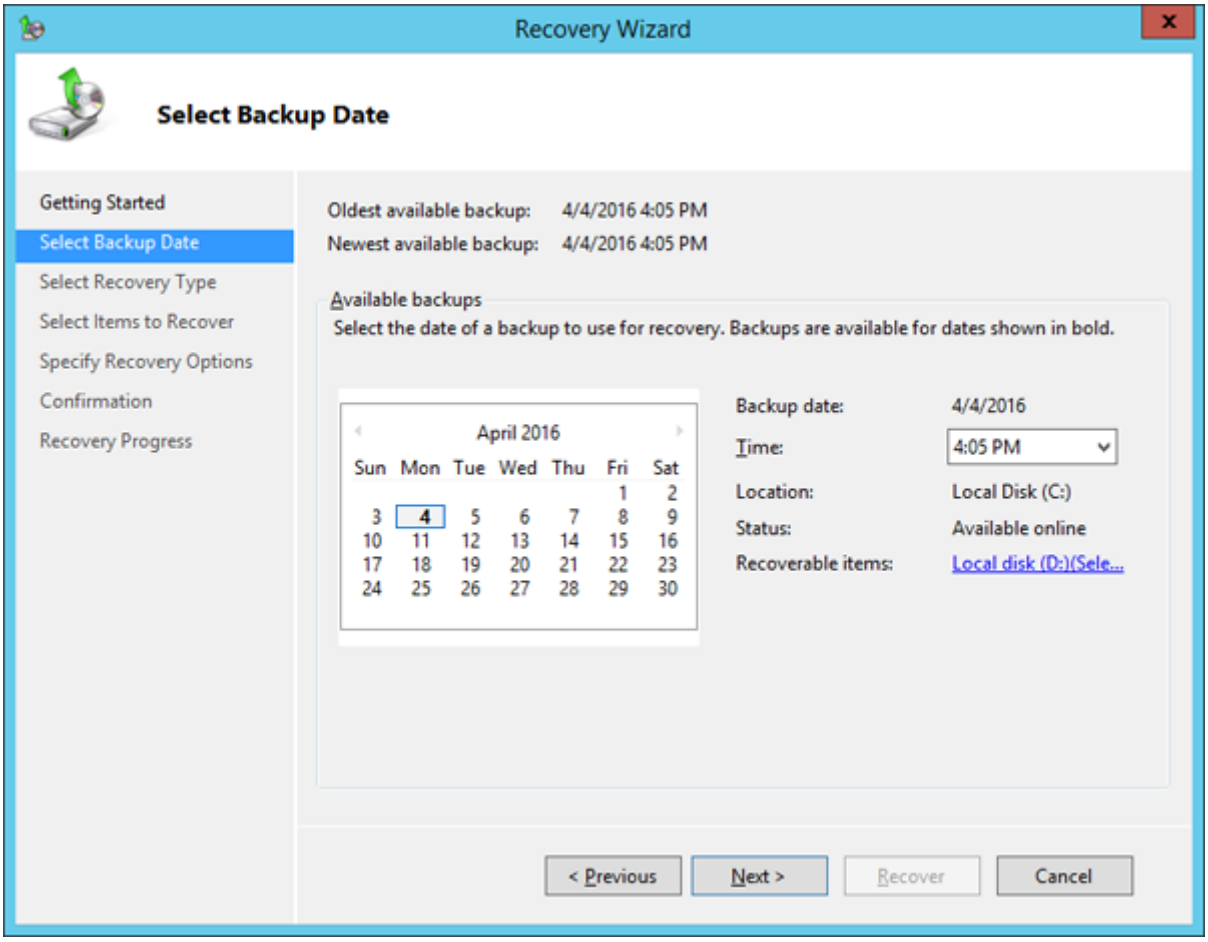


4 Select where the backup data is saved and click *Next*.

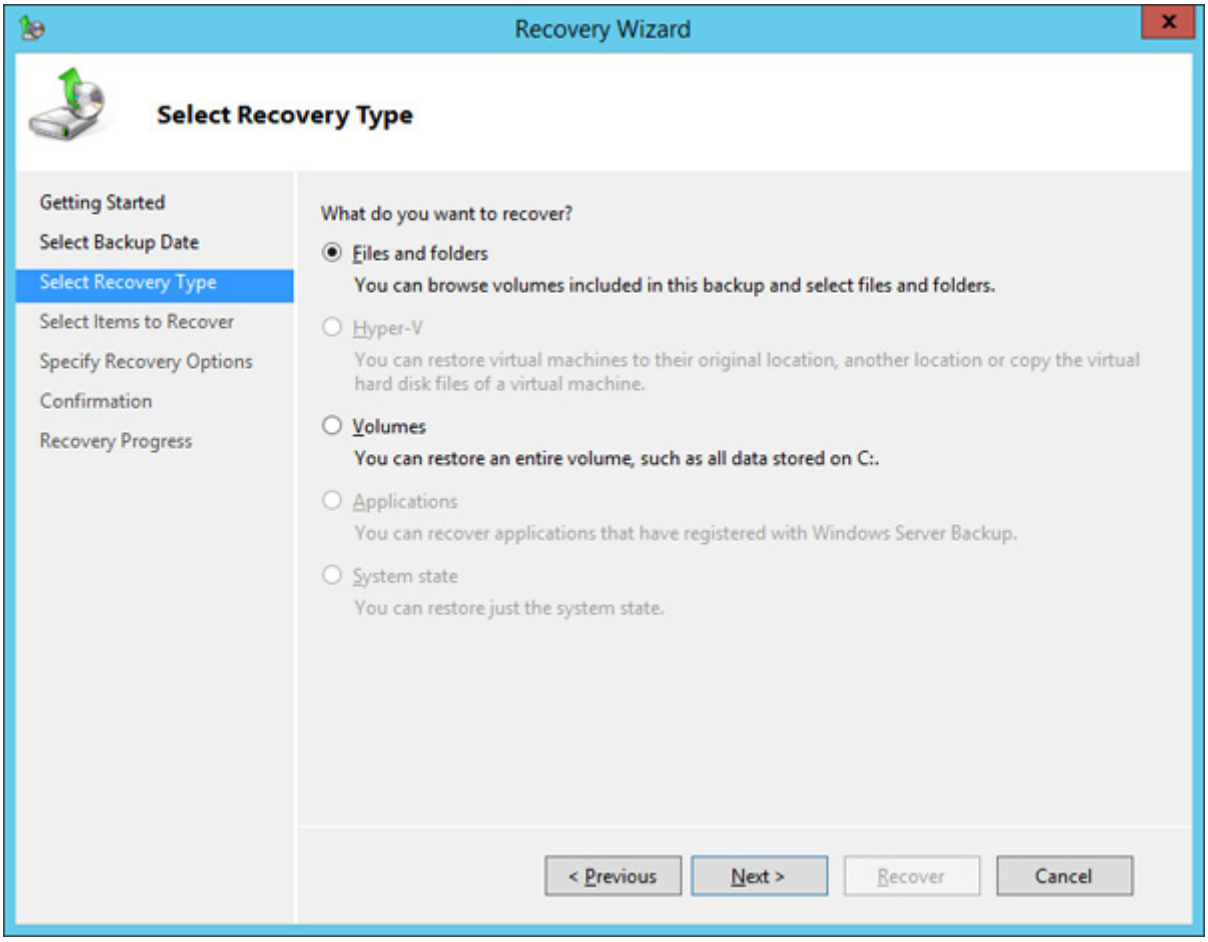
When "A backup stored on another location" is selected, specify the folder of the backup data in the next page.



5 Select the date when a data backup occurred and click *Next*.



6 Select the recovery targets and click *Next*.



7 Step through the wizard to finish.

Replication

Replication copies all data from a share to a share on a different TeraStation. This is an easy way to configure a reliable system to provide data protection in the event your main TeraStation fails. To configure replication, connect an Ethernet cable to the LAN port of each TeraStation and follow the steps below.

Note: Replication operation may not proceed properly if a large number of files or a large capacity file have been replicated continually for a long time, causing too of a data load. Before starting replication, check if there is any cause for operational issues.

Differences Between Buffalo Replication and DFS Replication

To use DFS Replication, your TeraStation needs to be joined to an Active Directory, while Buffalo Replication does not require joining an AD domain. Buffalo Replication can also specify another TeraStation or LinkStation as a replication target.

If your environment must join the Active Directory domain, use DFS Replication. If joining the Active Directory is not required, or if a TeraStation or LinkStation has been configured as the replication target, using Buffalo Replication is recommended.

Before Using Replication

- For best results, use static IP addresses with the same subnet masks for both replication TeraStations (source and target). If on a VPN network, configure the network settings so that broadcast packets are not dropped.
- Setting the TeraStation on a 1000 Mbps network is recommended.

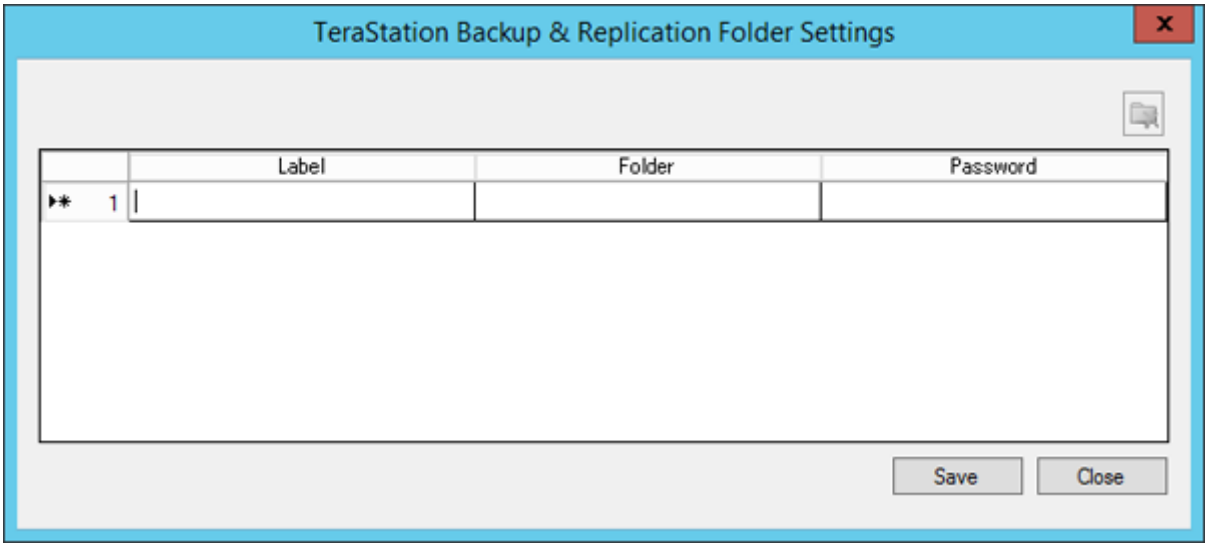
- Up to five replication tasks can be created.
- Filenames and file paths that will be copied by replication should be within 170 characters. Files with filenames that are longer than 170 characters may not be copied correctly.

Buffalo Replication

If using Buffalo Windows Storage Server-installed TeraStations as both the replication source and target, start from step 1. If using a different TeraStation as the replication target, refer to that TeraStation's user manual to configure it as a replication target. After you finish configuring on the TeraStation's Settings, go to step 3.

1 Click *TeraStation Backup & Replication Folder Settings* in the Start menu on the replication target TeraStation's Windows Storage Server.

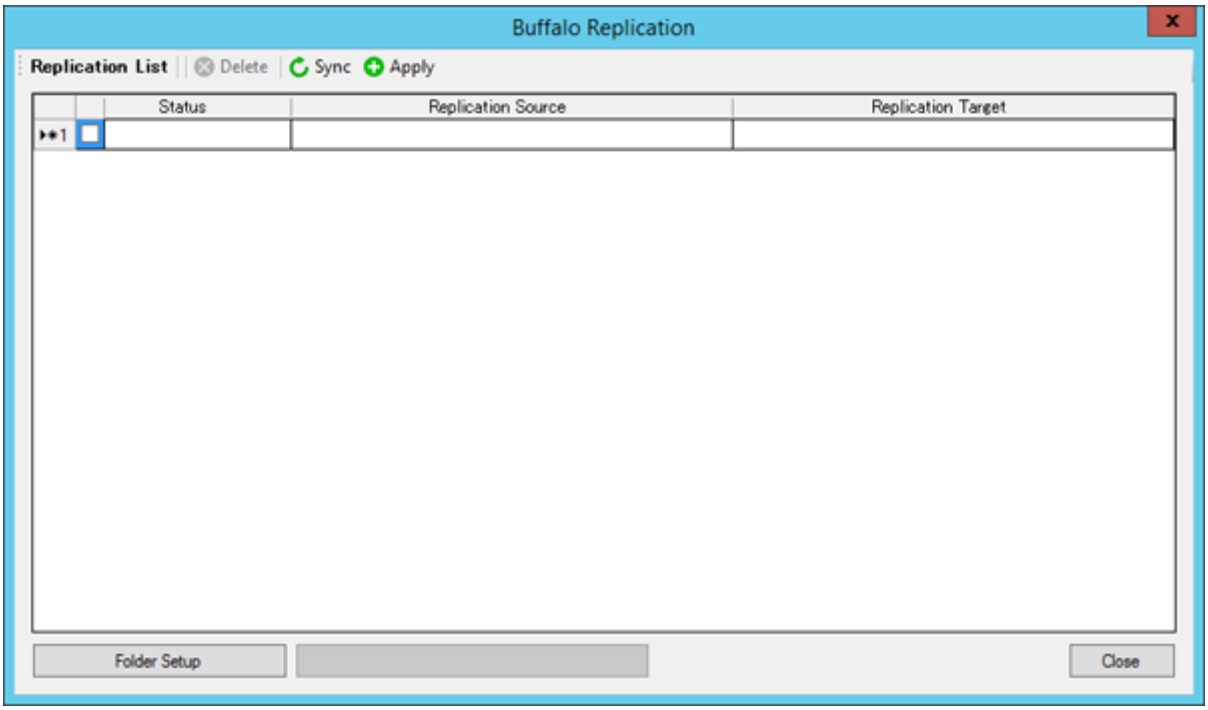
2 Double-click the blank space under "Label" and enter a label for the folder. Click . under "Folder" and select the folder as a replication target. Click *OK* when finished.



3 Click *Buffalo Replication* in the Start menu on the replication source TeraStation's Windows Storage Server.

4 Click the blank space under "Replication Source" and click . Select a folder from the list as the replication source and click *OK*.

5 Click the blank space under "Replication Target" and select the folder from the list. If a backup password has been configured, that folder cannot be used as the replication target. Then click *Select*.



6 When configuration is finished, click *Apply*.

7 Click *Close*.

Notes:

- To delete the settings from the list, check the task and click *Delete*. If you click *Sync*, the task will start differential overwrite from the replication source data to the replication target.
- The Ethernet port number to use for replication cannot be specified in the replication task.
- The following files and folders will not be replicated:
  Files with periods (.) or underscores (_) as the first character in their name.
  Folders with periods (.) or underscores (_) as the first character in their name.
  .AppleDesktop/
  Network Trash Folder/
  TheVolumeSeHngsFolder/
  .DS_Store/
  .AppleDouble/
  .AppleDB/

If the Network Settings Are Changed After Replication Tasks Are Created

If the network settings are changed after replication tasks are created, the TeraStation cannot communicate with the replication target TeraStation and replication may fail. For example, disconnecting the Ethernet cable and reconnecting it to another LAN port or changing the IP address of the replication source or target TeraStation. If the network settings are changed, refresh the list of TeraStations and LinkStations as follows.

1 Click *Buffalo Replication* in the Start menu on Windows Storage Server.

2 Click *Refresh* and refresh the detected TeraStations and LinkStations list.

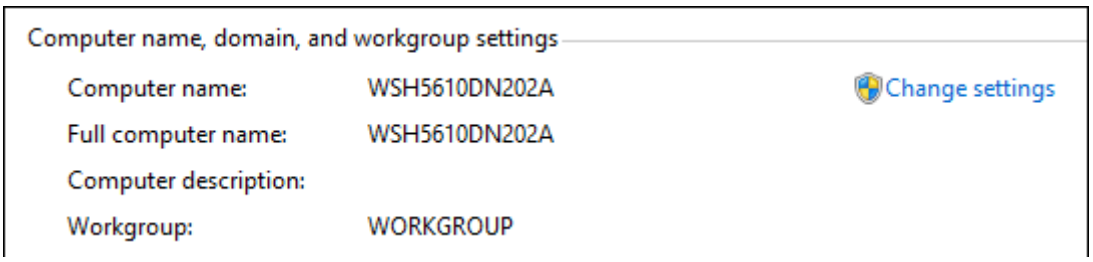
3 When the TeraStation that the network settings were changed is displayed in the refreshed list, close the window and click *Sync*.

DFS Replication

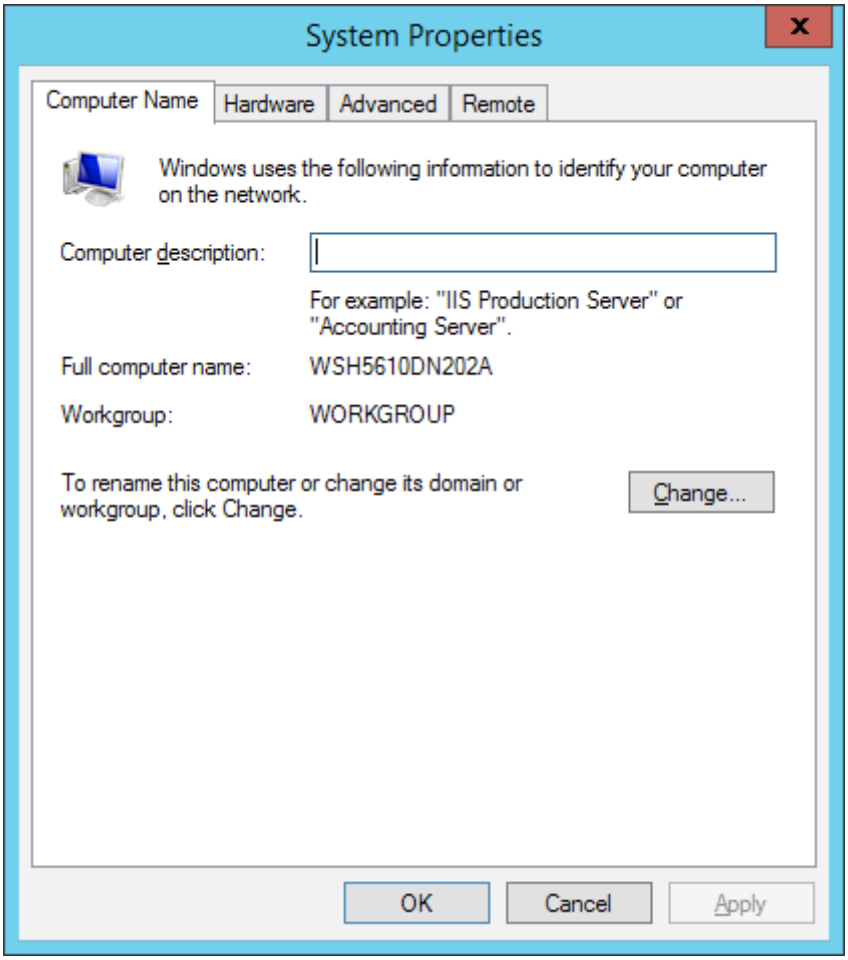
DFS (Distributed File System) is a set of client and server services that allows Windows users to organize many distributed SMB file shares into a distributed file system.
To use DFS Replication, the TeraStation must be joined to an Active Directory domain. Make the necessary settings as detailed below to use DFS Replication on Windows Storage Server.

Joining an Active Directory

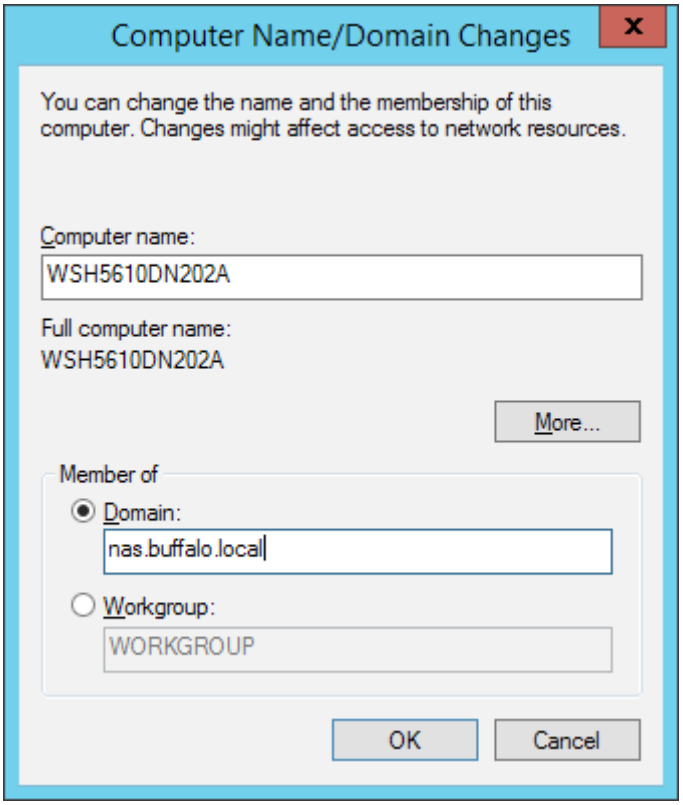
1 In Control Panel, go to *System* and click *Change settings* under "Computer name, domain, and workgroup settings".



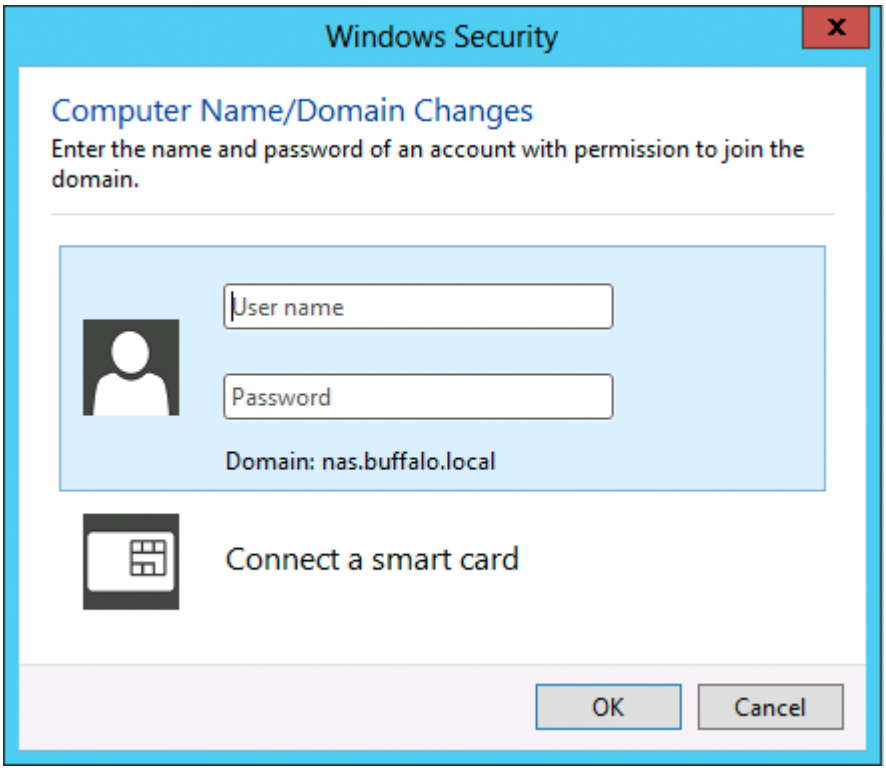
2 Click *Change*.



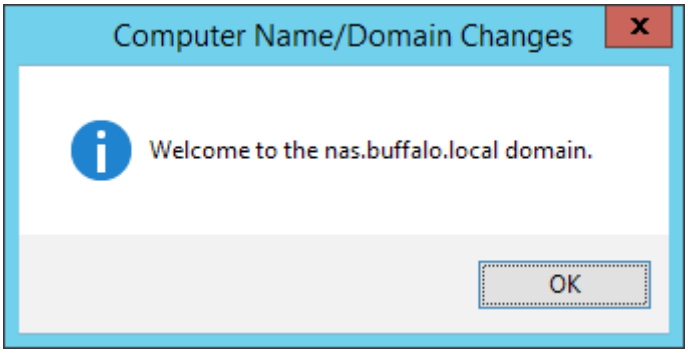
3 Select "Domain", enter a domain name, and click *OK*.



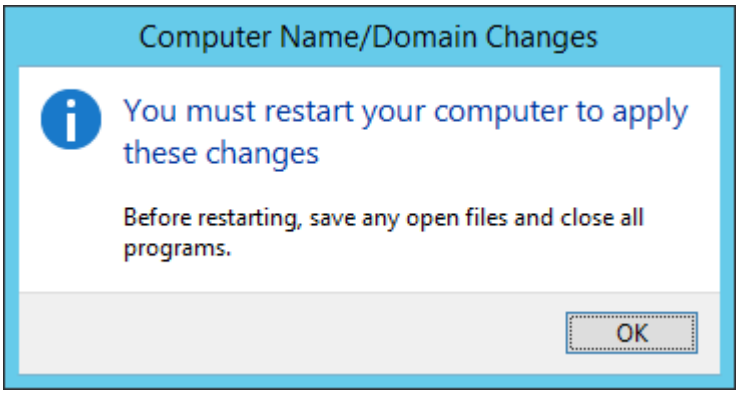
4 Enter a administrator username and password for the Active Directory domain controller.



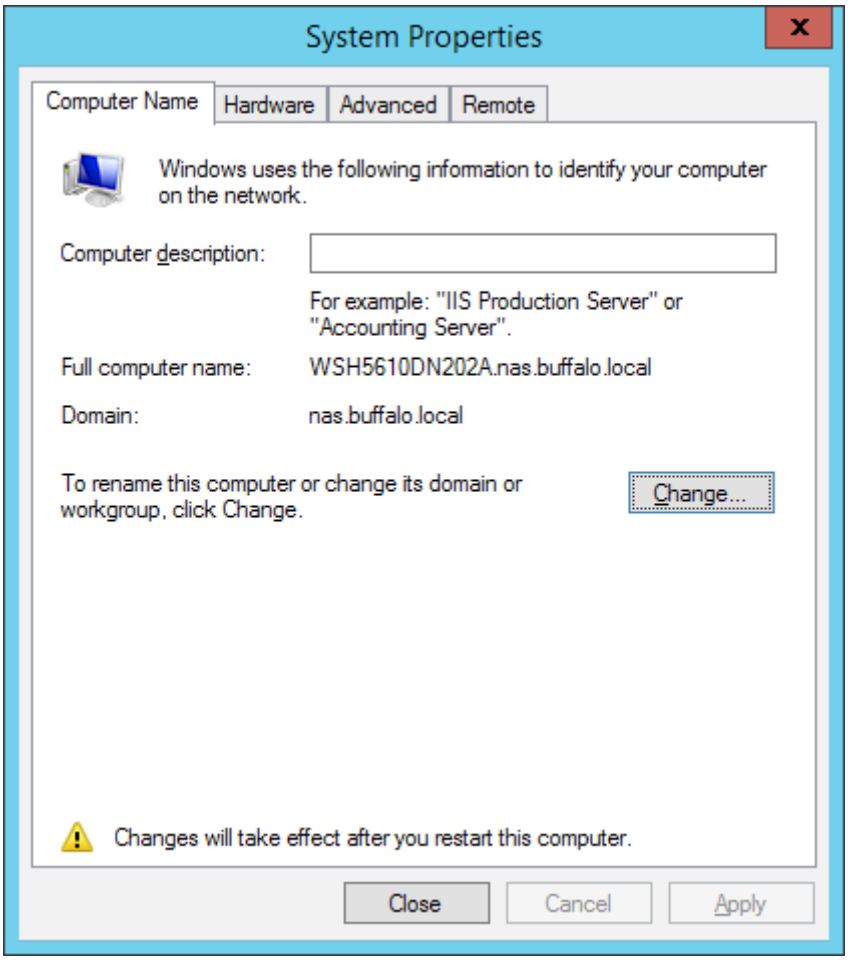
5 Click *OK* when the following message is displayed.



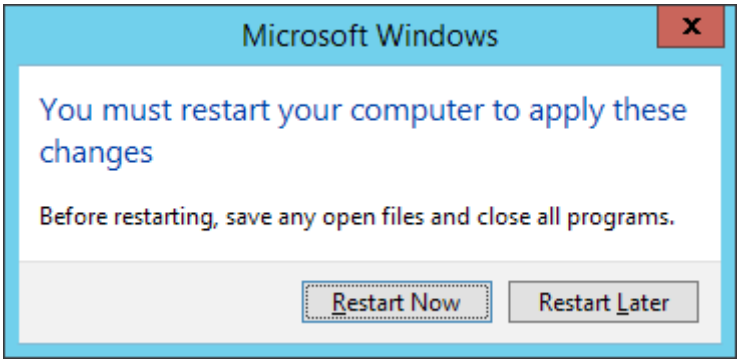
6 Click *OK* again.



7 Click *Close*.

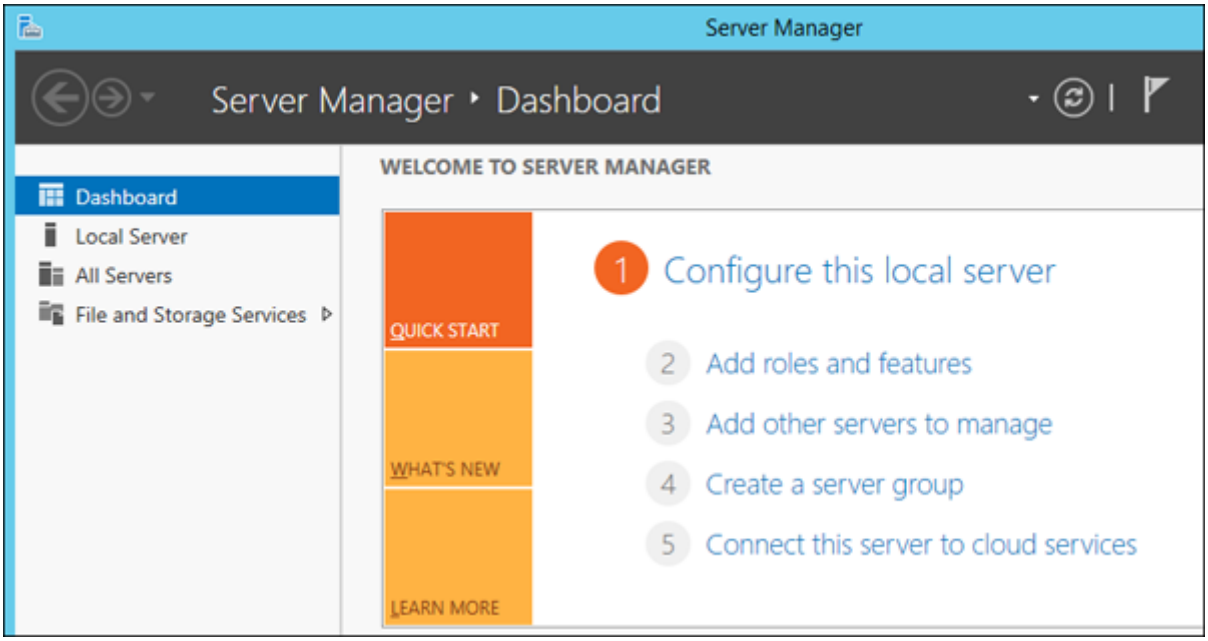


8 Click *Restart Now* and restart your computer to apply settings.



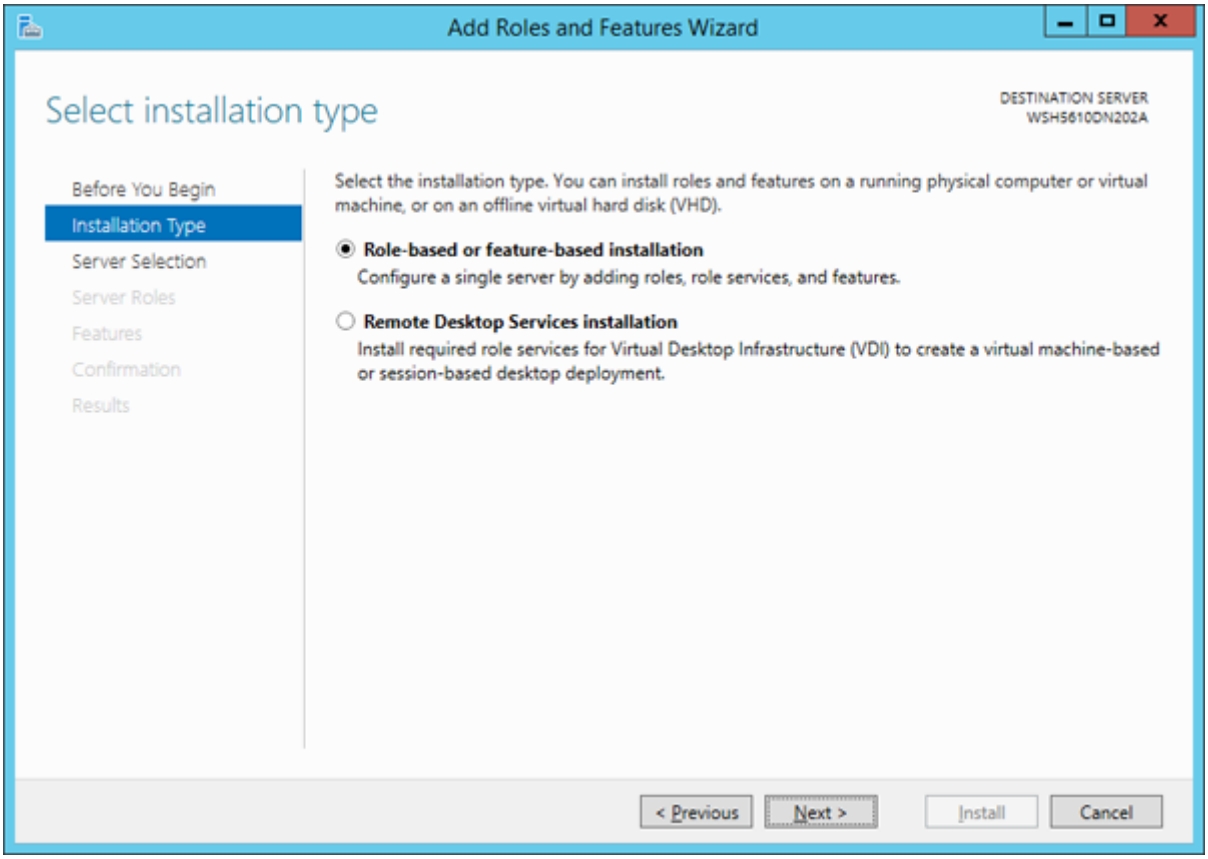
Installing DFS

1 In Server Manager, click *Dashboard - Add roles and features*.

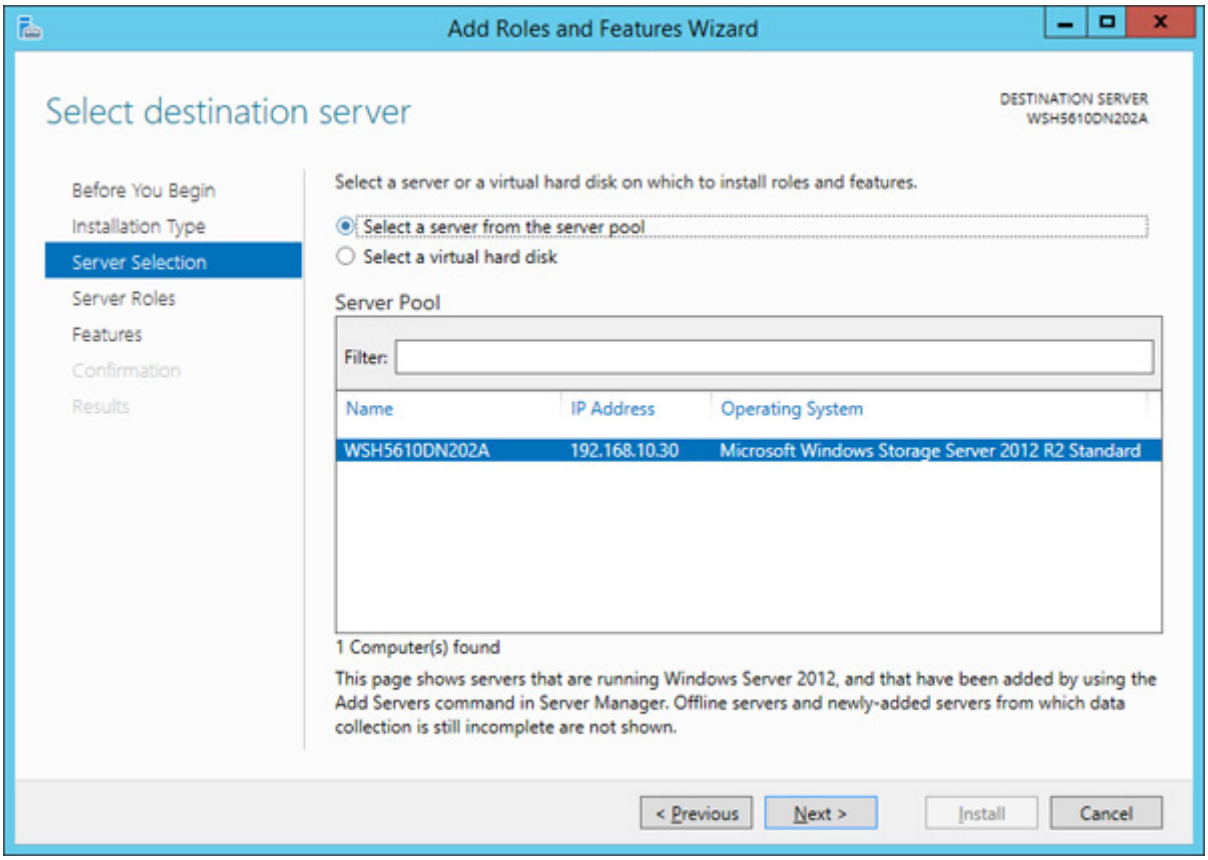


2 Click *Next*.

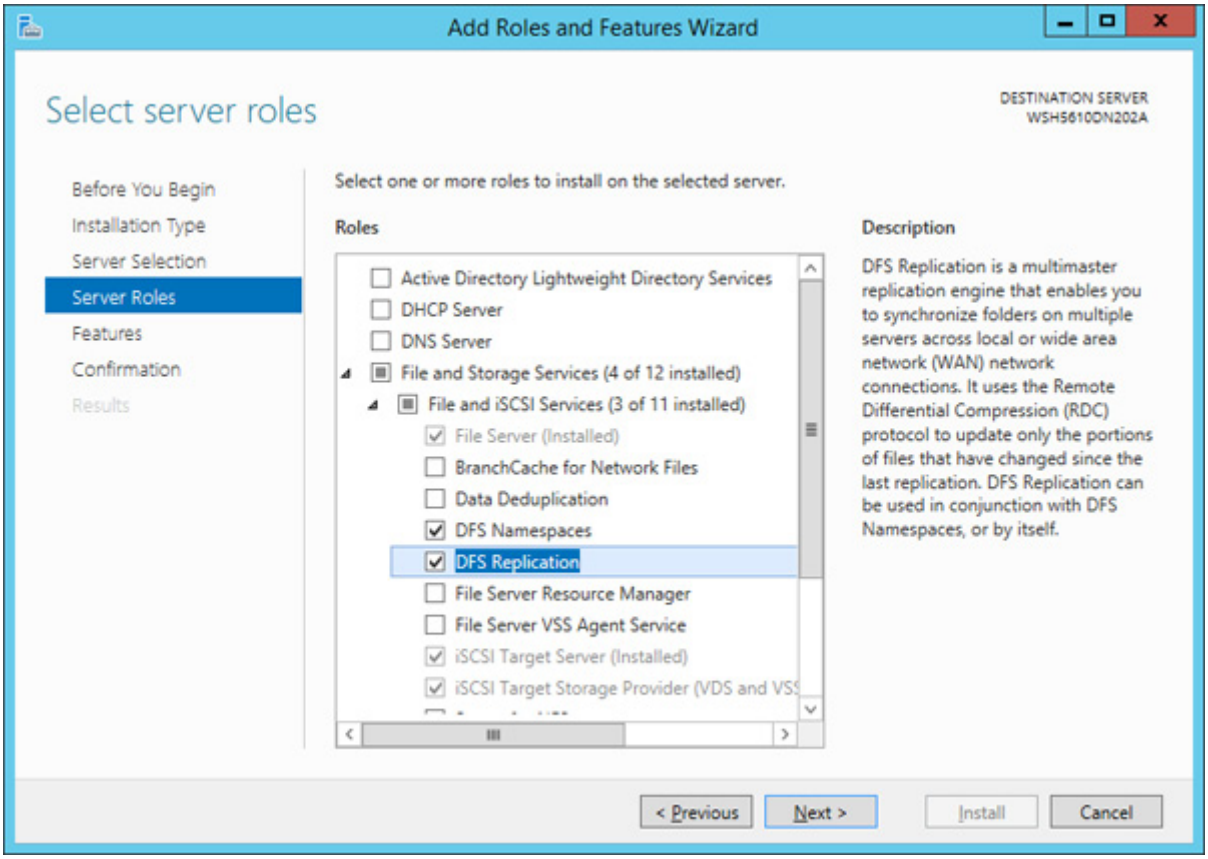
3 Select "Role-based or feature-based installation" and click *Next*.



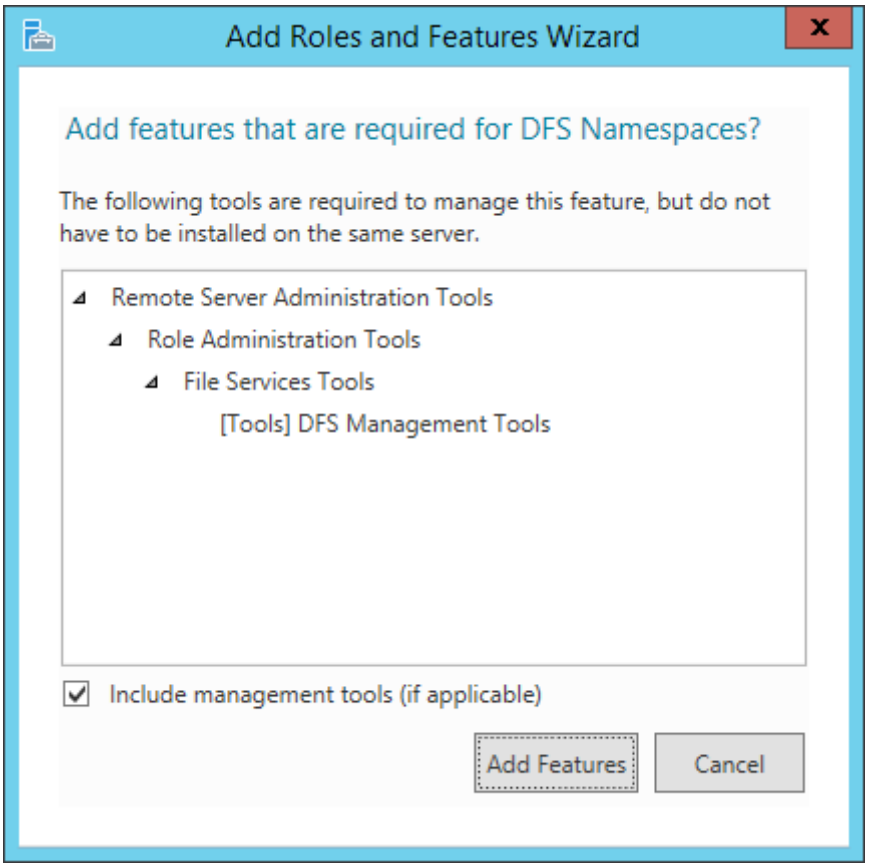
4 Click *Next*.



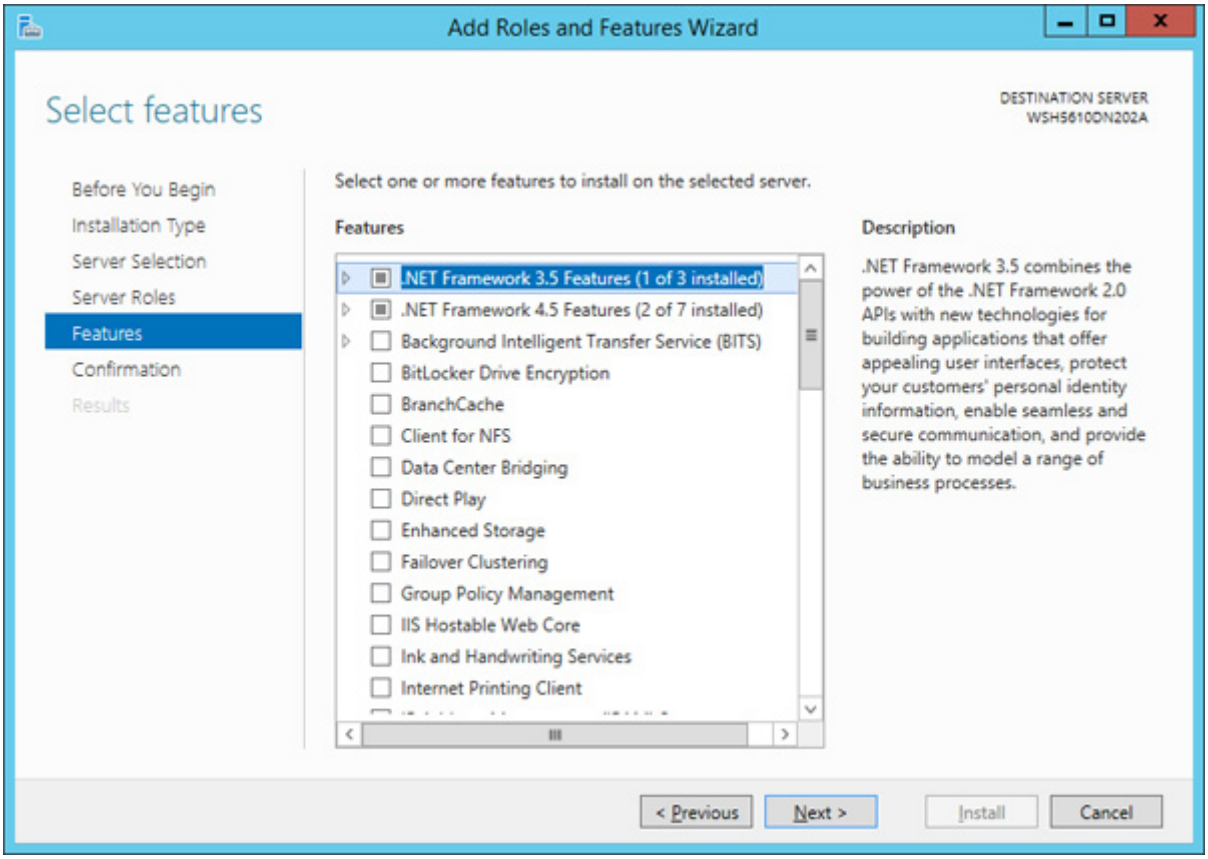
5 Select "DFS Namespaces" and "DFS Replication" in "File and Storage Services" - "File and iSCSI Services".



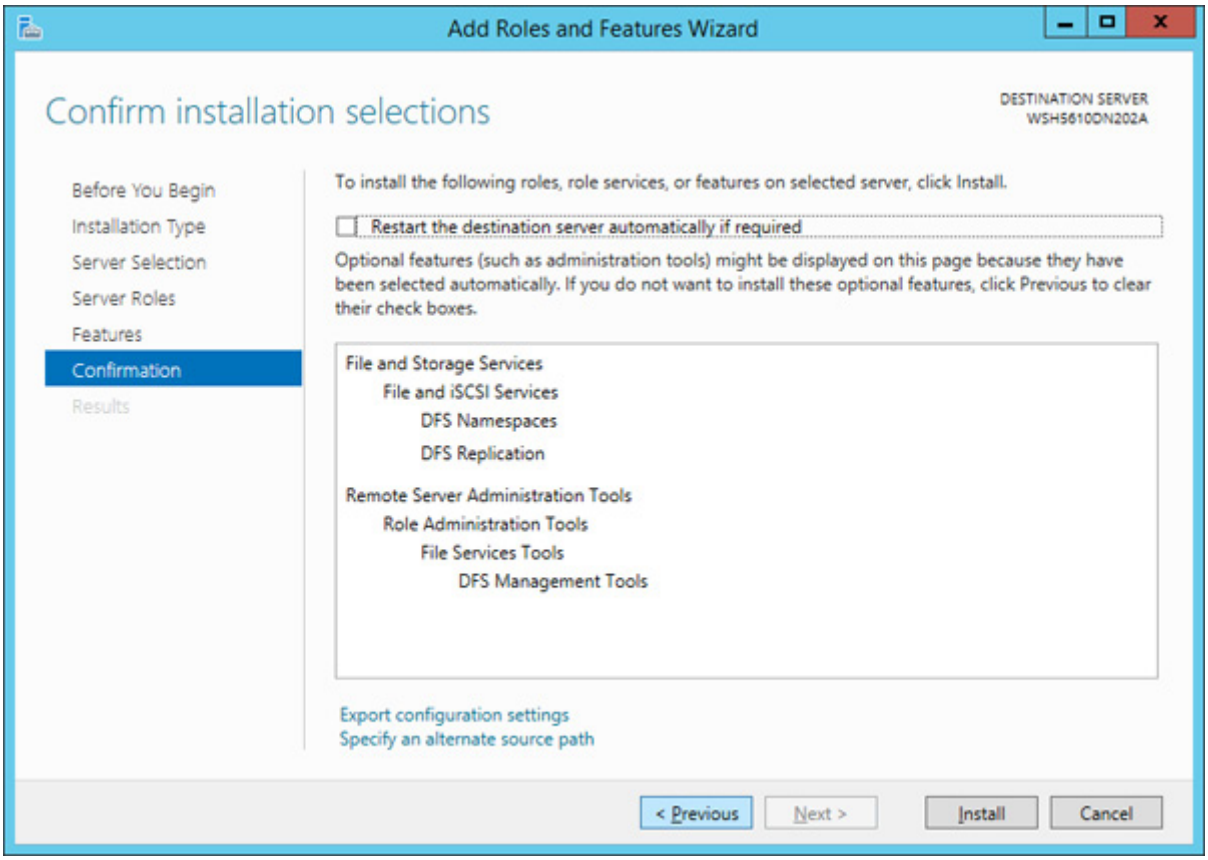
6 Select "Include management tools (if applicable)" and click *Add Features*.



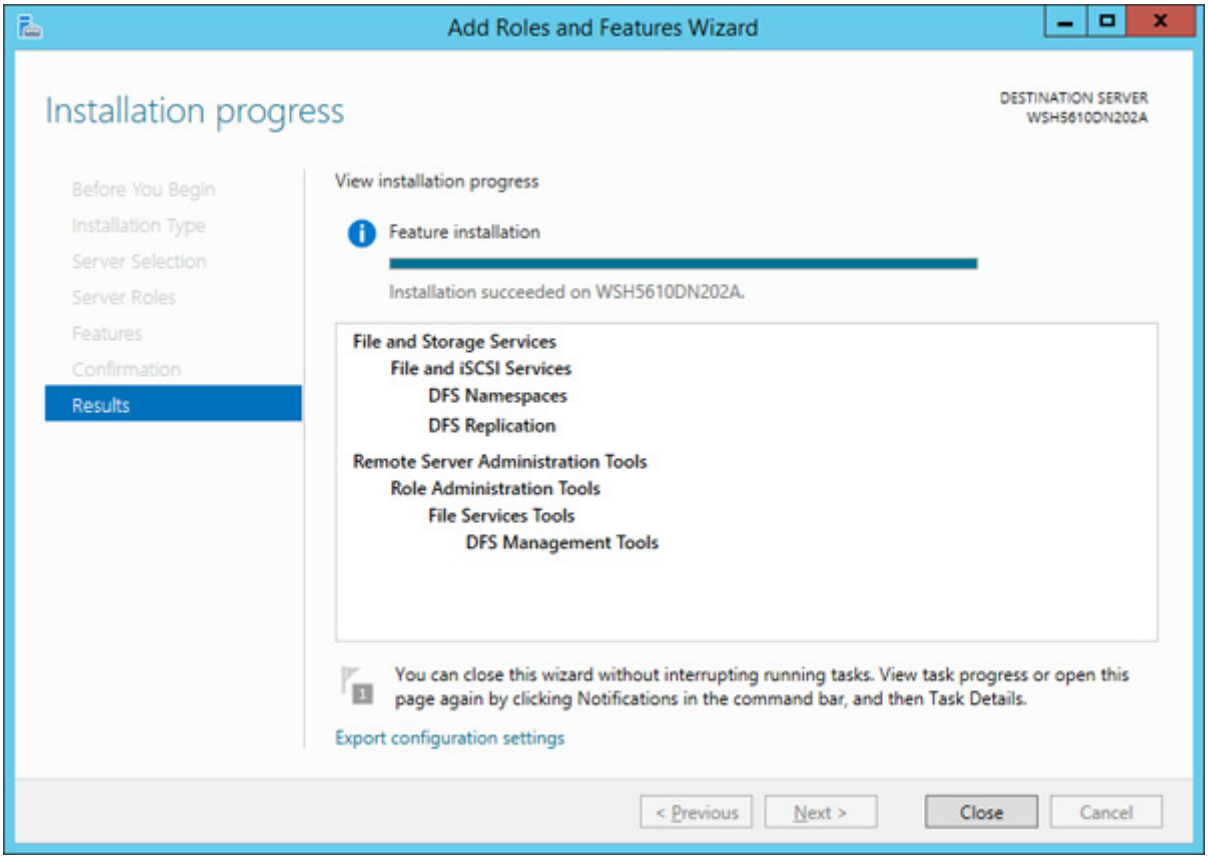
7 Click *Next*.



8 Click *Install*.

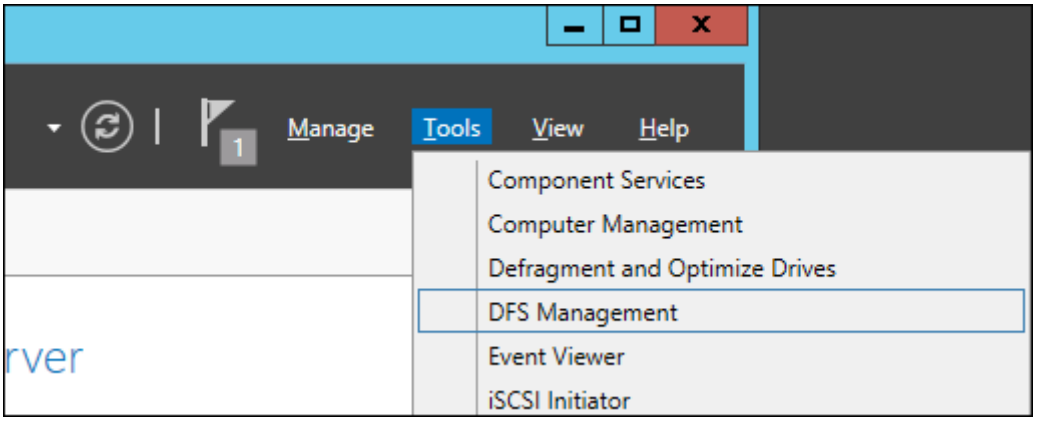


9 Click *Close* to finish.

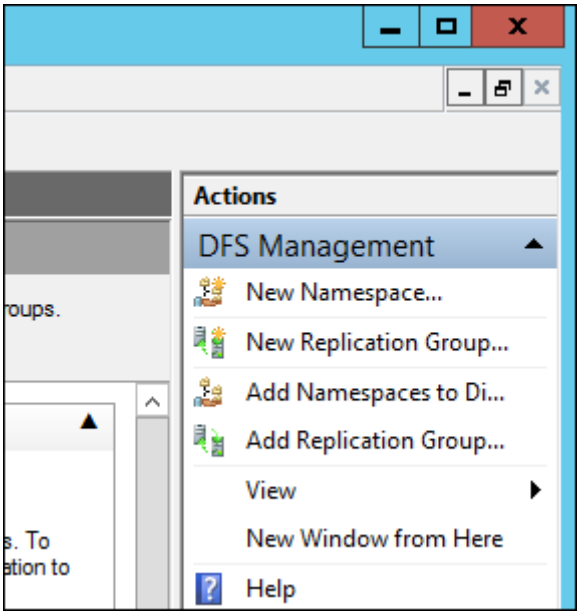


Creating Namespaces

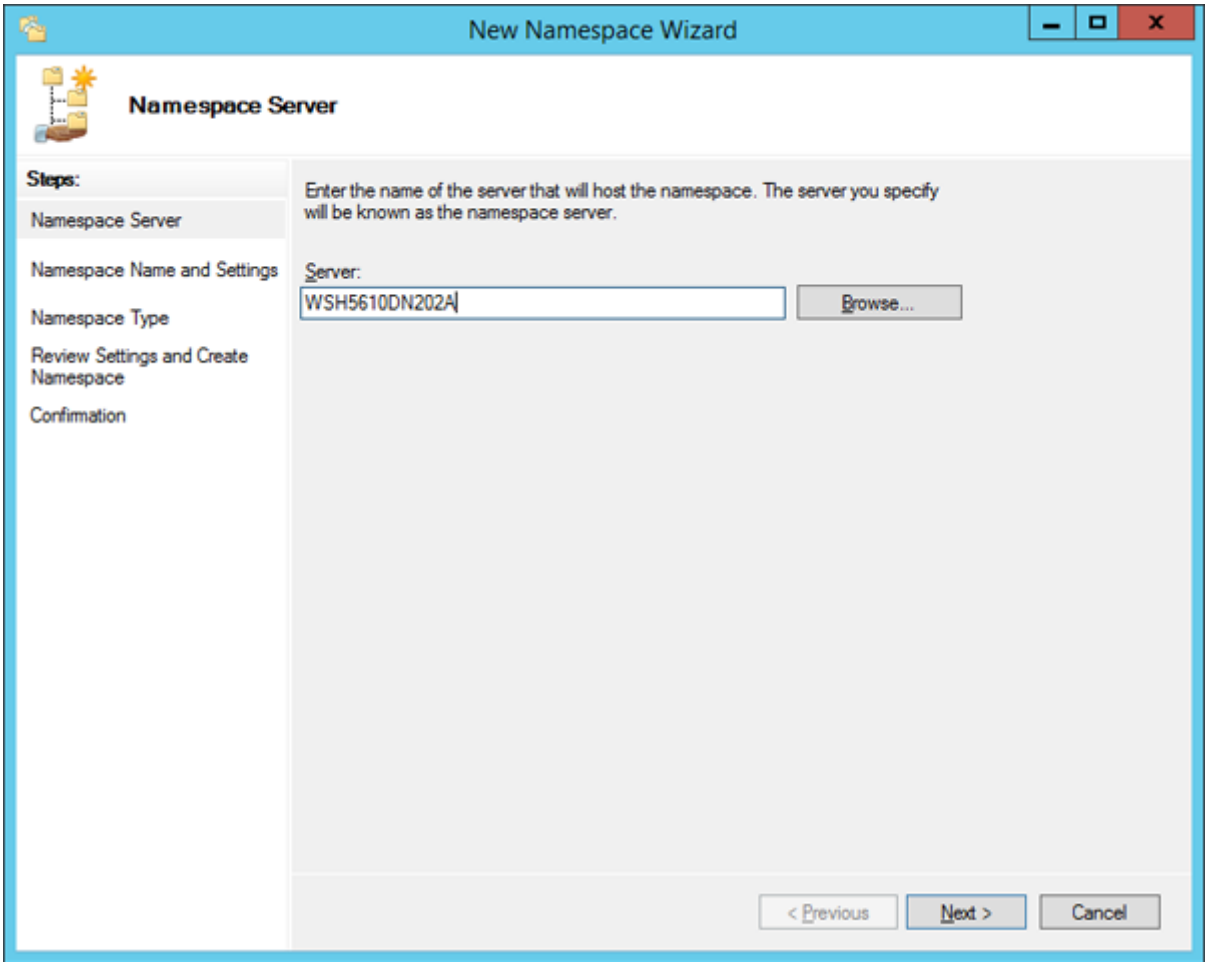
1 In Server Manager, click *Tools - DFS Management*.



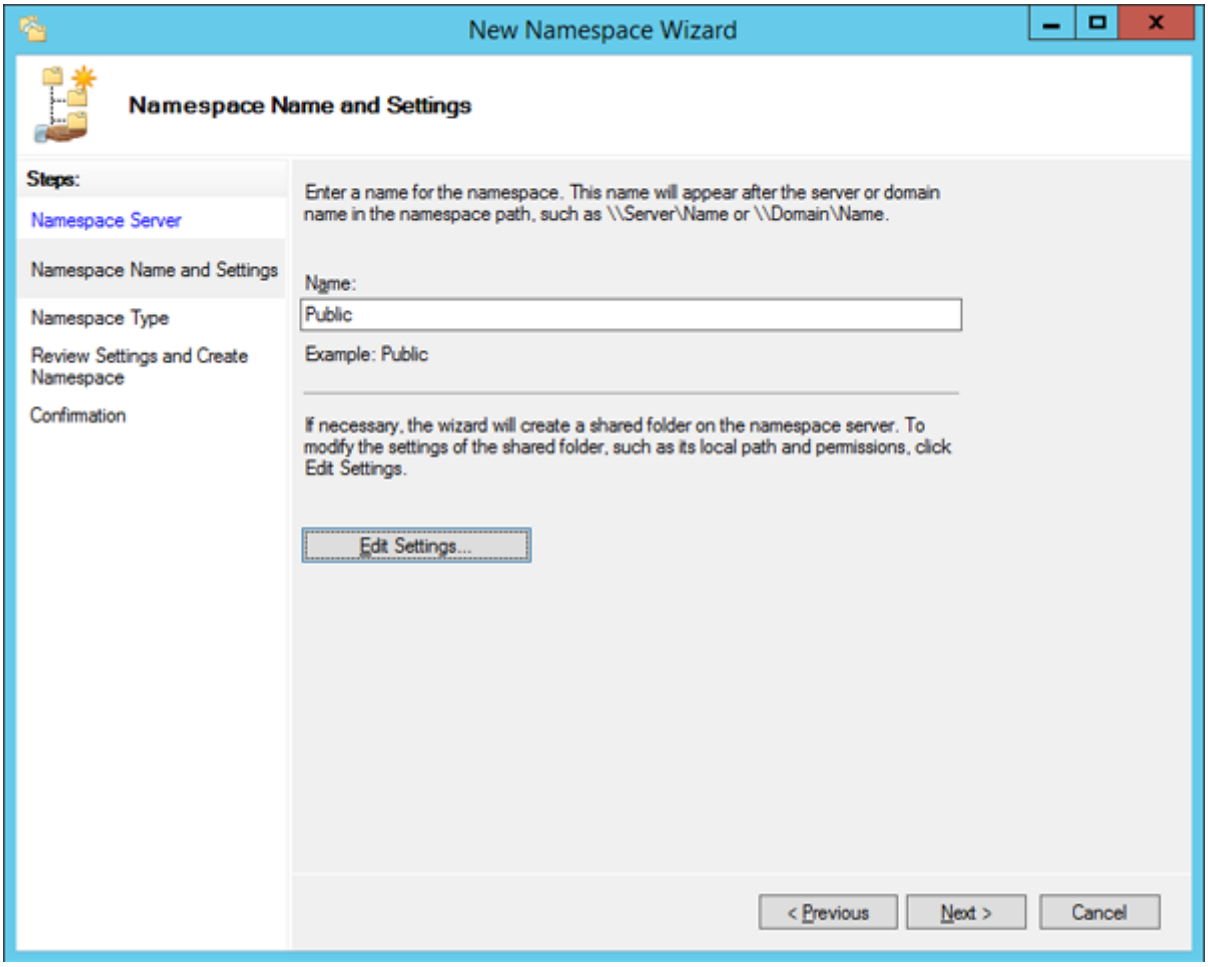
2 Click *Namespaces - New Namespace*.



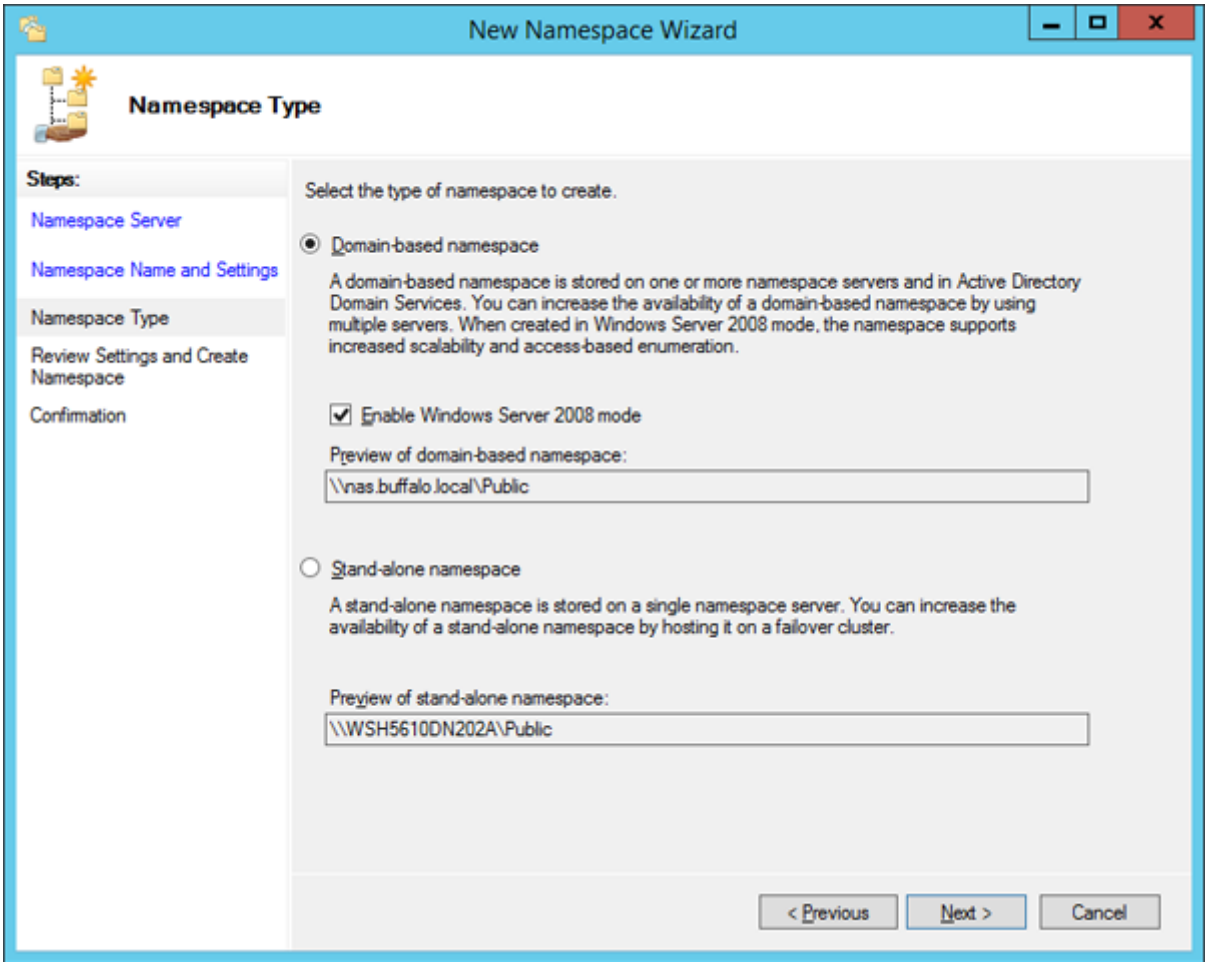
3 Enter a hostname for the namespace server and click *Next*.



4 Enter a name for the namespace and click *Next*.



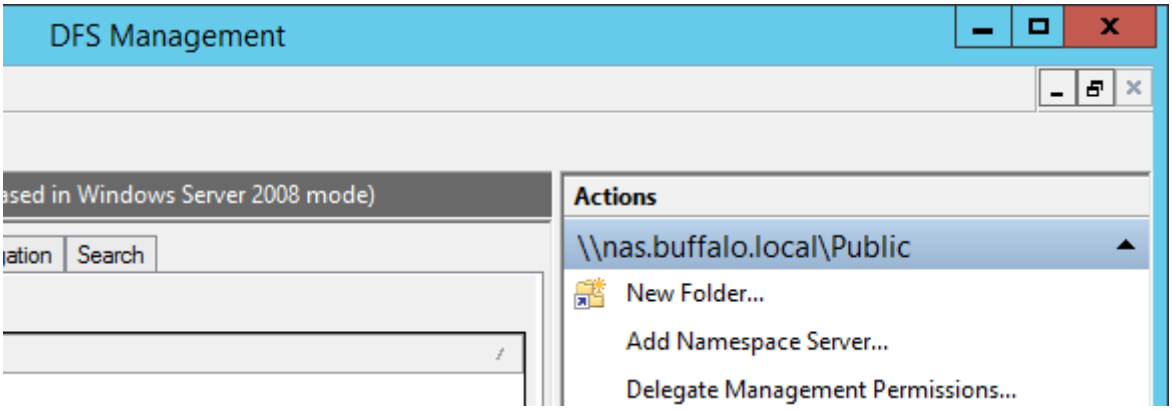
5 Select *Domain-based namespace* and click *Next*.



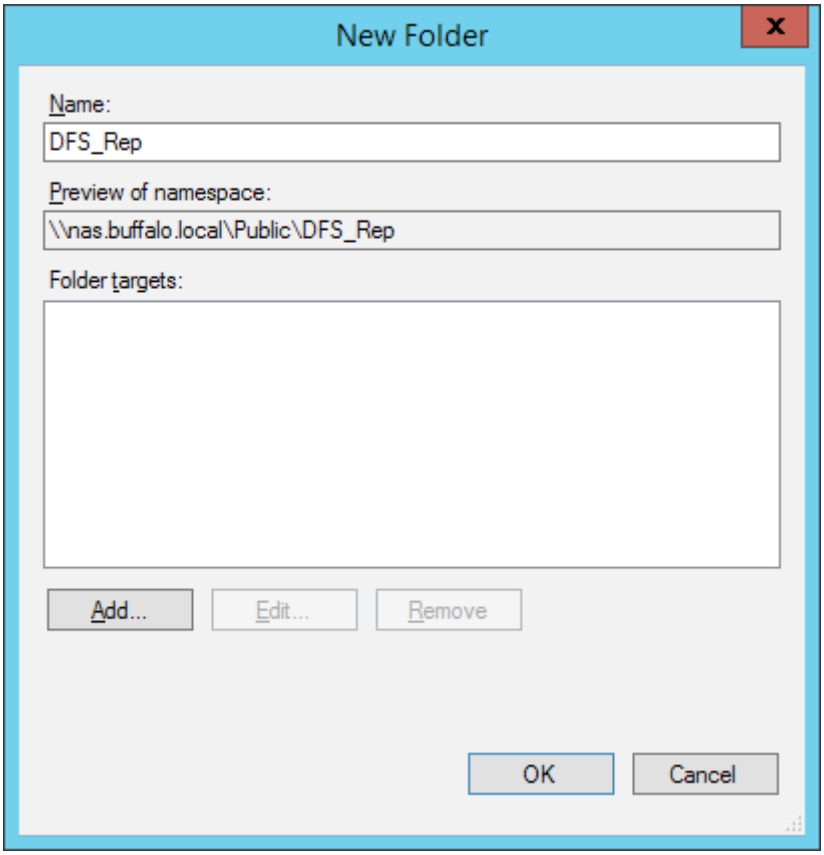
6 Click *Create*.

7 Click *Close* when the New Namespace Wizard finishes.

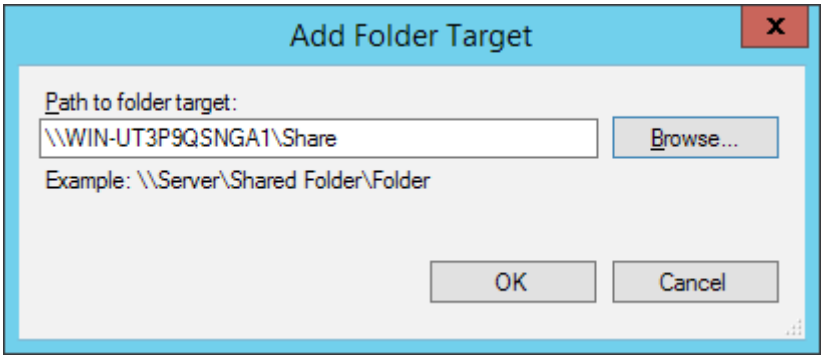
8 In DFS Management, click *Namespaces* and the name you created through the wizard. Then click *New Folder*.



9 Enter a folder name and click *OK*.



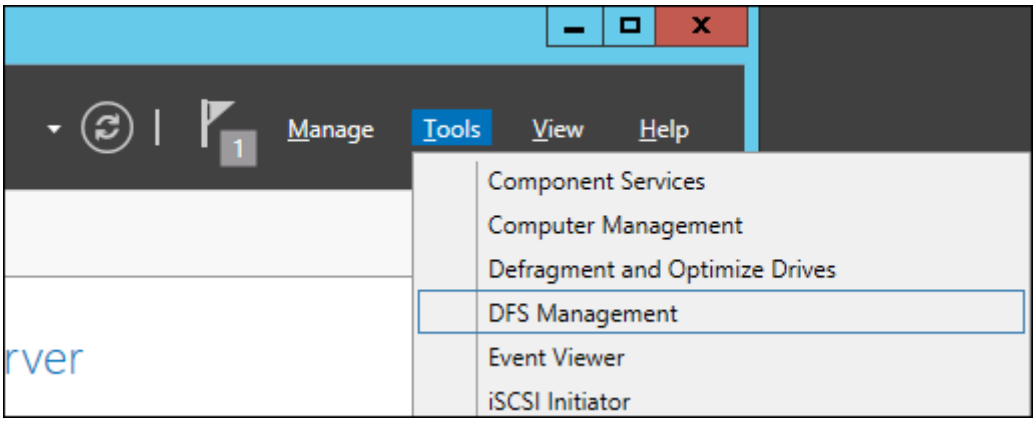
10 Enter a path to the folder or select from the list by clicking *Browse*. Click *OK*.



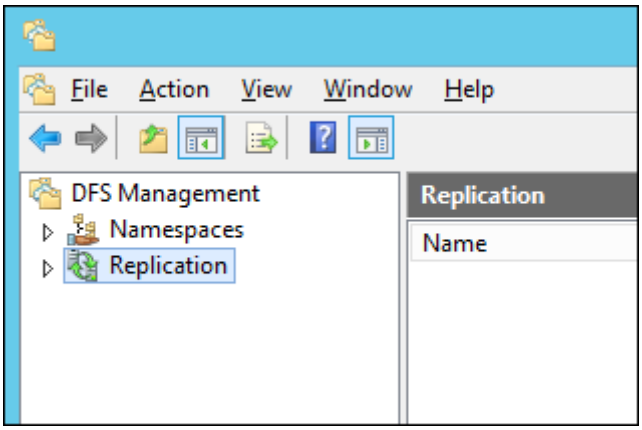
11 Click *OK* again.

Configuring DFS Replication

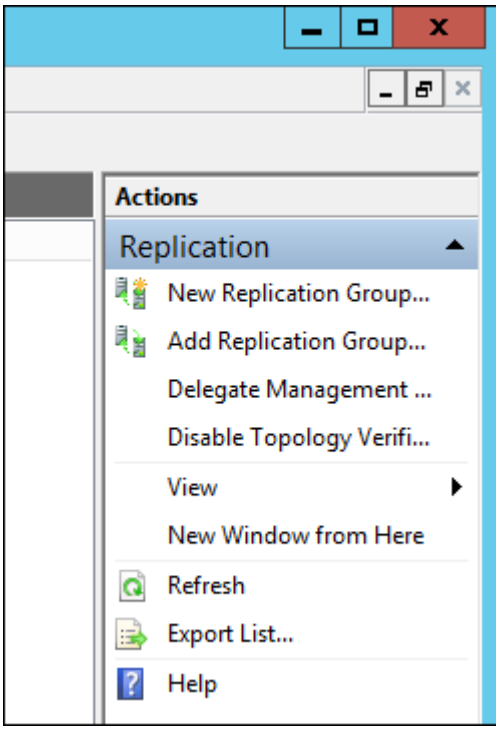
1 In Server Manager, click *Tools - DFS Management*.



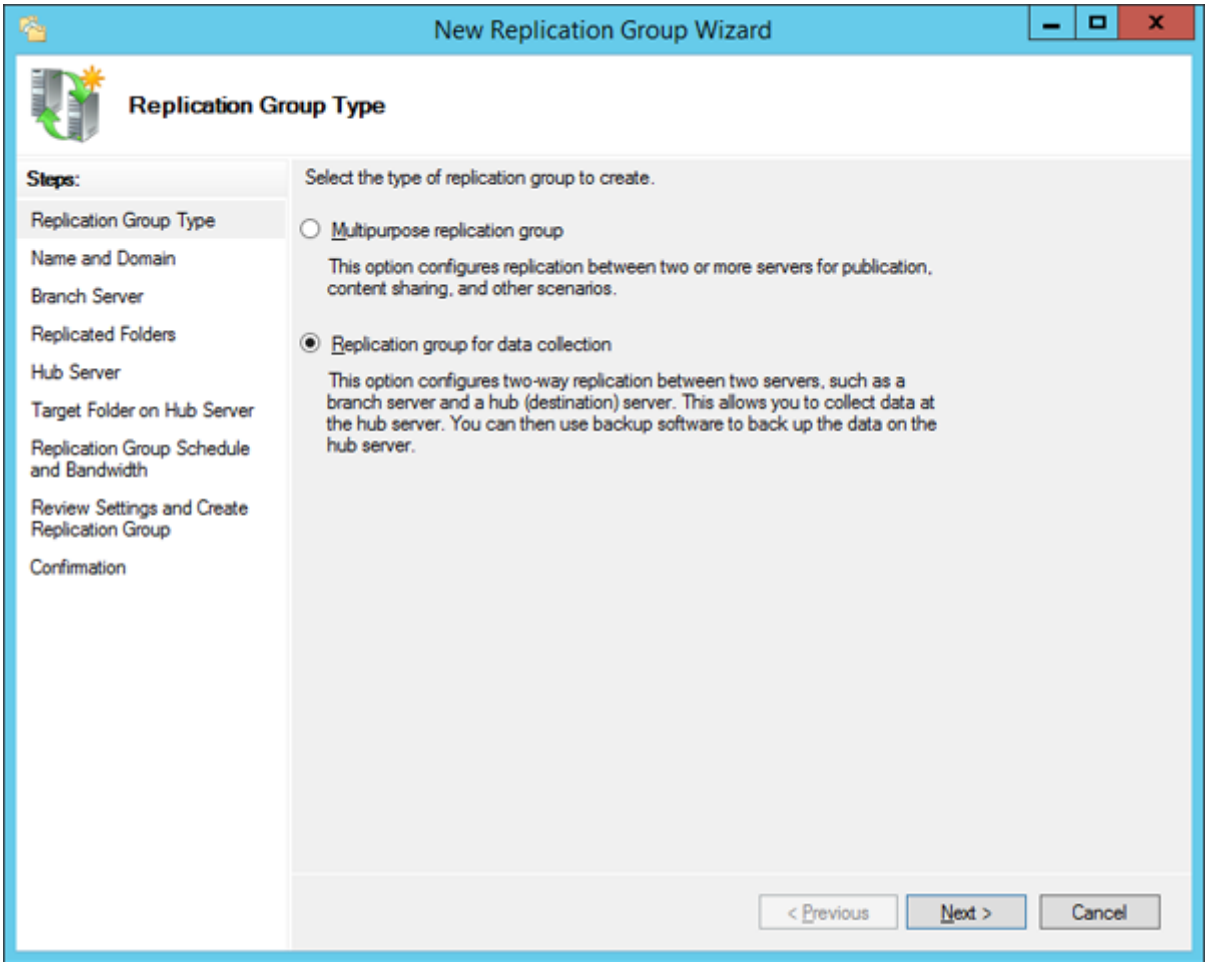
2 Click *Replication*



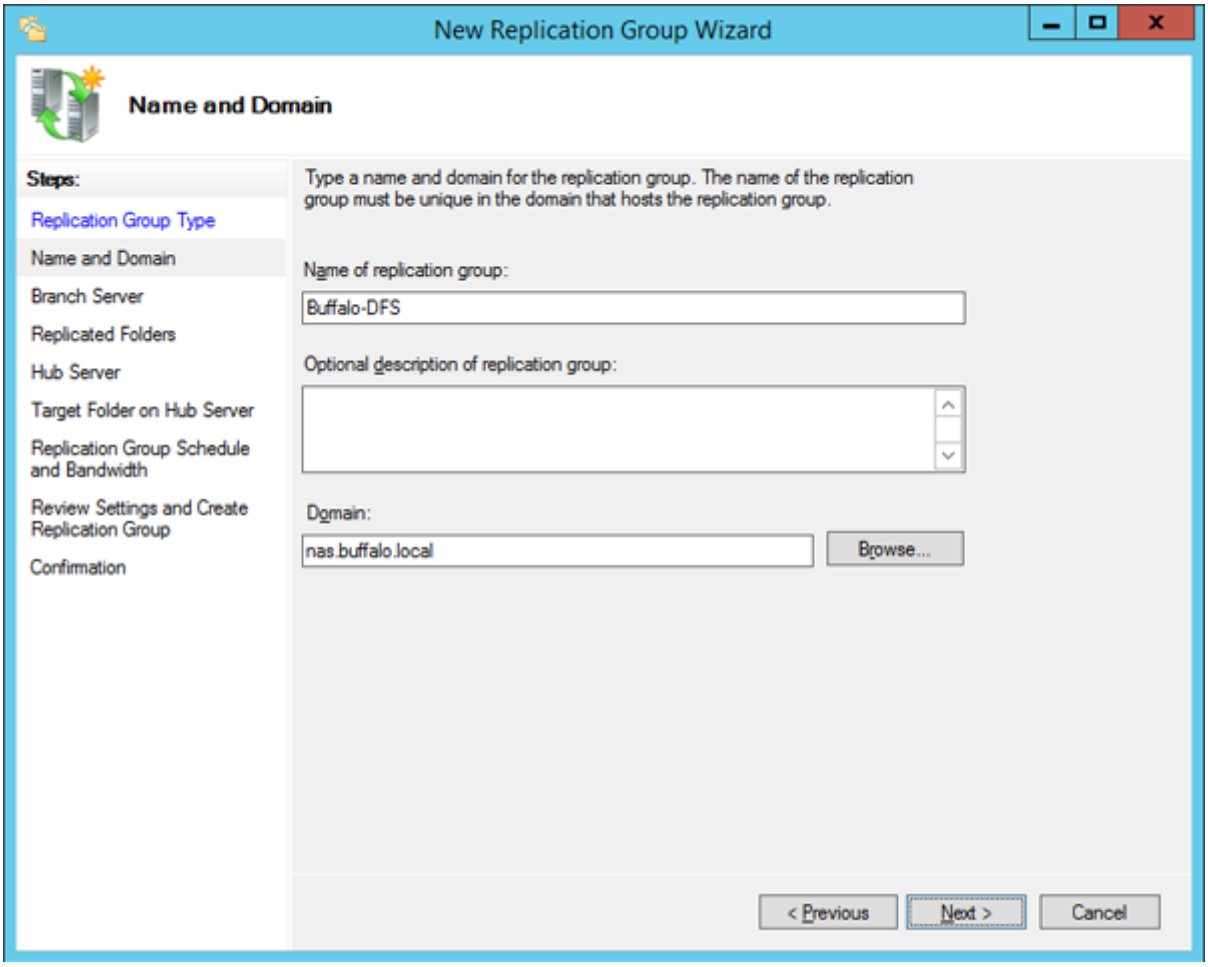
3 Click *New Replication Group*.



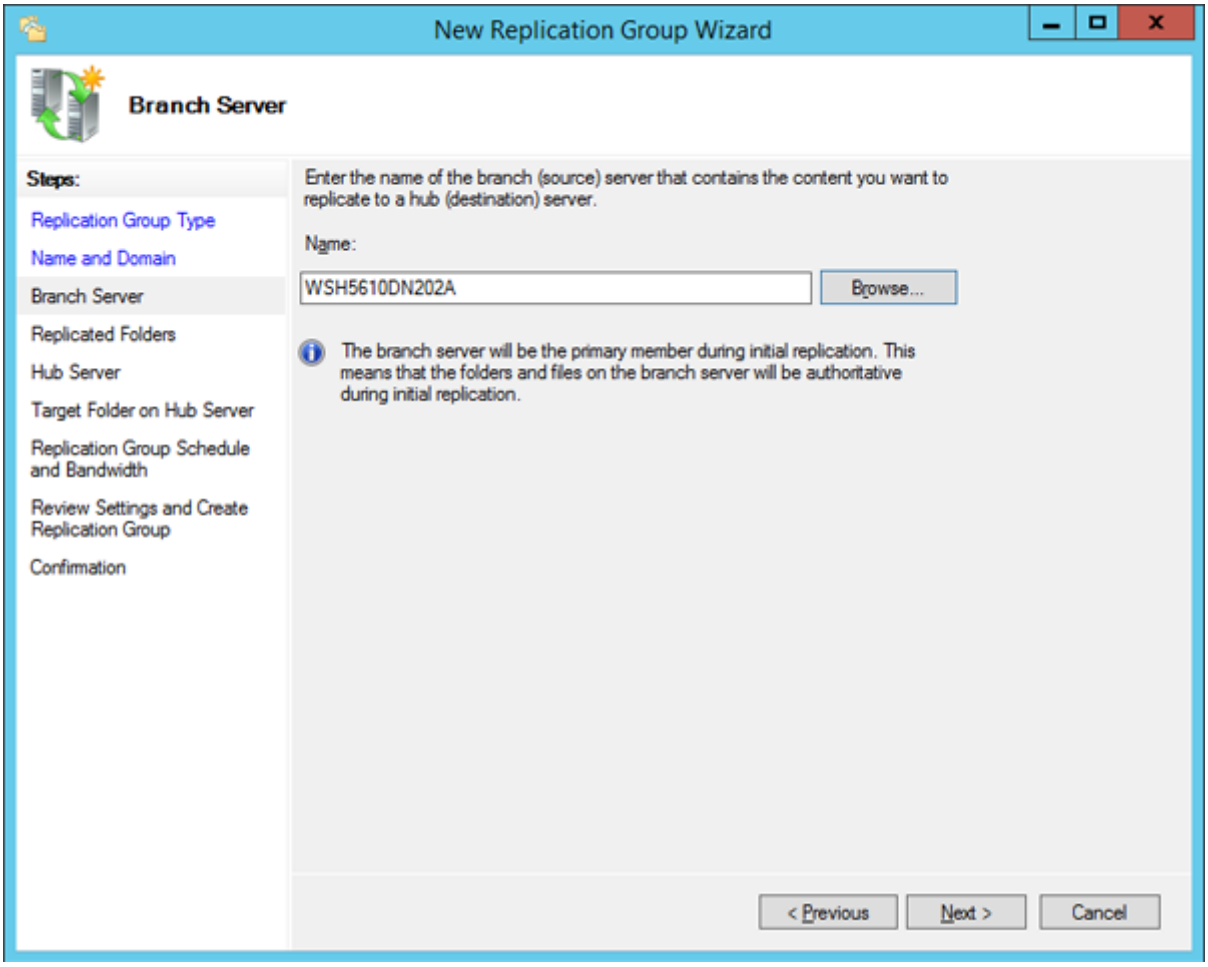
4 Select the type of replication group and click *Next*.



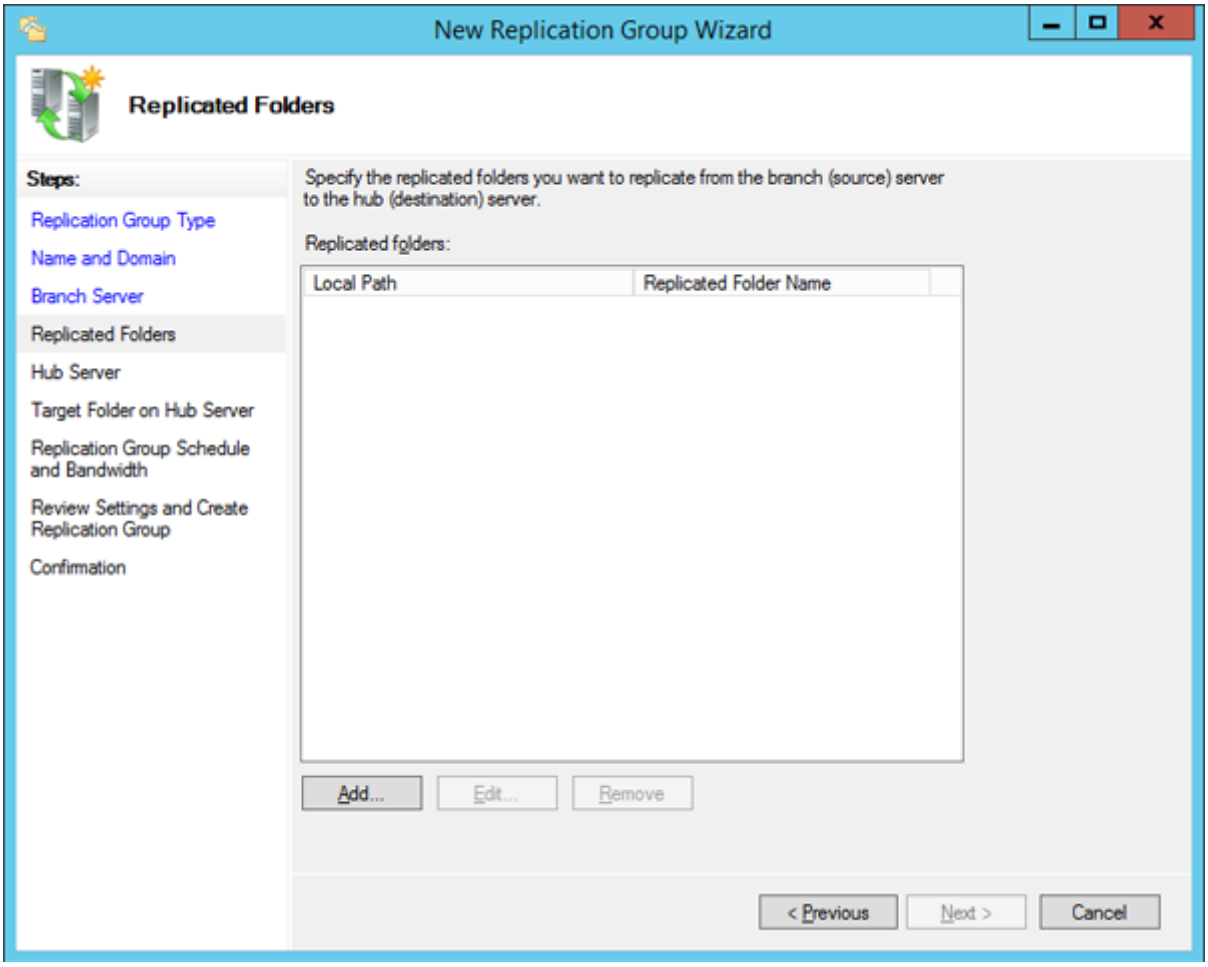
5 Enter a name for the replication group and click *Next*.



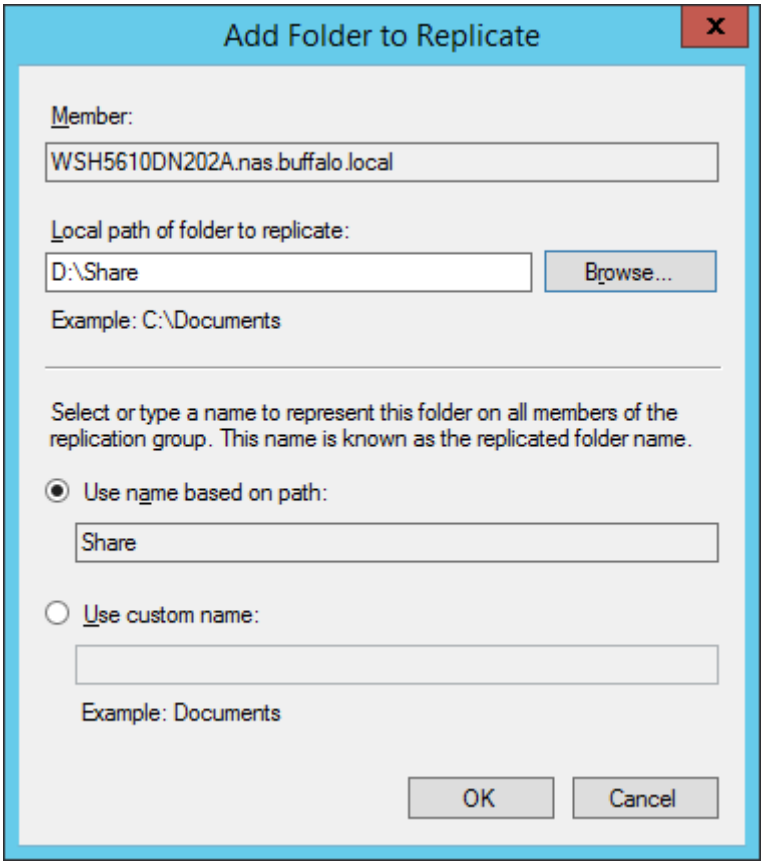
6 Enter the hostname of the file server for the replication source and click *Next*.



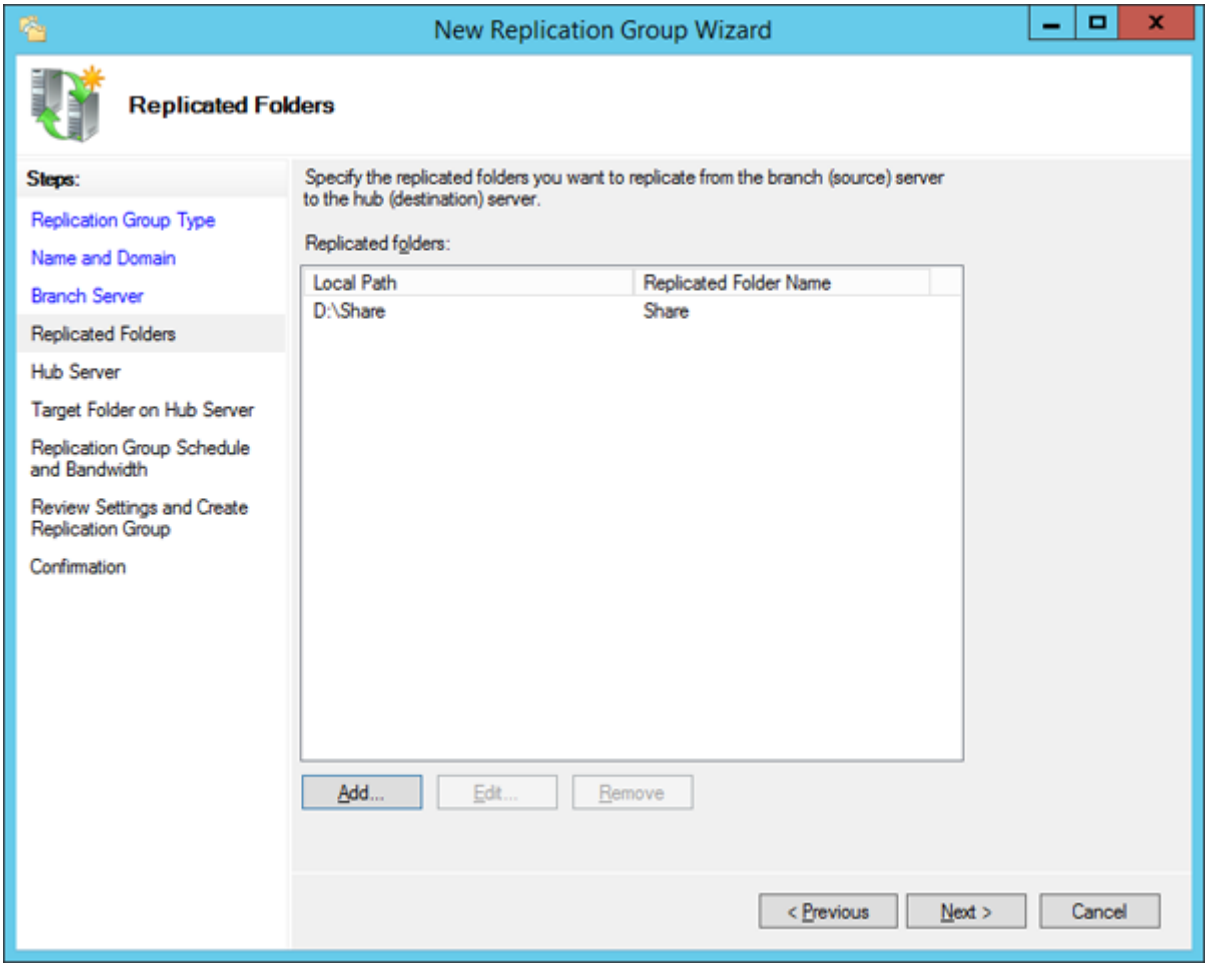
7 Click *Add*.


New Replication Group Wizard
Replicated Folders
Steps:
Replication Group Type
Name and Domain
Branch Server
Replicated Folders
Hub Server
Target Folder on Hub Server
Replication Group Schedule and Bandwidth
Review Settings and Create Replication Group
Confirmation
Specify the replicated folders you want to replicate from the branch (source) server to the hub (destination) server.
Replicated folders:
Local Path
Replicated Folder Name
Add...
Edit...
Remove
< Previous
Next >
Cancel

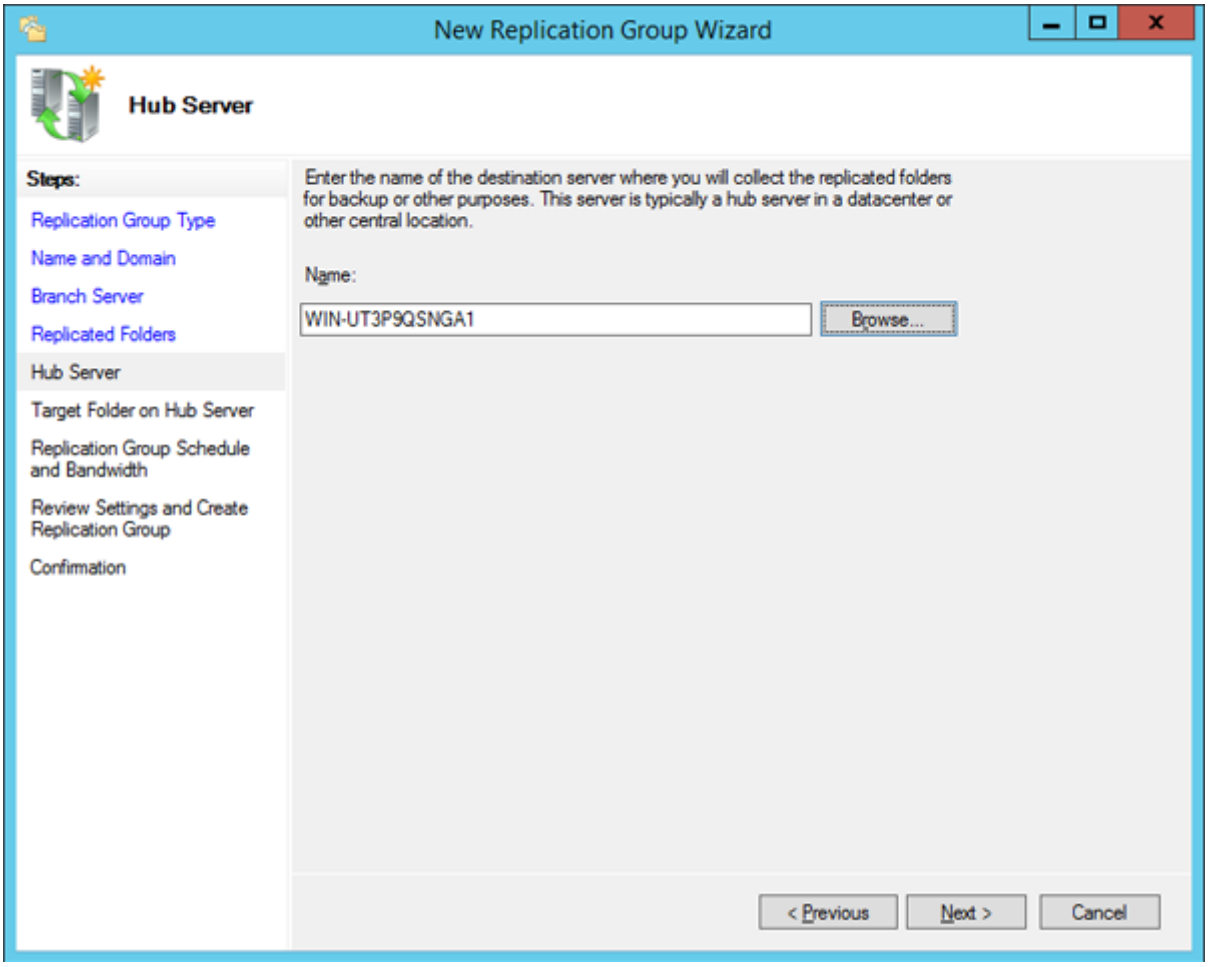
8 Enter the path of the replication source and click *OK*.



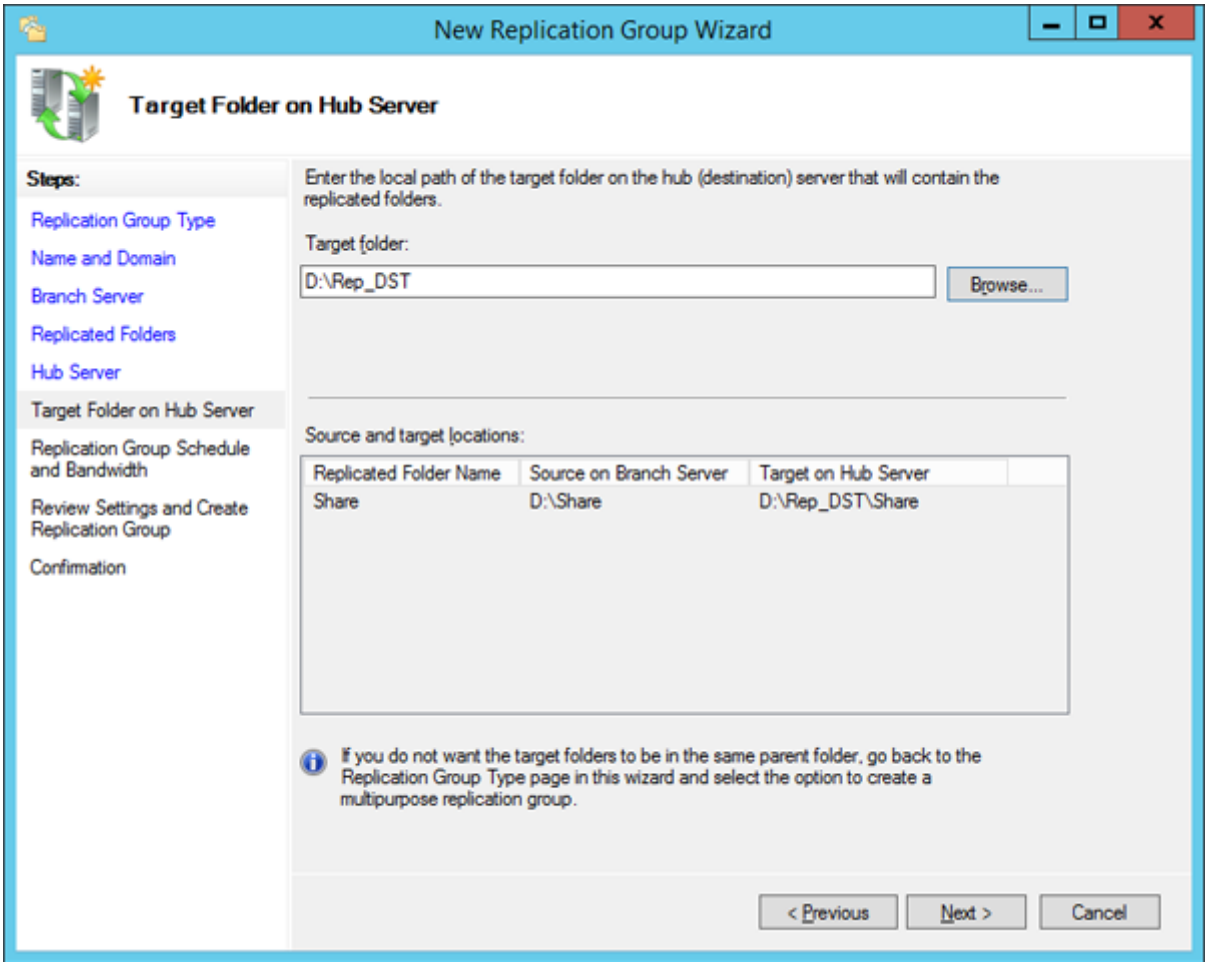
9 Click *Next*.


New Replication Group Wizard
Replicated Folders
Steps:
Replication Group Type
Name and Domain
Branch Server
Replicated Folders
Hub Server
Target Folder on Hub Server
Replication Group Schedule and Bandwidth
Review Settings and Create Replication Group
Confirmation
Specify the replicated folders you want to replicate from the branch (source) server to the hub (destination) server.
Replicated folders:
Local Path
Replicated Folder Name
D:\Share
Share
Add...
Edit...
Remove
< Previous
Next >
Cancel

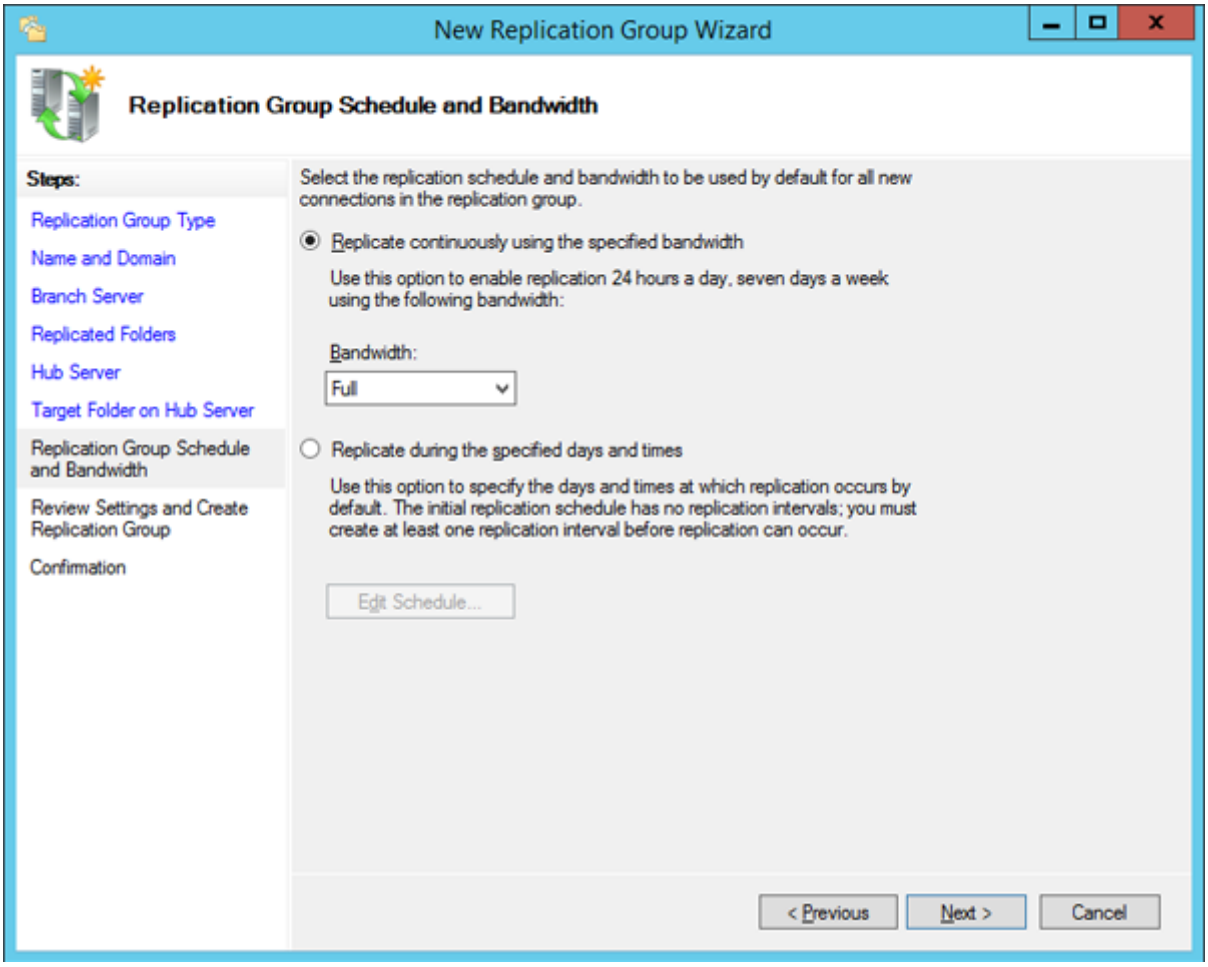
10 Enter the hostname of the file server for the replication target and click *Next*.



11 Enter the path of the replication target. Alternatively, click *Browse* and select the folder from the list. Click *Next*.

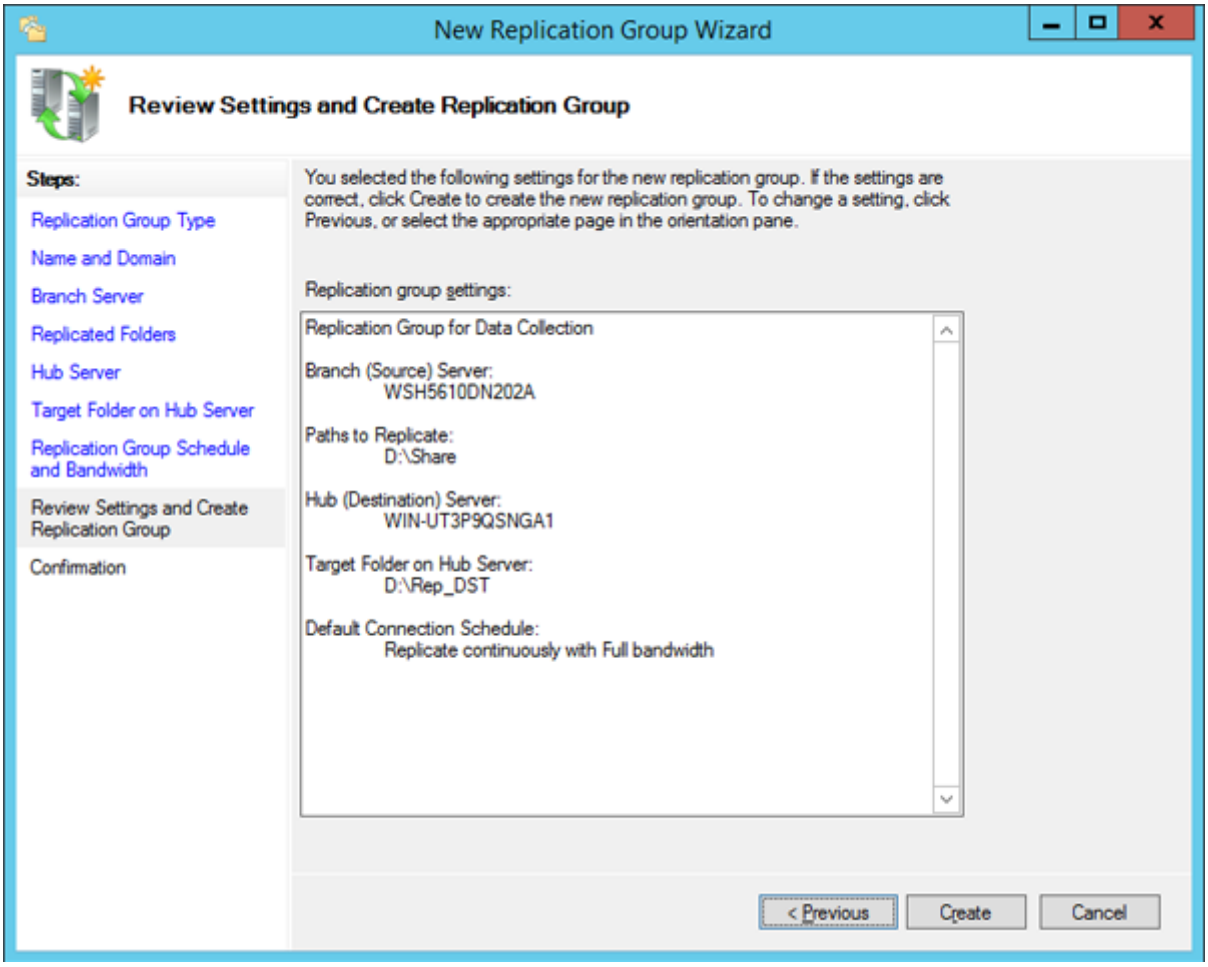


12 Click *Next* again.



Note: You have options to specify the network band and the date and time. To configure bandwidth, select *Replicate continuously using the specified bandwidth* and the bit rate from the drop-down list. To configure the schedule time, select *Replicate during the specified days and times* and click *Edit Schedule*. You can select the date and time in the displayed window.

13 Click *Create*.



14 Click *Close* when finished. DFS Replication is now configured.

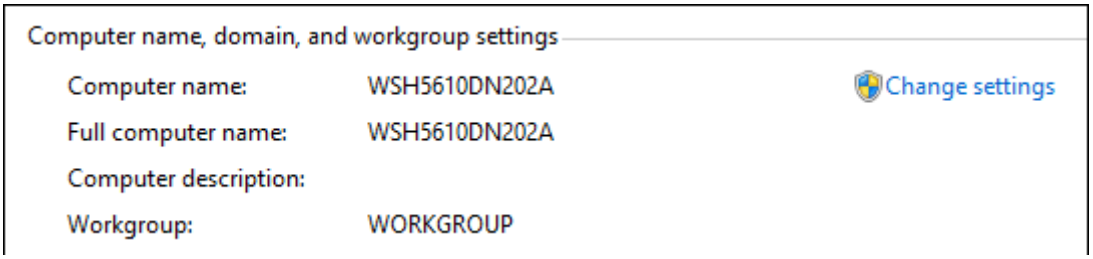
Note: It may take some time before actual replication is caught up.

Chapter 5 Additional Settings

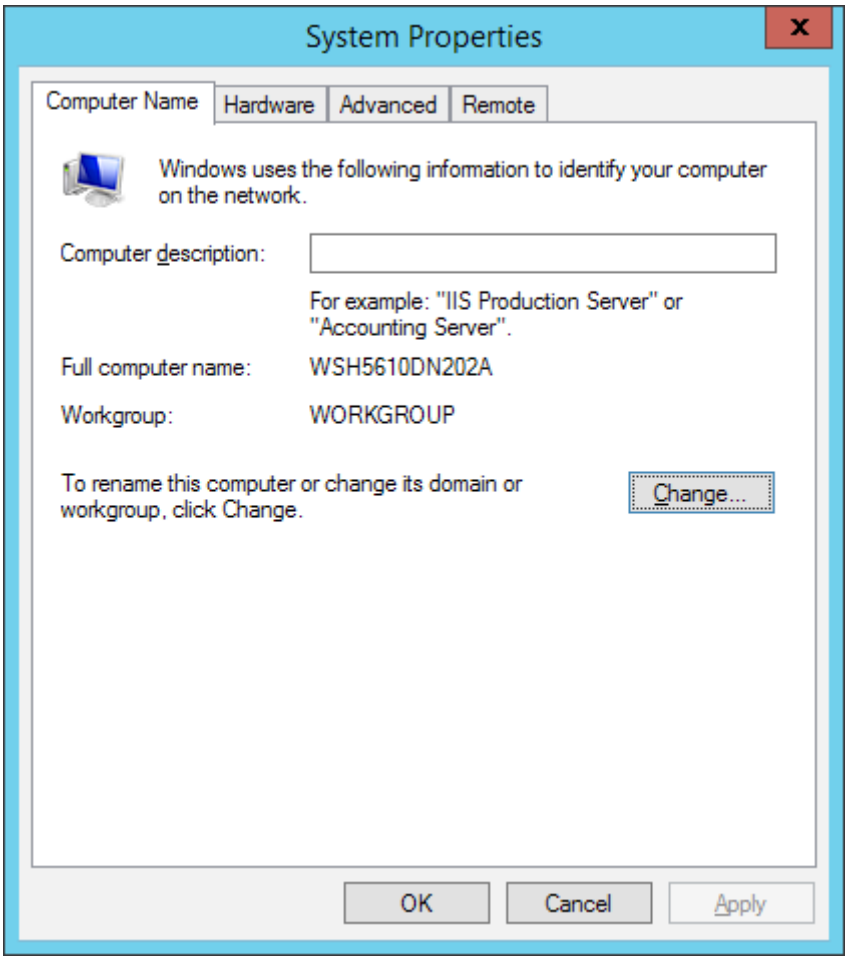
Changing Server Name, Workgroups, and Domains

1 From the Windows Storage Server Start menu on the Windows Storage Server, right-click *This PC* and choose *Properties*.

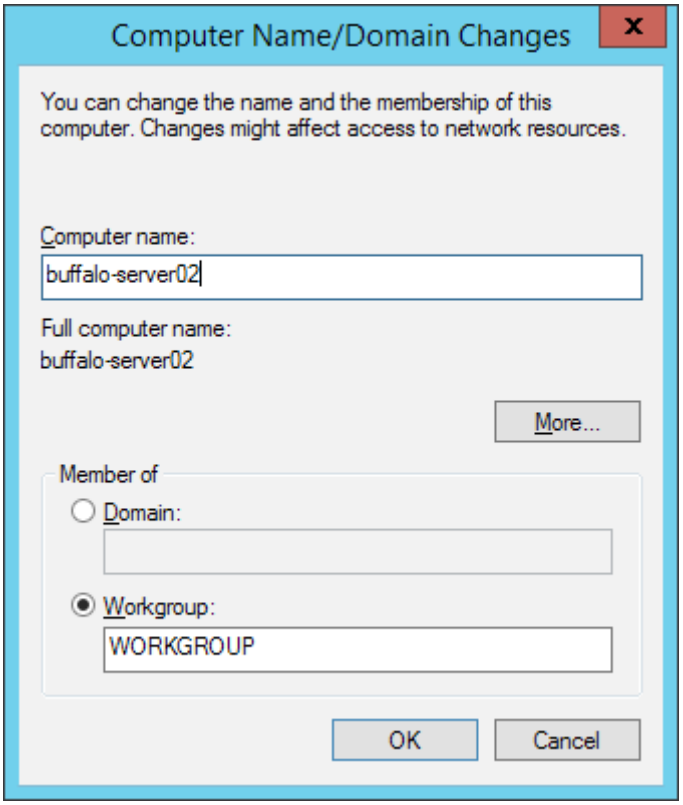
2 Click *Change settings* under *Computer name, domain, and workgroup settings*.



3 In the *Computer Name* tab, click *Change*.



4 Enter the computer name, choose domain or workgroup, and click *OK*.



Note: The computer name should have 16 characters or less. If more than 16 characters are entered, all characters from the 17th character on are ignored.

Changing the Password

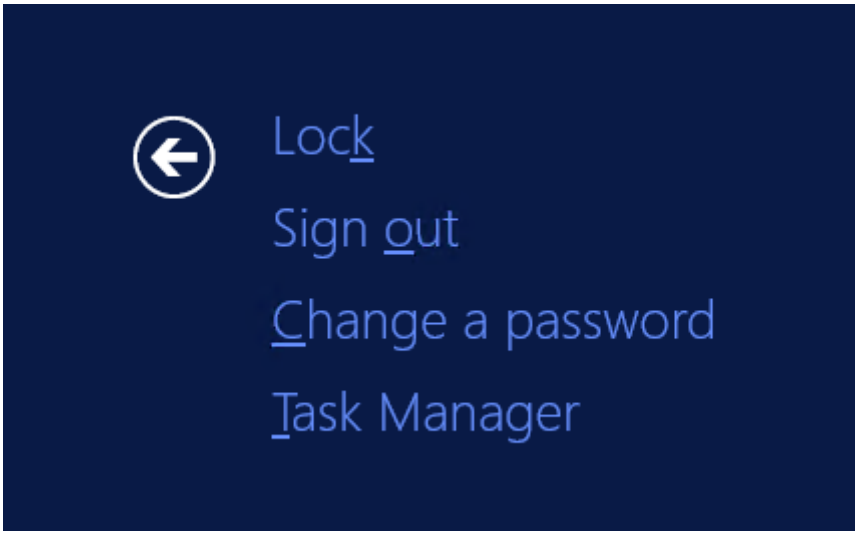
The default password for the TeraStation's administrator account is "password". This is public knowledge, so for security, you should change it immediately. Follow the procedure below to change the password.

Changing Administrator's Password

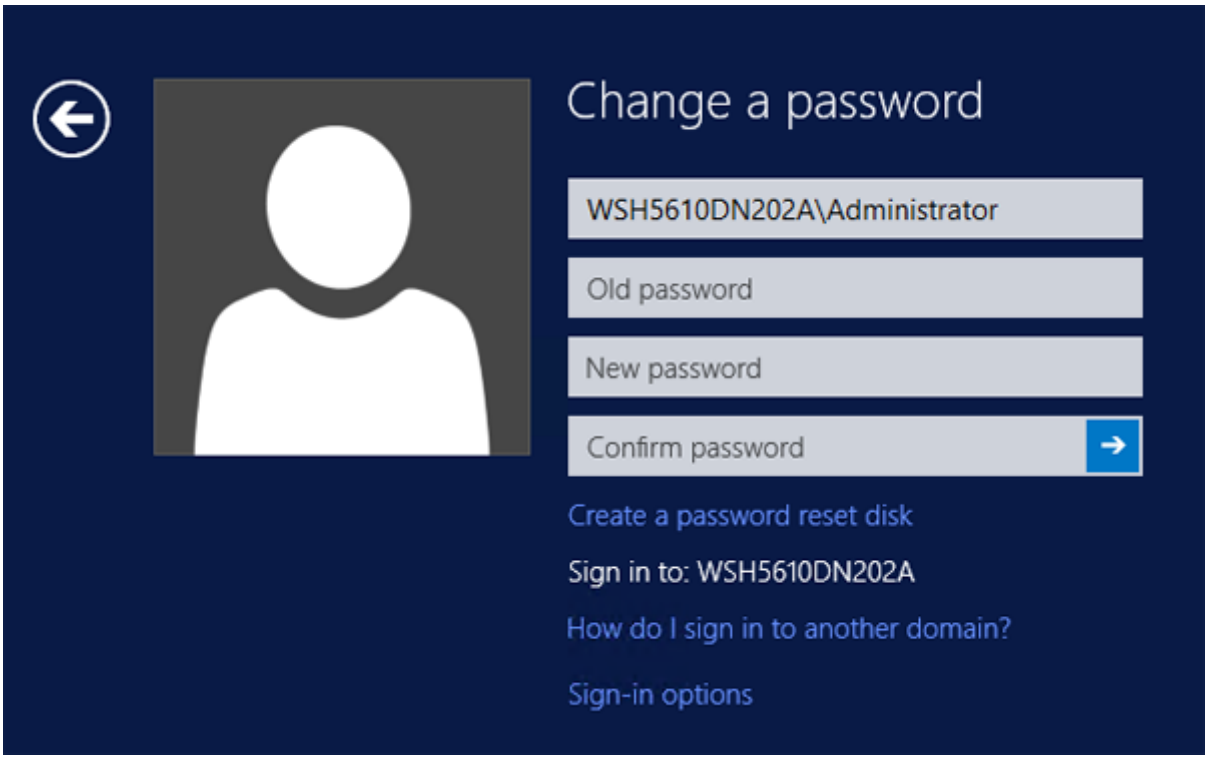
1 Log on to Windows Storage Server with "Administrator".

2 Press Ctrl+Alt+End.

3 Click *Change a password*.



4 Enter the current administrator's password and a new password (twice), then press the Enter key.



Changing Other Users' Password

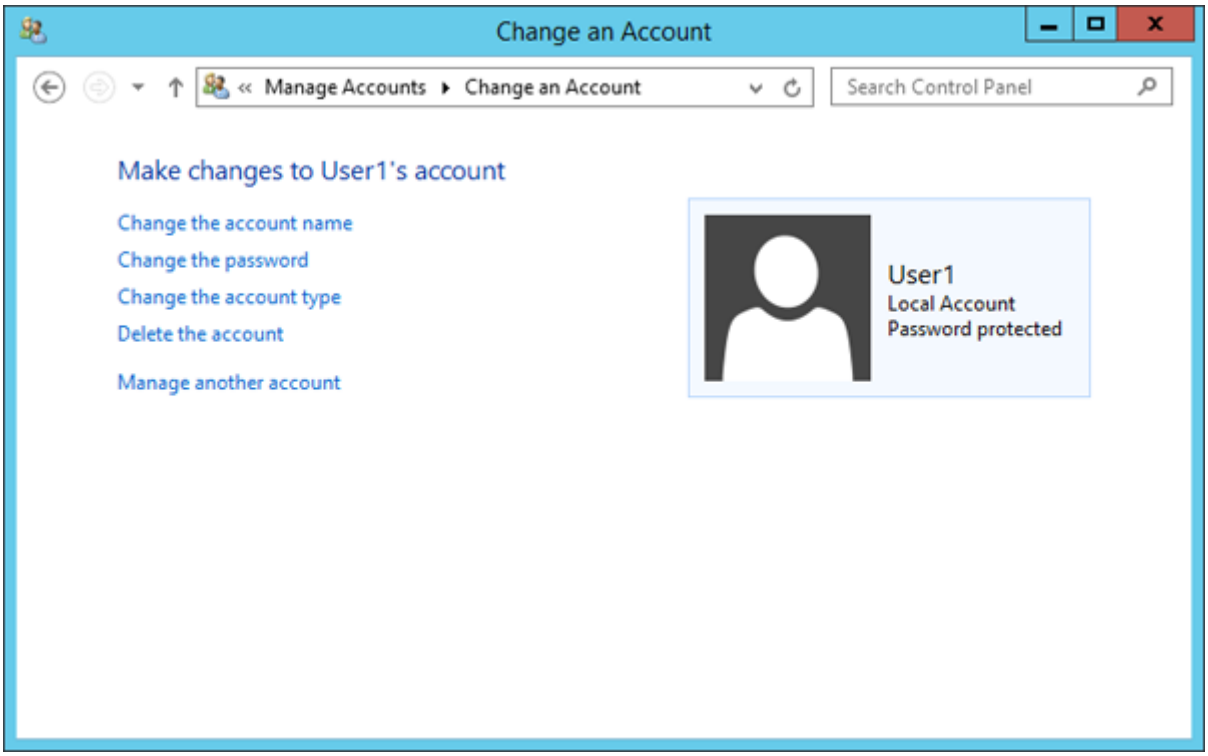
1 From the Windows Storage Server Start menu on the Windows Storage Server, open *Administrative Tools*, then double-click *Computer Management*.

2 Click *Local Users and Groups*, then double-click *Users*.

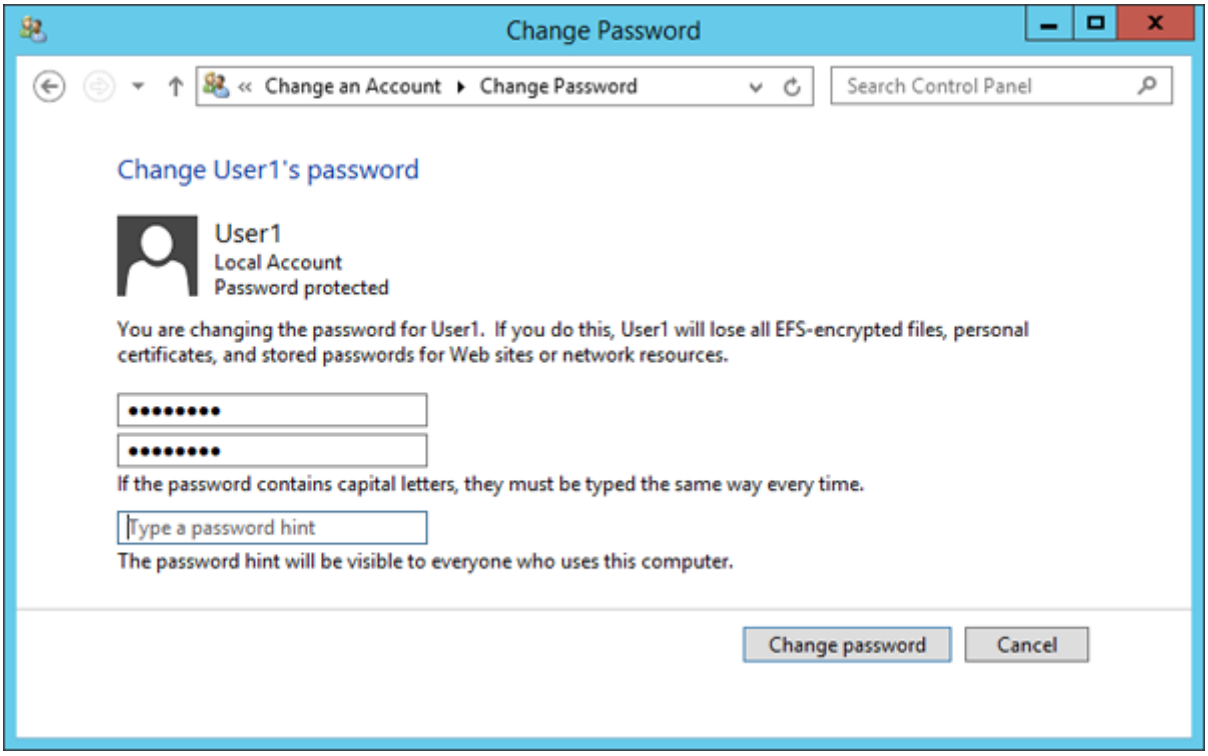
3 Right-click the user whose password will be changed and click *Set Password*.



4 Click *Proceed*.



5 Enter a new password (twice).

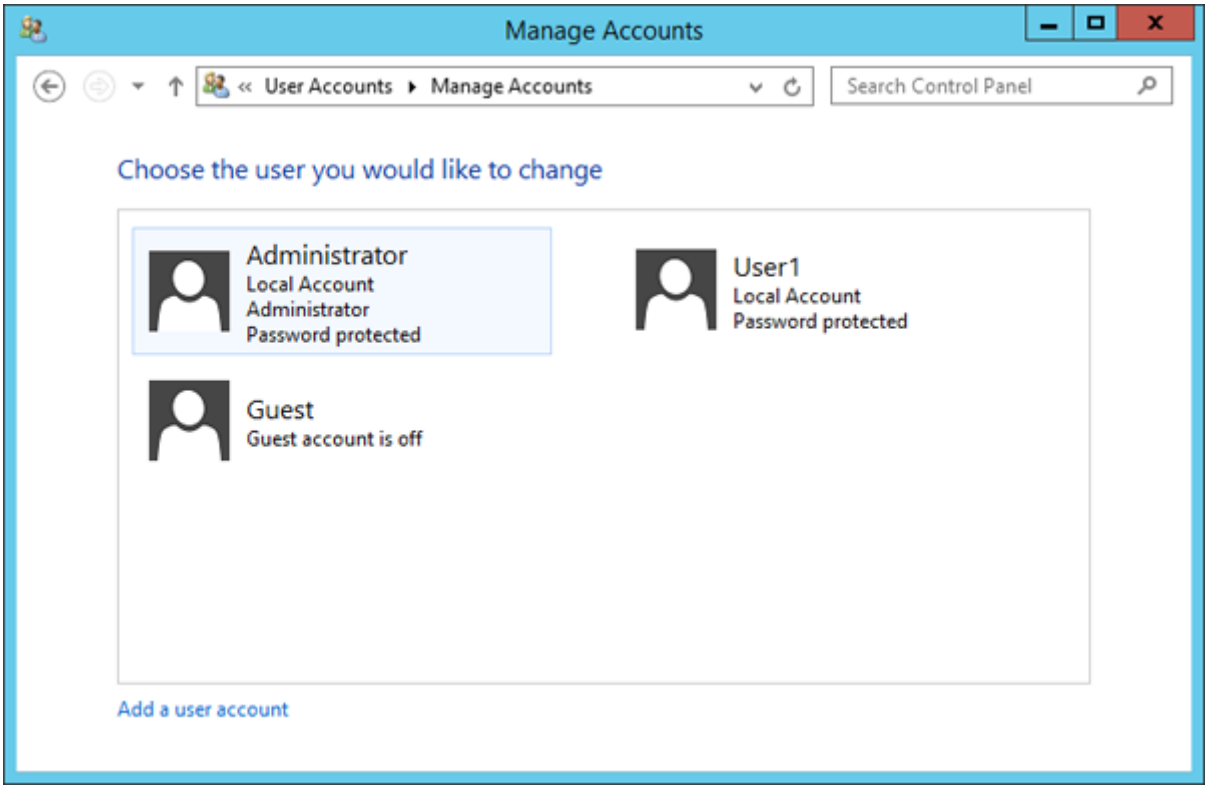


Adding a User

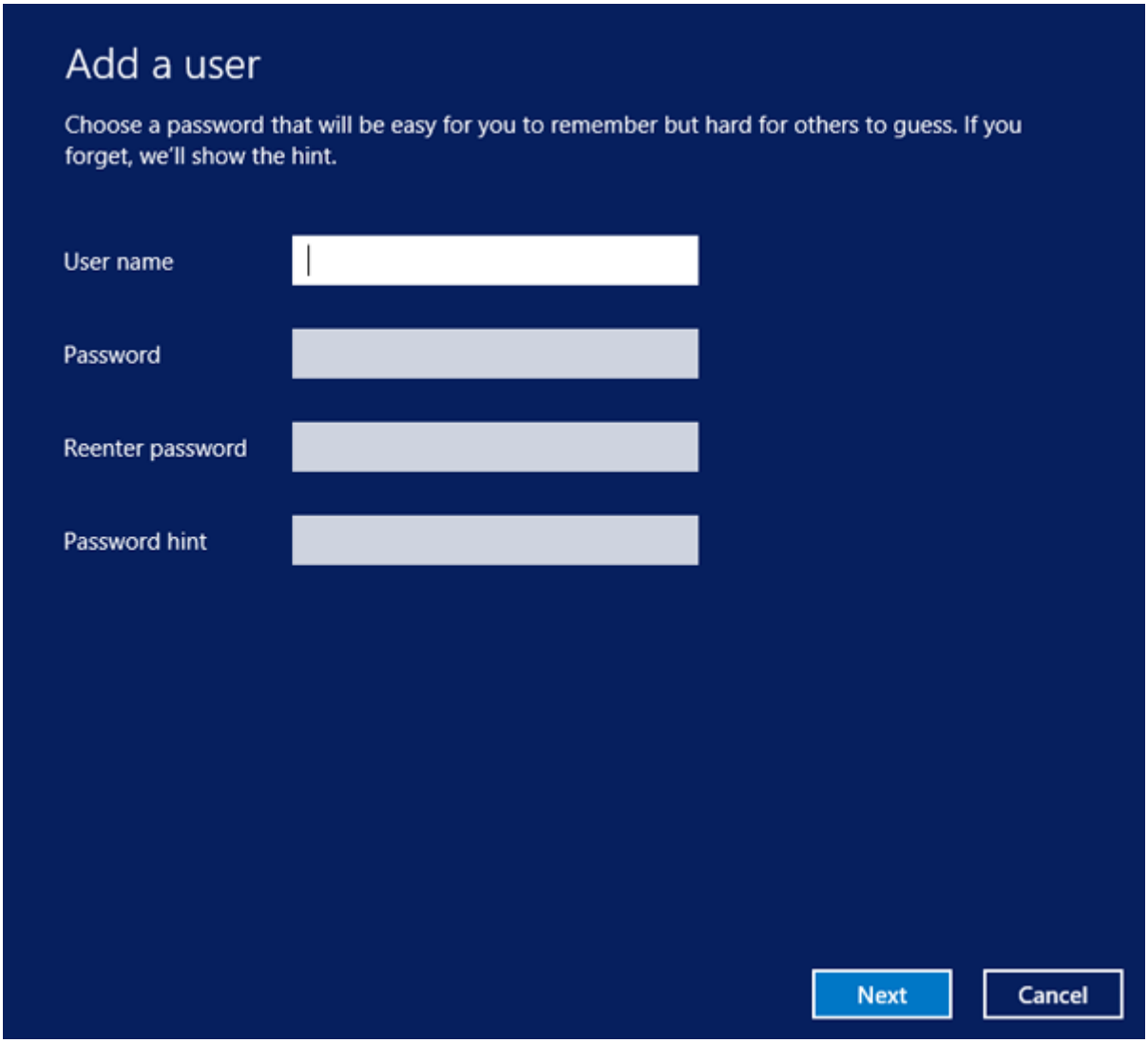
1 From the Windows Storage Server Start menu, open *Administrative Tools*, then double-click *Computer Management*.

2 Click *Local Users and Groups*.

3 Right-click *Users* and click *New User*.



4 Enter the desired settings and click *Create*.



5 Click *Close*.

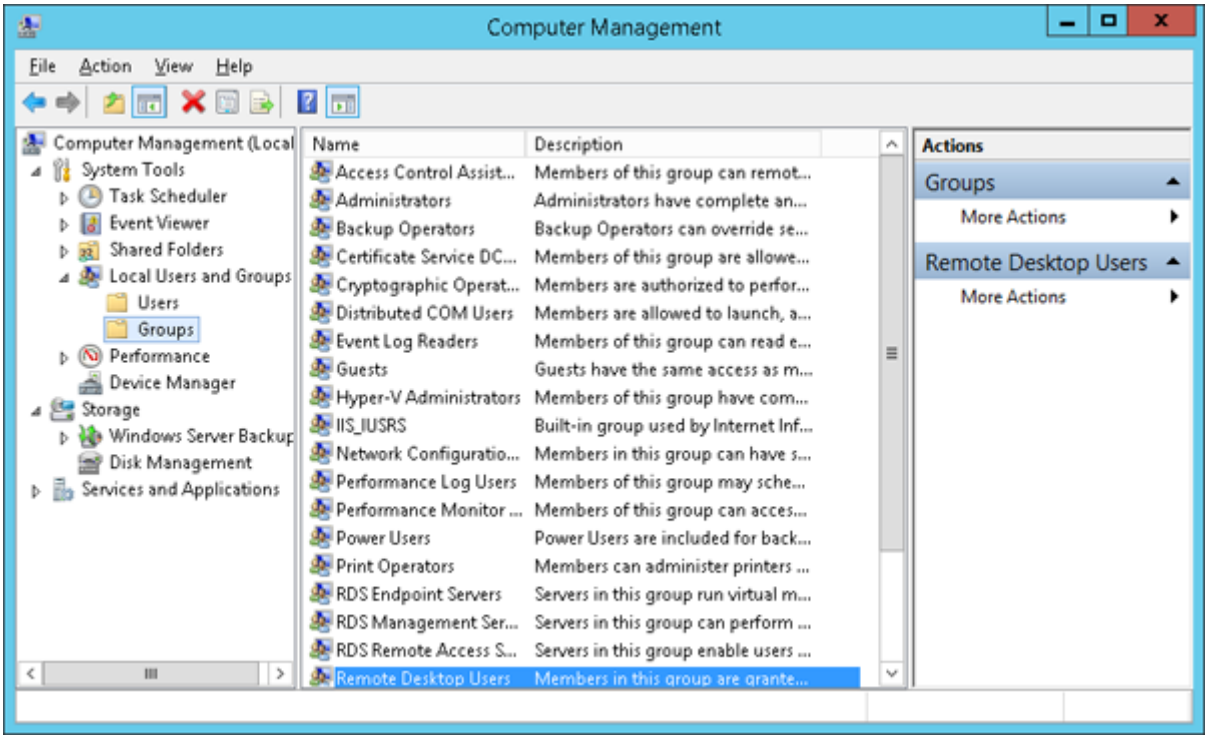
Connecting to Windows Storage Server with Standard Accounts

Accounts not belonging to the Administrators group cannot connect to Windows Storage Server through the remote desktop. Those accounts must be added to the "Remote Desktop Users" group. Follow the procedure below to add accounts to the group.

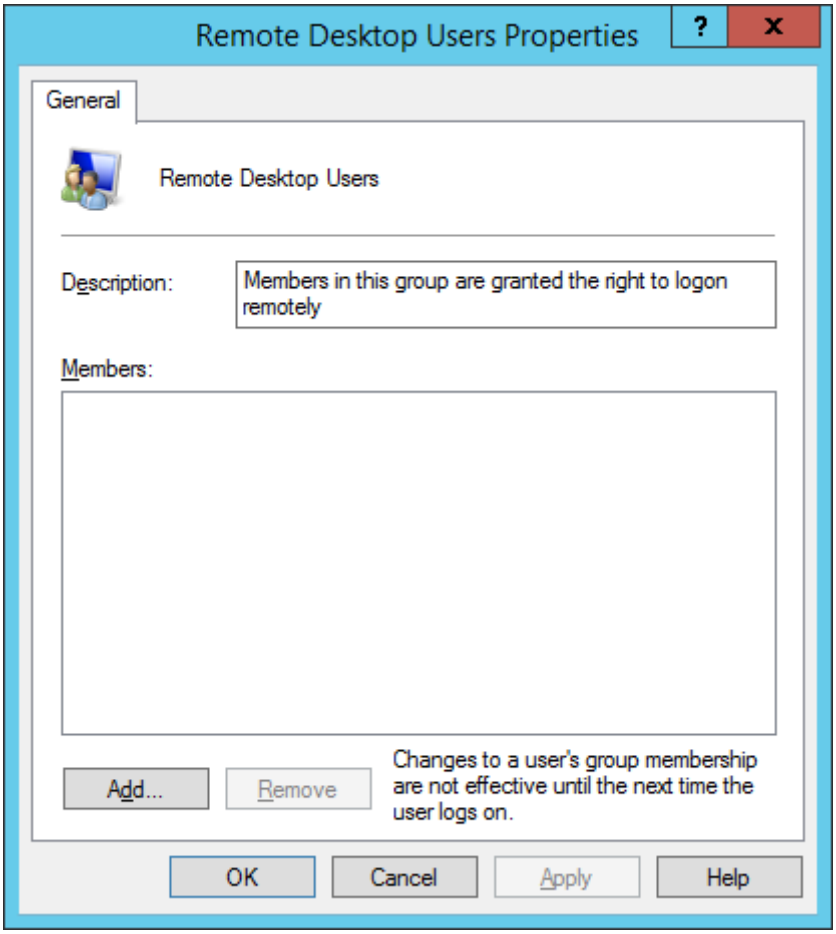
1 From the Windows Storage Server Start menu on the Windows Storage Server, click *Administrative Tools*, then double-click *Computer Management*.

2 Click *Local Users and Groups* and double-click "Groups".

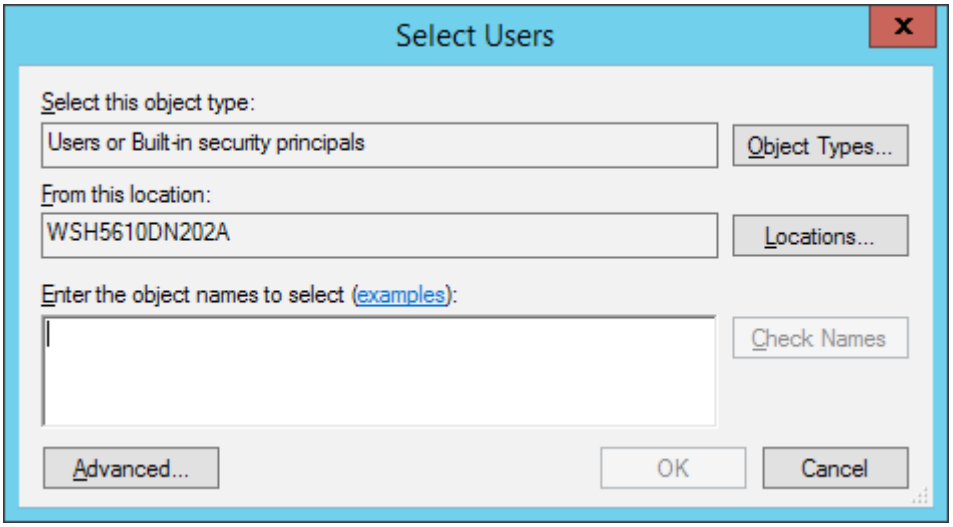
3 Double-click *Remote Desktop Users*.



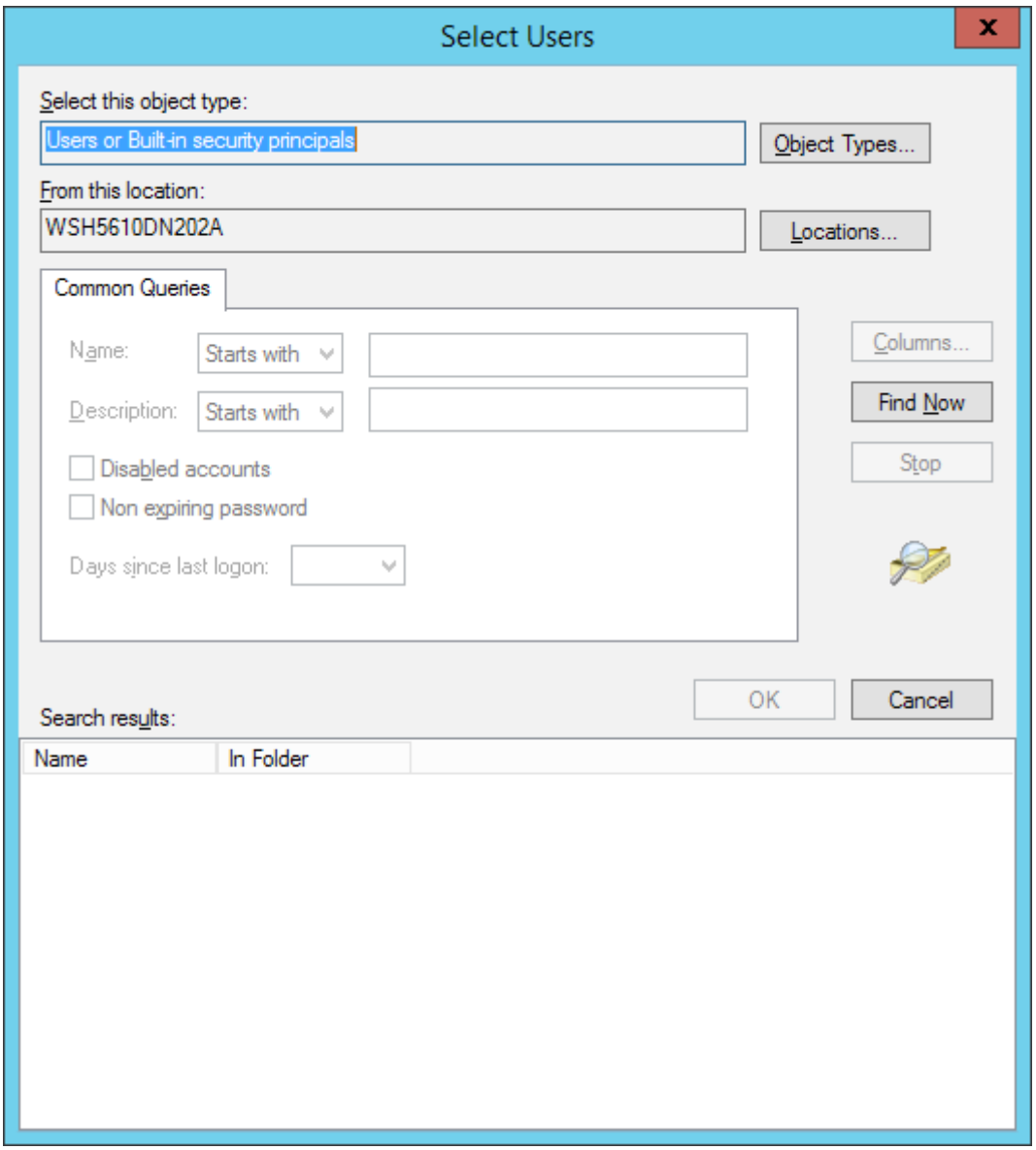
4 Click *Add*.



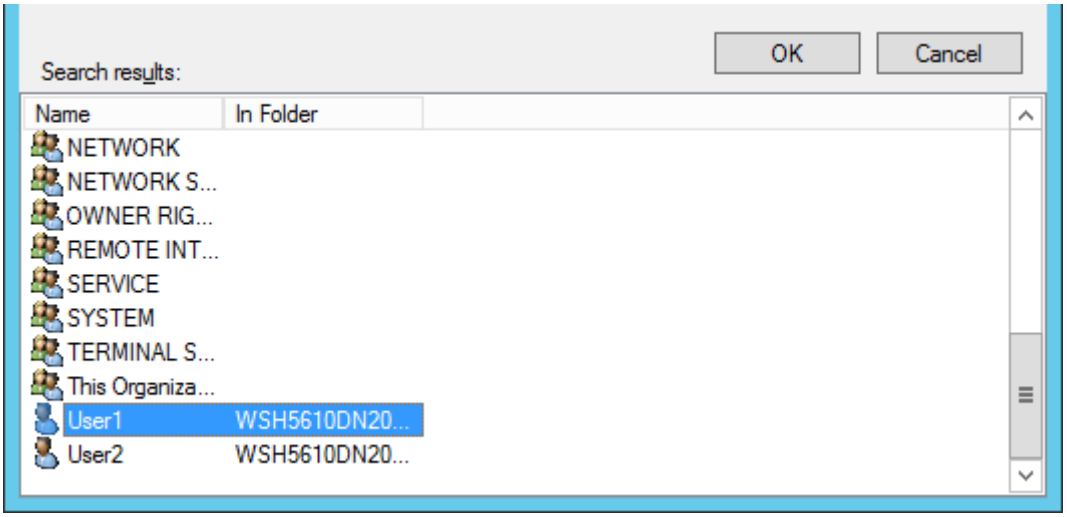
5 Click *Advanced*.



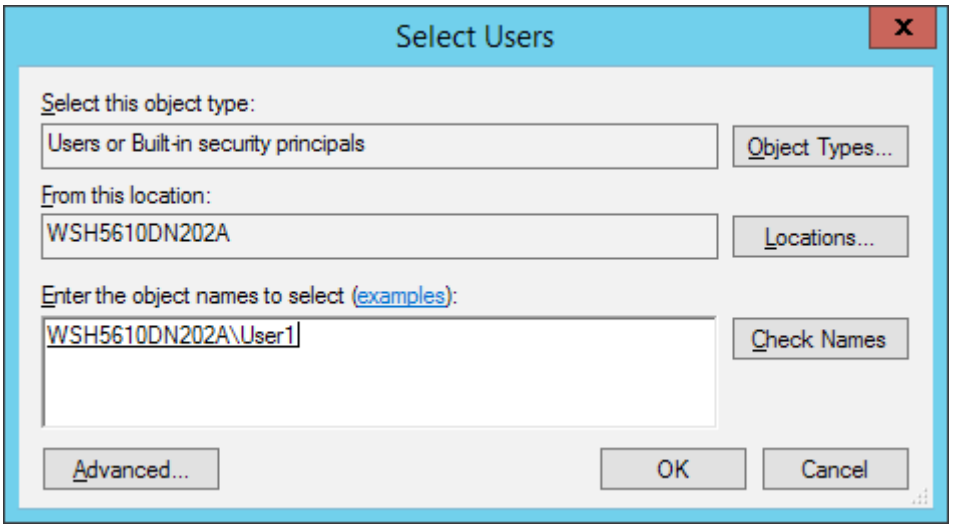
6 Click *Find Now*.



7 Select the user to be joined as a group member and click *OK*.



8 Click *OK* twice.

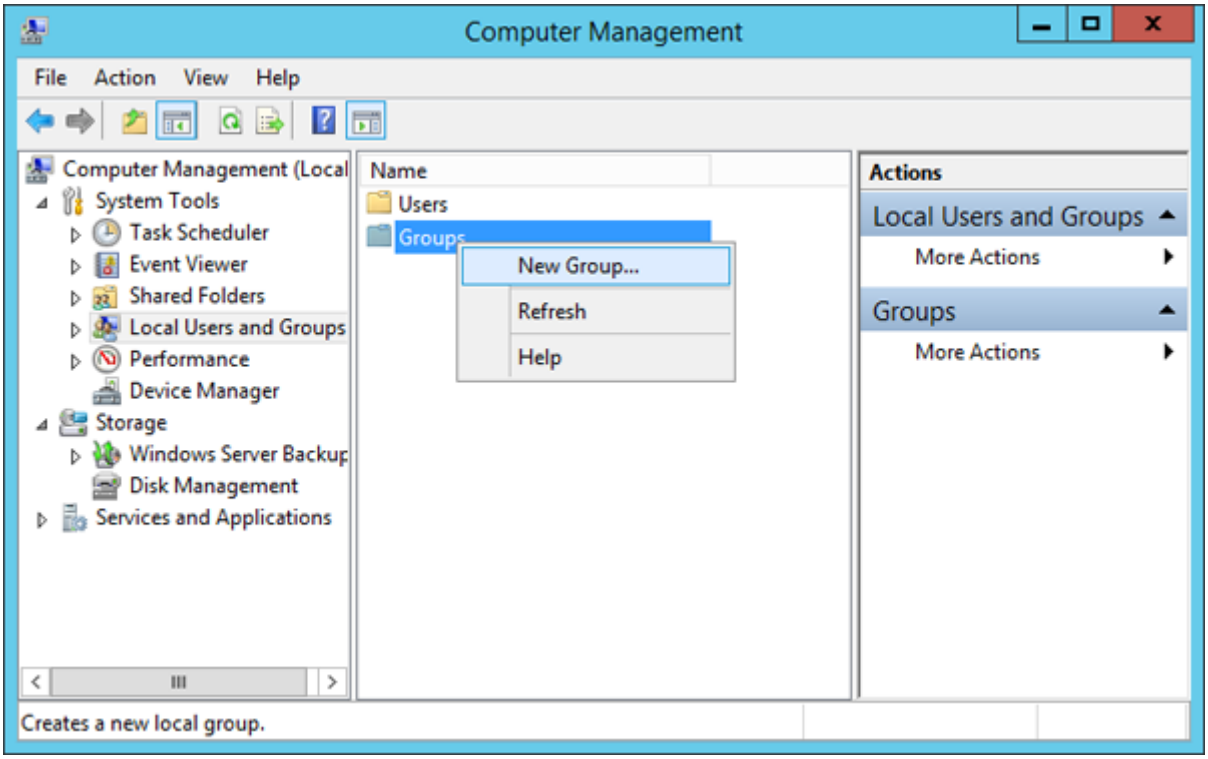


Adding a Group

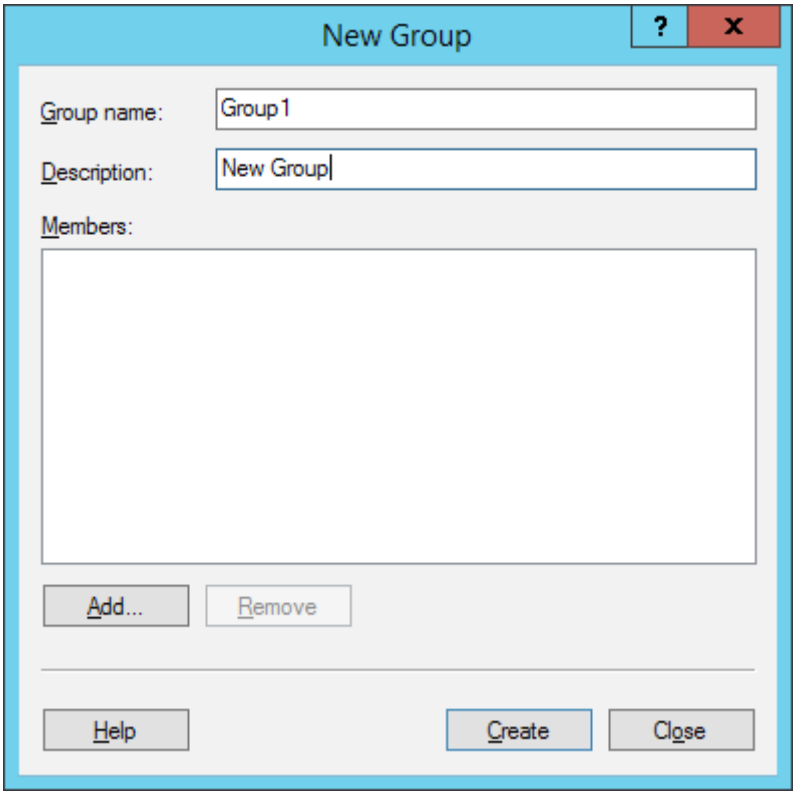
1 From the Windows Storage Server Start menu, open *Administrative Tools*, then double-click *Computer Management*.

2 Click *Local Users and Groups*.

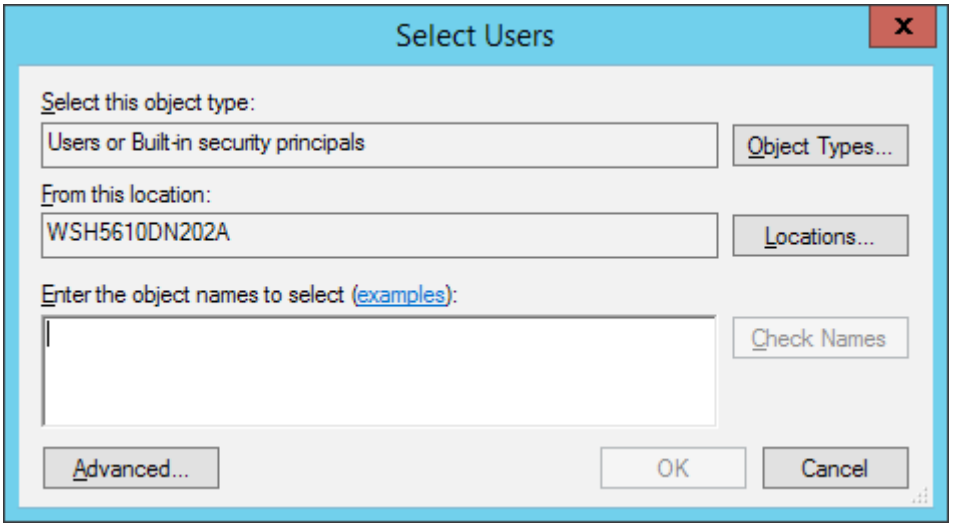
3 Right-click *Groups* and choose *New Group*.



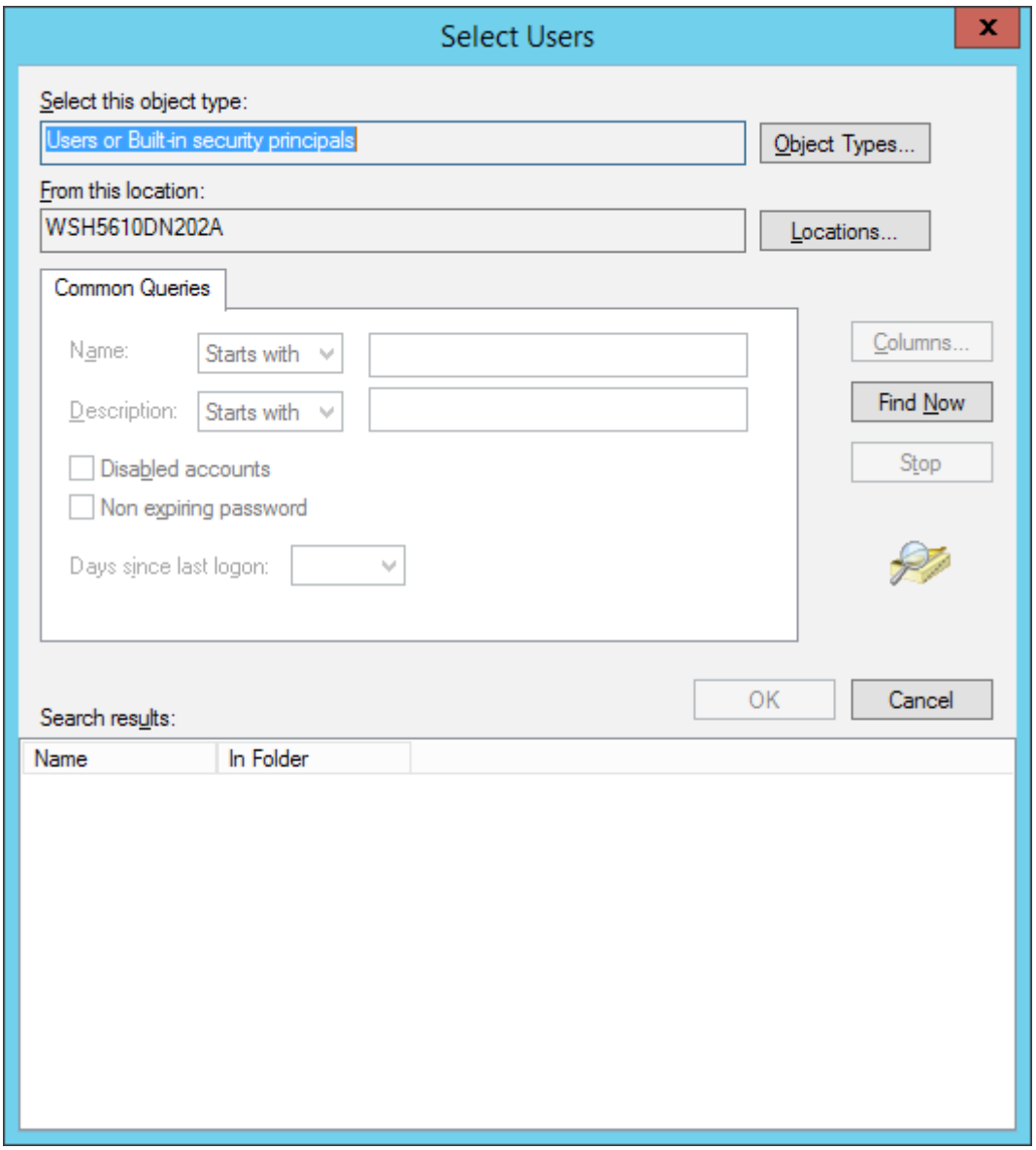
4 Enter a group name and click *Add*.



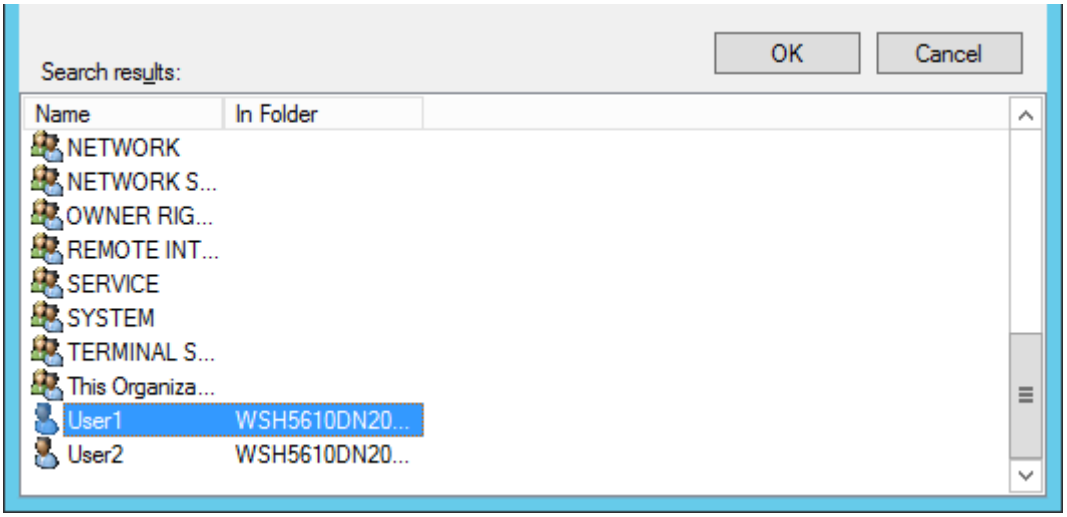
5 Click *Advanced*.



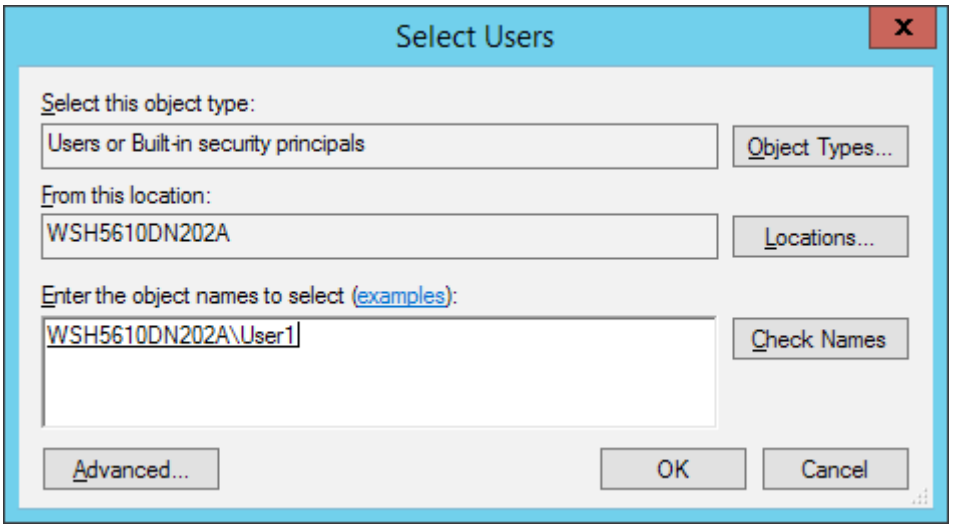
6 Click *Find Now*.



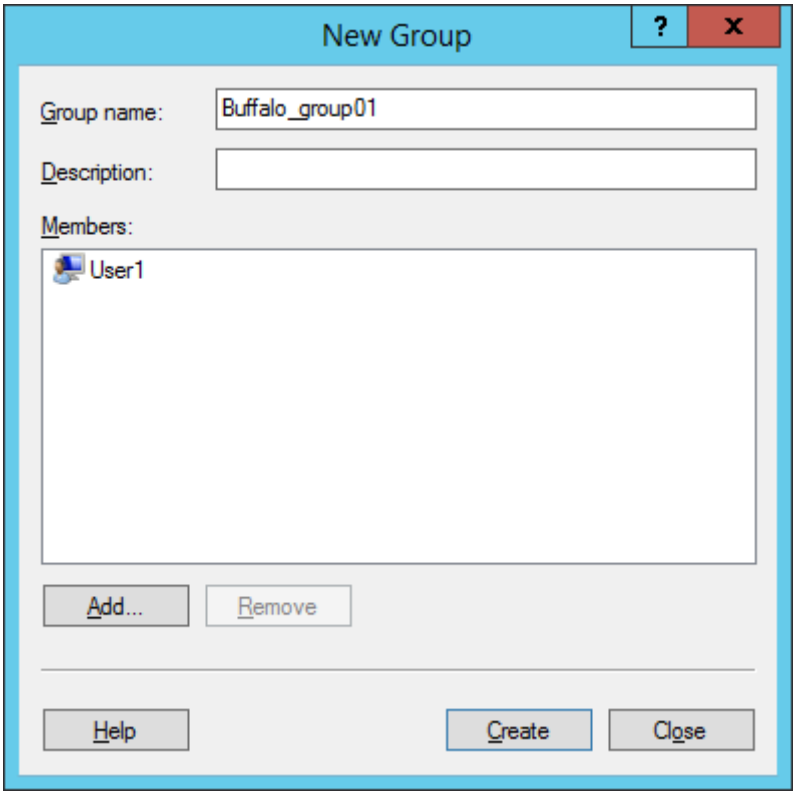
7 Select the users to be registered to the group, then click *OK*.



8 Click *OK*.



9 Click *Create*.



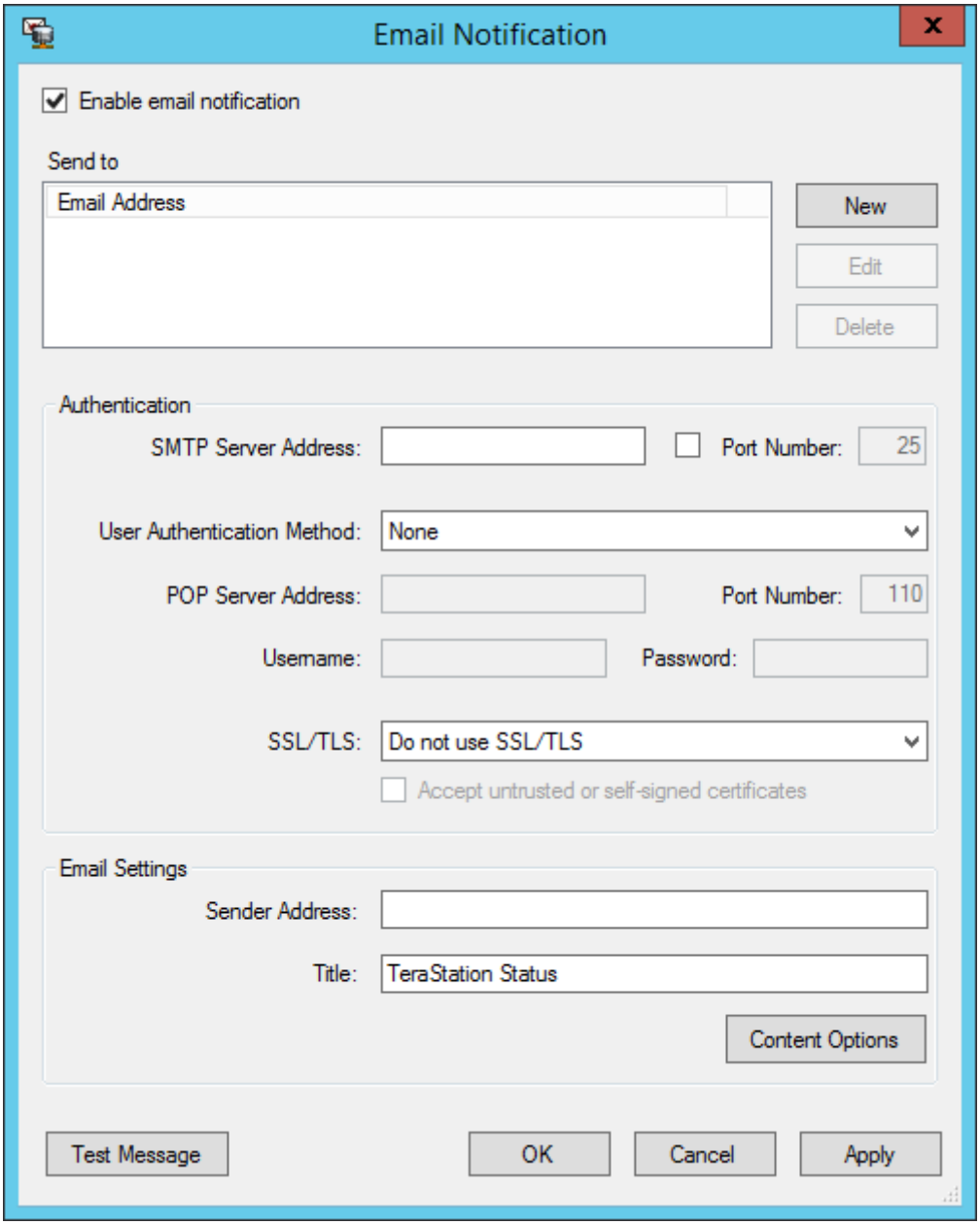
10 Click *Close*.

Email Notification

Your TeraStation can send you email reports daily, or when settings are changed or an error occurs. Notification emails may be triggered by any of TeraStation reports or Windows event logs.

1 From the Windows Storage Server Start menu, click *Email Notification*.

2 Select the "Enable email notification" checkbox.



3 Click *New* and enter an email address.

4 Enter your mail server settings. Click *OK* to finish the email notification settings. You can send a test email when clicking *Test Message*.

5 Enter the password of the user you're logged in as and click *OK*.

Items	Descriptions
Enable email notification	If enabled, email reports will be sent during specific events.
Send to	Adds a new receiver for the notification email. Click *New* to add a new email address. Click *Edit* to change the receiver settings or *Delete* to remove an address from the list. **Note:** Up to five email addresses may be added.

Items	Descriptions
Authentication	**SMTP Server Address**: Enter your email SMTP server's address and port number. Port number 25 is configured by default. **Note:** If you choose "None" or "POP before SMTP" for the user authorization, the port number is locked to "25". **User Authentication Method**: Select the user authorization type from "None", "POP before SMTP", "LOGIN (SMTP-AUTH/LOGIN)", and "CRAM-MD5 (SMTP-AUTH/CRAM-MD5)". If "POP before SMTP" is selected, enter the POP server address and port number. Unless the port is specified, the standard port number (110) is used. **Username** and **Password**: Enter the username and password of your mail server. **SSL/TLS**: If "LOGIN (SMTP-AUTH/LOGIN)" or "CRAM-MD5 (SMTP-AUTH/CRAM-MD5)" is selected, select whether to use SSL/TLS or STARTTLS.
Email Settings	**Sender Address**: Enter the sender's email address for notification emails. **Title**: Enter the subject of the notification email. Click *Content Options* to select the event that will trigger the notification emails to be sent.
Test Message	Sends a test email to the email address which is configured.

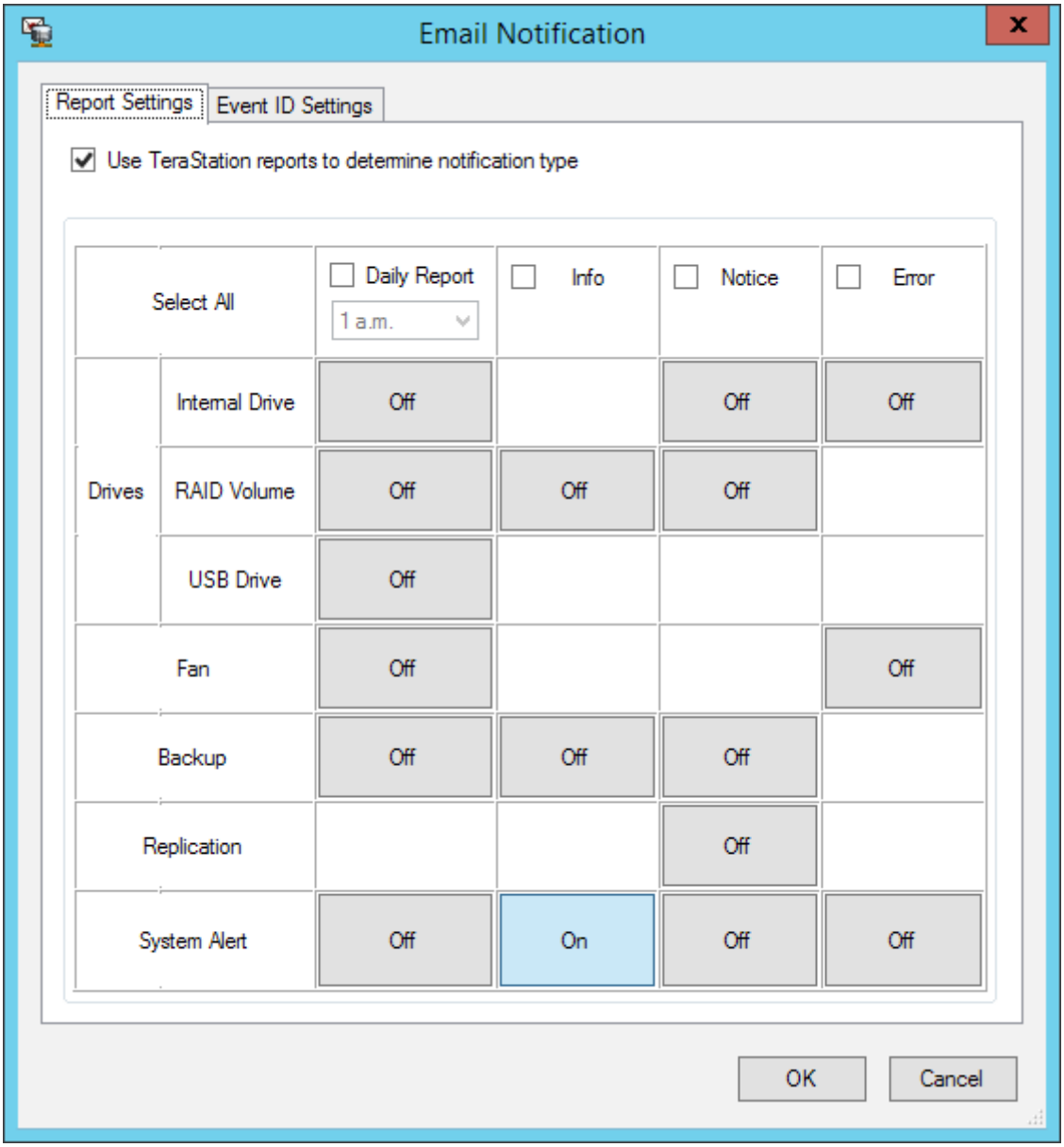
Specifying TeraStation Reports

A notification email can be sent using TeraStation reports.

1 From the Windows Storage Server Start menu, click *Email Notification*.

2 Click *Content Options*.

3 Click the *Report Settings* tab and select the "Use TeraStation reports to determine notification type" checkbox.



4 Click *On* or *Off* to enable/disable the notifications of the function. When you select the checkboxes to the left of each log level, all notifications of the line will be selected at once.

5 Click *OK* when finished.

6 Click *OK*.

7 Enter the password of the user you're logged in as and click *OK*.

The notification emails will be categorized into the following importance levels.

Levels	Details
Daily Report	Describes the status of the TeraStation in a daily report email.
Info	Sends a notification email if an event occurs. Info reports will contain just information such as capacity information, backup job starts/finishes, etc.

Levels	Details
Notice	Sends a notification email if a non-critical error occurs. Notice reports will contain warnings such as something has failed, but the function or unit can continue operating as usual. It is recommended to do the corrective action for the notice as soon as possible.
Error	Sends a notification email if an error occurs. Error reports will describe any critical failures that prevented a function or unit from operating. It is recommended to do the corrective action for the error immediately.

Specifying Windows Event Logs

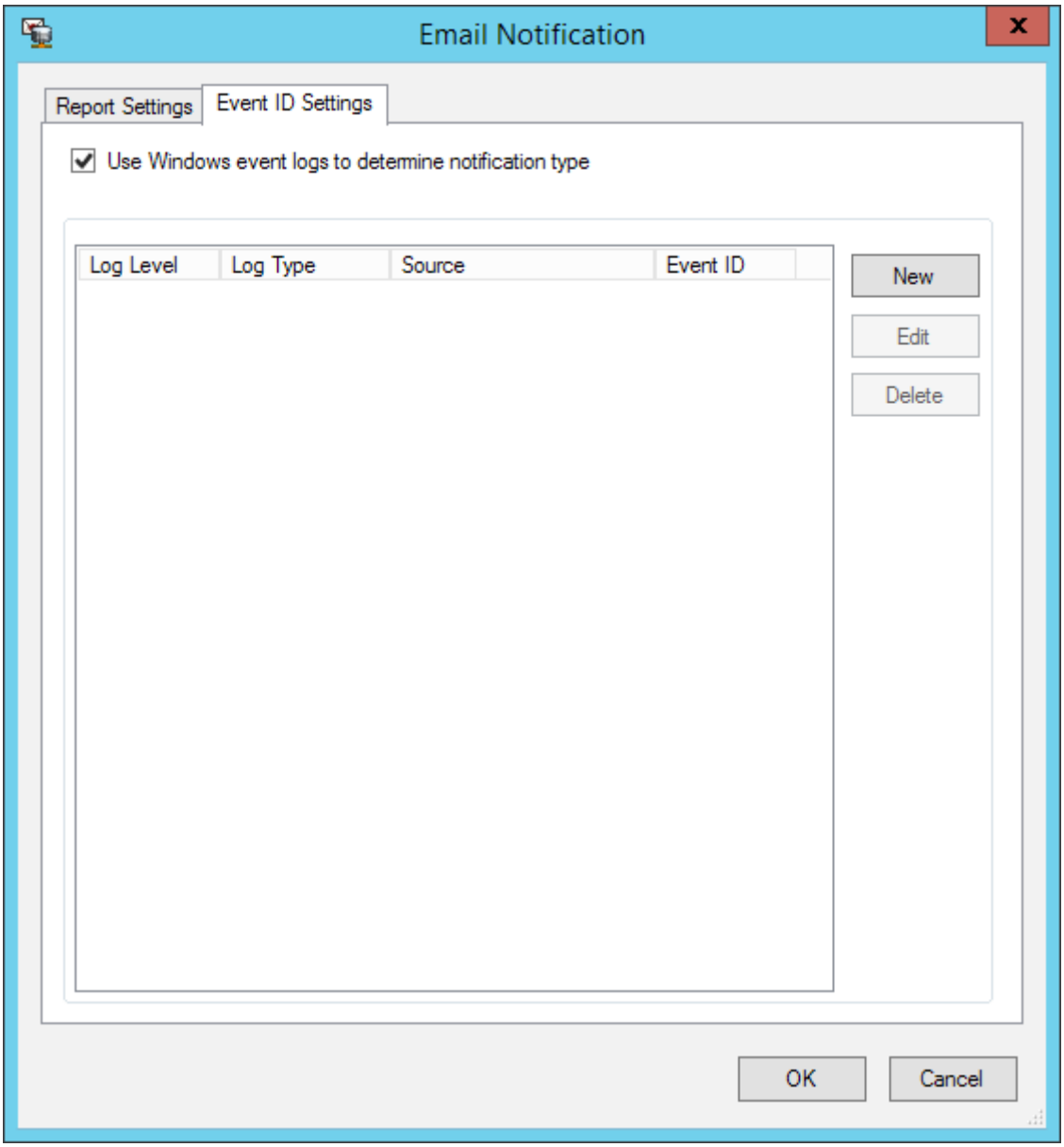
A notification email will be sent when the specified event occurs. If using Buffalo Replication, enabling this function is recommended.

This section describes using Buffalo Replication's event IDs.

1 From the Windows Storage Server Start menu, click *Email Notification*.

2 Click *Content Options*.

3 Click the *Event ID Settings* tab and select the "Use Windows event logs to determine notification type" checkbox.



4 Click *New*.

5 Select the importance level from the "Log Level" list.

6 Select "Application from the "Log Type" list.

7 Enter "Replication" into the "Source" box.

8 Enter an event ID referring to the table below.

- Event IDs

Event ID	Type	Description
1001	Warning	Files in the replication source were deleted so they could not be sent to the replication target.
1002	Warning	Files in the replication source were locked so they could not be sent to the replication target.

Event ID	Type	Description
1008	Warning	Could not read the replication log file. Devices for which replication failed could not be clarified.
1009	Warning	Replication failed.
1032	Warning	The replication log file was corrupted.
1033	Warning	An unexpected modification was made to the replication log file.
3001	Warning	The folder path to the replication target does not exist.
3002	Warning	A folder that is not configured as a replication target is queued.

9 Click *OK*.

10 Repeat steps 4 through 9 for the number of events to be added.

11 Click *New*.

12 Select the importance level from the "Log Level" list.

13 Select "Application from the "Log Type" list.

14 Enter "TeraSync" into the "Source" box.

15 Enter an event ID referring to the table below.

- Event IDs

Event ID	Type	Description
1001	Warning	Files in the replication source were deleted so they could not be sent to the replication target.
1002	Warning	Files in the replication source were locked so they could not be sent to the replication target.

16 Click *OK*.

17 Repeat steps 11 through 16 for the number of events to be added.

18 Click *OK*.

19 Click *OK*.

20 Enter the password of the user you're logged in as and click *OK*.

Acquiring Windows Event Logs

To acquire event logs of the TeraStation, follow the procedure below.

1 From the Windows Storage Server Start menu, click *Administrative Tools*.

2 Double-click *Event Viewer*.

3 Double-click *Windows Logs*.

4 Right-click on either "Application", "Security", "Setup", or "System" in the left-side menu to determine the logs to be saved.

5 Click *Save All Events As*.

6 Specify the desired location and enter a filename, then click *Save*.

Note: Do not change the file type.

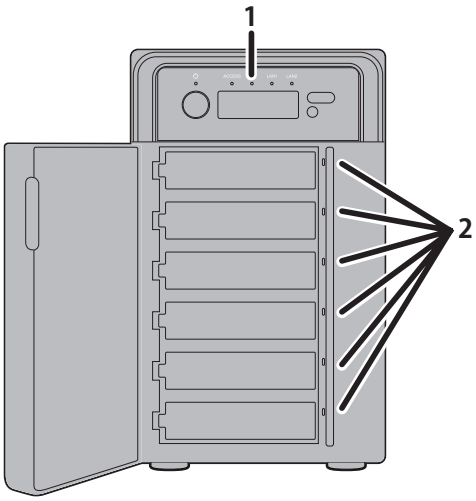
7 When the "Display Information" screen appears, click *OK*.

The operation to acquire event logs is complete. Open the log file stored in the specified location to check the contents of the event logs.

Chapter 6 Replacing Hard Drives

LEDs

If a drive fails or dismounts, the LED will glow as below. To see the status LEDs, open the front cover.



1 Fail LED

Glows amber if a drive has failed.

2 Status LEDs

The failed drive's status LED will be glowing a steady amber. It also glows when the drive is dismounted.

If the RAID array is fragmented by a drive failure, such as in the case of a 3-drive failure in a RAID 6 array, the LEDs will glow as above and the "SYSTEM DOWN" message will be displayed on the LCD panel.

Notes:

- For the replacement drive, use a Buffalo OP-HDBN/B series drive. The new drive should be the same size as the replacement drive.
- The TeraStation is fragile. Handle it with care. Do not drop or bump the TeraStation.
- Use caution when handling the unit in order to avoid personal injury.
- Never disassemble any parts while replacing a hard drive unless instructed to do so in this manual. Any malfunction or damage caused by disassembling the TeraStation will void your warranty.
- To avoid damaging the TeraStation with static electricity, ground yourself by touching something made of metal before handling any sensitive electronic parts.
- Do not change the order of the hard drives in the TeraStation. For example, pulling out drive 1 and replacing it with drive 2 may cause data to be corrupted or lost.

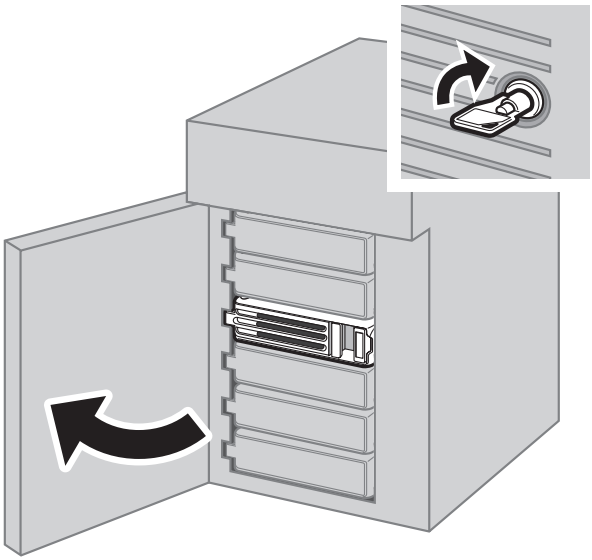
Hard Drive Replacement Procedure

Follow the procedure below to replace a defective drive.

"ONE DRIVE DOWN" Is Displayed on the LCD Panel

Note: Back up the data before replacing drives.

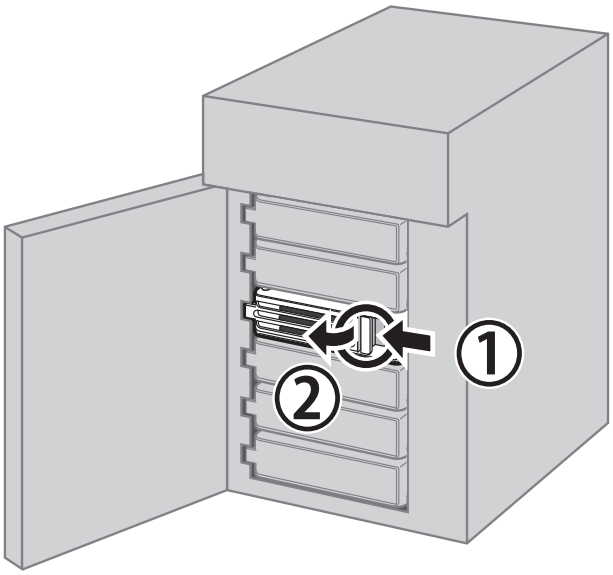
1 Open the front cover with the included key.



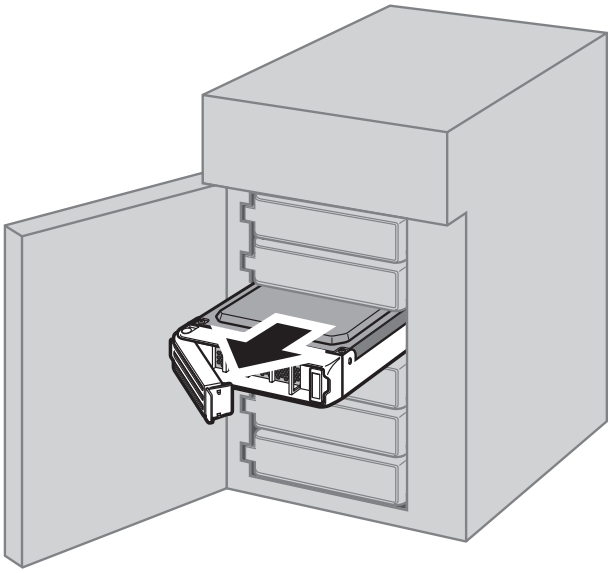
2 Verify the status LEDs. The LED for the failed drive glows amber.

3 Push the unlock button of the drive whose status LED is glowing amber and swing the locking mechanism out.

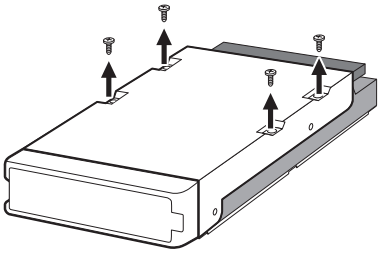
Do not unplug and remove the hard drives with the status LED lit green. If you do, it may cause data loss or the unit to malfunction.



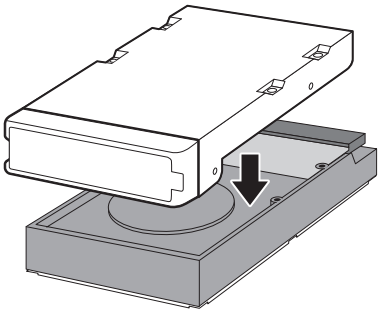
4 Pull out the drive cartridge and remove it from the unit.



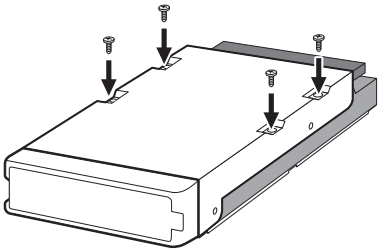
5 Remove the drive from the cartridge.



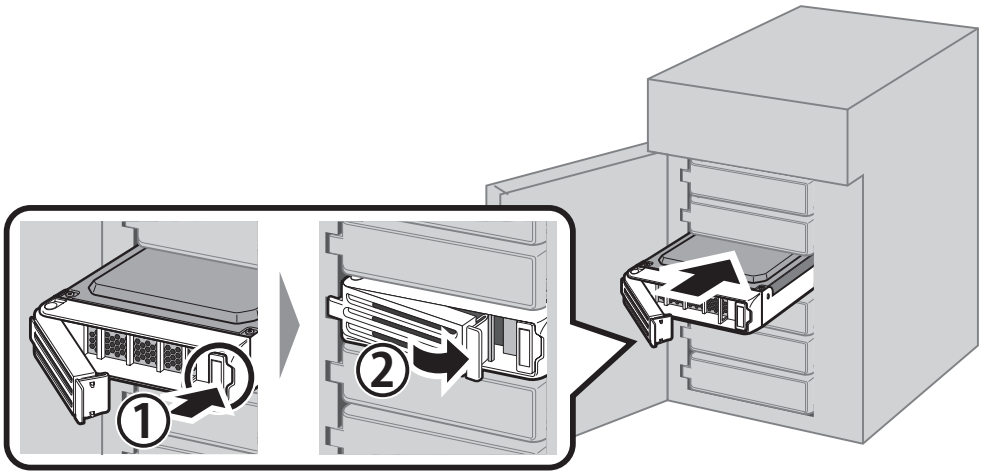
6 Install a new drive into the cartridge.



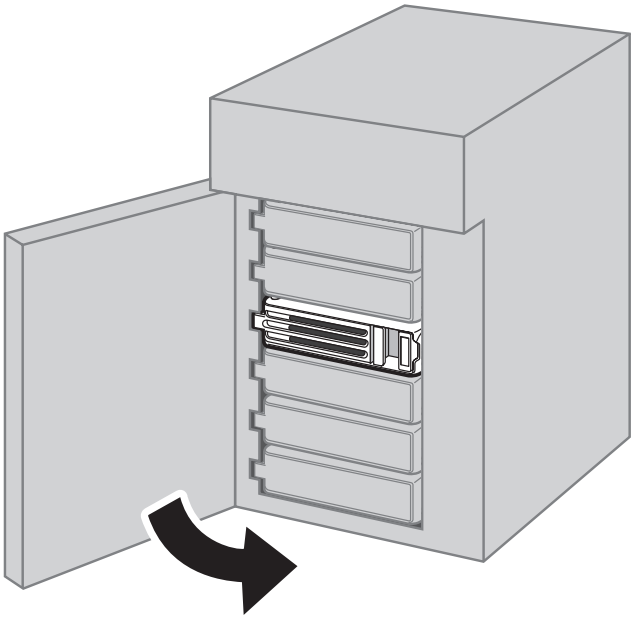
7 Replace the four screws.



8 Insert the new drive into the empty slot, slide the drive in with the locking mechanism open, and swing the lock back down until it clicks into the place.



9 Close the front cover with the key.



10 The "RAID-x RECOVERING 0%" message will be displayed on the LCD panel after 3 minutes.

RAID-6 RECOVERING 0%

11 When "RAID-x NORMAL" is displayed, hard drive replacement is finished.

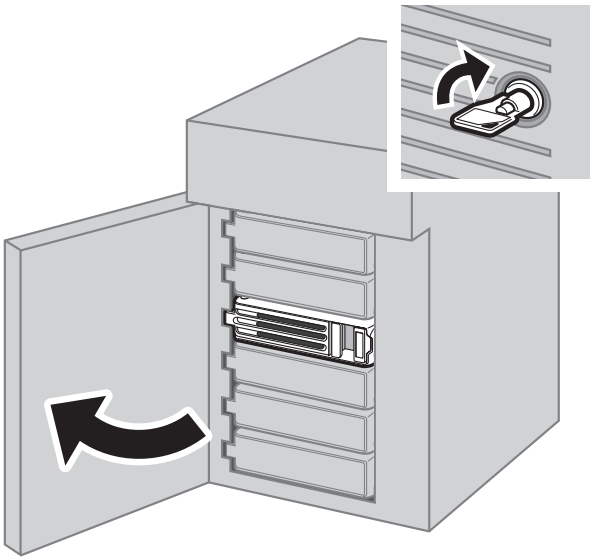
RAID-6 NORMAL

Drive replacement is finished.

"TWO DRIVE DOWN" Is Displayed on the LCD Panel

Note: Back up the data before replacing drives.

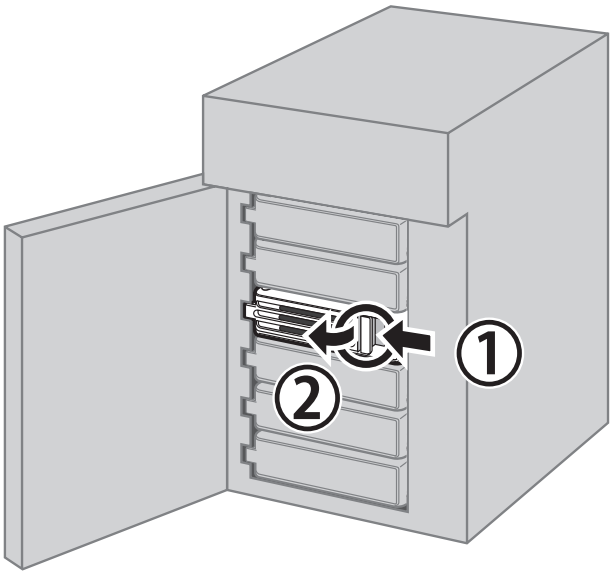
1 Open the front cover with the included key.



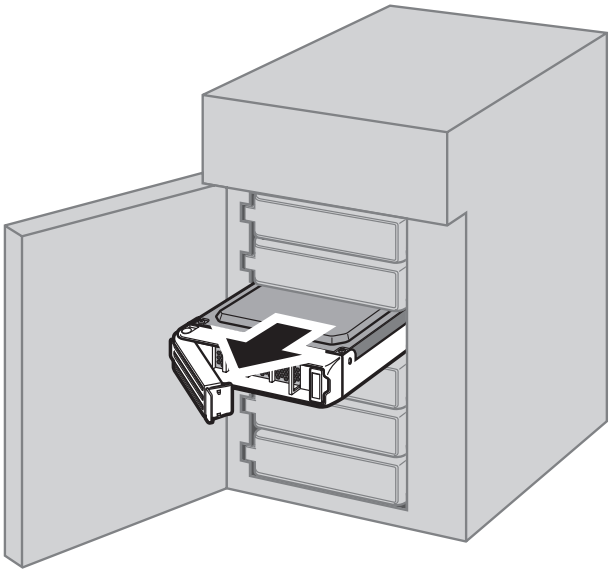
2 Verify the status LEDs. The LED for the failed drive glows amber.

3 Push the unlock button of the drive whose status LED is glowing amber and swing the locking mechanism out.

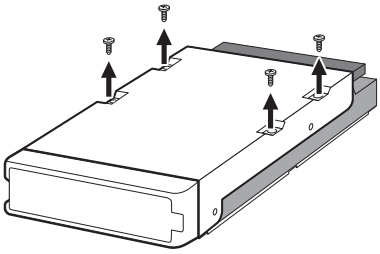
Do not unplug and remove the hard drives with the status LED lit green. If you do, it may cause data loss or the unit to malfunction.



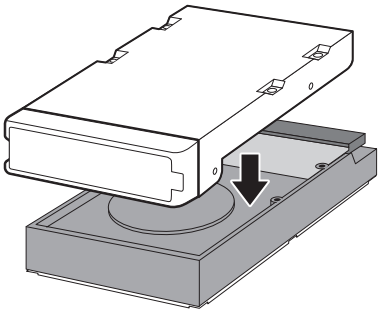
4 Pull out the drive cartridge and remove it from the unit.



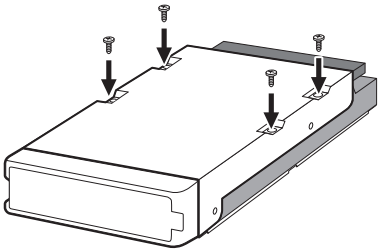
5 Remove the drive from the cartridge.



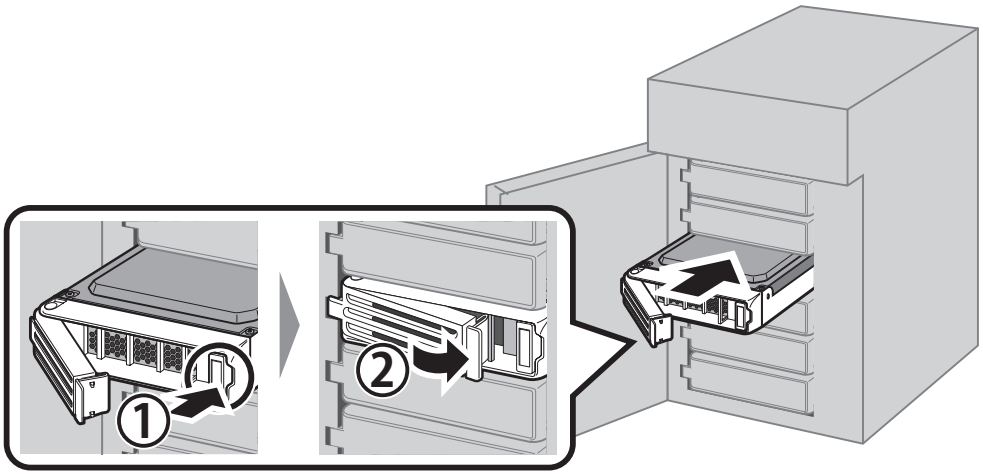
6 Install a new drive into the cartridge.



7 Replace the four screws.



8 Insert the new drive into the empty slots, slide the drive in with the locking mechanism open, and swing the lock back down until it clicks into the place.



9 The "RAID-6 RECOVERING 0%" message will be displayed on the LCD panel after 3 minutes.

RAID-6 RECOVERING 0%

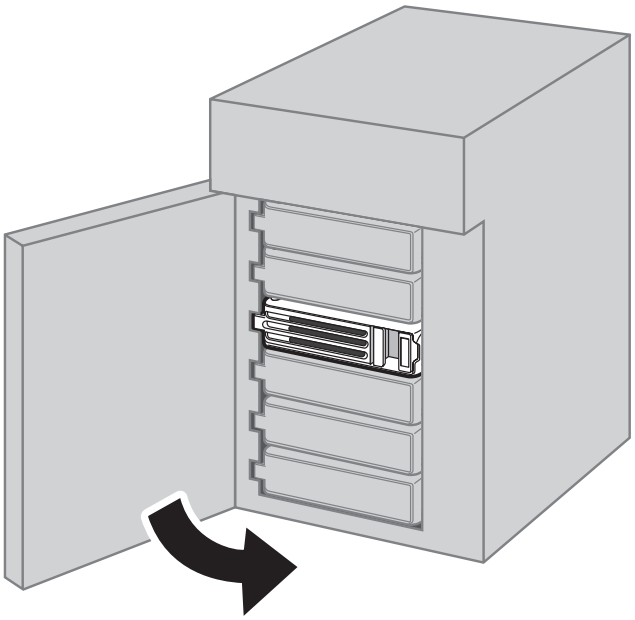
10 When "RAID-6 ONE DRIVE DOWN" is displayed, replacement for a defective drive is finished.

RAID-6 ONE DRIVE DOWN

11 Push the rest of the failed drive's unlock button and swing the locking mechanism out.

12 Insert the new drive into the empty slot, slide the drive in with the locking mechanism open, and swing the lock back down until it clicks into the place.

13 Close the front cover with the key.



14 The "RAID-6 RECOVERING 0%" message will be displayed on the LCD panel after 3 minutes.

RAID-6 RECOVERING 0%

15 When "RAID-6 NORMAL" is displayed, hard drive replacement is finished.

RAID-6 NORMAL

"SYSTEM DOWN" Is Displayed on the LCD Panel

Note: If the "SYSTEM DOWN" is displayed, the data may be lost. If you can access the TeraStation, back up data before replacing drives.

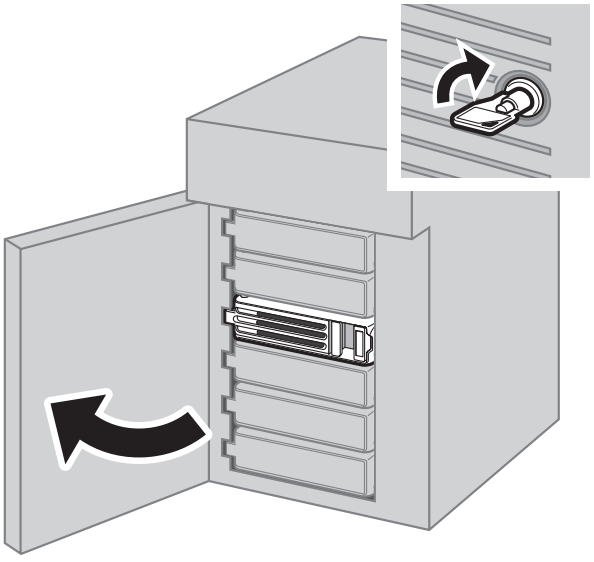
For Striped Volume:

1 Turn off the unit.

2 Turn the unit on while holding down the mode button.

3 When "RAID-0 NORMAL" is displayed, you can proceed.
If "SYSTEM DOWN" is still displayed, go to the next step to replace the defective hard drive.

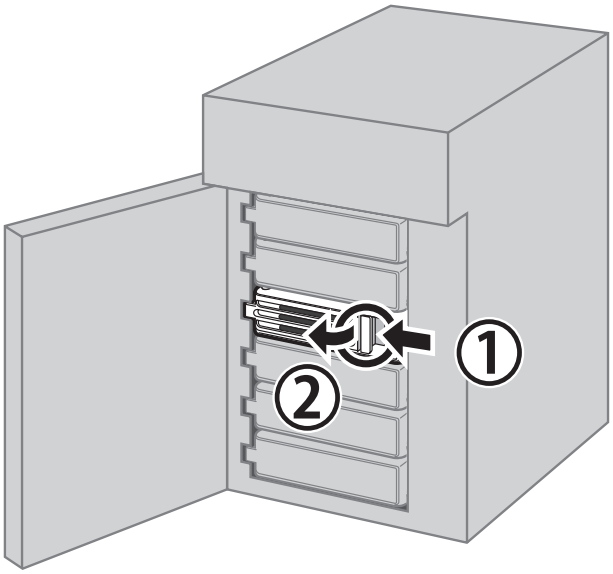
4 Open the front cover with the included key.



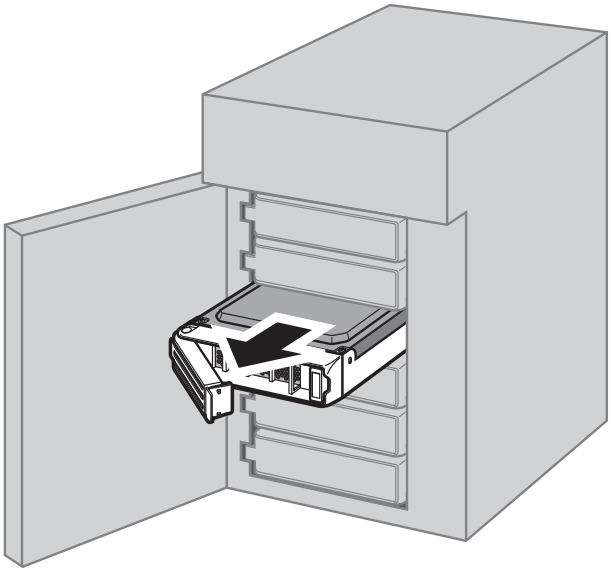
5 Verify the status LEDs. The LED for the failed drive glows amber.

6 Push the unlock button of the drive whose status LED is glowing amber and swing the locking mechanism out.

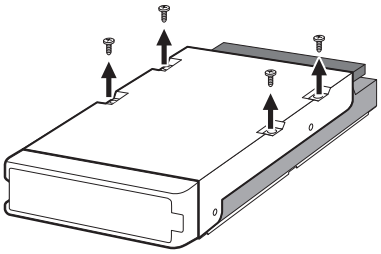
Do not unplug and remove the hard drives with the status LED lit green. If you do, it may cause data loss or the unit to malfunction.



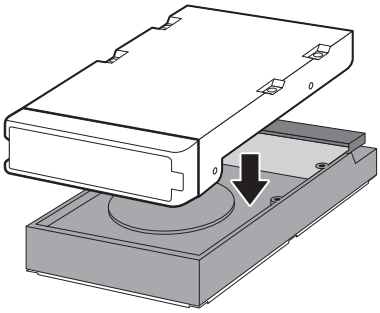
7 Pull out the drive cartridge and remove it from the unit.



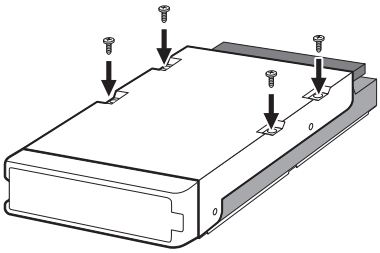
8 Remove the drive from the cartridge.



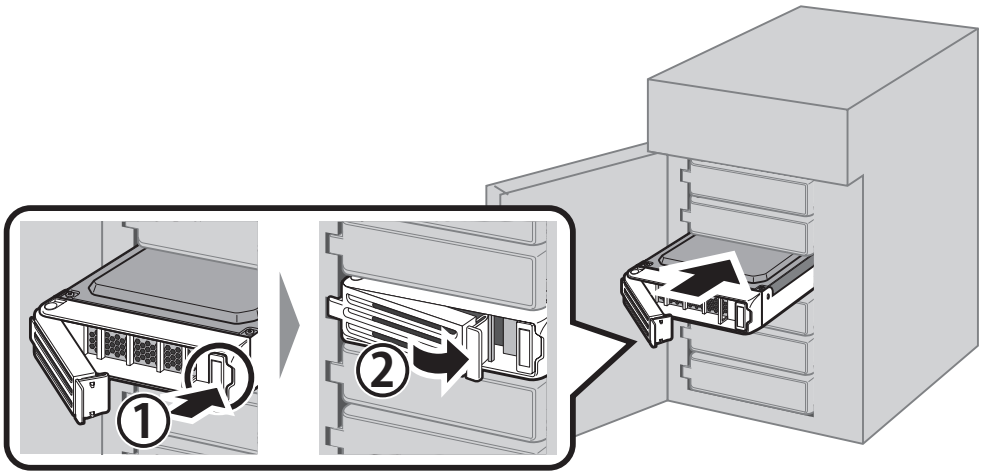
9 Install a new drive into the cartridge.



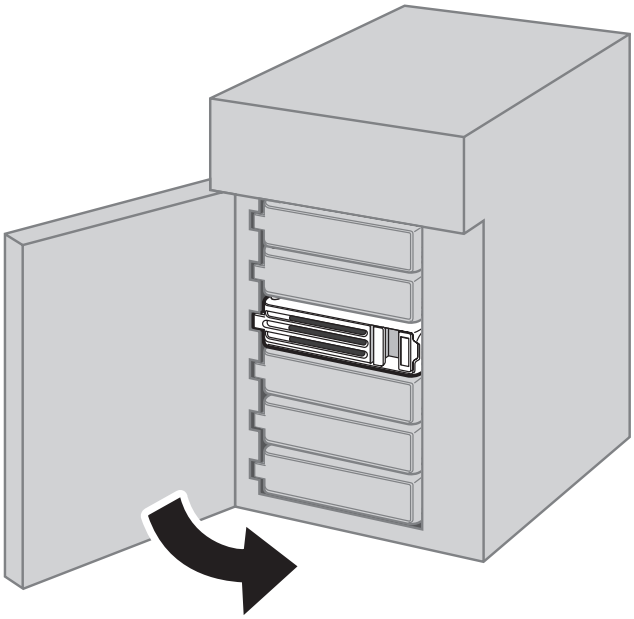
10 Replace the four screws.



11 Insert the new drive into the empty slots, slide the drive in with the locking mechanism open, and swing the lock back down until it clicks into the place.



12 Close the front cover with the key.



13 Turn the TeraStation off first, then turn it on while holding down the mode button.

14 "RAID-0 NORMAL" will be displayed on the LCD panel.

RAID-0 NORMAL

15 Create a RAID volume. Refer to the "Creating a RAID Volumes" section in chapter 3.

For RAID 6 Volume:

1 Open the front cover with the included key.

2 Verify the status LEDs. The LED for the failed drive glows amber.

Do not unplug and remove the hard drives with the status LED lit green. If you do, it may cause data loss or the unit to malfunction.

3 Remove the two defective hard drive cartridges whose status LED glow amber from the unit.

Leave the hard drives that the status LEDs blink amber in the unit.

4 Turn off the TeraStation.

5 Turn on the unit while holding down the mode button with the hard drives left removed.

6 When "RAID-6 TWO DRIVE DOWN" is displayed, replace the defective drive, referring to the ""TWO DRIVE DOWN" Is Displayed on the LCD Panel" section above.

If "SYSTEM DOWN" is still displayed, go to the next step to replace the defective drive.

7 Remove another defective hard drive cartridges whose status LED glows amber.

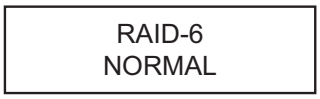
8 Remove hard drives from the cartridges and install new hard drives in them.

9 Insert the new drive into all empty slots, slide the drive in with the locking mechanism open, and swing the lock back down until it clicks into the place.

10 Close the front cover with the key.

11 Turn the TeraStation off, then turn it on while holding down the mode button.

12 "RAID-6 NORMAL" will be displayed on the LCD panel.



If either "RAID-6 ONE DRIVE DOWN", "RAID-6 TWO DRIVE DOWN", or "SYSTEM DOWN" is displayed, try the procedure described in each section above.

13 Create a RAID volume. Refer to the "Creating a RAID Volumes" section in chapter 3.

For RAID 5 or RAID 10 Volumes:

1 Open the front cover with the included key.

2 Verify the status LEDs. The LED for the failed drive glows amber.

Do not unplug and remove the hard drives with the status LED lit green. If you do, it may cause data loss or the unit to malfunction.

3 Remove the one defective hard drive cartridges whose status LED glows amber from the unit.

Leave the hard drive cartridges whose status LED blinks amber in the unit.

4 Turn off the TeraStation.

5 Turn on the unit while holding down the mode button with the hard drives left removed.

6 When "RAID-x ONE DRIVE DOWN" is displayed, replace the defective drive referring to the ""ONE DRIVE DOWN" Is Displayed on the LCD Panel" section above.

If "SYSTEM DOWN" is still displayed, go to the next step to replace the defective drive.

7 Remove another defective hard drive cartridge whose status LED glows amber from the unit.

8 Remove hard drives from the cartridges and install new hard drives in them.

9 Insert the new drive into all empty slots, slide the drive in with the locking mechanism open, and swing the lock back down until it clicks into the place.

10 Close the front cover with the key.

11 Turn the TeraStation off first, then turn it on while holding down the mode button.

12 "RAID-x NORMAL" will be displayed on the LCD panel.

If "RAID-x ONE DRIVE DOWN" or "SYSTEM DOWN" is displayed, try the procedure described in the each section above.

13 Create a RAID volume. Refer to the "Creating a RAID Volumes" section in chapter 3.

Replacing a Non-Malfunctioning Hard Drive

In general, we do not recommend replacing a hard drive that is not malfunctioning.

If you must change a drive that is not malfunctioning, shut down the TeraStation before replacing the drive. If you need to replace more than one drive at the same time, replace the drives one at a time to preserve your data. When replacing a non-malfunctioning drive, follow the procedures below:

Operating in Stripe Volume

All data on the RAID volume will be deleted after replacing the drive. You will not be able to use the TeraStation until the hard drive has been replaced. Refer to the ""SYSTEM DOWN" Is Displayed on the LCD Panel" section above for the procedure.

Operating in a Redundant RAID Volume Other Than Stripe Volume

If you are using a redundant RAID volume such as RAID 5 or 6, the RAID volume will be in degraded mode after replacing the drive. You need to recover from degraded mode by replacing the hard drive. Refer to the ""ONE DRIVE DOWN" Is Displayed on the LCD Panel" section above for the procedure.

Chapter 7 Utilities

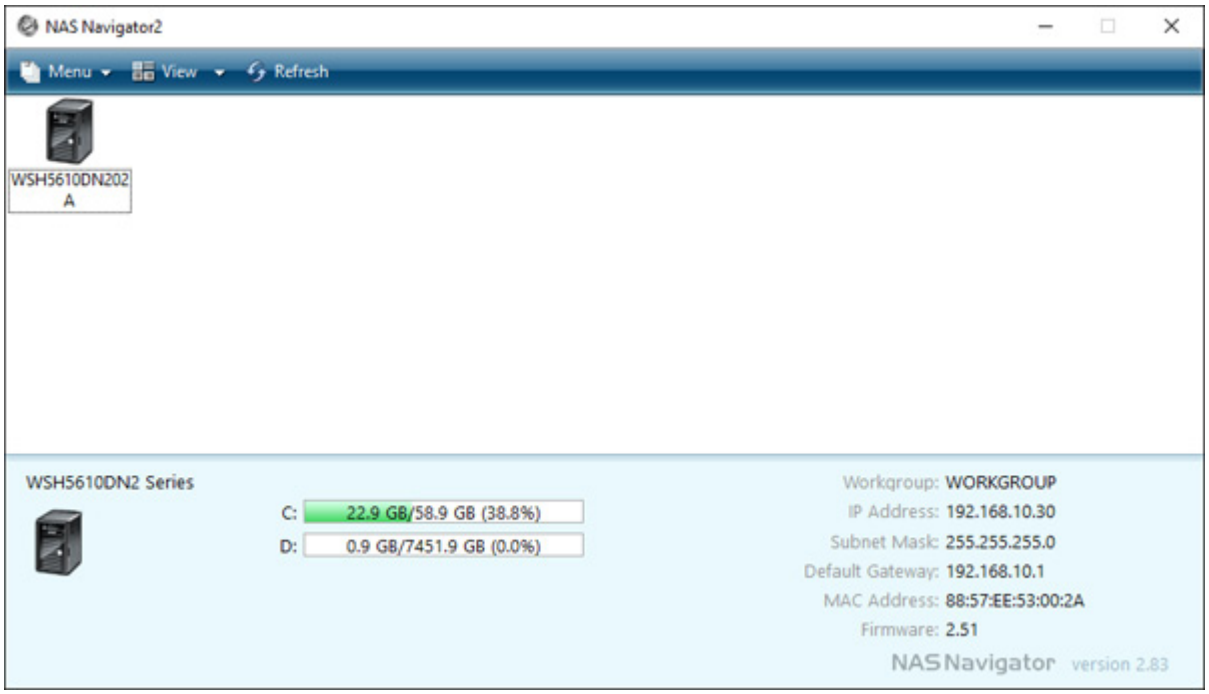
NAS Navigator2 for Windows

NAS Navigator2 is a utility program that makes it easy to display Windows Storage Server, change the IP address, or check its hard drive in remote desktop. If you installed the TeraStation with the TeraNavigator, NAS Navigator2 was installed automatically.

NAS Navigator2 will run in the system tray when the computer is on.



Double-click the  icon to start NAS Navigator2.



Click on a TeraStation's icon to display:

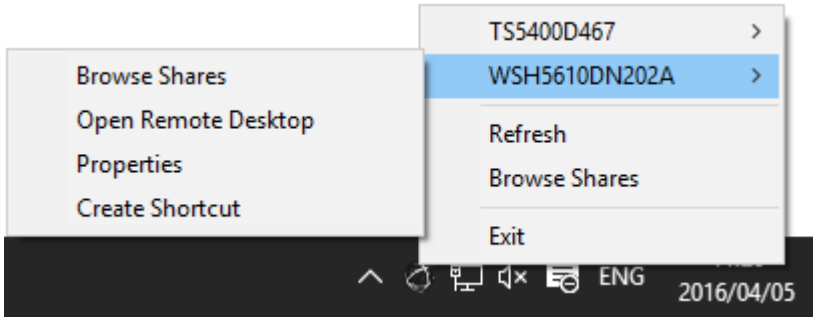
- Total capacity
- Capacity in use
- IP address
- Workgroup
- Subnet mask
- Default gateway
- MAC address
- Firmware version

Double-click the icon to open a share on the TeraStation.

Name		Description
Menu	Map All Remote Shares to Drive Letters	Assigns all the LinkStations' and TeraStations' shared folders as network drives. This is available only when a shared folder has been created.
	Create Desktop Shortcut*	Creates a desktop shortcut to the selected LinkStation's or TeraStation's shared folders.
	Launch NAS Navigator2 on Startup	Launches NAS Navigator2 in the system tray when Windows boots.
	Display Errors	If an error occurs, an error message will pop up from the NAS Navigator2 icon in the system tray.
	Properties*	Opens the selected LinkStation's or TeraStation's properties page.
	Close	Closes NAS Navigator2.
View	View	**Icons**: Displays icons. **Details**: Displays the hostname, product name, workgroup, IP address, subnet mask, and default gateway.
	Sort by	If you have multiple LinkStations and TeraStations on the network, you may choose to display them in order of hostname, product name, workgroup, IP address, subnet mask, or default gateway.
Browse*		Opens the selected LinkStation's or TeraStation's shared folders.
Refresh		Searches for NAS devices on the network again.
Displays when you right-click on a device's icon.	Browse Shares	Opens the selected LinkStation's or TeraStation's shared folders.
	Open Remote Desktop	Opens Windows Storage Server in remote desktop.
	Properties	Opens the selected LinkStation's or TeraStation's properties page.
	Create Desktop Shortcut	Creates a desktop shortcut to the selected LinkStation's or TeraStation's shared folders.

*Click on the selected LinkStation's or TeraStation's icon to display these options.

When NAS Navigator2 is closed, right-click on the NAS Navigator2 icon in the system tray for the following options.



Name		Description
NAS Name	Browse Shares	Opens the selected LinkStation's or TeraStation's shared folders.
	Open Remote Desktop	Opens Windows Storage Server in remote desktop.
	Properties	Opens the selected LinkStation's or TeraStation's properties page.
	Create Shortcut	Creates a desktop shortcut to the selected LinkStation's or TeraStation's shared folders.

Name	Description
Refresh	Refreshes list of NAS devices.
Browse Shares	Displays NAS Navigator2 window.
Exit	Exits NAS Navigator2.

The following tasks may be performed from the properties page.

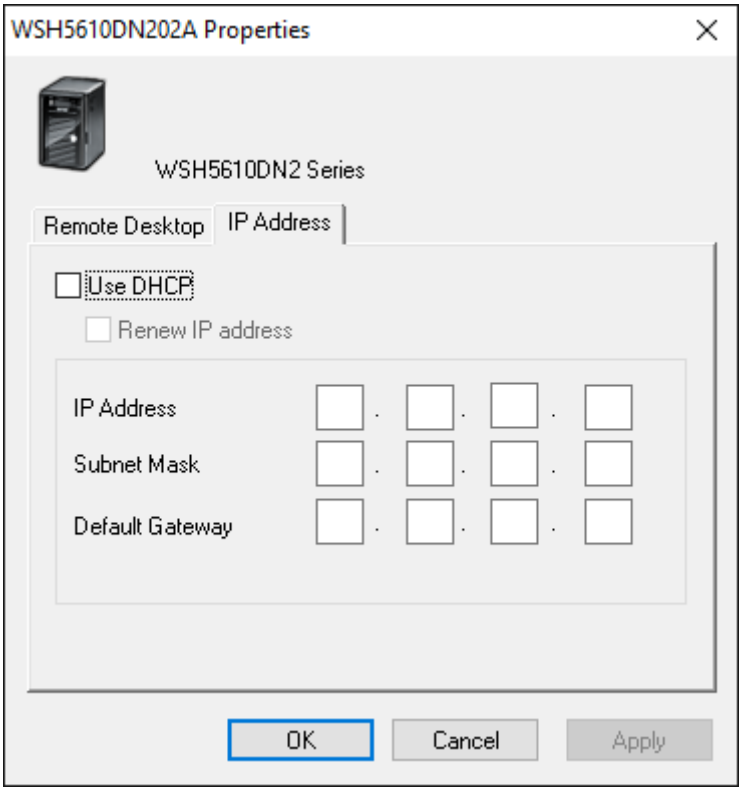
Name	Description
Remote Desktop	Click *Open Remote Desktop* to open Windows Storage Server.
IP Address	Select the "Use DHCP" checkbox to assign an IP address from the DHCP server automatically. If there is no DHCP server in the network, you cannot use this function. Select the "Renew IP address" checkbox to obtain an IP address from the DHCP server. You can manually enter an IP address, subnet mask, and default gateway.

Changing the IP Address

1 Double-click the  icon to start NAS Navigator2.

2 Right-click on your TeraStation's icon and choose *Properties - IP Address*.

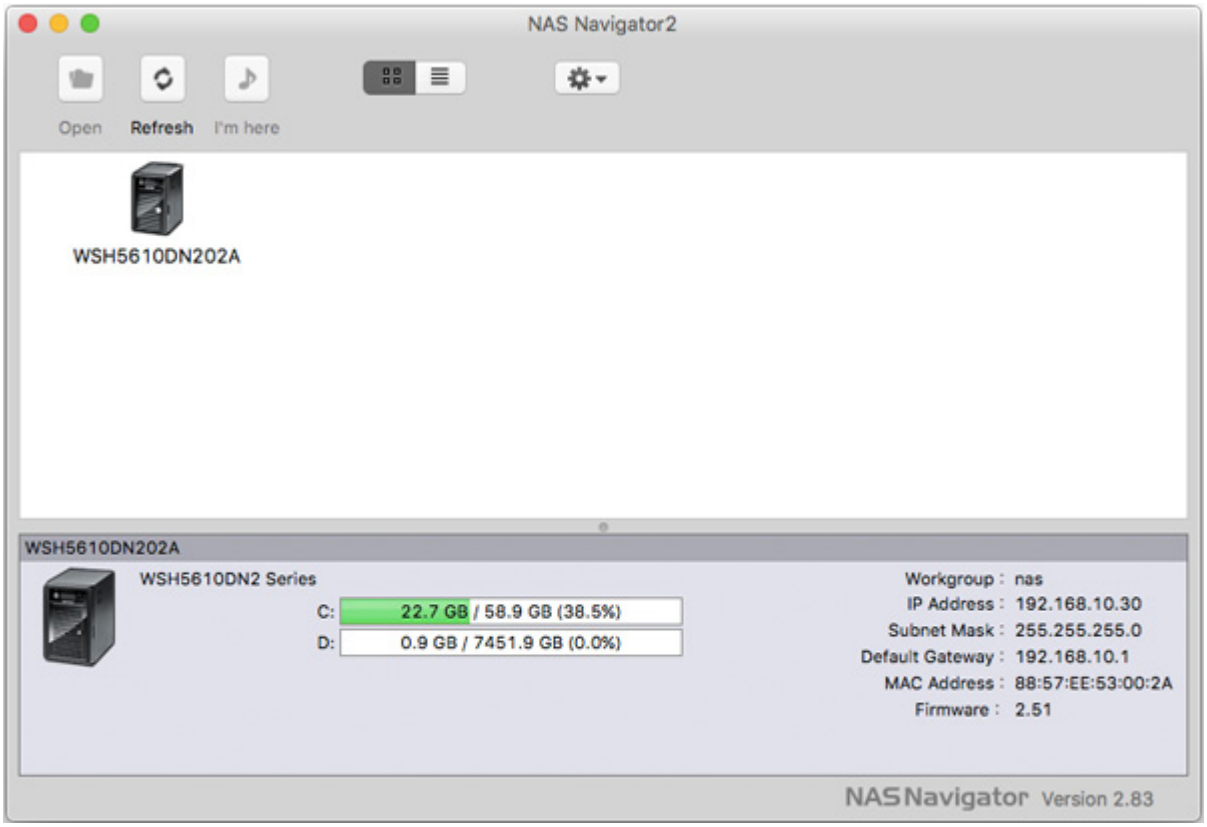
3 Clear the "Use DHCP" checkbox, enter the IP address and subnet mask, and click *OK*. If the username and password prompts appears, enter the admin username and password.



NAS Navigator2 for Mac OS

NAS Navigator2 is a utility program that makes it easy to display Windows Storage Server, change the IP address, or check its hard drive in remote desktop. If you installed the TeraStation with the TeraNavigator, NAS Navigator2 was installed automatically.

To launch NAS Navigator2, click the  icon in the Dock.



Click on a TeraStation's icon to display:

- Total capacity
- Used capacity
- Workgroup
- IP address
- Subnet mask
- Default gateway
- MAC address
- Firmware version

Double-click it to open a share on the TeraStation.

Name	Description
Open	Opens the default shared folder for a selected LinkStation or TeraStation.
Refresh	Searches for NAS devices on the network again.
Open Remote Desktop	Opens Windows Storage Server in remote desktop.
Configure	Opens the window that lets you configure the NAS's IP address or open Remote Desktop.
Label Color	Selects the color of the name displayed below the icon.
View Options	Lets you choose icon size, position, and view mode.

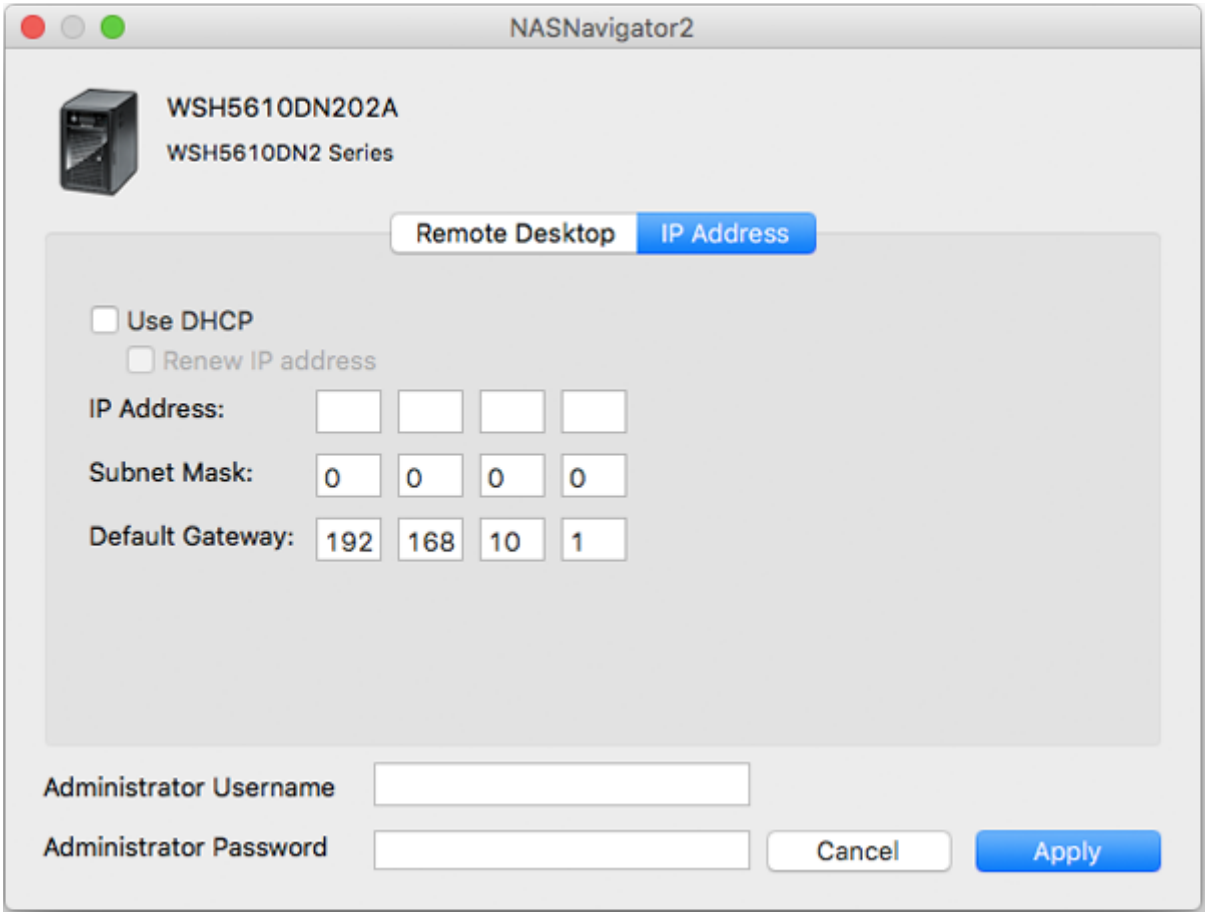
Auto Power Mode		Auto power mode can turn supported TeraStations and LinkStations on the network on and off automatically.
To display these options, hold down the control key and click a device's icon.	Open Folder	Opens the selected LinkStation's or TeraStation's shared folder.
	Open Remote Desktop	Opens Windows Storage Server in remote desktop.
	Configure	Opens a window that lets you configure the NAS's IP address or open Remote Desktop.
	Label Color	Selects the color of the name displayed below the icon.

Changing the IP Address

1 Click the  icon in the Dock to start NAS Navigator2.

2 Hold down the control key, select your TeraStation, and choose *Configure* - *IP Address*.

3 Clear the "Use DHCP" checkbox, enter the desired settings and the administrator username and password, then click *Apply*.



NovaBACKUP

NovaBACKUP is a Windows utility that lets you back up the data on your computer or TeraStations.
The NovaBACKUP installer is available from http://d.buffalo.jp/WSH5000N2/. Select the region and model to go to your specific model's d.buffalo website. Download the NovaBACKUP installer and install it onto your computer.

To download the installer, you will need the serial number of your TeraStation. The serial number is printed on the label on the back of the unit.

Chapter 8 Troubleshooting

TeraStation Cannot Be Set Up

If the TeraStation could not be located on NAS Navigator2 or connected to through the remote desktop, refer to the possible causes and corrective actions below:

- **Cause 1. The cables are not connected correctly:**
  The cables are not physically connected, or there may be a contact defect. Reconnect the AC cable and Ethernet cable and restart both the computer and the TeraStation.
- **Cause 2. Security software in the background is blocking communications:**
  Add an exception to your firewall software, or disable the firewall software completely. Turn off any software security suite that might include a firewall. Try searching again.
- **Cause 3. Wireless and wired adapters are both enabled:**
  Disable all adapters except for the LAN adapter connected to the TeraStation.
- **Cause 4. The Ethernet cable is defective, or the connection is unstable:**
  Try changing the hub port or Ethernet cable that you use to connect.
- **Cause 5. The LAN board, card, or adapter that you are using is defective:**
  Try changing the LAN board, card, or adapter.
- **Cause 6. The LAN board or hub transmission mode has not been set:**
  Change the transmission mode in the LAN board or hub to "10M half-duplex" or "100M half-duplex". Some LAN boards or hubs may be unable to connect the network correctly when the transmission mode is set to "Auto Negotiation".
- **Cause 7. A network bridge is installed:**
  If the network has a network bridge that is not being used, remove it.
- **Cause 8. You are searching from a different network:**
  You cannot conduct searches beyond your local network subnet. Connect the TeraStation to the same network subnet as the computer performing the search.
- **Cause 9. TCP/IP is not operating correctly:**
  Reinstall the LAN adapter drivers.
- **Cause 10. "Remote Desktop Connection Client for Mac 2" is not installed on your Mac:**
  Note: If using Mac OS, download and install "Remote Desktop Connection Client for Mac 2" from the Microsoft website.

Shared Folders Suddenly Do Not Open

If the TeraStation shared folder is assigned and used as a network drive, access to the TeraStation may suddenly fail if network settings such as IP addresses or groups are changed. If this happens, launch NAS Navigator2 and search the TeraStation, then double-click the TeraStation icon to open the TeraStation's shared folder.
For Mac OS, the TeraStation is mounted as a drive icon on the desktop or it is displayed in the sidebar of the Finder.

Shared Folders Cannot Be Accessed or System Is Unstable

This usually happens because too many software applications are running in Windows Storage Server, causing a memory shortage. Exit or uninstall some of the software running in Windows Storage Server, then restart the TeraStation.

Hard Drive Status Cannot Be Found

If the language settings are not the same for the following options, the hard drive status such as error, resynchronizing, or degraded may not be detected correctly. Configure the same language for these options.

- Display language
- Welcome screen and system account
- System locale

LCD Panel Displays a Different IP Address

The IP address displayed when pressing the select button is for maintenance use only and this is not the IP address of the TeraStation.

Resynchronization Regressed When TeraStation Was Restarted While Resynchronizing

If you restart the TeraStation while resynchronizing, the resynchronization temporarily halts and will resume after the reboot completes. The ones place digit of the progress display will be reset to "0".
For example, if rebooted when resynchronizing has proceeded to 15%, the progress status after restarting will be 10%.

TeraStation Does Not Boot

If Windows Storage Server is not functioning properly, perform recovery using the supplied SD card.

Notice When Recovering

- This recovery procedure erases the data on the drive C. Backing up regularly is highly recommended to avoid losing your important data. The data on drive D will be kept.
- Do not connect the SD card to another TeraStation or your computer. The recovery process that involves using the SD card is intended for this product only.
- If the storage pool is created on drive 1, delete the storage pool before running the recovery process.
- Remove all USB devices except for the supplied SD card, a card reader, a mouse, and keyboard before recovering. When it's completed, you can connect them back to the TeraStation.

Recovering Windows Storage Server

1 Turn off the TeraStation.

2 Insert the SD card into the card reader (not included).

3 Connect a mouse, keyboard, and the card reader to the TeraStation using a USB 3.0 or 2.0 port.

4 Connect the monitor to the TeraStation using a HDMI or VGA port.

5 Press the power button to turn the TeraStation on.

6 Press the F11 key some times until the "Please select boot device:" is displayed. When it's displayed, stop pressing F11. If it not displayed, repeat from the step 1.

7 Press the Down Arrow key and select the SD card beginning from "UEFI:", then press the Enter key.

8 The recovery process proceeds automatically.

9 When the recovery process finishes, the TeraStation shuts down automatically.

10 Turn on the TeraStation. If it boots up properly, the recovery is completed.

Errors on the LCD Panel

The unit indicates errors on the LCD panel. The LCD panel can help you troubleshoot problems. Refer to the "Diagrams" section in chapter 1 to locate where the LCD panel is.
If an error occurs, the unit will beep. You can stop the beeping by pressing the mode button.

Error Messages

LCD Panel	Corrective Action
RAID-6 ONE DRIVE DOWN	One hard drive failed. Check the LED in front for the defective drive. Refer to the "Hard Drive Replacement Procedure" section in chapter 6 and replace the failed drive with a new drive. You can stop the beeping by pressing the mode button.
RAID-6 TWO DRIVE DOWN	Two hard drives failed. Check the LED in front for the defective drive. Refer to the "Hard Drive Replacement Procedure" section in chapter 6 and replace the failed drive with a new drive. You can stop the beeping by pressing the mode button.
SYSTEM DOWN	Three or more hard drives failed. Check the LED in front for the defective drive. Refer to the "Hard Drive Replacement Procedure" section in chapter 6 and replace the failed drive with a new drive. You can stop the beeping by pressing the mode button.
FAN STOP NORMAL	The fan is stopped. If you continue to use the unit while the fan is stopped, the temperature of the drive will increase and a malfunction may occur. Turn off the unit and check if dust has accumulated on the fan. If removing dust does not solve the problem, the fan may be broken. Contact Buffalo technical support. You can stop the beeping by pressing the mode button.
Code ROM Error System Halted	Program ROM cannot be read. Shut off the unit, wait 10 seconds, then turn it back on. If the error still remains, contact Buffalo technical support.
Work RAM Error System Halted	A work memory error occurred on the array controller. Shut off the unit, wait 10 seconds, then turn it back on. If the error still remains, contact Buffalo technical support.

LCD Panel	Corrective Action
Dispatch Nesting Error Divide or FPP or Invalid Code Err System INTERRUPT Error System SBI INT Occur System RIE INT:0x000 System AE INT:0x000 System TRAP Error Buffer Manager Queue Error Cache Buffer Error 0x######## Buffer Size Error Buffer Manager Link Error	Internal error. The unit cannot be accessed. Contact Buffalo technical support.

Characters Added When "ONE DOWN" or "SYSTEM DOWN" Occurs

When "ONE DOWN" or "SYSTEM DOWN" is displayed on the LCD panel, one of the following characters will also be displayed. Refer to the chart below for more detailed information about the error that occurred.

For Hardware Errors

r	The hard drives may be malfunctioning.	Replace the hard drive by referring to the "Replacing Hard Drives" section in chapter 6.
A		
B		
C		
D		
E		
I		
M		
N		
O		
p		
R		
S		
T		
Y		
Z		
z		
L		
W		
X	Drive disconnected.	Reconnect the drive.

Note: If "S", "Z", or "z" is displayed, the hard drives may be malfunctioning. Contact Buffalo technical support while keeping the TeraStation power on.

For Software Errors

U	The hard drives may be malfunctioning.	Replace the hard drive by referring to the "Replacing Hard Drives" section in chapter 6.
E		

Chapter 9 Appendix

Default Settings

Administrator's Name	Administrator
Password	password
Shared Folders	Drives C and D are configured as administrative hidden shares by Windows Storage Server's default settings.
DHCP Client	Normally, the TeraStation will get its IP address automatically from a DHCP server on the network. If no DHCP server is available, then an IP address will be assigned as follows: IP Address: IP address will be assigned starting from "169.254". Subnet Mask: 255.255.0.0
Registered Groups	Windows Storage Server's default groups are registered.
Microsoft Network Group Setting	WORKGROUP
RAID Mode	RAID 6
Local Security Policy	"Password must meet complexity requirements" is disabled by default.

The TeraStation has the following functions and roles:

Features:

WoW64 Support, Graphical Management Tools and Infrastructure, Server Graphical Shell, User Interfaces and Infrastructure, NET Framework 4.5, WCF Service, Windows Server Backup, TCP Port Sharing, Windows PowerShell 4.0, Remote Server Administration Tools, File Services Tools, iSNS Server service, etc.

Roles:

File and Storage Services

Note: For other installed roles and features, see "ROLES AND FEATURES", which you can reach by clicking "Local Server" on the left side menu in "Server Manager".

Specifications

Check the Buffalo website for information about the latest products and specifications.

Installed System	Microsoft Windows Storage Server 2012 R2 Standard **Note:** The Microsoft License Terms is on the d.buffalo website, http://d.buffalo.jp/WSH5000N2/. Be sure to read the terms and conditions of this license.	
LAN Port	Interface	IEEE 802.3ab (1000BASE-T) IEEE 802.3u (100BASE-TX) IEEE 802.3 (10BASE-T)
	Transfer Speed	1000 Mbps full duplex (auto-negotiation) 100 Mbps full duplex/half duplex (auto-negotiation) 10 Mbps full duplex/half duplex (auto-negotiation)
	Number of Ports	2 ports (supports auto MDI-X)
	Connector Type	RJ-45 8-pin
USB Port	2 USB 2.0 ports (type A), 1 USB 3.0 port (type A)	

eSATA Port	1 eSATA port
UPS Port	1 D-sub 9 pin (male)
Internal Hard Drive	If a hard drive in the TeraStation malfunctions, replace it with a Buffalo OP-HDBN/B series of the same capacity. The drives are available from the Buffalo website.
Power Supply	AC 100–240 V, 50/60 Hz
Power Consumption (Max.)	120 W
Dimensions (W x H x D)	170 x 260 x 230 mm; 6.7" x 10.2" x 9.1" in
Weight	9.0 kg; 19.8 lb
Operating Environment	Temperature: 5–35°C; 41–95°F Humidity: 20–80% (no condensation)
Compatibility	Windows PCs, Macs, and tablets with wired or wireless Ethernet connection. **Note:** The TeraStation requires an Ethernet connection with your computer for operation. The TeraStation cannot connect via USB.
Supported OS	Windows 10, 8.1, 7, Vista, Windows Server 2012 R2, 2012, 2008 R2, 2008 OS X 10.11, 10.10, 10.9, 10.8, 10.7

Chapter 10 Regulatory Compliance Information

For Customers in the United States

FCC Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
Only use the cables and accessories that are included in the package. Don't use other accessories or cables unless specifically instructed to in the documentation.

UL and MET

The socket-outlet shall be installed near the equipment and shall be easily accessible.

Proposition 65

WARNING:
This product and its components contain chemicals known to the State of California to cause cancer and birth defects, or reproductive harm. Wash hands after handling.

For Customers in Europe

CE

CE

Dansk
Dette er et Klasse A-produkt. I et hjemmemiljø kan dette produkt skabe radiointerferens, hvormed det kan være nødvendigt for brugeren at tage passende forholdsregler.
Dette produkt kan forårsage interferens hvis det bruges i beboelsesområder. En sådan anvendelse skal undgås, medmindre brugeren tager specielle foranstaltninger for at reducere elektromagnetiske emissioner for at forhindre interferens med modtagelse af radio- og tv-udsendelser.

Der må kun bruges de kabler og det tilbehør der er inkluderet i pakken. Der må ikke bruges andet tilbehør eller kabler, medmindre det er udtrykkeligt beskrevet i dokumentationen.
Brug ikke USB-kabler, der er 3 meter eller længere for at tilslutte USB enheder til denne TeraStation serie.

Deutsch
Dies ist ein Produkt der Klasse A. In einer häuslichen Umgebung kann dieses Produkt Funkstörungen verursachen. Um diese zu beheben, müssen ggf. entsprechende Maßnahmen ergriffen werden.
Bei einer Nutzung in Wohngebieten können bei diesem Produkt Störungen auftreten. Eine solche Nutzung soll vermieden werden, außer der Nutzer ergreift bestimmte Maßnahmen, um elektromagnetische Strahlung zu reduzieren und Störungen der Radio- und Fernsehübertragung zu vermeiden.
Verwenden Sie ausschließlich die Kabel und Zubehörteile, die im Lieferumfang enthalten sind. Andere Zubehörteile oder Kabel dürfen nur dann verwendet werden, wenn dies in der Dokumentation ausdrücklich vorgeschrieben ist.
Verwenden Sie keine USB-Kabel, die 3 Meter lang oder länger sind, um USB-Geräte an TeraStation dieser Serie anzuschließen.

English
This is a class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.
This product may cause interference if used in residential areas. Such use must be avoided unless the user takes special measures to reduce electromagnetic emissions to prevent interference to the reception of radio and television broadcasts.
Only use the cables and accessories that are included in the package. Don't use other accessories or cables unless specifically instructed to in the documentation.
Do not use USB cables that are 3 meters or longer to connect USB devices to this TeraStation series.

Español
Este es un producto de Clase A. En una situación domestica, este producto puede producir interferencias de radio, en ese caso el usuario deberá tomar las medidas adecuadas.
Este producto puede causar interferencias al utilizarlo en áreas residenciales. Debe evitarse utilizarlo así, salvo si el usuario adopta medidas especiales para reducir las emisiones electromagnéticas e impedir que se produzcan interferencias con la recepción de emisiones de radio y televisión.
Utilice únicamente los cables y accesorios incluidos en el paquete. No utilice otros accesorios ni cables a menos que así se indique en la documentación.
Utilice cables de una longitud inferior a 3 metros para conectar los dispositivos USB a este tipo de TeraStation.

Français
Cet appareil est un produit de Classe A. Dans un environnement domestique, ce produit est susceptible de provoquer des interférences radio, auquel cas l'utilisateur peut être mis en demeure de prendre des mesures appropriées.
Utilisé dans un environnement domestique, cet appareil génère des interférences. Ce type d'utilisation est donc à éviter si l'utilisateur n'a pas pris de mesures spécifiques visant à réduire les émissions électromagnétiques pour éviter les interférences avec la réception de programmes de radio et de télévision.
Utilisez uniquement les câbles et accessoires inclus dans ce package. N'utilisez aucun autre accessoire ou câble sauf instruction spécifique de la documentation.
Utilisez des câbles d'une longueur de moins 3 mètres pour connecter les périphériques USB à ce type de TeraStation.

Italiano
Questo è un prodotto di Classe A. In ambienti domestici il prodotto può causare radiointerferenza, nel qual caso potrebbe rendersi necessaria l'adozione di opportune misure.

Questo prodotto può causare interferenze se usato in zone residenziali. Evitare l'uso in queste zone a meno che l'utente non intraprenda azioni specifiche per ridurre le emissioni elettromagnetiche e impedire le interferenze alla ricezione di trasmissioni radio-televisive.
Utilizzare esclusivamente i cavi e gli accessori inclusi nell'imballaggio. Non utilizzare altri accessori o cavi a meno che non sia specificamente indicato nella documentazione.
Non utilizzare cavi USB lunghi 3 metri o più per collegare dispositivi USB a questa TeraStation.

Nederlands
Dit is een Klasse A product. Dit product kan in een huishoudelijke omgeving radiostoring veroorzaken in welk geval de gebruiker adequate maatregelen dient te nemen.
Dit product kan storing veroorzaken wanneer gebruikt in woongebieden. Dergelijk gebruik dient te worden vermeden tenzij de gebruiker speciale maatregelen treft om de elektro-magnetische uitstraling te beperken zodat storing van de ontvangst van radio- en televisieuitzendingen wordt voorkomen.
Gebruik alleen de kabels en toebehoren die zich in de verpakking bevinden. Gebruik geen ander toebehoren of kabels tenzij dit uitdrukkelijk in de handleiding wordt aangegeven.
Gebruik geen USB-kabels die 3 meter of langer zijn om USB-apparaten met deze TeraStation series te verbinden.

Norsk
Dette er et produkt i klasse A. I et hjemmemiljø kan dette produktet forårsake radiointerferens, noe som gjør at brukeren i så fall må foreta passende tiltak.
Dette produktet kan forårsake interferens dersom det brukes i boligområder. Slik bruk må unngås med mindre brukeren tar spesielle tiltak for å redusere elektromagnetisk stråling for å unngå interferens med mottak av radio- og TV-sendinger.
Bruk kun kabler og tilbehør som er inkludert i pakken. Ikke bruk annet tilbehør eller kabler med mindre spesielt instruert til å gjøre det i dokumentasjonen.
Bruk ikke USB-kabler på tre meter eller mer for å koble USB-enheter til denne TeraStation-serien.

Português
Este é um produto de Classe A. Num ambiente doméstico, este produto pode provocar interferências de rádio, pelo que o utilizador poderá ter de tomar medidas adequadas.
Este produto poderá causar interferências se utilizado em áreas residenciais. A utilização deverá ser evitada, salvo se o utilizador tomar medidas especiais para reduzir as emissões electromagnéticas e assim prevenir interferências na recepção de rádio e televisão.
Utilizar apenas cabos e acessórios incluídos na embalagem. Não utilizar outros acessórios ou cabos, salvo se especificamente indicado na documentação.
Não usar cabos USB de 3 metros ou mais para ligar dispositivos USB a esta série TeraStation.

Suomi
Tämä on luokan A tuote. Tämä tuote voi aiheuttaa radiohäiriöitä kotikäytössä, jolloin käyttäjän on ehkä ryhdyttävä tarvittaviin toimenpiteisiin.
Tämä tuote saattaa aiheuttaa häirintää, jos sitä käytetään asuinalueella. Sellaista käyttöä on vältettävä, ellei ryhdytä erityistoimenpiteisiin sähkömagneettisen säteilyn vähentämiseksi häiriöiden estämiseksi radio- ja televisiolähetyksissä.
Käytä ainoastaan pakkauksen mukana toimitettuja kaapeleita ja varusteita. Älä käytä muita varusteita tai kaapeleita ellei näin ole erityisesti ohjeistettu asiakirjoissa.
Älä käytä 3m tai pitempiä USB-kaapeleita USB-laitteiden liittämiseen näille TeraStation-sarjoille.

Svensk

Detta är en Klass A-produkt. I en hushållsmiljö kan denna produkt orsaka radiostörningar, och användaren kan i så fall begäras att vidta lämpliga åtgärder.
Den här produkten kan oraka störningar om den används i bostadsområden. Sådan användning måste undvikas om inte användaren vidtar speciella åtgärder för att minska elektromagnetiska sändningar för att förhindra störningar i mottagningen av radio- och tv-sändningar.
Använd bara kablar och tillbehör som ingår i förpackningen. Använd inte andra tillbehör eller kablar om du inte får uttryckliga instruktioner om det i dokumentationen.
Använd inte USB-kablar som är 3 meter eller längre för att ansluta USB-enheter till den här TeraStation-serien.

Türk
Bu, A Sınıfı bir üründür. Evde kullanım sırasında bu ürün radyo girisimine yol açabilir ve bu durumda kullanıcının gerekli önlemleri alması gerekebilir.
Bu ürün yerleşim bölgelerinde kullanılırsa parazite neden olabilir. Kullanıcı radyo ve televizyon yayınlarında paraziti önlemek üzere elektromanyetik salınımları azaltacak özel önlemler almadıkça bu şekilde kullanımdan kaçınılmalıdır.
Yalnızca pakette bulunan kablo ve aksesuarları kullanın. Belgelerde özellikle belirtilmedikçe başka aksesuar ve kablolar kullanmayın.
USB aygıtları bu TeraStation serisine bağlamak için 3 metre ve daha uzun USB kabloları kullanmayın.

CB

The socket-outlet shall be installed near the equipment and shall be easily accessible.

Norsk
Utstyr som er koplet til beskyttelsesjord via nettplugg og/eller via annet jordtilkoplet utstyr – og er tilkoplet et kabel-TV nett, kan forårsake brannfare.
For å unngå dette skal det ved tilkopling av utstyret til kabel-TV nettet installeres en galvanisk isolator mellom utstyret og kabel- TV nettet.

Svensk
Utrustning som är kopplad till skyddsjord via jordat vägguttag och/eller via annan utrustning och samtidigt är kopplad till kabel-TV nät kan i vissa fall medföra risk för brand. För att undvika detta skall vid anslutning av utrustningen till kabel-TV nät galvanisk isolator finnas mellan utrusningen och kabel-TV nätet.