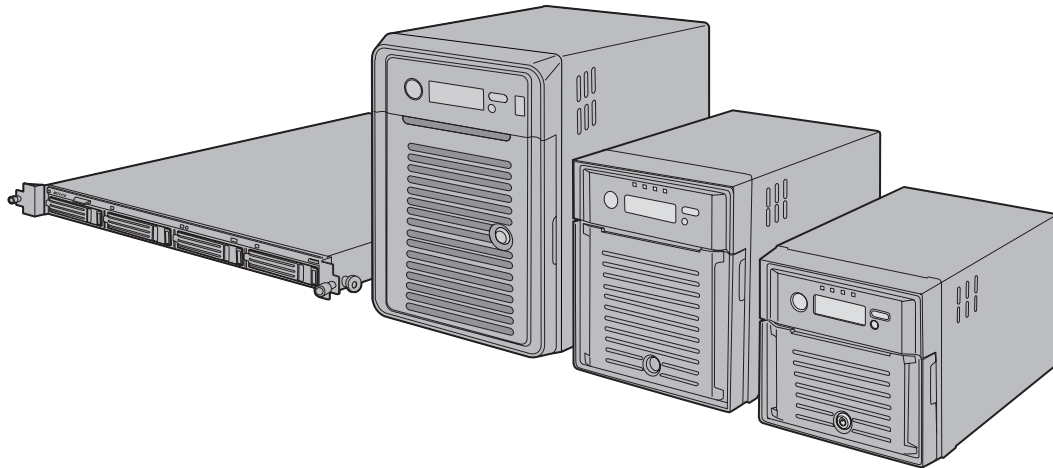


Network Attached Storage

TeraStation WSS 5000R2 and 5000N2

User Manual



Please make sure to read this manual before using and follow the procedures. 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.

Americas: www.buffaloamericas.com

Europe: www.buffalo-technology.com

Asia Pacific: www.buffalo-asia.com

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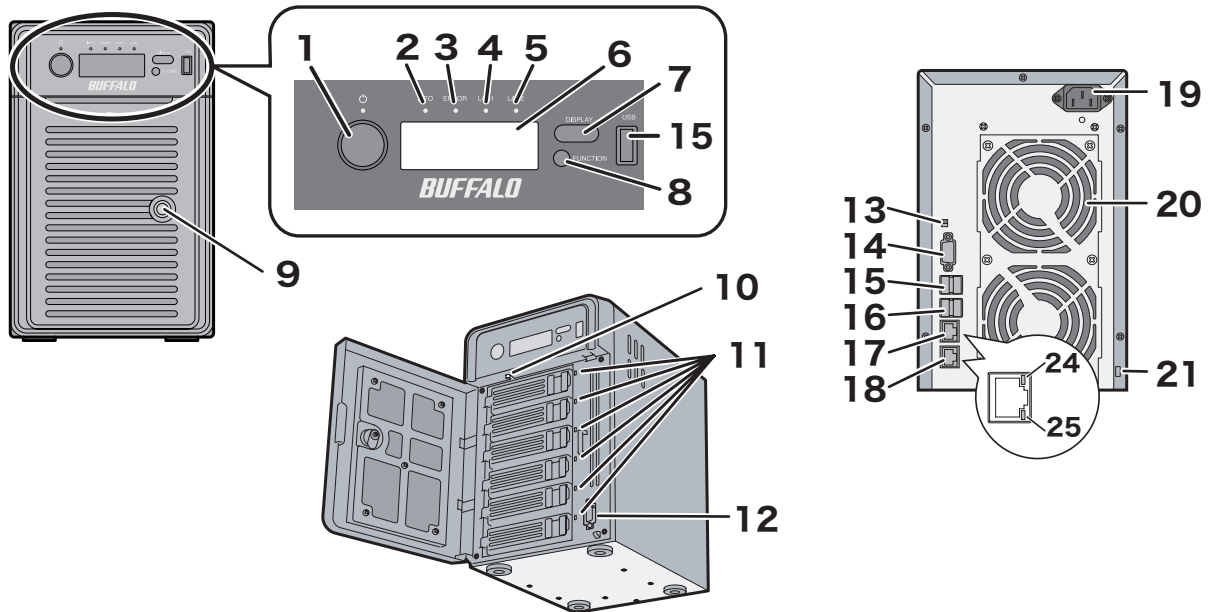
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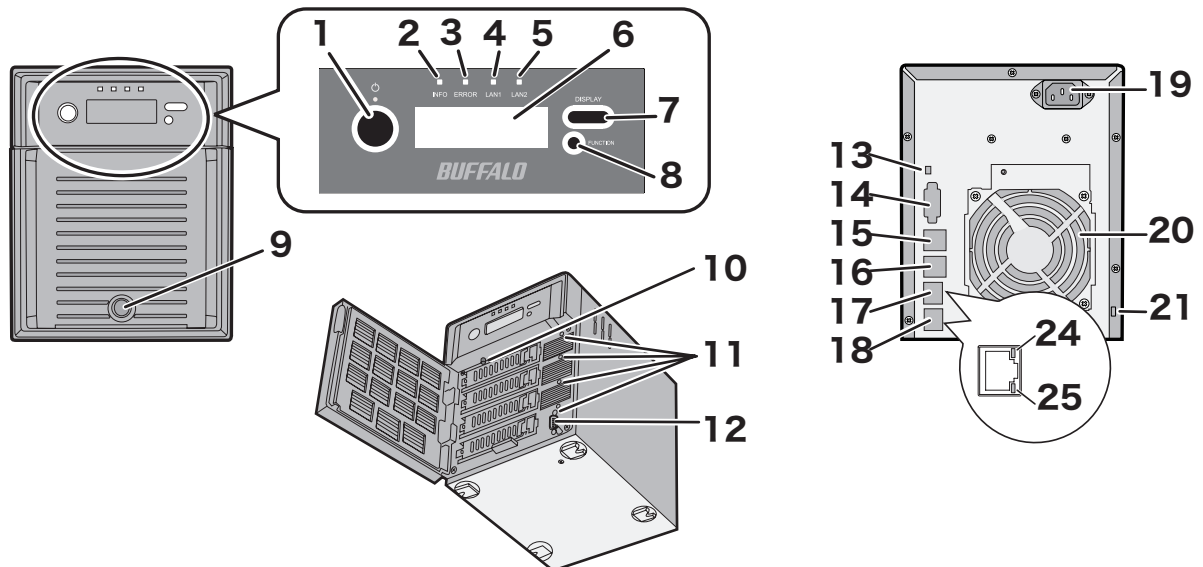
Chapter 1 Getting Started

Diagrams

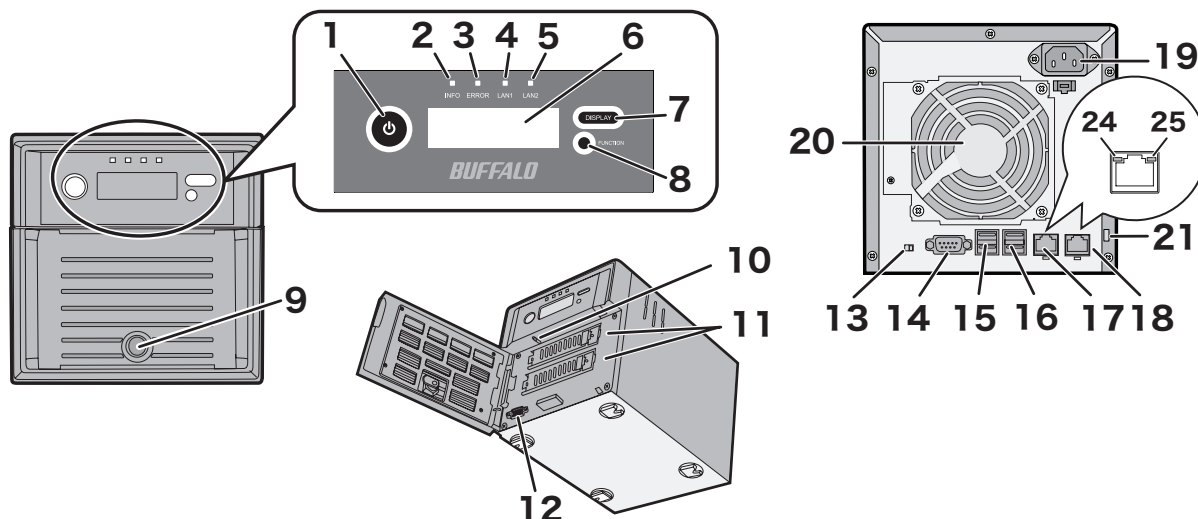
WS5600DN2, WS5600DR2



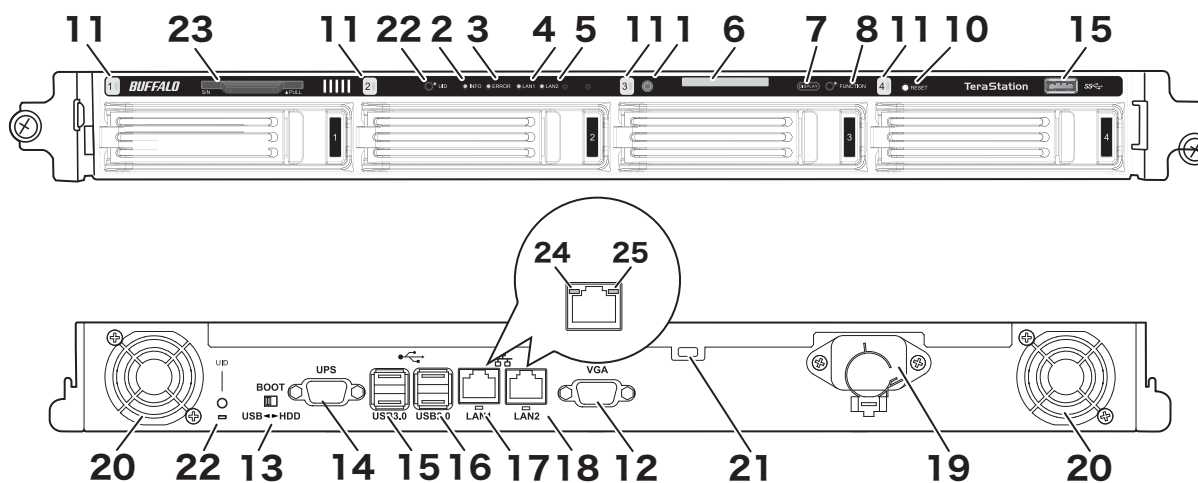
WS5400DN2, WS5400DR2



WS5200DN2, WS5200DR2



WS5400RN2, WS5400RR2



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 Info LED

If there is a status message, the amber info LED will light up. Check the LCD panel to see the status message.

3 Error LED

If there is an error, the red error LED will light up. Check the LCD panel to see the error message.

4 LAN1 LED

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

5 LAN2 LED

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

6 LCD Panel

This display shows the status of many TeraStation settings. It also displays errors and messages when available.

7 Display Button

Switches between the different display modes. Also, if the TeraStation is beeping, press this button to stop it.

8 Factory Use Only

9 Drive Lock

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

10 Reset Button

To shut down and reboot the TeraStation, hold down the reset button.

11 Status LEDs

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

12 VGA Connector

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.

13 Boot Mode Switch

Leave the switch on the "HDD" position during normal operation. To recover settings, insert the recovery USB drive into a USB 3.0 or 2.0 port, move the boot switch to the "USB" position, and press the power button.

14 UPS Port

Connect to a UPS.

15 USB 3.0 Port

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

16 USB 2.0 Port

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

17 LAN Port 1

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

18 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.

19 Power Connector

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

20 Fan

Do not block the fan.

21 Anti-Theft Security Slot

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

22 UID Button

Press the UID button on the front or the back of the unit to cycle the blue LED on and off.

23 Serial Number

This sticker shows the TeraStation's serial number.

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.

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.

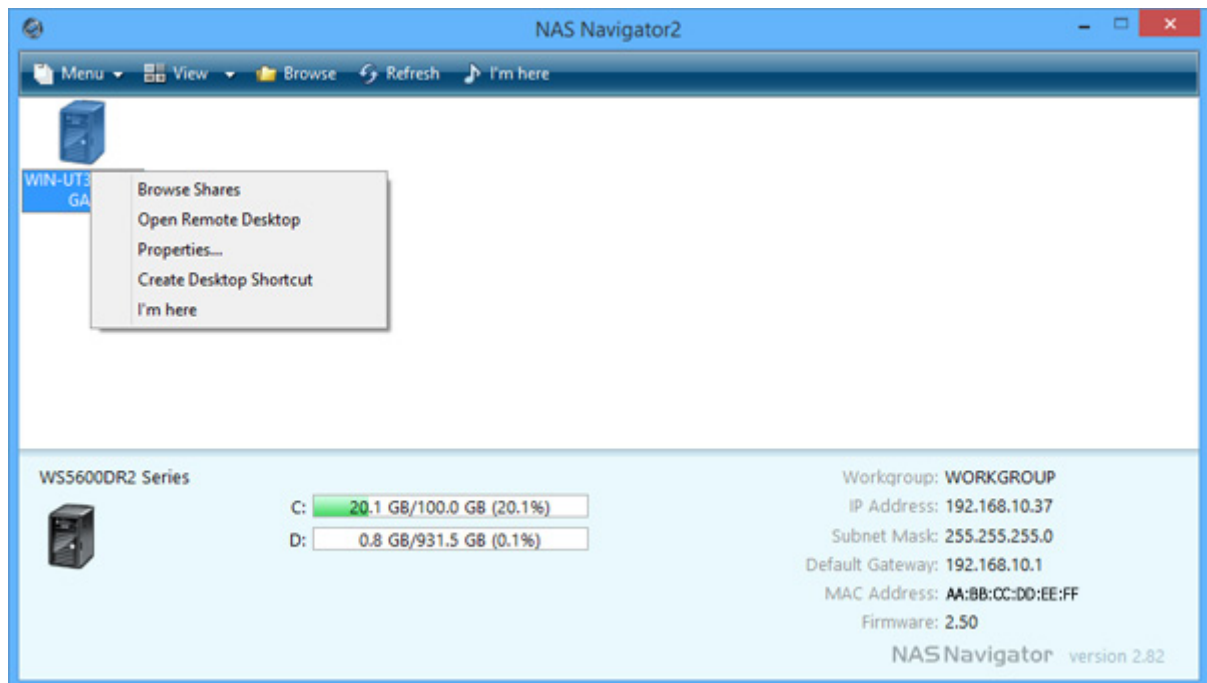
Connect a USB optical drive to the TeraStation's USB port, load the antivirus software CD into the optical drive, and install the software.

Chapter 2 Remote Desktop

Opening Windows Storage Server

Note: If using macOS, download and install "Microsoft Remote Desktop" from the Mac App Store.

- 1 Double-click the  icon to start NAS Navigator2.
- 2 Right-click on your TeraStation's icon and choose *Open Remote Desktop*. For macOS, click the TeraStation's icon while holding down the control key, then click *Open Remote Desktop*.



Notes:

- If remote desktop connection software doesn't start on a Mac, exit and re-launch NAS Navigator2. To exit NAS Navigator2, click the NAS Navigator icon while holding down the control key and click *Quit*.
- Click the TeraStation icon to view the IP address and other information for the TeraStation.
- 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. Windows Storage Server will open in the remote desktop.

Note: The default username and password are "Administrator" and "password".

Chapter 3 Windows Update

Windows Update

For best results, Windows Storage Server should be updated regularly. Use Windows Update as described below.

Note: The TeraStation must be connected to the Internet to use Windows Update.

- 1** From the Windows Storage Server Start menu, click *Control Panel - System and Security - Windows Update*.
- 2** Click *Check for updates*.
- 3** Click *Install updates*.

Choose your Windows Update settings

When your PC is online, Windows can automatically check for important updates and install them using these settings. When new updates are available, you can also choose to install them when you shut down your PC.

Important updates



Install updates automatically (recommended) ▼

Updates will be automatically downloaded in the background when your PC is not on a metered Internet connection.

Updates will be automatically installed during the maintenance window.

- 4** Step through the wizard to install the updates.

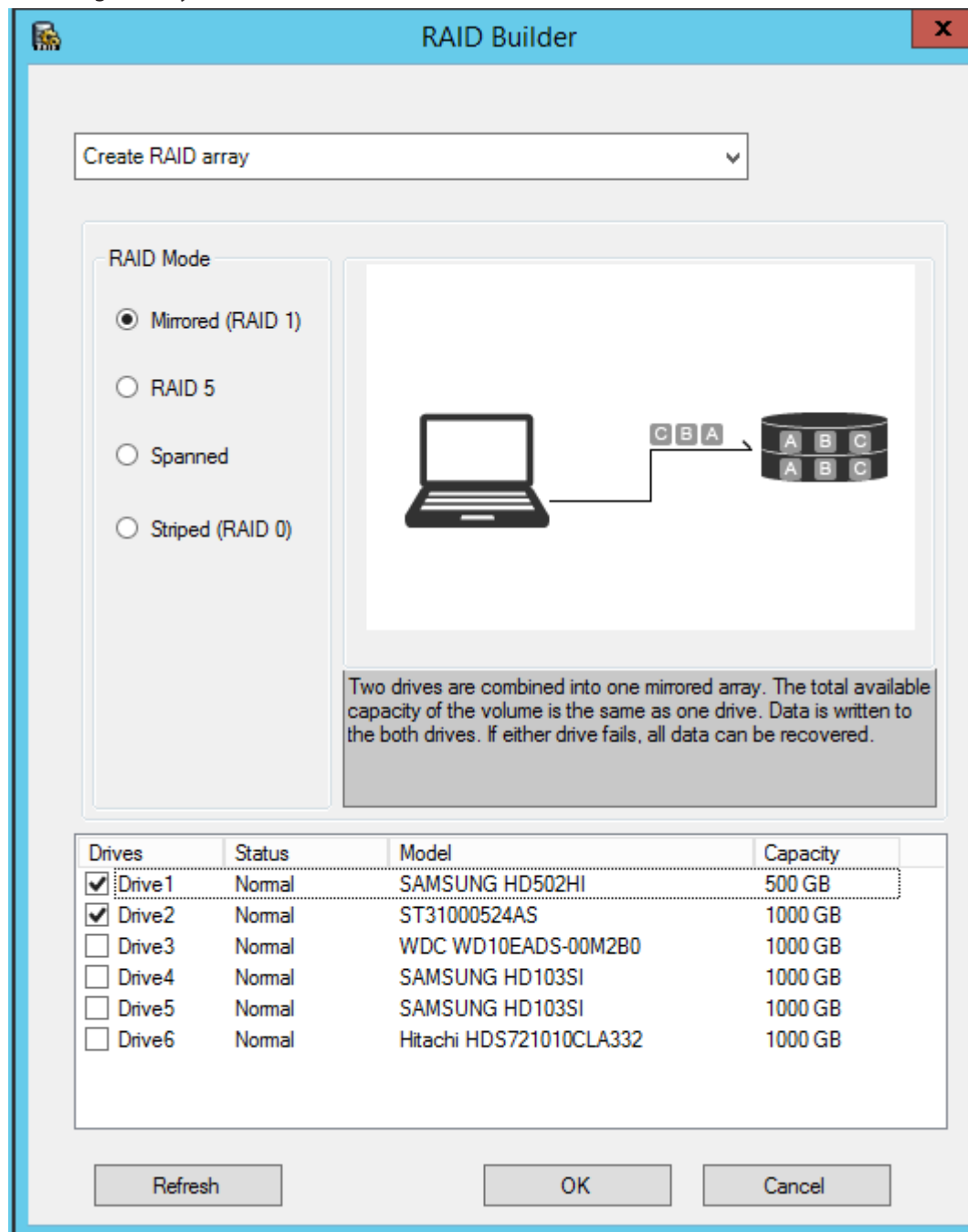
Chapter 4 Preinstalled Software

RAID Builder

RAID Builder is used to create RAID arrays. See the "Managing Storage" section in chapter 5 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.

Buffalo Dashboard Version 1.0.3.0

System Information

Product Name	WS5600DR2
Computer Name	WIN-UT3P9QSGA1
Domain Name	WORKGROUP
OS	Microsoft Windows Storage Server 2012 R2 Standard
OS Version	6.3.9600
Firmware	2.50 ☒ Check for updates
	☒ The latest firmware has already been installed.
Manufacturer	Buffalo Inc.

Network Information

Status	LAN	Adapter Name	IPv4 Address
Up	LAN 1	Ethernet	192.168.10...
Down	LAN 2	Ethernet 2	

I'm here!
The "I'm here" button will cause your TeraStation to beep.

Temperature
System : 31°C / 88°F

Fan
Fan1 : 1739 RPM Fan2 : 1739 RPM

Backup
Buffalo Replication : Replication is synchronized.
Windows Server Backup : No logs available.

Drive

Status	Drive	Name	Capacity	Physical ...
Normal	1	SAMSU...	465 GB	512 Byte
Normal	2	ST31000...	931 GB	512 Byte
Normal	3	WDC W...	931 GB	512 Byte
Normal	4	SAMSU...	931 GB	512 Byte
Normal	5	SAMSU...	931 GB	512 Byte
Normal	6	Hitachi ...	931 GB	512 Byte

Operation When Power Is Restored
Power off

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 rpm.
Backup	Displays the status of backup and replication.
Network Information	Displays IP addresses, subnet masks, default gateways, LAN port numbers, and status.

Items	Descriptions
I'm here!	Causes your TeraStation to beep.
Drive	Displays the status, drive numbers, names, capacity, and physical sector sizes of each drive. Refresh: Updates the displayed drive information. Dismount Drive: Dismounts a drive for safe removal. Select the drive to dismount and click <i>OK</i>. Options: • Shut down when the drive's temperature becomes abnormally high: The TeraStation will automatically shut down if the drive gets too hot. • Turn off the drive if an error occurs: The hard drive will automatically be turned off (dismounted) if a drive error occurs. How to Dismount Drives: Click <i>Dismount Drive</i>, check the drive to dismount, then click <i>OK</i>. After the drive is dismounted, unplug the hard drive from the TeraStation.
Operation When Power Is Restored	• Configures the action to be taken after recovering from a power failure.Return to last state before power failure: The TeraStation will be restored to the state before the power failure. If the TeraStation was turned off, it will remain powered off even if power is restored. If the TeraStation was on, it will be powered on when power is restored. • Power off: The TeraStation will be kept shut down after power is restored. • Power on: Turns the TeraStation on after power is restored.

Note: The following functions are only available when logged in as administrator:

- Refresh
- Dismount drive
- Options
- Check for updates
- Operation when power is restored

Email Notification

Your TeraStation can send you email reports when settings are changed or an error occurs. See the "Email Notification" section in chapter 7 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.

Email Notification

☒ Enable email notification

Send to

Email Address

New

Edit

Delete

SMTP Server

Server Address:

☐

Port

25

Authentication

User Authentication

None

▼

POP Server Address:

Port

110

Username:

Administrator

Password:

SSL/TLS

Do not use SSL/TLS

▼

☐ Accept untrusted or self-signed certificates

Title:

TeraStation Status Report

Contents

Email Server Address:

☒ IPv4
 ☐ IPv6

☐ Status report

12 p.m. ▼

☐ Disk error

☐ At boot

☐ Fan failure

☐ Backup error

☐ Replication error

☐ Temperature error

☐ PSU failure

☐ Specify event ID

Log Type	Source	Event ID

New

Edit

Delete

Test Message

Apply

Close

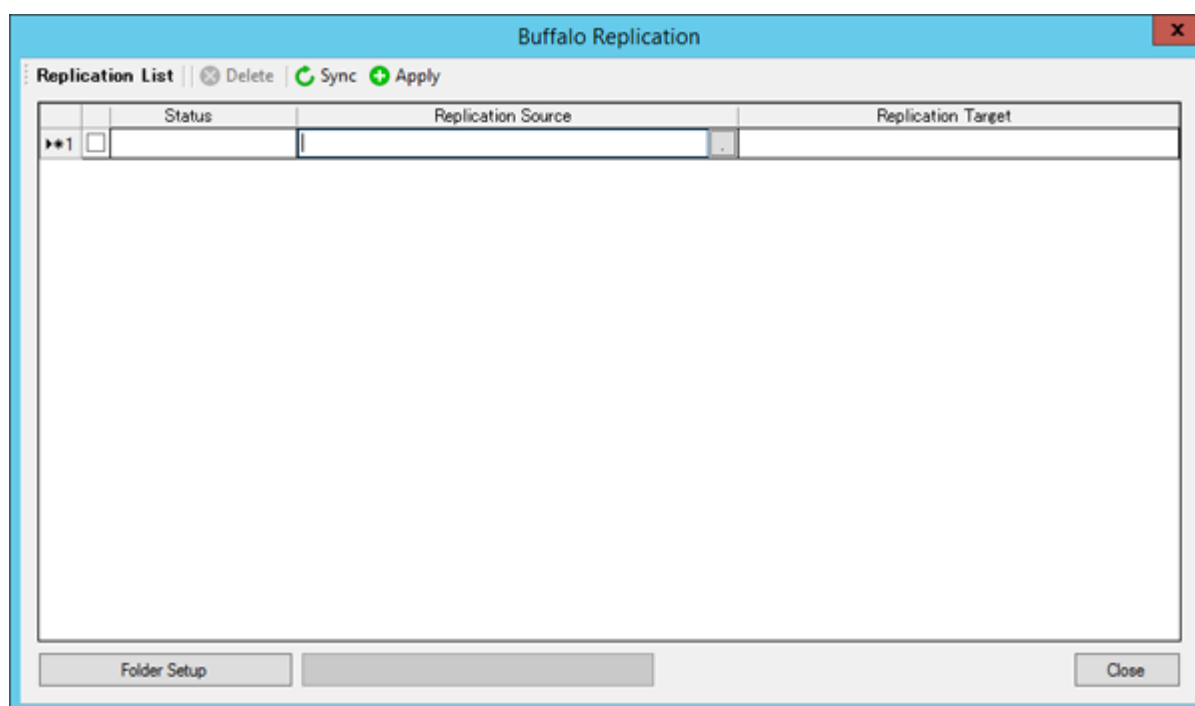
Buffalo Replication

Your TeraStation can be synchronized with another TeraStation, replicating most data. See the "Replication" section in chapter 6 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.

13

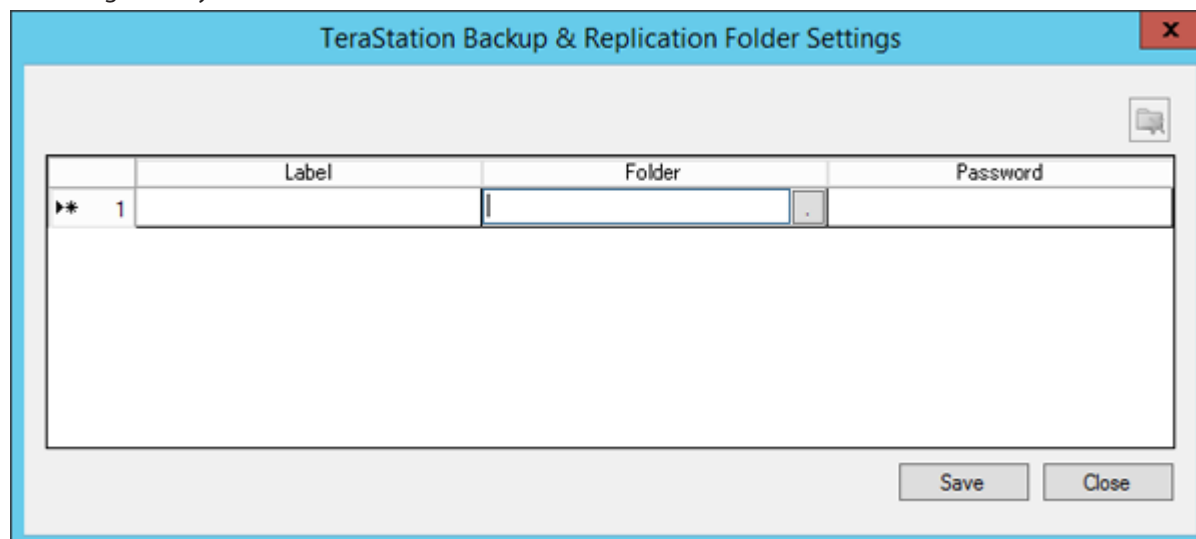


TeraStation Backup and Replication Folder Settings

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

To launch TeraStation Backup and 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.

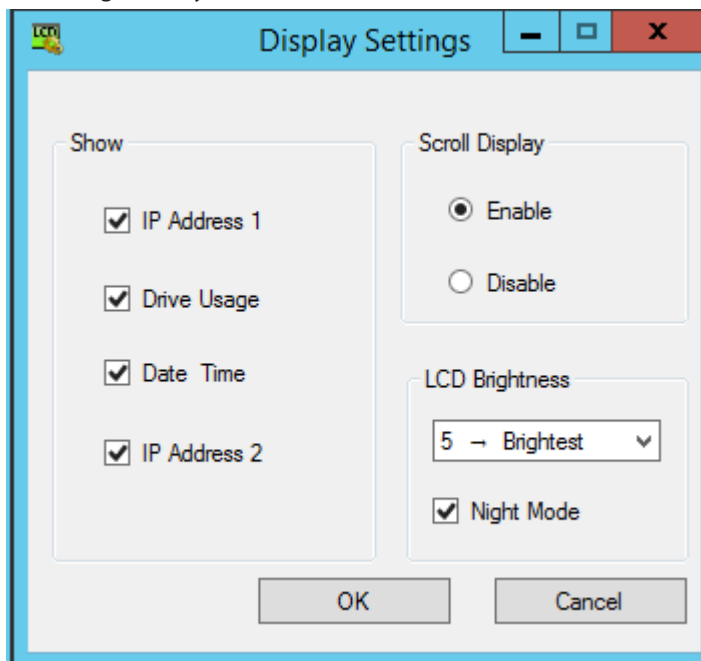
Items	Descriptions
	To remove a folder from the list of available backup targets, select the folder and click this button.

Display Settings

TeraStation's LCD panel settings can be changed using this software. See the "LCD Display Settings" section in chapter 7 for more details.

To launch Display 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.



Chapter 5 Managing Storage

Creating Volumes

Volume Types

The features of each volume type are explained below.

Notes:

- Use RAID Builder to create a volume, not the Disk Management options in Windows Storage Server.
- When volumes are deleted or formatted, or the RAID mode is changed, all data stored in that volume 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.
- RAID synchronization will run automatically after a volume is created. File transfers will be slower while it is running, which will take about 5 hours per terabyte.
- After a volume is created, unused extra space can't be added to the volume.
- Some space on each drive is not accessible because it is used by the system. The amount used on each drive is below.

Drive 1: 50 MB

Drive 2: 50 MB

Drive 3 to 6: 100 GB + 150 MB

RAID 5 Volumes*

The unallocated areas of three or more hard drives are used as a single array.

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.

*Available for 6-drive and 4-drive models.

Mirrored Volumes (RAID 1)

The unallocated areas of two drives are combined into a single RAID 1 array.

Because the same data is written to both drives simultaneously, if one drive fails, data can be recovered from the other drive. If both drives in the array fail, data cannot be recovered.

Striped Volumes (RAID 0)

The unallocated areas of two or more drives are combined into a single RAID 0 array. However, data cannot be recovered if even a single drive fails.

Spanned Volumes

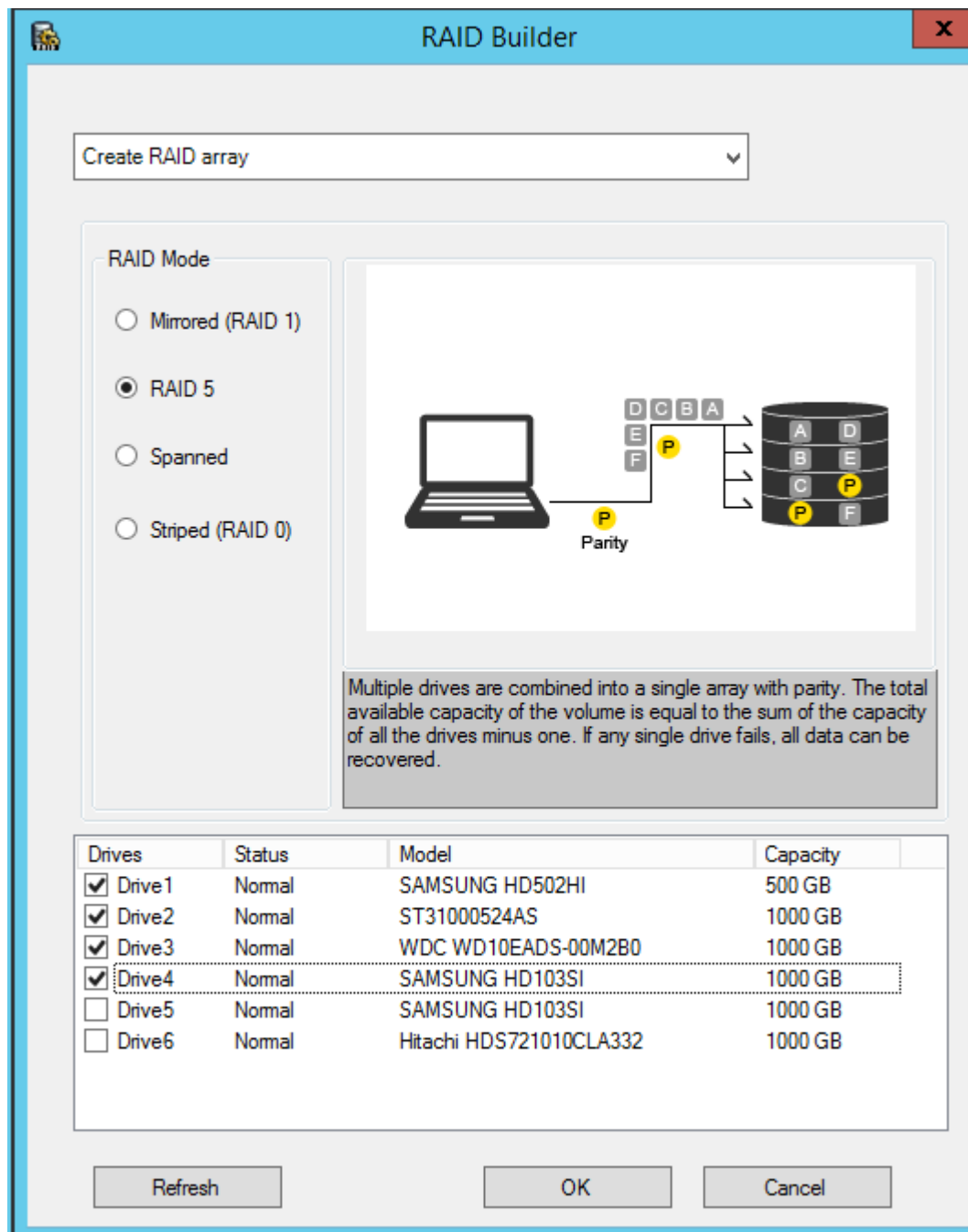
The unallocated areas of multiple hard drives are joined to create a single logical volume. This allows various drive spaces to be combined efficiently. However, data cannot be recovered if even a single drive fails.

Simple Volumes (JBOD)

The internal hard drives of the TeraStation are each used as individual drives. If a hard drive fails, the data on the failed hard drive cannot be recovered.

Creating a RAID 5 Volume

- 1 From the Windows Storage Server Start menu, click *RAID Builder*.
- 2 Select "Create RAID array" from the drop-down menu and "RAID 5" under "RAID Mode".
- 3 Select at least three drives to create a RAID 5 array.
- 4 Click *OK*.



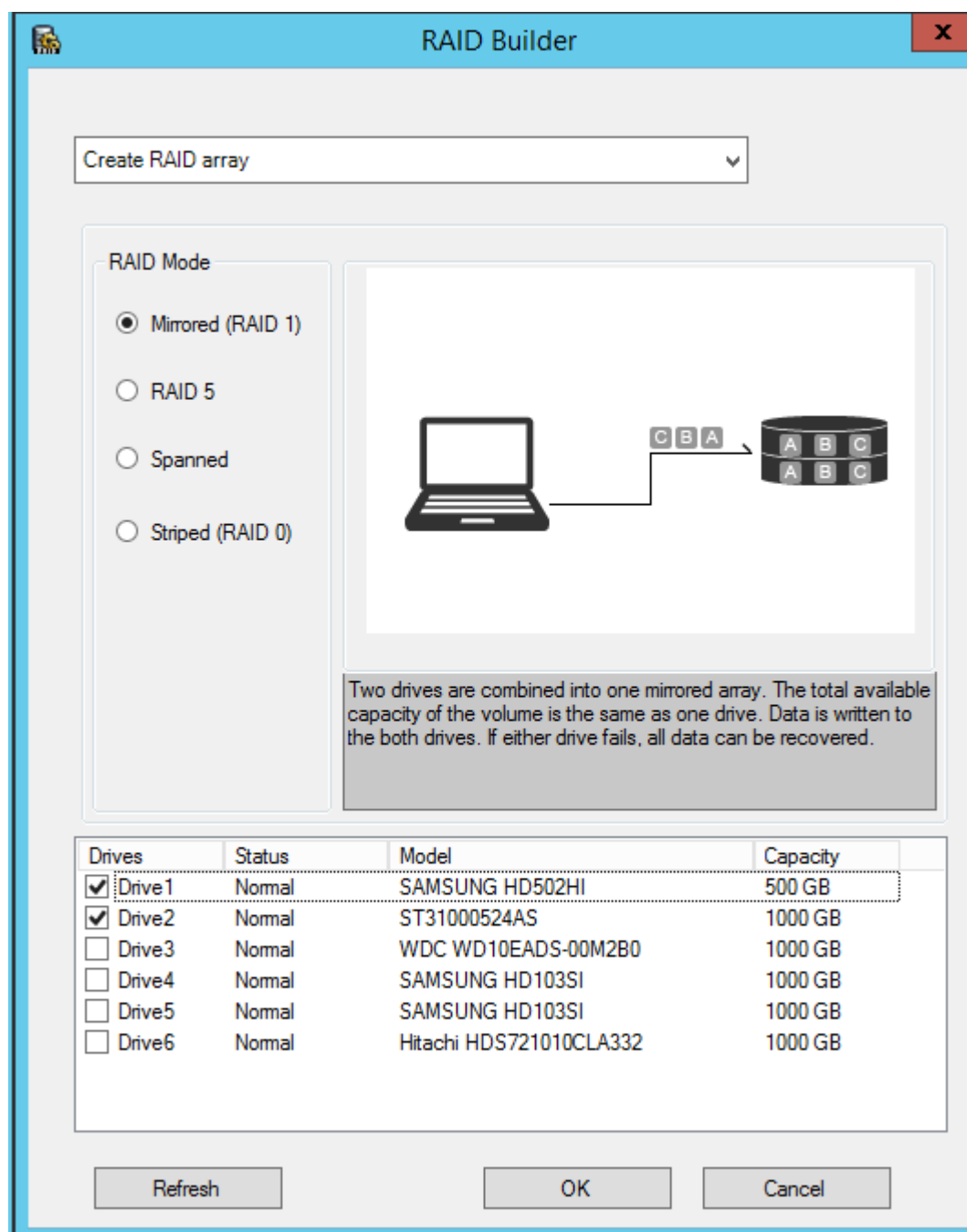
Capacity Example:

If configuring with drive 1 (50 GB), drive 2 (80 GB), drive 3 (58 GB), and drive 4 (100 GB), the usable space on the RAID volume will be $(50 \text{ GB} \times 4 \text{ drives}) \div 3/4 = 150 \text{ GB}$.

A RAID 5 volume will be created. Next, create a shared folder on the volume as described in chapter 7.

Creating a Mirrored Volume (RAID 1)

- 1 From the Windows Storage Server Start menu, click *RAID Builder*.
- 2 Select "Create RAID array" from the drop-down menu and "Mirrored (RAID 1)" under "RAID Mode".
- 3 Select at least two drives to create a RAID 1 array.
- 4 Click *OK*.



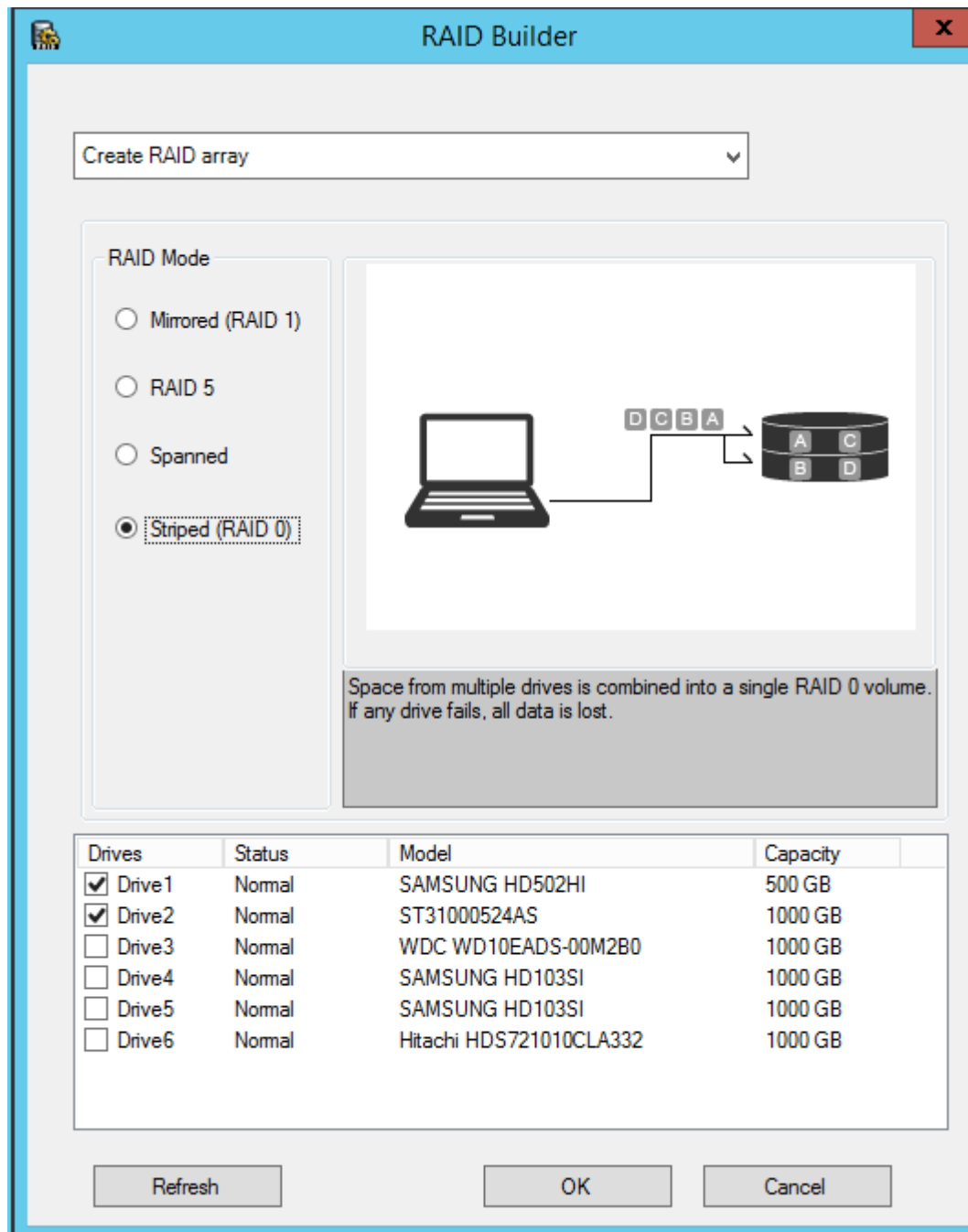
Capacity Example:

If configuring with drive 3 (58 GB) and drive 4 (100 GB), the usable space on the mirrored volume will be 58 GB.

A mirrored volume will be created. Next, create a shared folder on the volume as described in chapter 7.

Creating a Striped Volume (RAID 0)

- 1 From the Windows Storage Server Start menu, click *RAID Builder*.
- 2 Select "Create RAID array" from the drop-down menu and "Striped (RAID 0)" under "RAID Mode".
- 3 Select at least two drives to create a RAID 0 array.
- 4 Click OK.



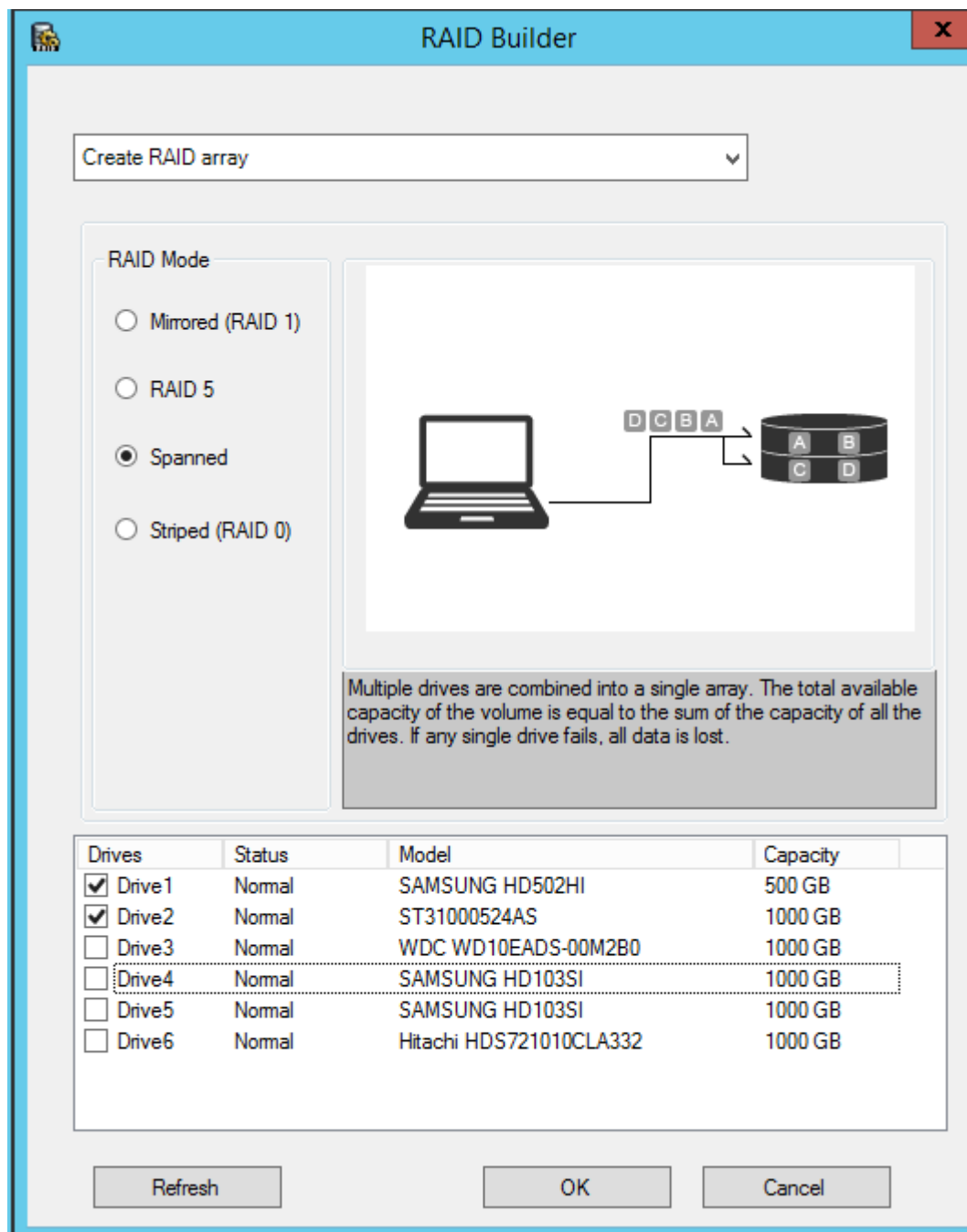
Capacity Example:

If configuring with drive 1 (50 GB), drive 2 (80 GB), drive 3 (58 GB), and drive 4 (100 GB), the usable space on the mirrored volume will be 50 GB x 4 drives = 200 GB.

A striped volume will be created. Next, create a shared folder on the volume as described in chapter 7.

Creating a Spanned Volume

- 1 From the Windows Storage Server Start menu, click *RAID Builder*.
- 2 Select "Create RAID array" from the drop-down menu and "Spanned" under "RAID Mode".
- 3 Select at least two drives to create a spanned array.
- 4 Click OK.



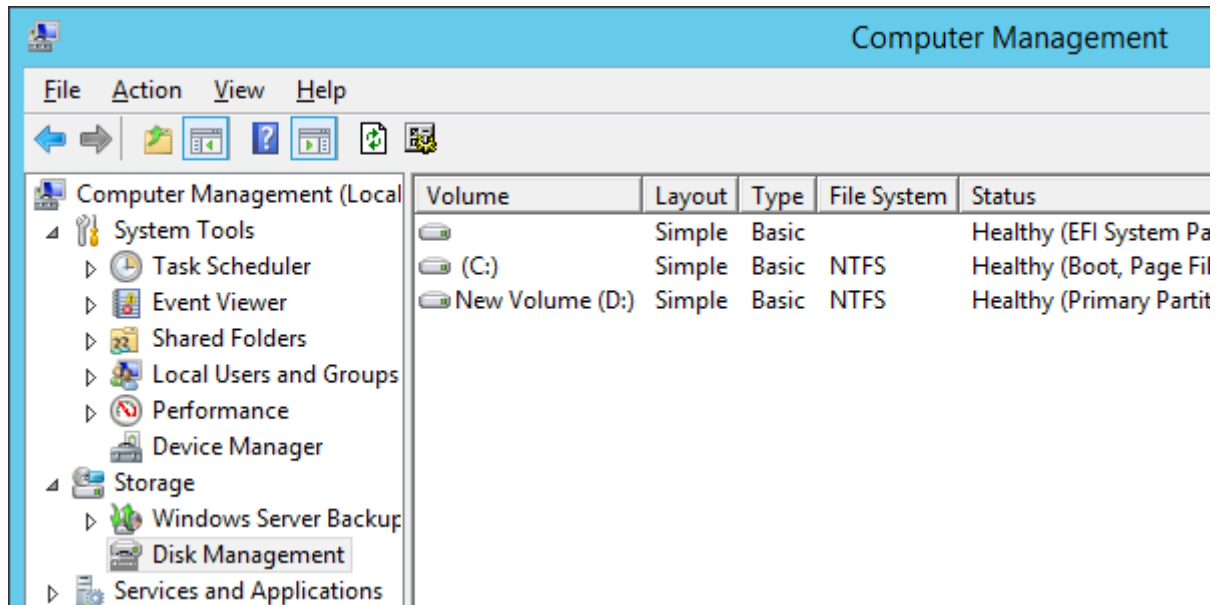
Capacity Example:

If configuring with drive 1 (50 GB), drive 2 (80 GB), drive 3 (58 GB), and drive 4 (100 GB), the usable space on the RAID volume will be 50 GB + 80 GB + 58 GB + 100 GB = 288 GB.

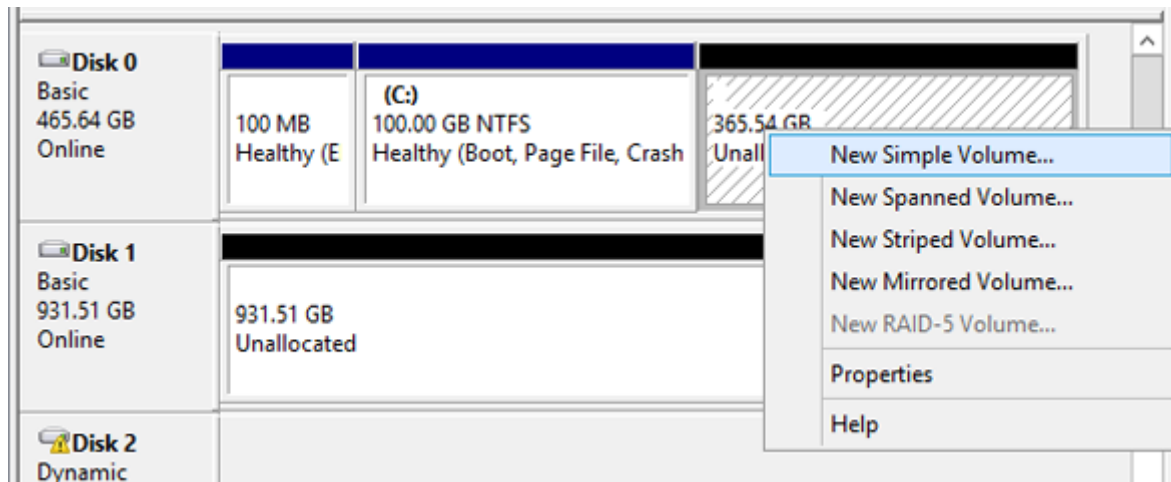
A spanned volume will be created. Next, create a shared folder on the volume as described in chapter 7.

Creating Simple Volumes (JBOD)

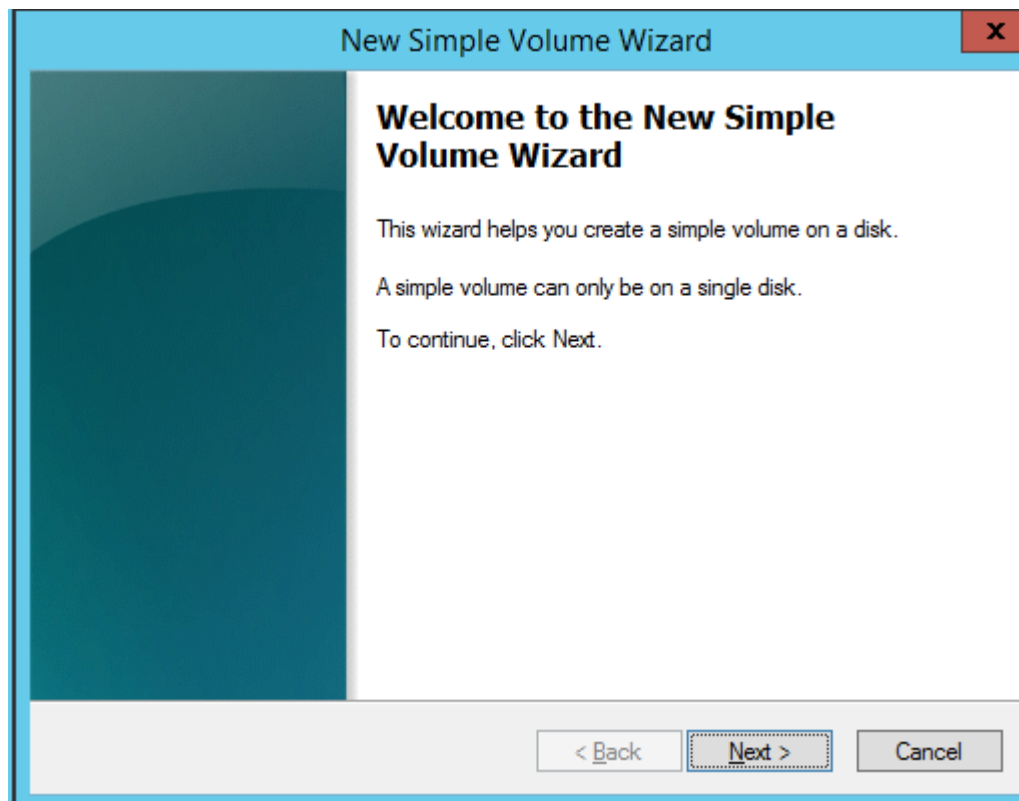
- 1 From the Windows Storage Server Start menu, open *Administrative Tools*, then double-click *Computer Management*.
- 2 Click *Disk Management*.



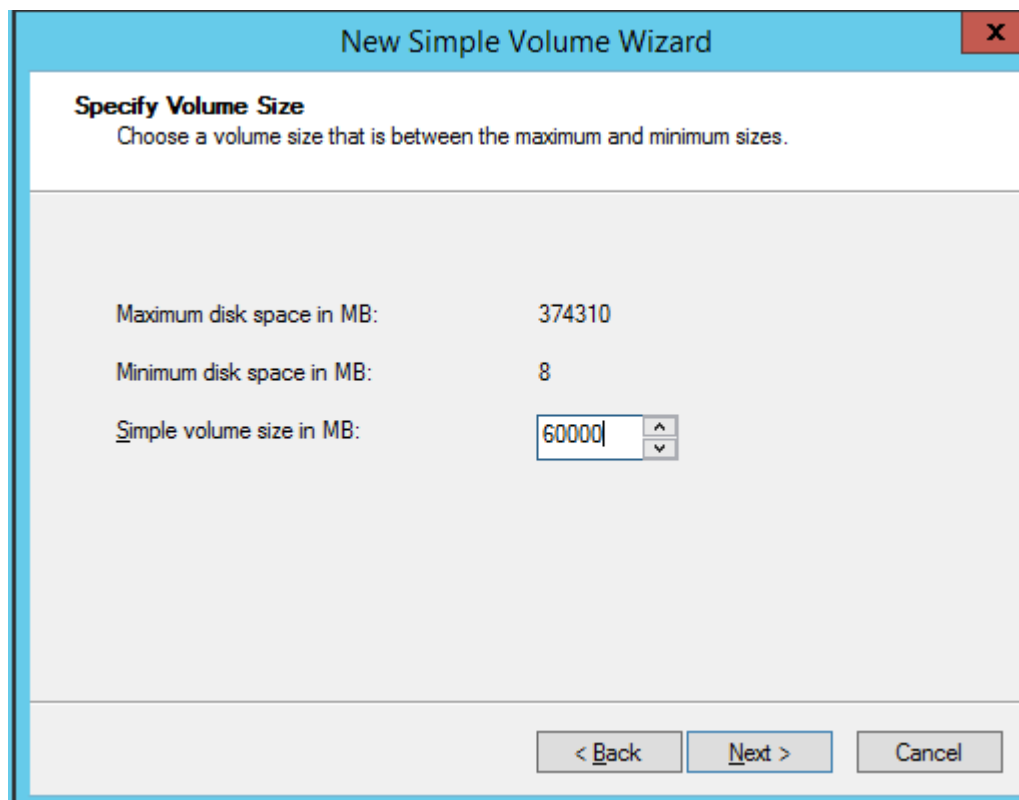
- 3 Right-click the unallocated area and select *New Simple Volume*.



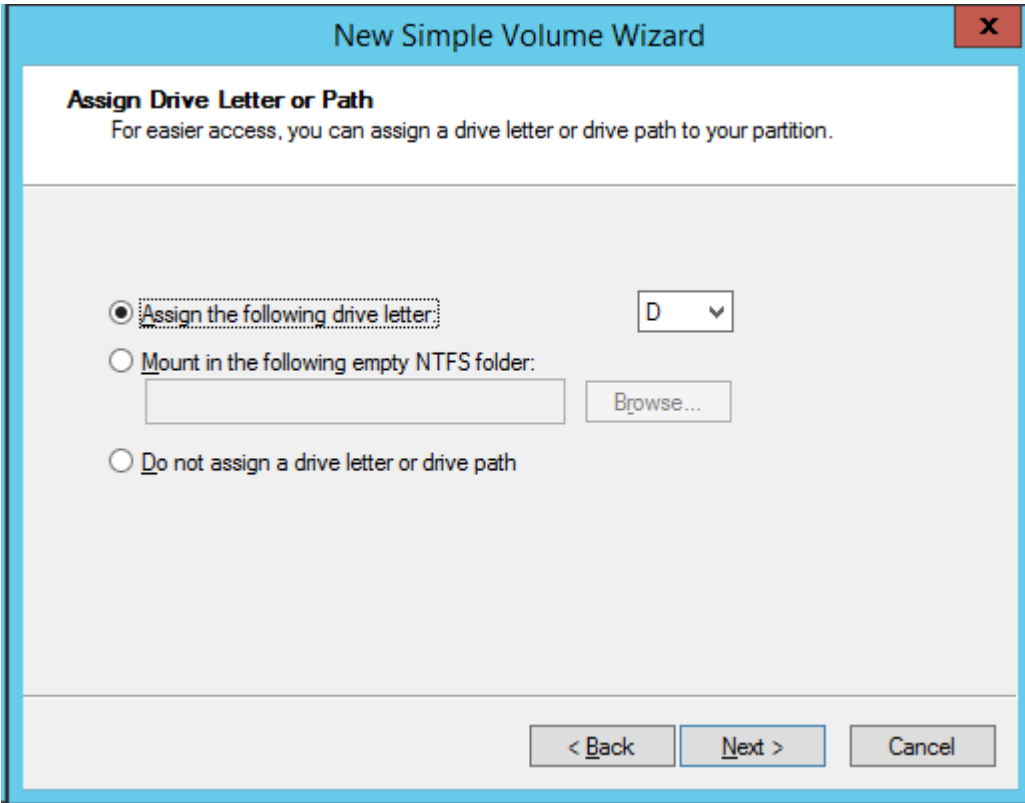
4 Click *Next*.



5 Enter the volume size that you want to create and click *Next*.

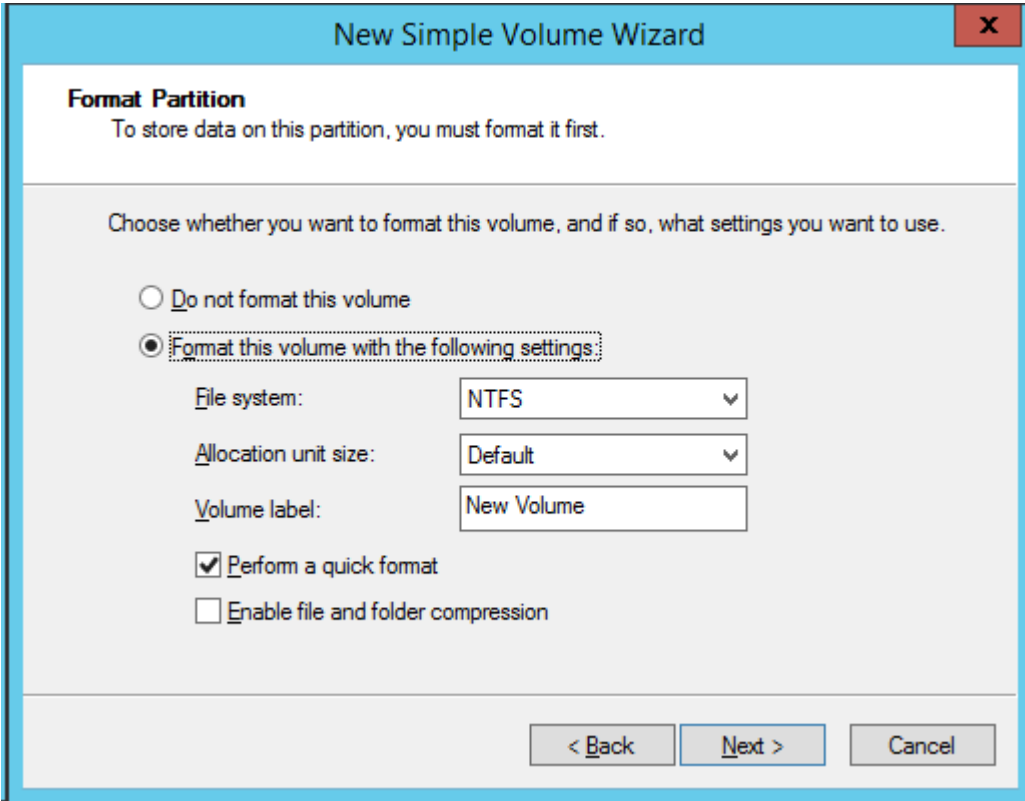


6 Select *Assign the following drive letter* and click *Next*.



The screenshot shows the 'New Simple Volume Wizard' window with the title bar 'New Simple Volume Wizard' and a close button. The main heading is 'Assign Drive Letter or Path' with the instruction 'For easier access, you can assign a drive letter or drive path to your partition.' There are three radio button options: 'Assign the following drive letter:' (selected), 'Mount in the following empty NTFS folder:', and 'Do not assign a drive letter or drive path'. The first option has a dropdown menu showing 'D'. The second option has a text box and a 'Browse...' button. At the bottom are three buttons: '< Back', 'Next >', and 'Cancel'.

7 Select *Format this volume with the following settings* and *Perform a quick format* and click *Next*.



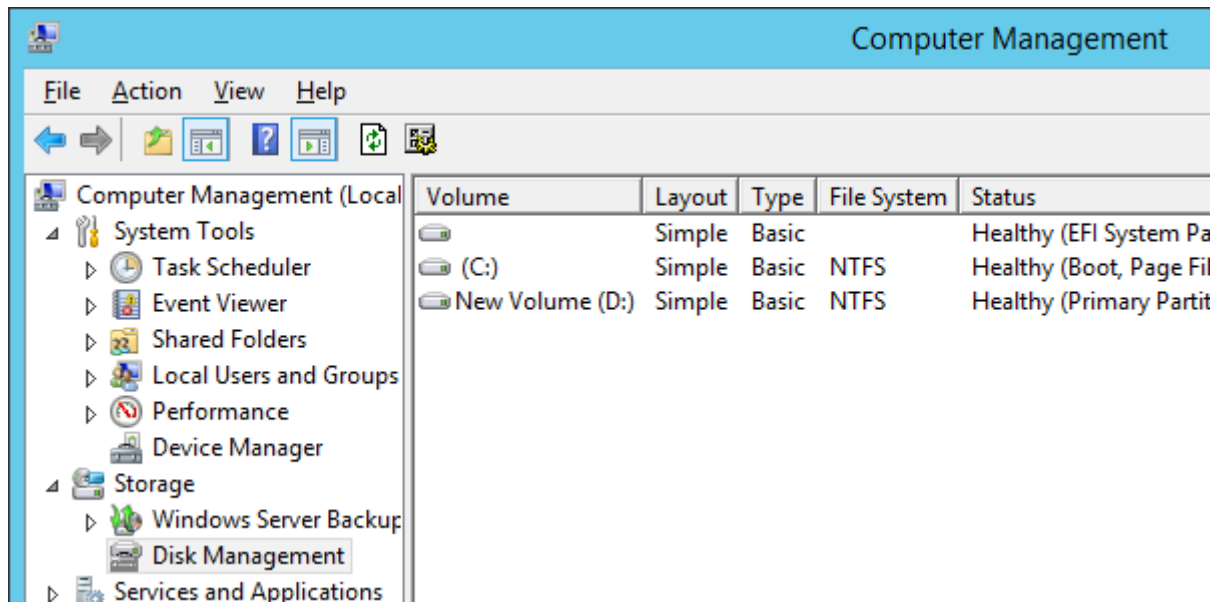
The screenshot shows the 'New Simple Volume Wizard' window with the title bar 'New Simple Volume Wizard' and a close button. The main heading is 'Format Partition' with the instruction 'To store data on this partition, you must format it first.' Below this is the text 'Choose whether you want to format this volume, and if so, what settings you want to use.' There are two radio button options: 'Do not format this volume' and 'Format this volume with the following settings:' (selected). Under the second option, there are three dropdown menus: 'File system:' (NTFS), 'Allocation unit size:' (Default), and 'Volume label:' (New Volume). There are also two checkboxes: 'Perform a quick format' (checked) and 'Enable file and folder compression' (unchecked). At the bottom are three buttons: '< Back', 'Next >', and 'Cancel'.

A simple volume will be created. Next, create a shared folder on the volume as described in chapter 7.

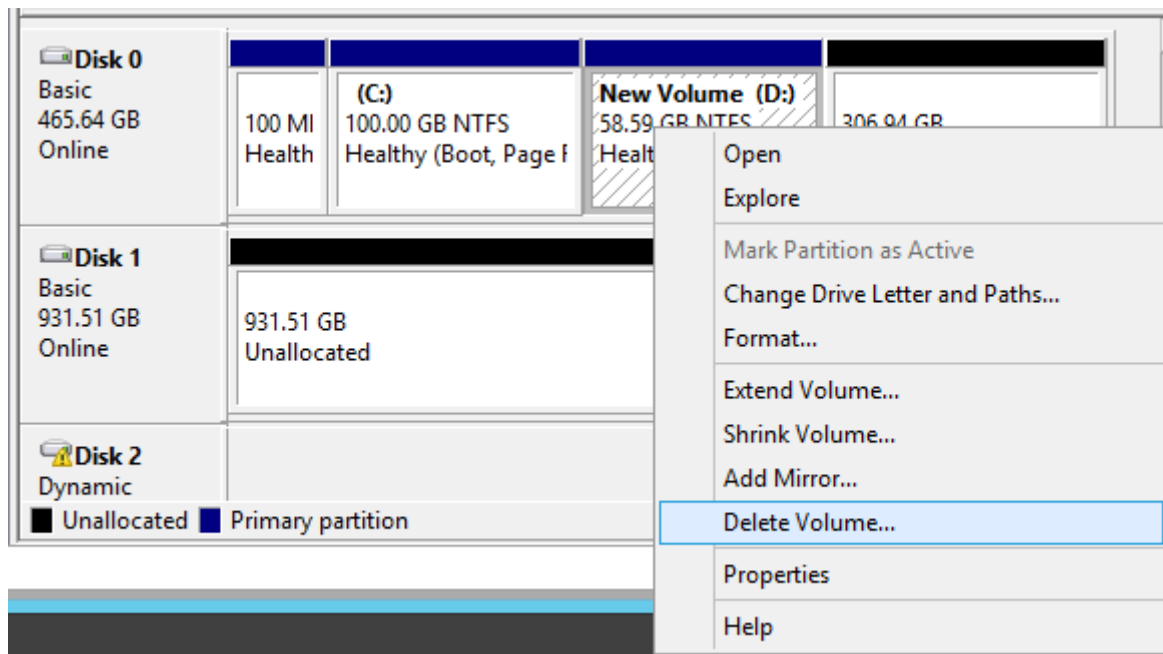
Deleting Volumes

An unallocated area on a drive is required to create a volume. If there are no unallocated areas, create one by deleting an existing volume.

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



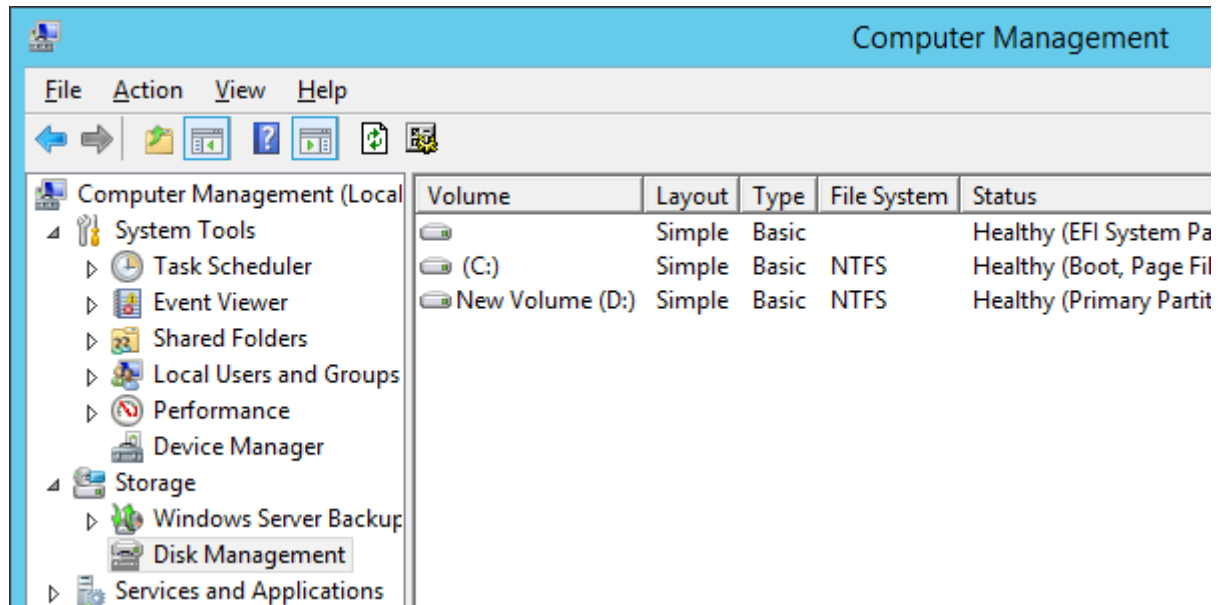
- 3 Right-click the volume that you want to delete and then select *Delete Volume*.



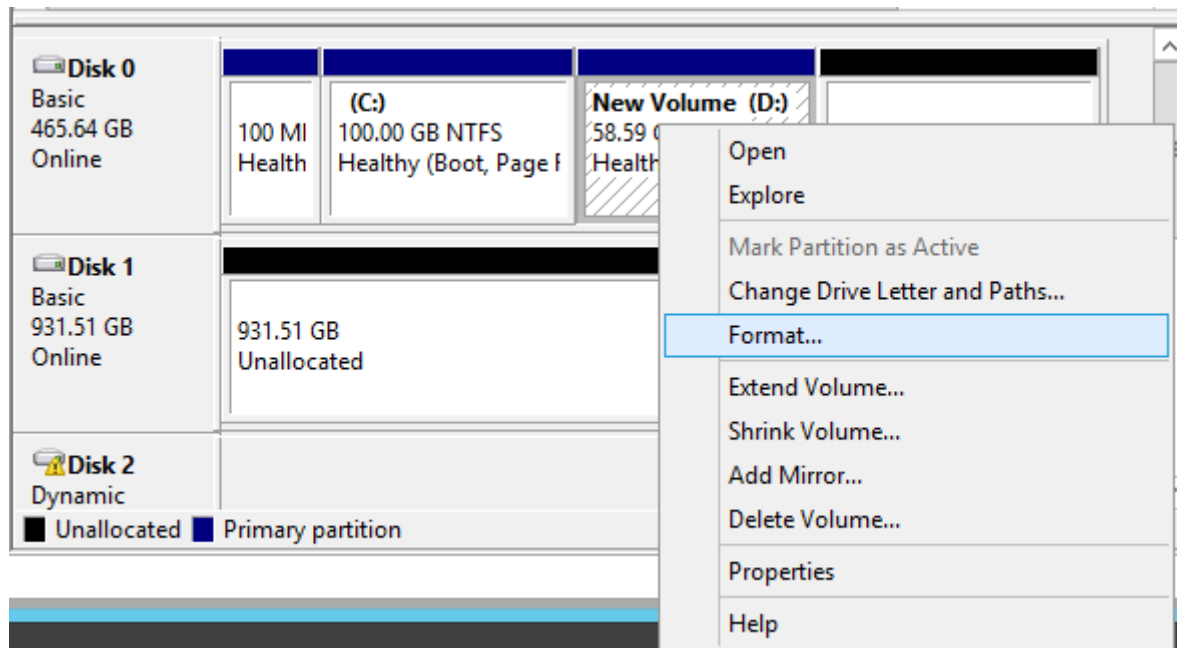
Formatting Volumes

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

2 Click *Disk Management*.

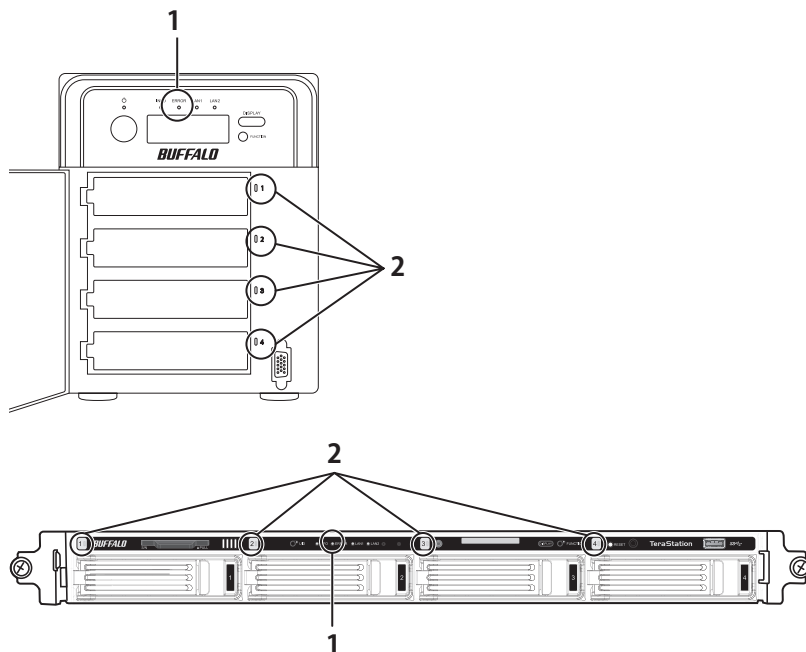


3 Right-click the volume that you want to format and select *Format*.



Hard Drive Replacement Procedure

Hard drives in the TeraStation show a green status LED during normal operation. If a drive fails, its error LED will glow red.



1 Error LED

Red if a drive has failed.

2 Status LEDs

Green: Normal operation.

Glowing red: If a drive's status LED is glowing red, the drive has malfunctioned. Dismount the drive in Buffalo Dashboard before unplugging it from the TeraStation.

Notes:

- Do not unplug a drive whose status LED is not lit red. If you remove the drive without properly dismounting it, data may be lost or the TeraStation may malfunction.
- For the replacement drive, use a Buffalo OP-HDWR series drive for WS5000N2 series and a OP-HDS series drive for WS5000R2 series. The new drive should be the same size (or larger) as the replacement drive. If a larger drive is used, the extra space will not be usable in a RAID array.
- 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 you are 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.
- The boot drive (C:) consists of the mirrored volume and a portion of the two drives from the top. Do not replace both of these hard drives at the same time.
- If a hard drive is replaced while saving a file, the file can be corrupted. Be sure that the saving operation is completed before replacing the hard drive.

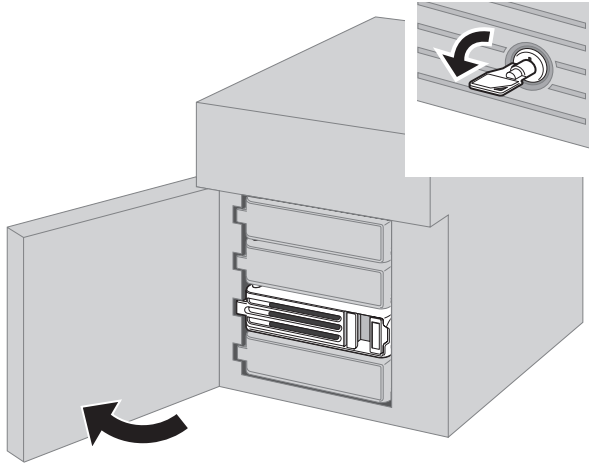
Hard Drive Replacement Examples

A Drive Failure Occurs in Drive 1 or 2

Notes:

- If one of the drives in the boot drive fails, repair the mirrored volume of the the system area first after replacing the drive. Repairing the volume for the data area first may not always succeed.
- If you used Disk Management to mirror the boot drive, the TeraStation will not boot when the drive fails. Follow the procedure below.

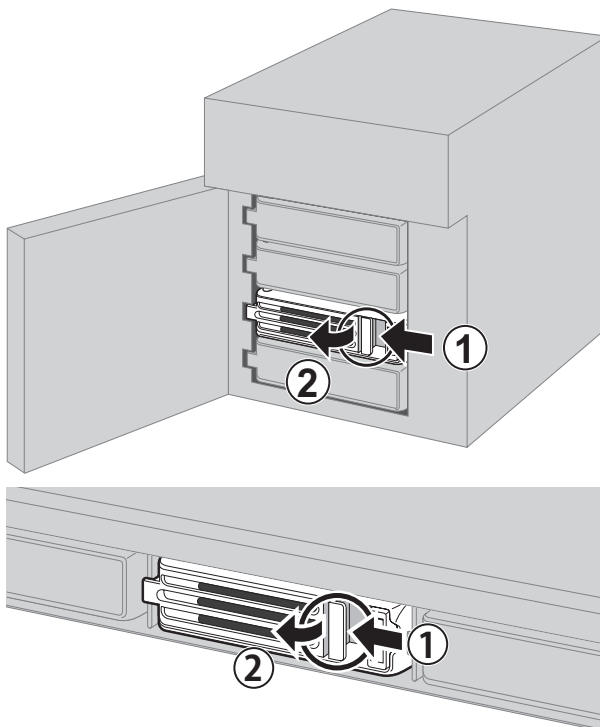
1 If your TeraStation has a front cover, open it with the included key.



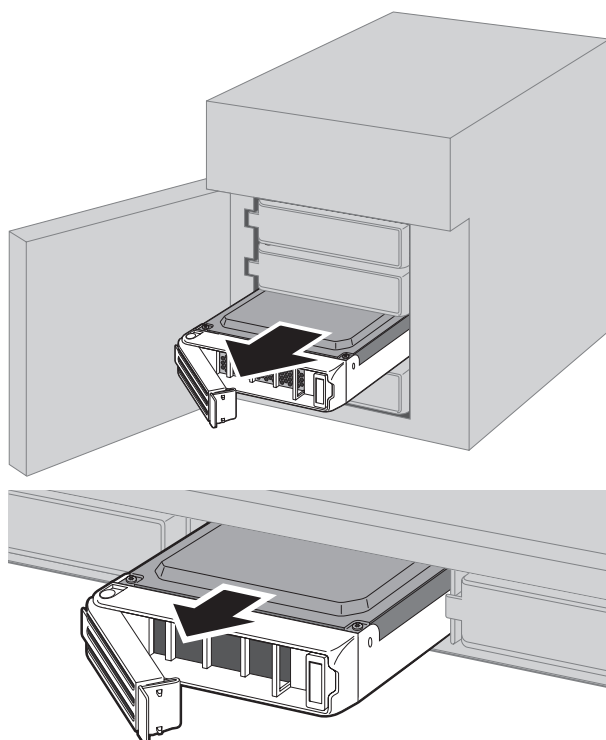
2 Make a note of the drive number where the status LED glows red.

3 Shut down the TeraStation.

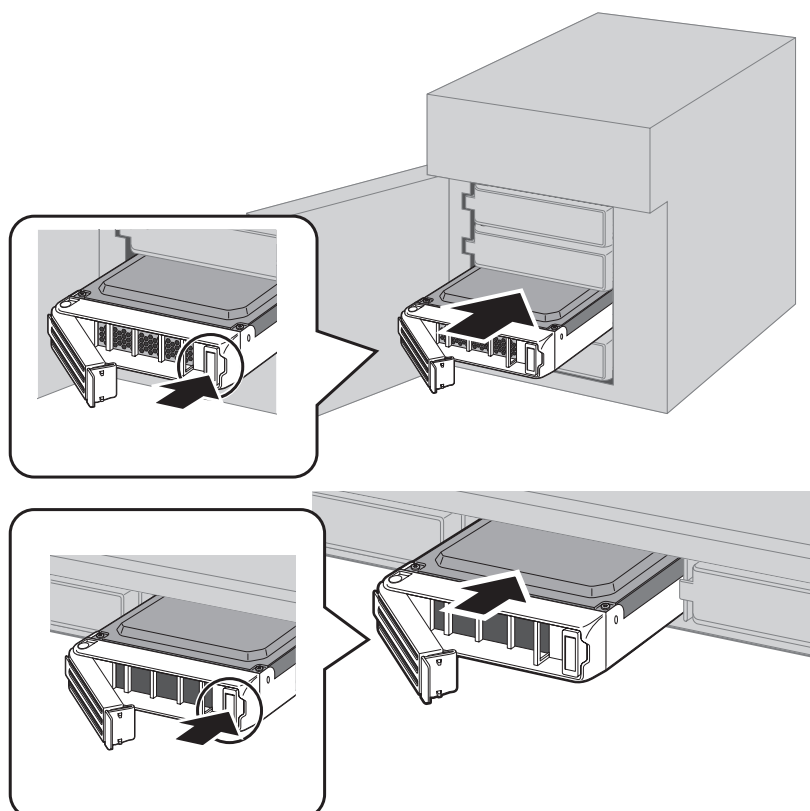
4 Push the unlock button of the failed hard drive and swing the lock mechanism out.



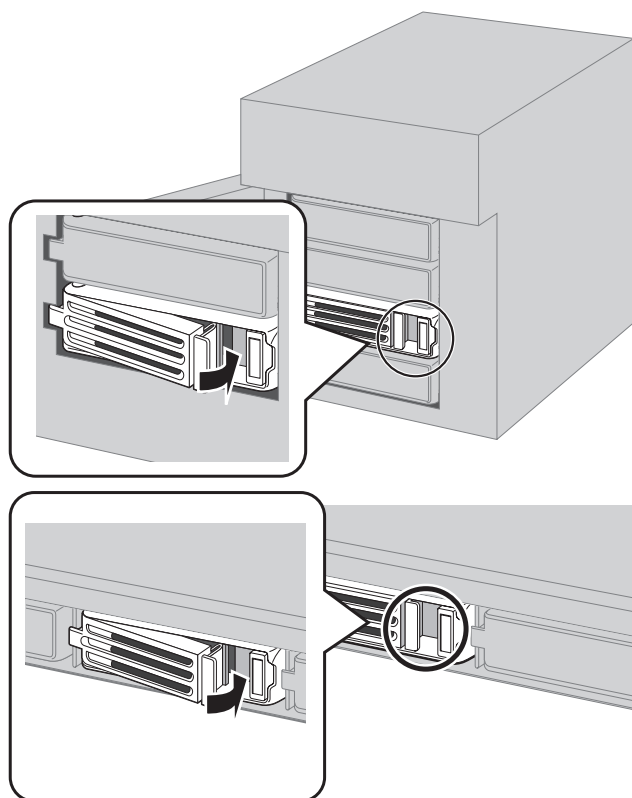
- 5** Pull out the drive cartridge and remove it from the TeraStation.



- 6** Insert the new drive in the empty slot. Slide the drive in with the locking mechanism open.



- 7 Swing the lock back down until it clicks into place.

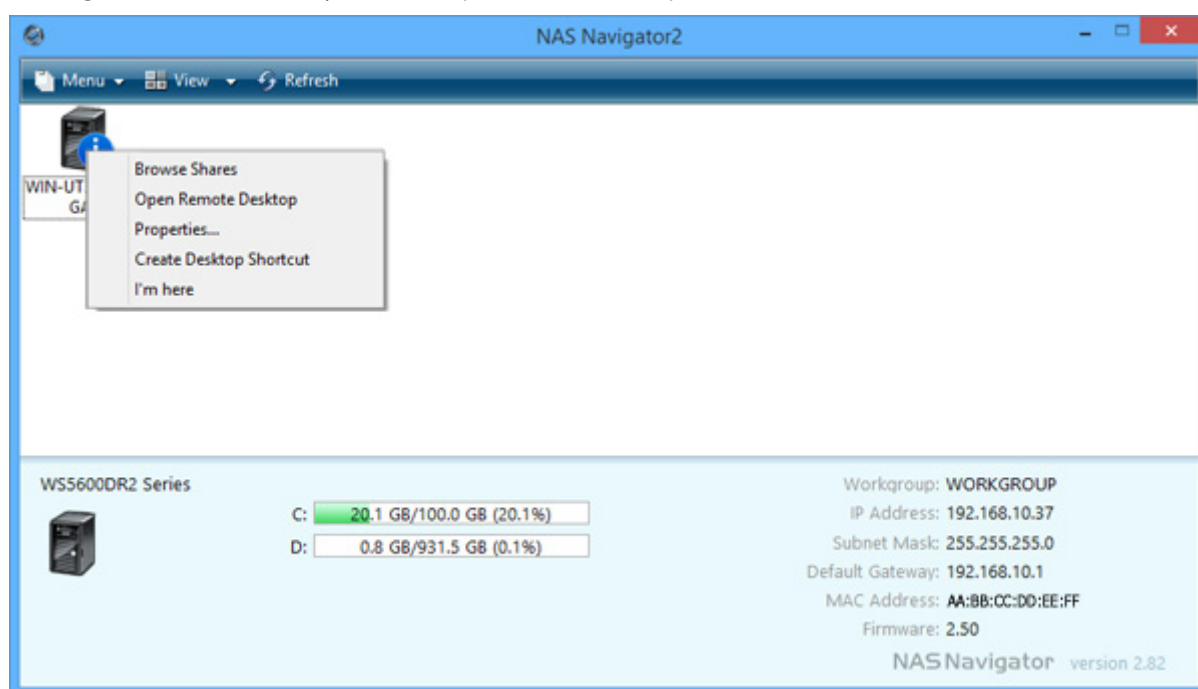


- 8 Close the front cover with the included key. Press the power button on the TeraStation to turn it on.

Note: If drive 1 is being replaced, the red error LED will light up and "POST ERR: 00D9 Boot from HDD x" will be displayed on the LCD panel. Wait for the unit to reboot. When the reboot is finished, go on to the next step.

- 9 Double-click the  icon to start NAS Navigator2.

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

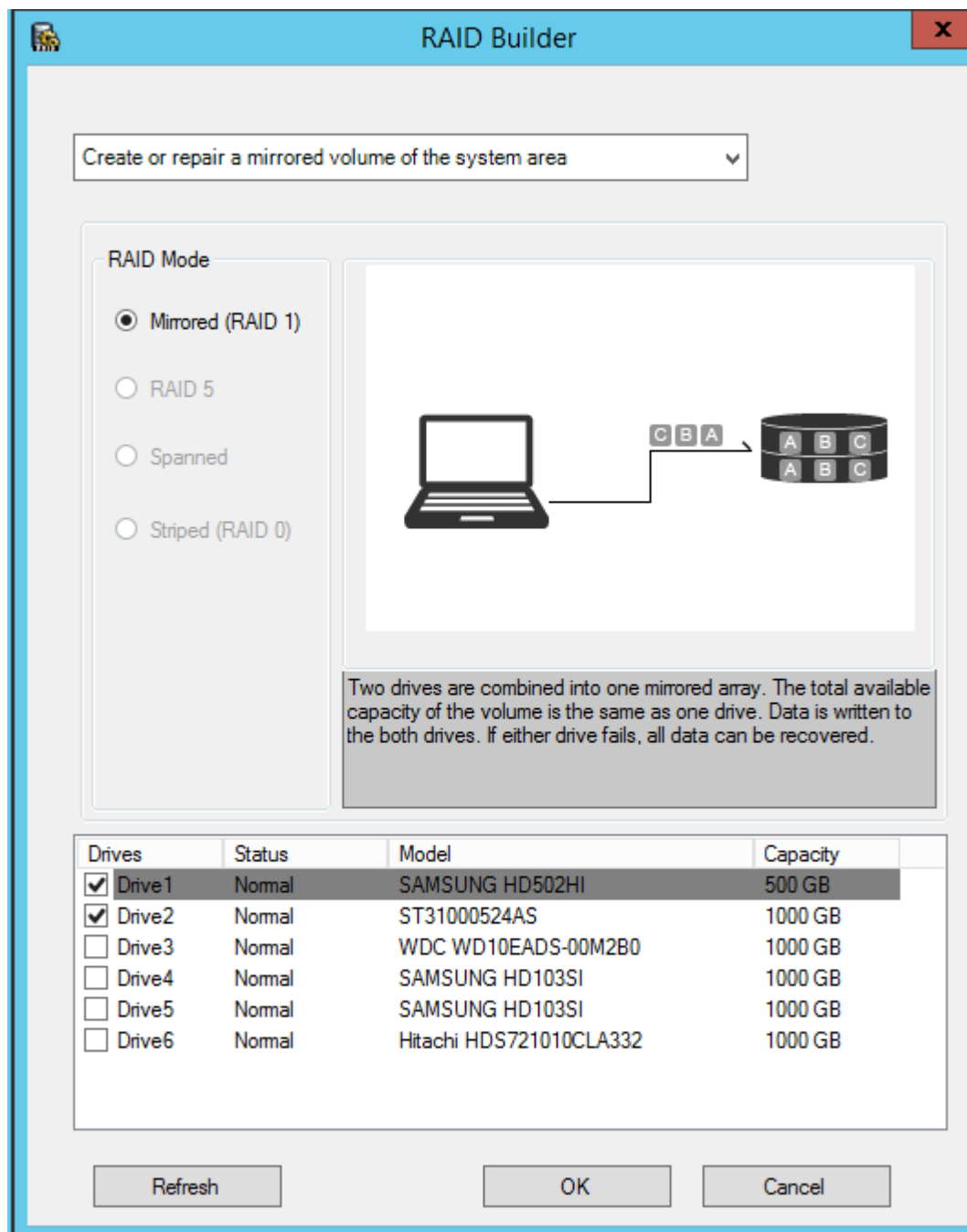


- 11** Enter the username and password and press the Enter key. Windows Storage Server opens in the remote desktop.

Note: The default username and password are "Administrator" and "password".

- 12** Click *RAID Builder* from the Start menu of Windows Storage Server.

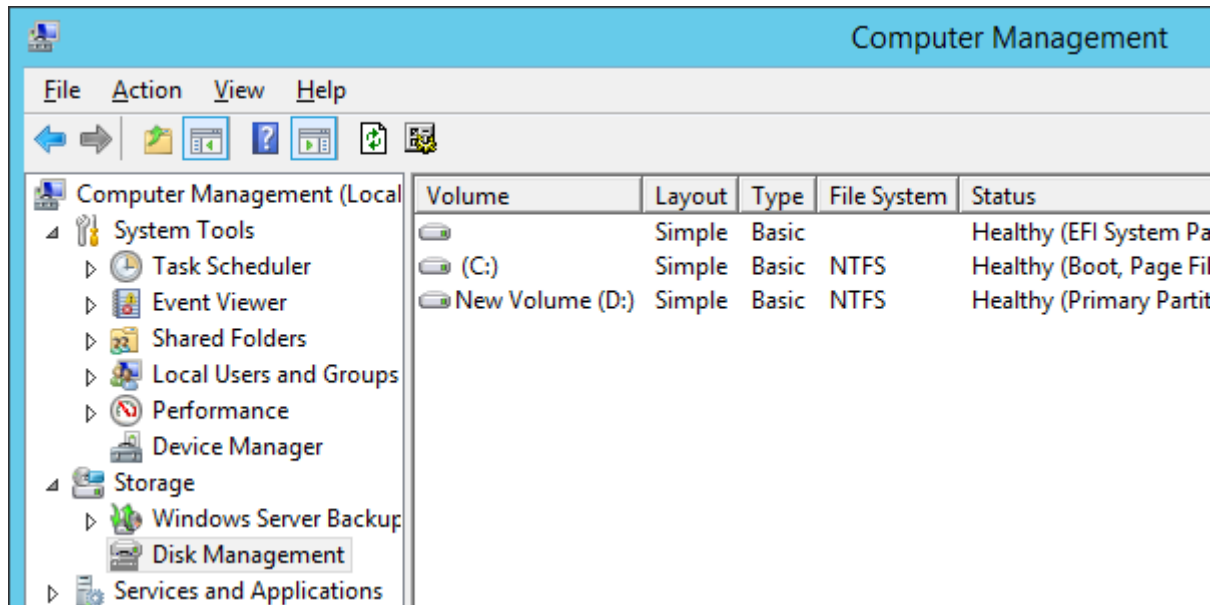
- 13** Select *Create or repair a mirrored volume of the system area*, check replaced hard drive, and click *OK*.



- 14** When "When Drive x will be initialized. Continue?" is displayed, click *OK*. It will take about an hour for the mirrored volume to be repaired. You can check the progress of the repair in Disk Management. After creating a mirrored volume, you will see the message dialogue to restart your TeraStation. Follow the instructions displayed. When the reboot is finished, go to the next step.

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

16 Click *Disk Management*.



17 Select the step depending on your reason for a created volume.

To create a new volume (except for a RAID 5 or mirrored volume):

- (1) Right-click the new dynamic disk and select *New Volume*.
- (2) Follow the instructions on the screen to create a new volume.

To restore a RAID 5 volume (RAID resynchronization):

- (1) Right-click the volume labeled "Failed Redundancy" and click *Restore Volume*.
- (2) When "Select one of the disks listed below." is displayed, select the drive to restore and click *OK*. Perform steps (1) and (2) for each volume that requires RAID resynchronization.
- (3) Right-click the volume labeled "Missing" and select *Remove Disk*.

To restore a mirrored volume (RAID resynchronization):

- (1) Right-click the volume labeled "Failed Redundancy" and click *Remove Mirror*.
- (2) When "Remove Mirror" is displayed, select the drive with its status missing and click *Remove Mirror*.
- (3) When "Are you sure you want to remove the mirror?" is displayed, click *OK*. Perform steps (1) to (3) for each volume that requires RAID resynchronization.
- (4) Select the new volume where mirroring will be performed and select *Add Mirror*.
- (5) When "Add Mirror" is displayed, select the drive where mirroring will be performed with the selected volume and click *Add Mirror*.

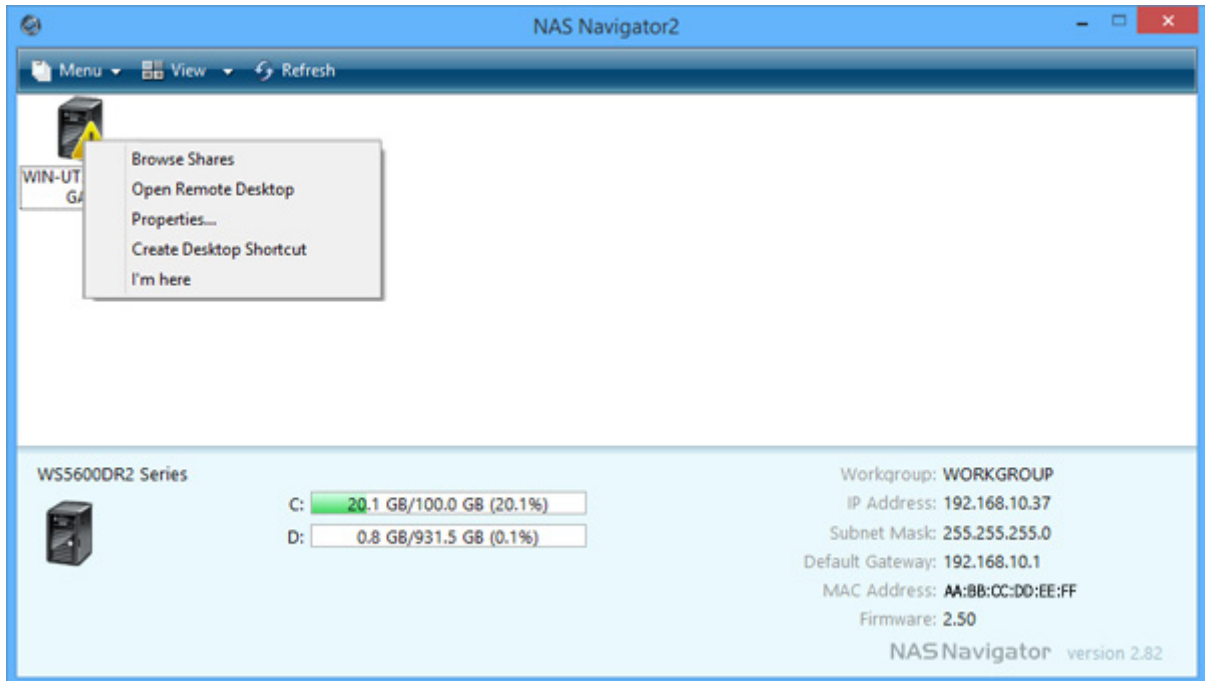
If a Mirrored Volume Failed to Restore

If a mirrored volume doesn't restore the first time, try the steps above a second time. If the mirrored volume still cannot be restored, contact Buffalo technical support for assistance.

A Drive Failure Occurs among Drives 3–6

- 1 Double-click the  icon to start NAS Navigator2.

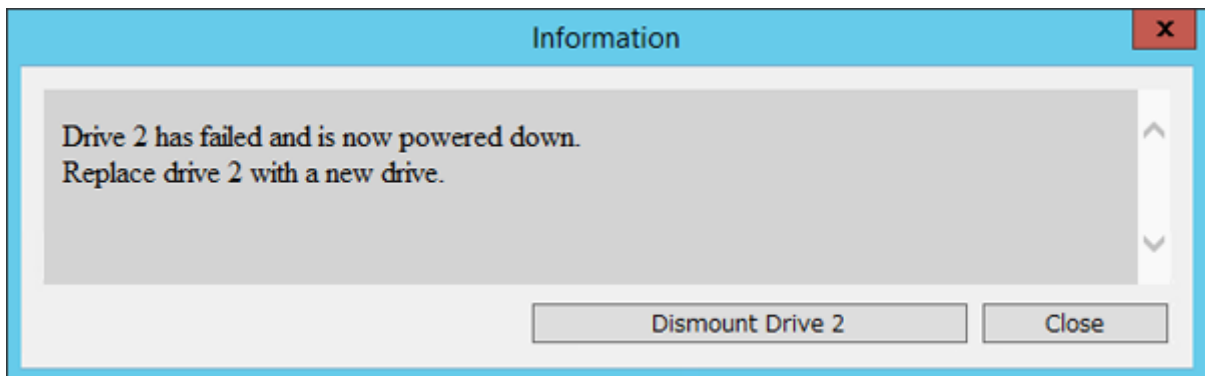
- 2 Right-click on your TeraStation's icon, then click *Open Remote Desktop*. For macOS, click the TeraStation's icon while holding down the control key, then click *Open Remote Desktop*.



- 3 Enter the username and password, then press the Enter key. Windows Storage Server will open in the remote desktop.

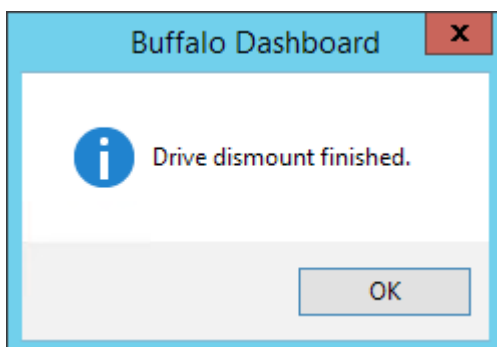
Note: The default username and password are "Administrator" and "password".

- 4 The error message (E30) will be displayed in Buffalo Dashboard.



- 5 Click *Dismount Drive X* (where "X" is the number of the failed drive).

- 6 When the message "Drive dismount finished." is displayed, click *OK*.



The status LED will stop flashing and glow steadily.

- 7** If your TeraStation has a front cover, open it with the included key.
- 8** Push the unlock button of the failed hard drive and swing the lock mechanism out.
- 9** Pull out the hard drive cartridge and remove it from the TeraStation.
- 10** Insert the new hard drive (sold separately) into the empty slot. Slide the drive in with the locking mechanism open.
- 11** Swing the lock back down until it clicks into place.
- 12** Close the front cover with the included key. If the hard drive was replaced while the TeraStation was off, power it on now.
- 13** Buffalo Dashboard will show the drive status "Getting..."

✓ Drive _____

Options

Status	Drive	Name	Capacity
✓ Normal	1	SAMSU...	931 GB
✓ Normal	2	SAMSU...	931 GB
✓ Normal	3	WDC W...	931 GB
✓ Normal	4	SAMSU...	931 GB
✓ Normal	5	SAMSU...	931 GB
✓ Getting...	6	Hitachi ...	931 GB

- 14** After the drive status changes to "Normal", open *Administrative Tools* and double-click *Computer Management* in Windows Storage Server.

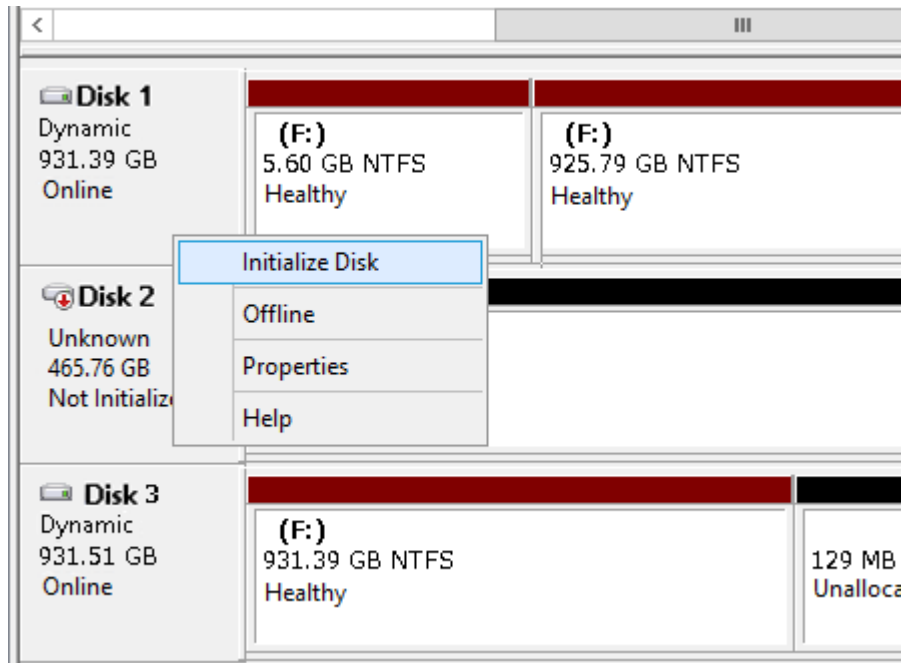
✓ Drive _____

Options

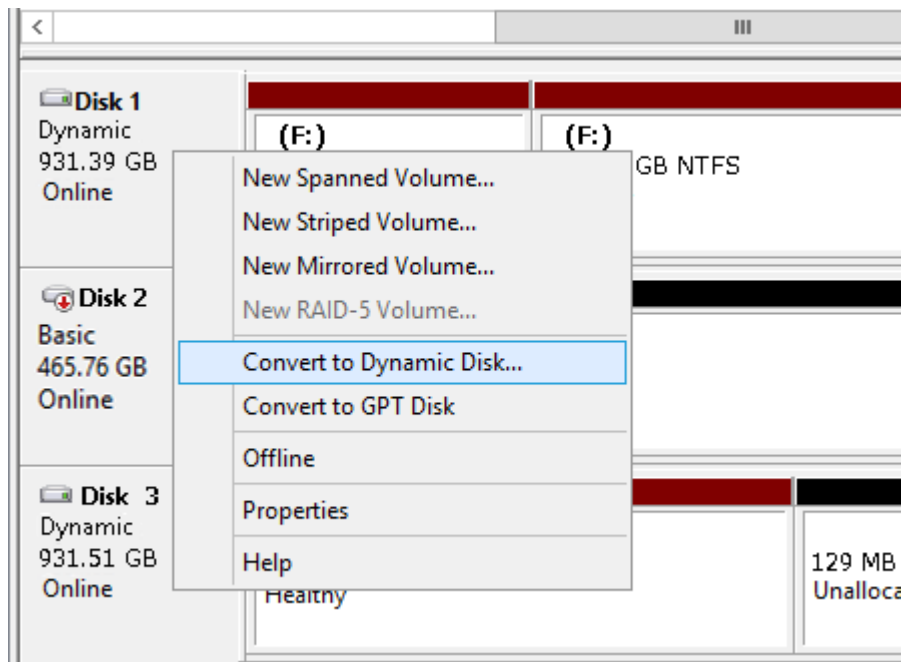
Status	Drive	Name	Capacity
✓ Normal	1	SAMSU...	931 GB
✓ Normal	2	SAMSU...	931 GB
✓ Normal	3	WDC W...	931 GB
✓ Normal	4	SAMSU...	931 GB
✓ Normal	5	SAMSU...	931 GB
✓ Normal	6	Hitachi ...	931 GB

- 15** Click *Disk Management*.

16 Right-click the new drive and select *Initialize Disk*.



17 Right-click the initialized hard drive and select *Convert to Dynamic Disk*. A RAID array cannot be built unless the hard drive is converted to a dynamic disk.



18 Select the step depending on your reason for a created volume.

To create a new volume (except for a RAID 5 or mirrored volume):

- (1) Right-click the new dynamic disk and select *New Volume*.
- (2) Follow the instructions on the screen to create a new volume.

To restore a RAID 5 volume (RAID resynchronization):

- (1) Right-click the volume labeled "Failed Redundancy" and click *Restore Volume*.
- (2) When "Select one of the disks listed below." is displayed, select the drive to restore and click OK. Perform steps (1) and (2) for each volume that requires RAID resynchronization.
- (3) Right-click the volume labeled "Missing" and select *Remove Disk*.

To restore a mirrored volume (RAID resynchronization):

(1) Right-click the volume labeled "Failed Redundancy" and click *Remove Mirror*.

(2) When "Remove Mirror" is displayed, select the drive with its status missing and click *Remove Mirror*.

(3) When "Are you sure you want to remove the mirror?" is displayed, click *OK*.

Perform steps (1) to (3) for each volume that requires RAID resynchronization.

(4) Select the new volume where mirroring will be performed and select *Add Mirror*.

(5) When "Add Mirror" is displayed, select the drive where mirroring will be performed with the selected volume and click *Add Mirror*.

Chapter 6 Backup

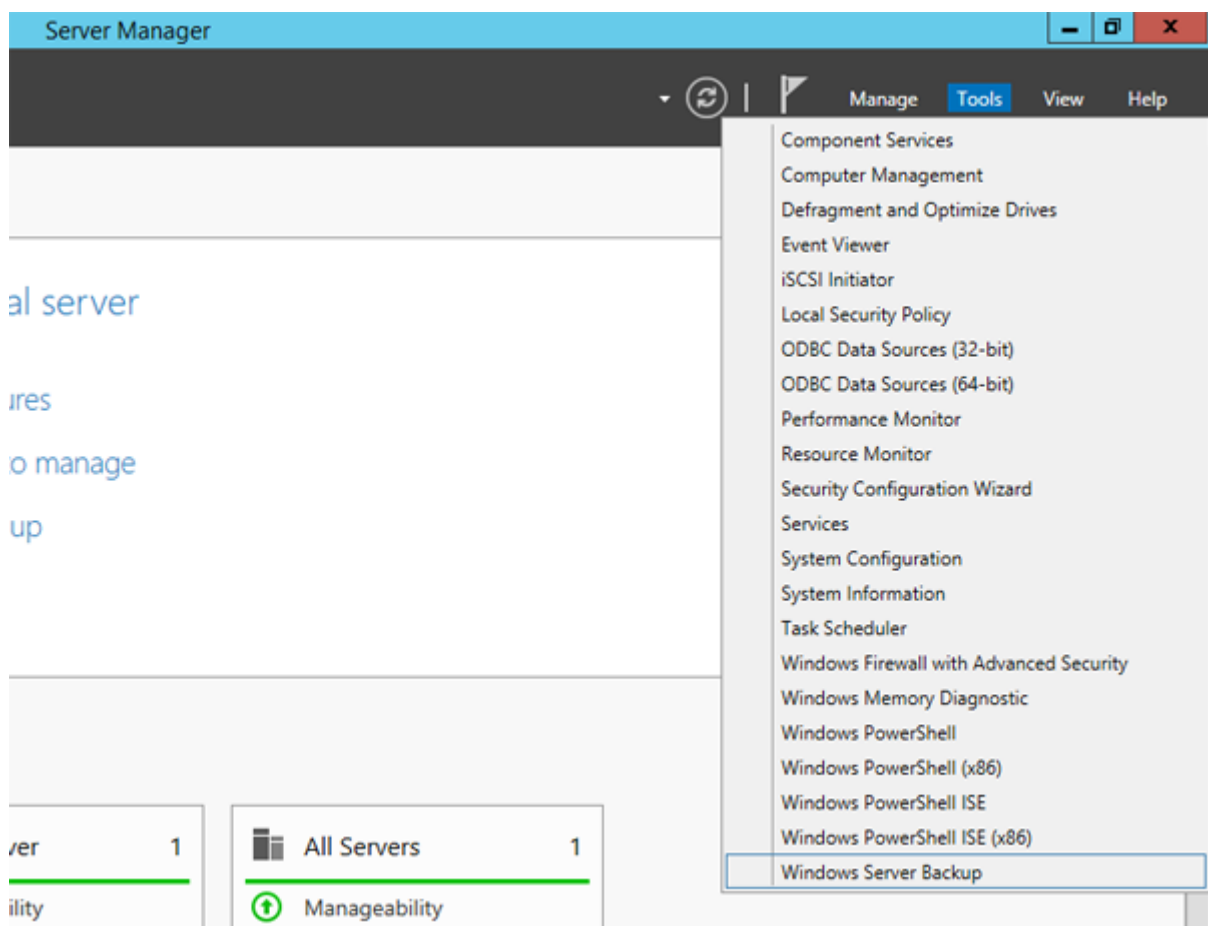
To avoid losing data accidentally, back up your data regularly.

Back Up in Windows Storage Server

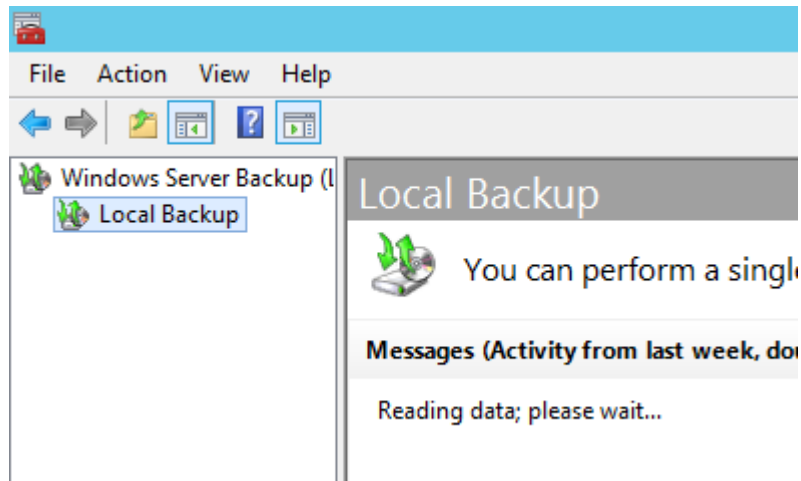
You can back up TeraStation folders in Windows Storage Server.

Preparing a Backup Destination

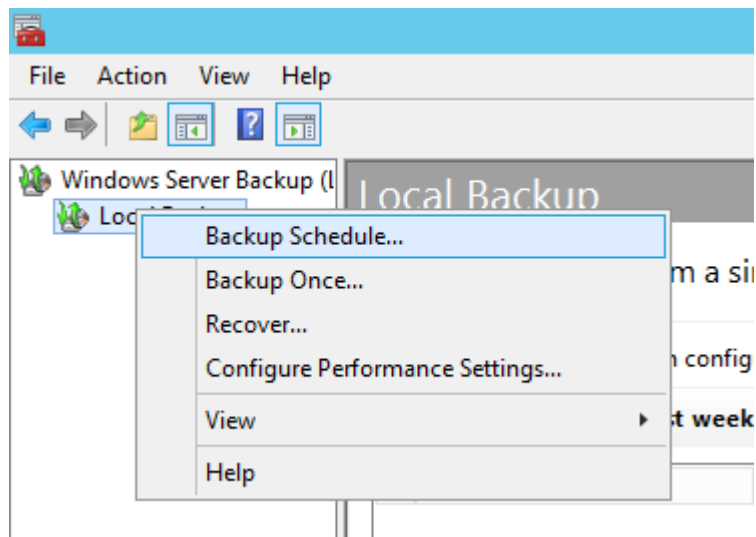
- 1 In Server Manager, click *Tools - Windows Server Backup*. Windows Server Backup will start.



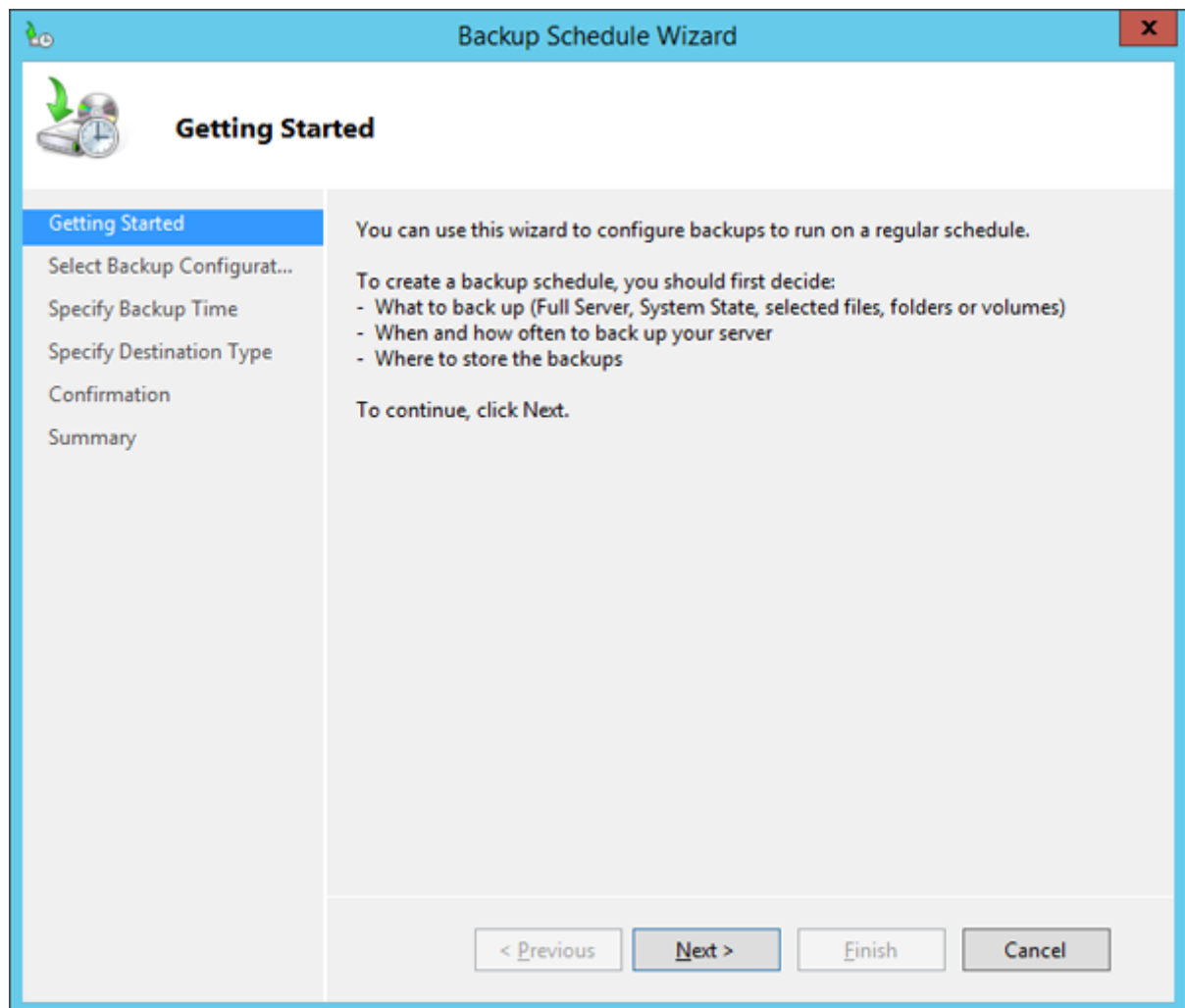
- 2 Click *Local Backup*. If "Reading data; please wait..." is displayed, please wait until these messages disappear.



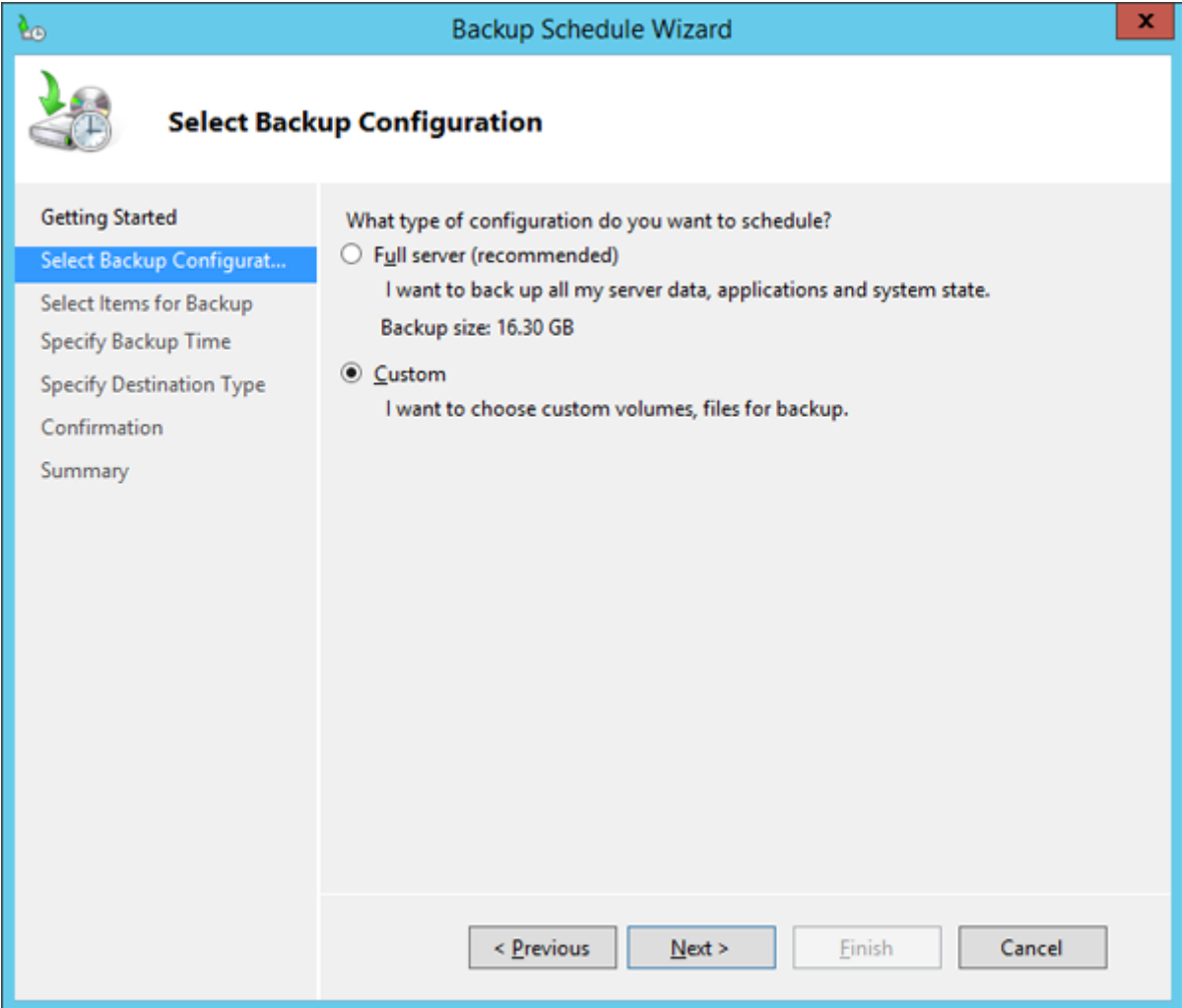
- 3 Right-click on "Local Backup" and select *Backup Schedule....* The Backup Schedule Wizard will start.



4 Click Next.



5 Select "Custom" and click *Next*.



The screenshot shows the 'Backup Schedule Wizard' window. The title bar is blue with the text 'Backup Schedule Wizard' and a close button. The main area has a light blue header with a green arrow icon and the title 'Select Backup Configuration'. On the left is a vertical list of steps: 'Getting Started', 'Select Backup Configurat...', 'Select Items for Backup', 'Specify Backup Time', 'Specify Destination Type', 'Confirmation', and 'Summary'. The 'Select Backup Configurat...' step is highlighted in blue. The main content area asks 'What type of configuration do you want to schedule?' and offers two options: 'Full server (recommended)' and 'Custom'. The 'Custom' option is selected with a radio button. Below the 'Full server' option, it says 'I want to back up all my server data, applications and system state. Backup size: 16.30 GB'. Below the 'Custom' option, it says 'I want to choose custom volumes, files for backup.' At the bottom are four buttons: '< Previous', 'Next >', 'Finish', and 'Cancel'.

Backup Schedule Wizard

Select Backup Configuration

Getting Started
Select Backup Configurat...
Select Items for Backup
Specify Backup Time
Specify Destination Type
Confirmation
Summary

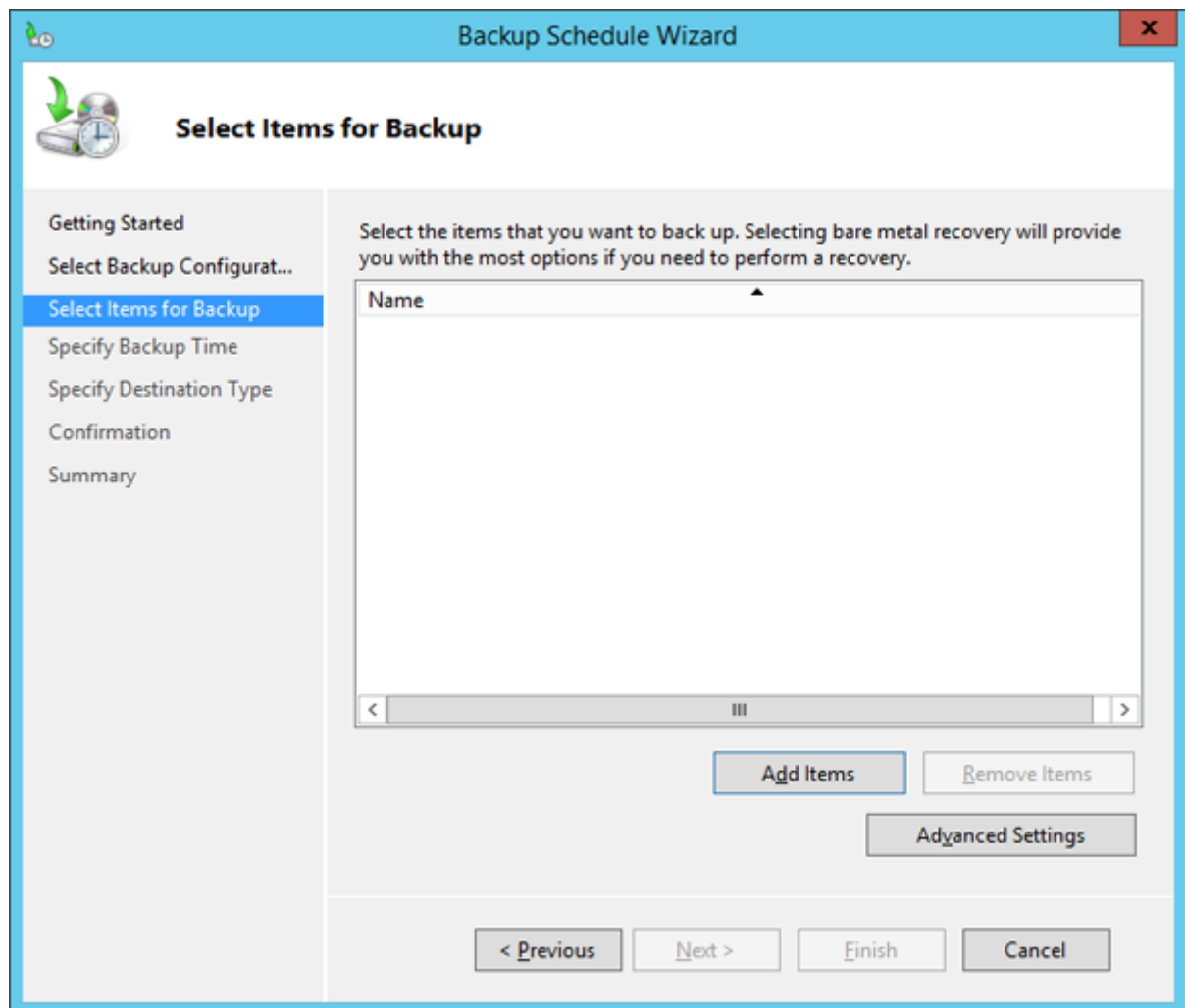
What type of configuration do you want to schedule?

☐ Full server (recommended)
I want to back up all my server data, applications and system state.
Backup size: 16.30 GB

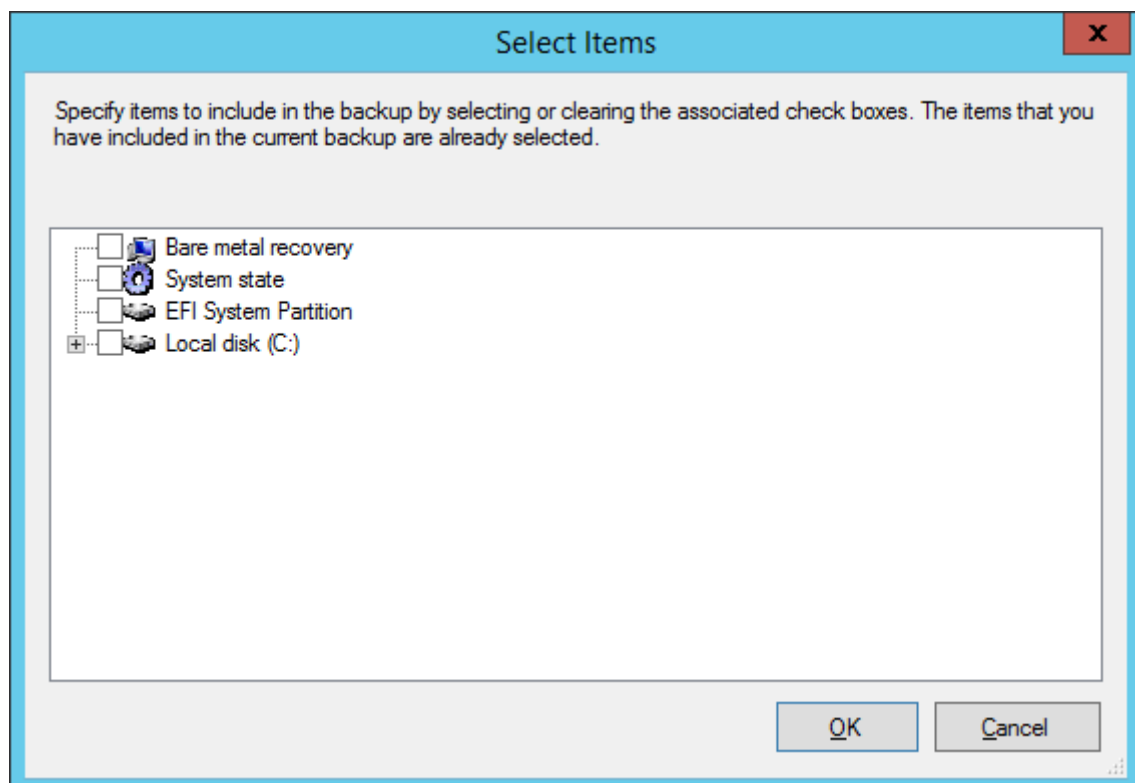
☒ Custom
I want to choose custom volumes, files for backup.

< Previous Next > Finish Cancel

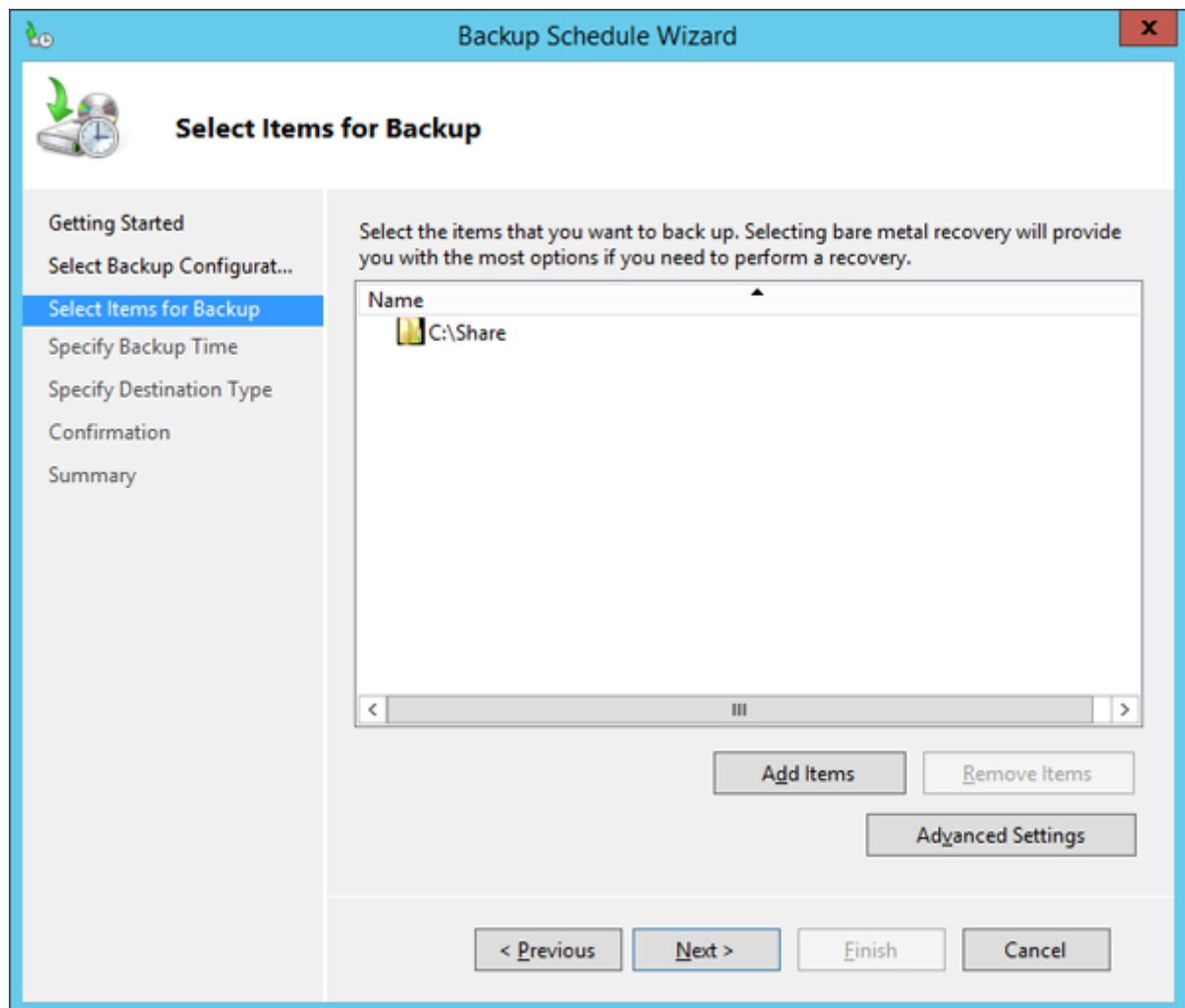
6 Click *Add Items*.



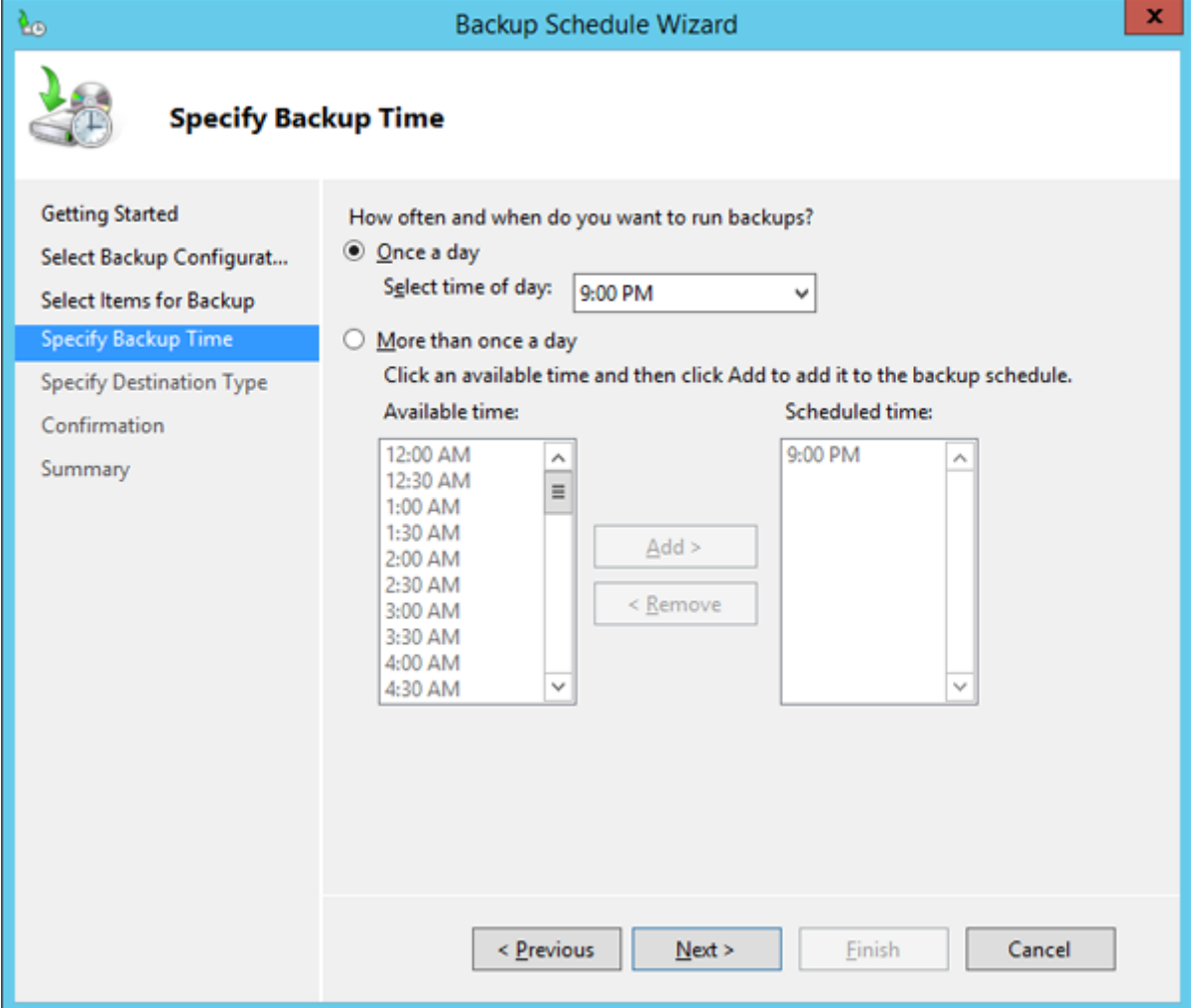
7 Select the backup source folders or drives and click *OK*.



8 Click Next.



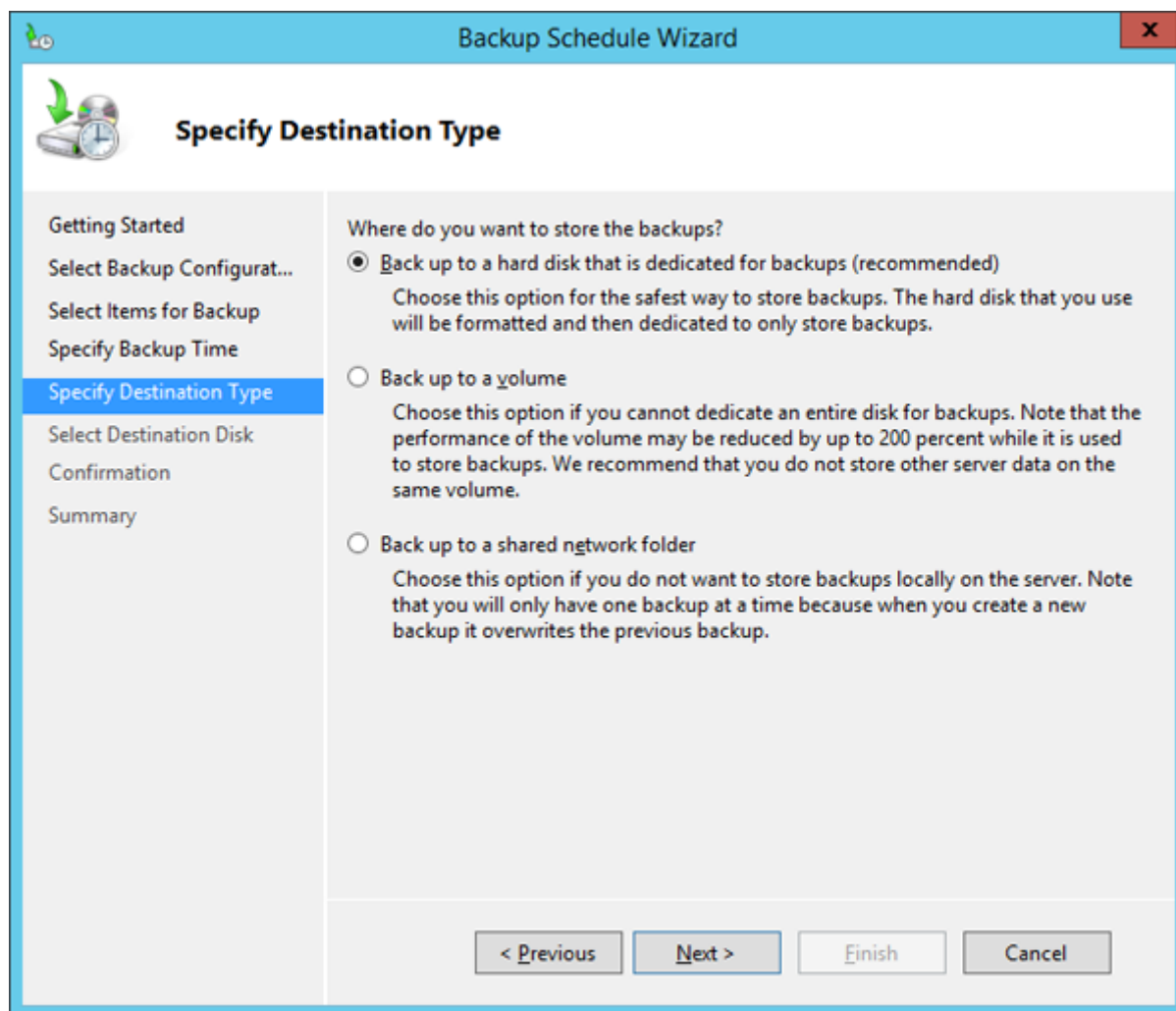
9 Specify the schedule to run the backup and click *Next*.



The image shows a screenshot of the 'Backup Schedule Wizard' window, specifically the 'Specify Backup Time' step. The window has a blue title bar with the text 'Backup Schedule Wizard' and a close button. On the left, there is a sidebar with a list of steps: 'Getting Started', 'Select Backup Configurat...', 'Select Items for Backup', 'Specify Backup Time' (which is highlighted in blue), 'Specify Destination Type', 'Confirmation', and 'Summary'. The main area of the window is titled 'Specify Backup Time' and contains the following elements:

- A question: 'How often and when do you want to run backups?'
- Two radio buttons: 'Once a day' (selected) and 'More than once a day'.
- Under 'Once a day', there is a 'Select time of day:' label and a dropdown menu showing '9:00 PM'.
- Under 'More than once a day', there is a text instruction: 'Click an available time and then click Add to add it to the backup schedule.'
- Two lists of times: 'Available time:' and 'Scheduled time:'. The 'Available time:' list shows times from 12:00 AM to 4:30 AM in 30-minute increments. The 'Scheduled time:' list shows '9:00 PM'.
- Between the two lists are two buttons: 'Add >' and '< Remove'.
- At the bottom of the window are four buttons: '< Previous', 'Next >', 'Finish', and 'Cancel'.

10 Select the backup destination and click *Next*.

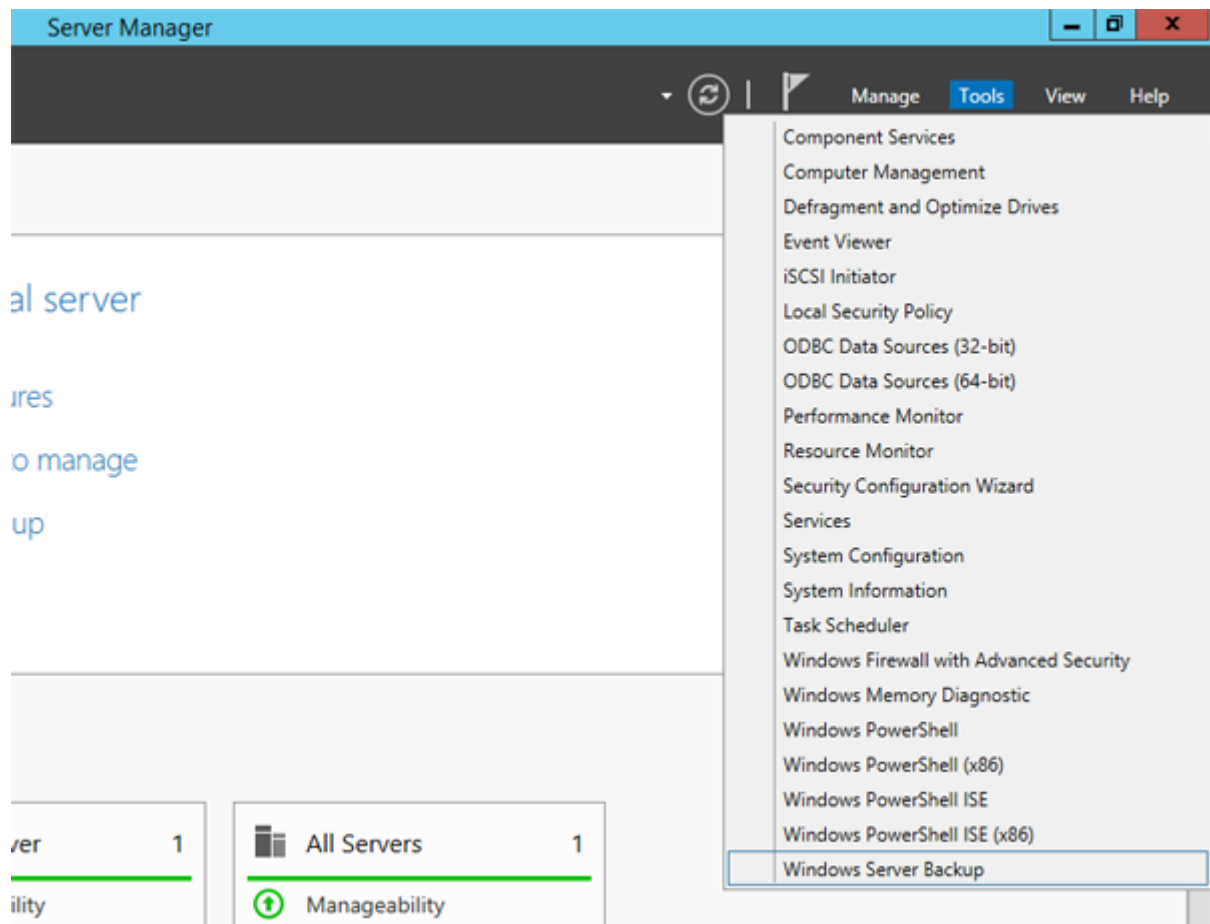


11 Step through the wizard to finish.

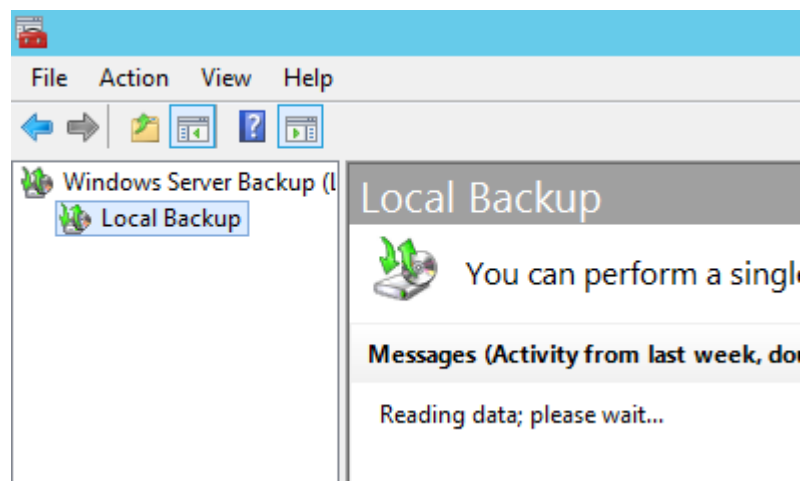
Recovering Backup Data

Recover the backup data to the TeraStation.

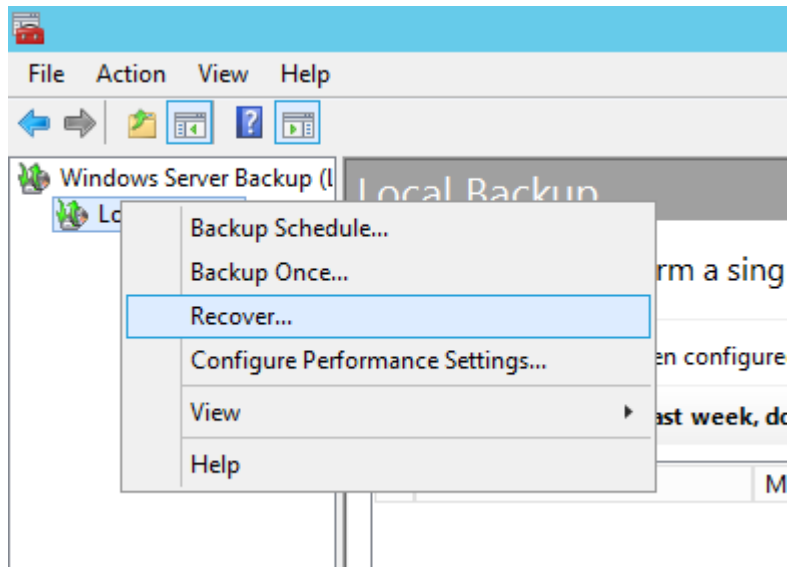
- 1 In Server Manager, click *Tools - Windows Server Backup*. Windows Server Backup will start.



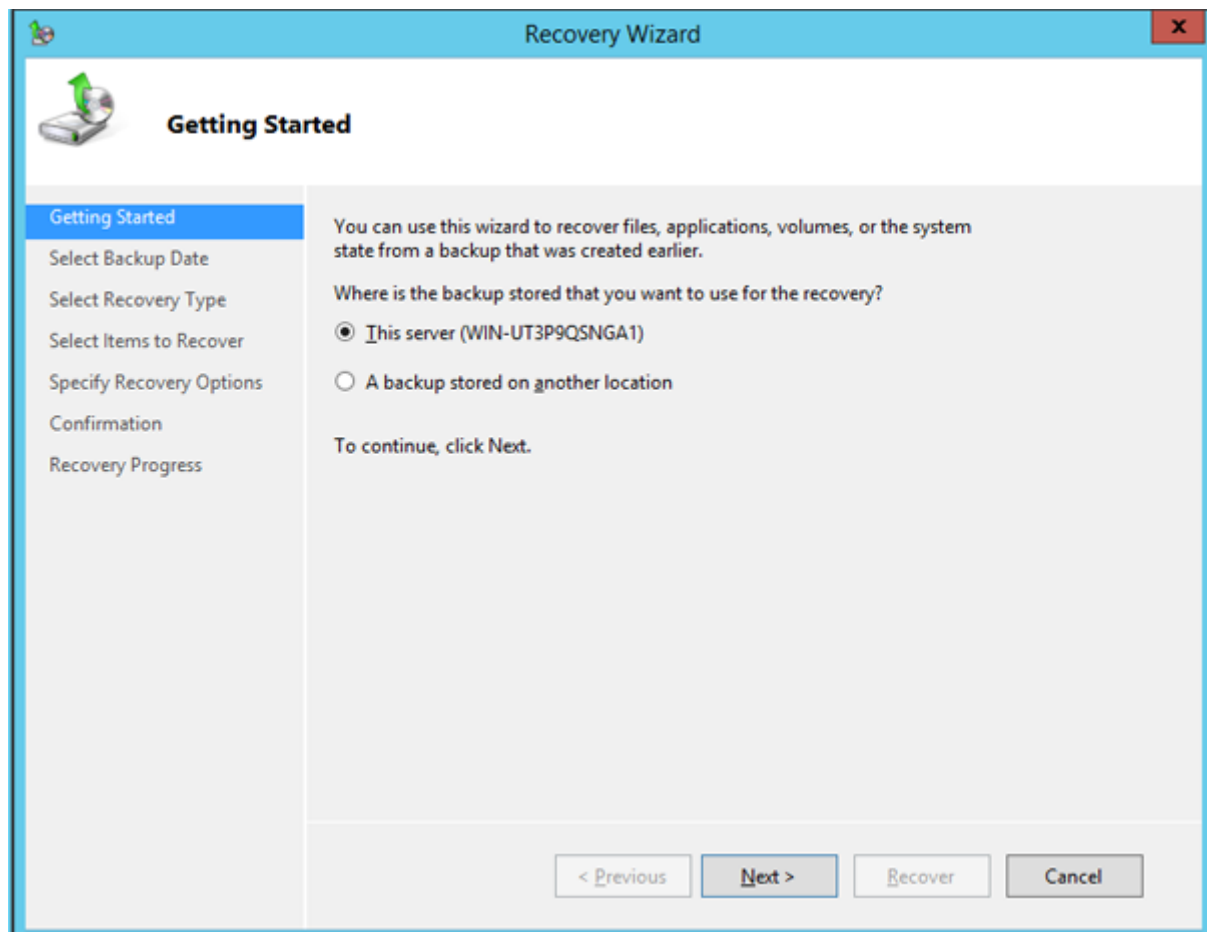
- 2 Click *Local Backup*. If "Reading data; please wait..." is displayed, please wait until these messages disappear.



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



4 Click *Next*.



5 Select the date when backing up the data and click **OK**.

Recovery Wizard

Select Backup Date

Getting Started
Select Backup Date
Select Recovery Type
Select Items to Recover
Specify Recovery Options
Confirmation
Recovery Progress

Oldest available backup: 12/5/2013 12:59 AM
Newest available backup: 12/5/2013 12:59 AM

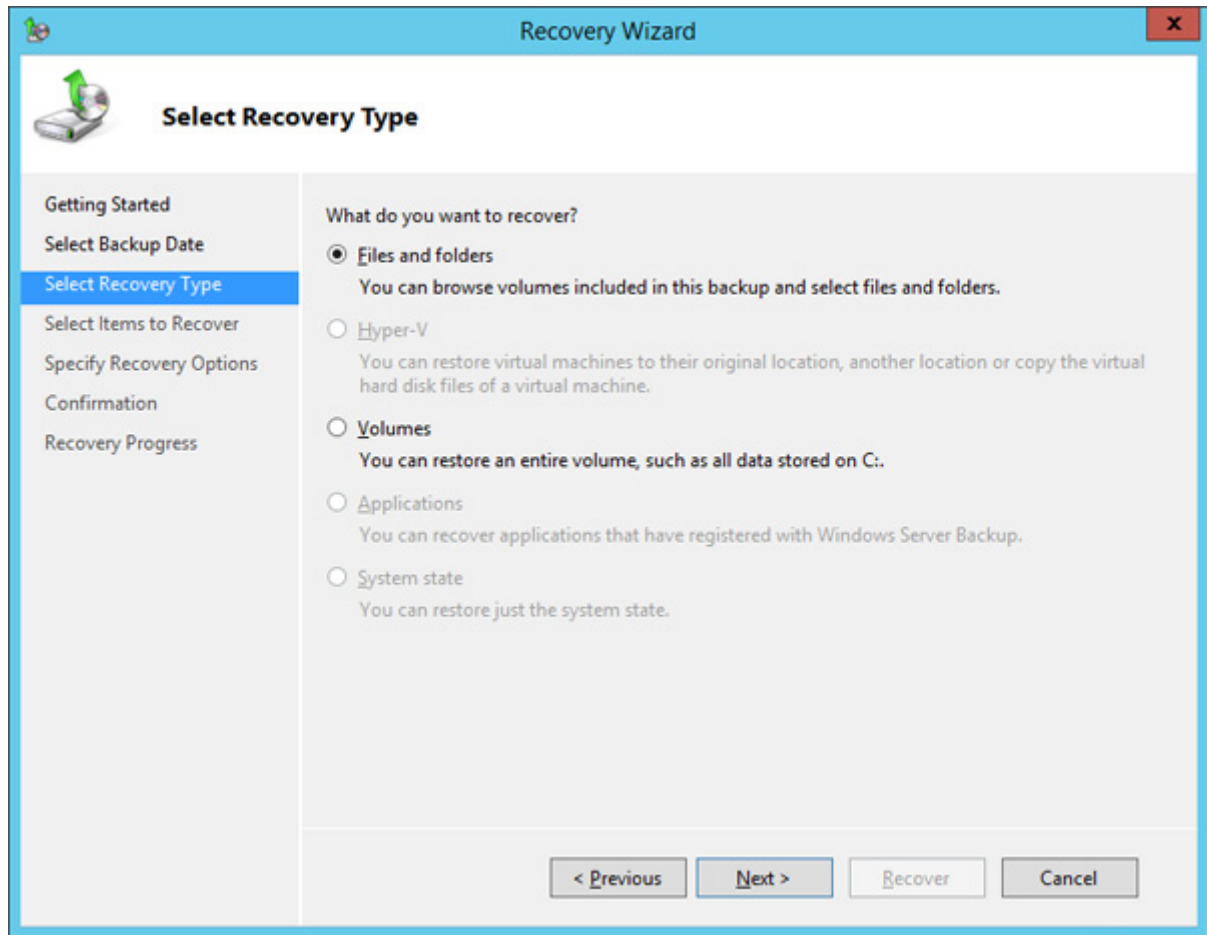
Available backups
Select the date of a backup to use for recovery. Backups are available for dates shown in bold.

December 2013						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Backup date: 12/5/2013
Time: 12:59 AM
Location: WIN-TF0 2013_12_05 ...
Status: Available online
Recoverable items: [Local disk \(C:\)\(Sele...](#)

< Previous Next > Recover Cancel

6 Select the recovery targets and click *Next*.



7 Step through the wizard to finish.

Replication

Buffalo 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.

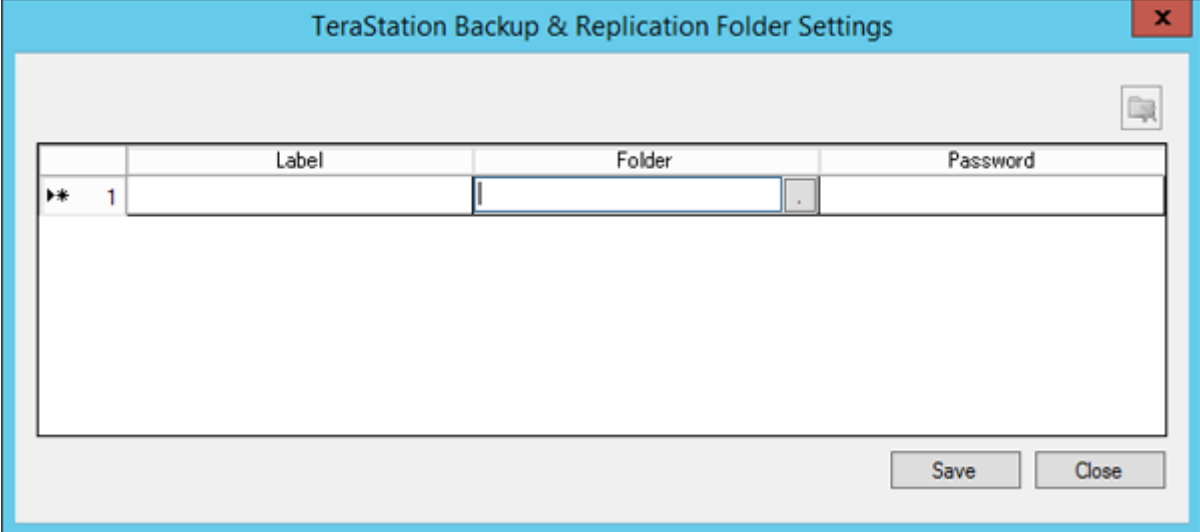
Notes:

- For best results, use static IP addresses for both replication TeraStations (source and target).
- Replication source data is copied to the replication target folder with a differential overwrite. Data that is not in the replication source will not be overwritten. Access attributes for the folders and files in the replication source will not be copied to the replication target.

If you use Buffalo WS5000N2, WS5000R2, or WS5000 series TeraStations for the replication source and target, start from step 1. If you use a different TeraStation as the replication target, refer to that TeraStation's user manual to configure as a replication target. When you finish configuring, go to step 3.

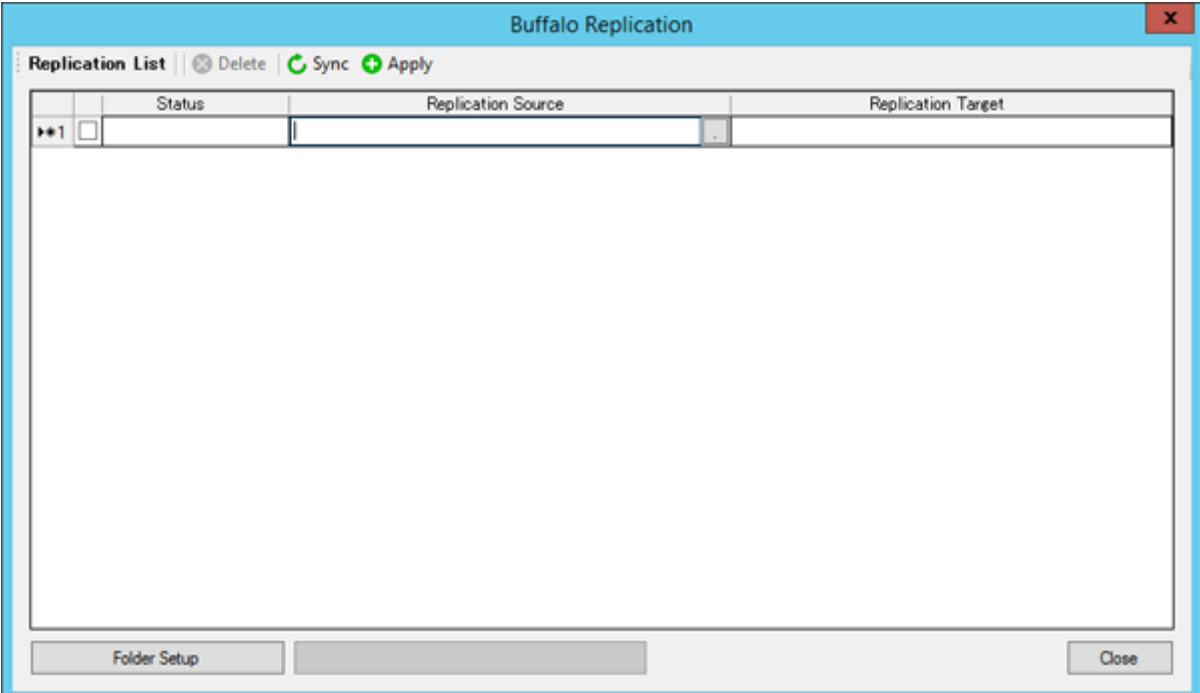
1 Click *TeraStation Backup & Replication Folder Settings* in the Start menu on Windows Storage Server.

- 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. If you enter a backup password, the new folder will not be listed as a target folder for backup. Click *OK* when finished.



	Label	Folder	Password
☒	1		

- 3** Click *Buffalo Replication* in the Start menu on Windows Storage Server.
- 4** Click the blank space under "Replication Target" and click . Select a folder from the list for replication target and click *OK*. Click the blank space under "Replication Target" and select the folder from the list. Then click *Select*.



	Status	Replication Source	Replication Target
☐			

Note: Folders with backup passwords configured will not be displayed in the list.

- 5** When the setting is done, click *Apply*. If you configure the backup password for a folder, entering password dialog box will be displayed.

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.

- 6** Click *Close*.

Replication is configured.

Note: 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/

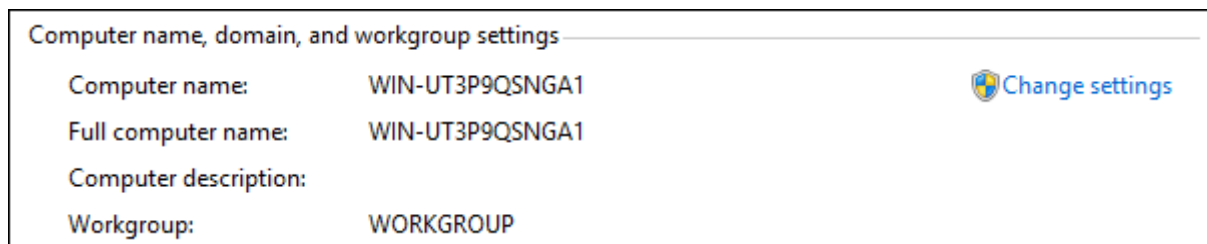
DFS Replication

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. Follow the steps below to enable DFS on the TeraStation.

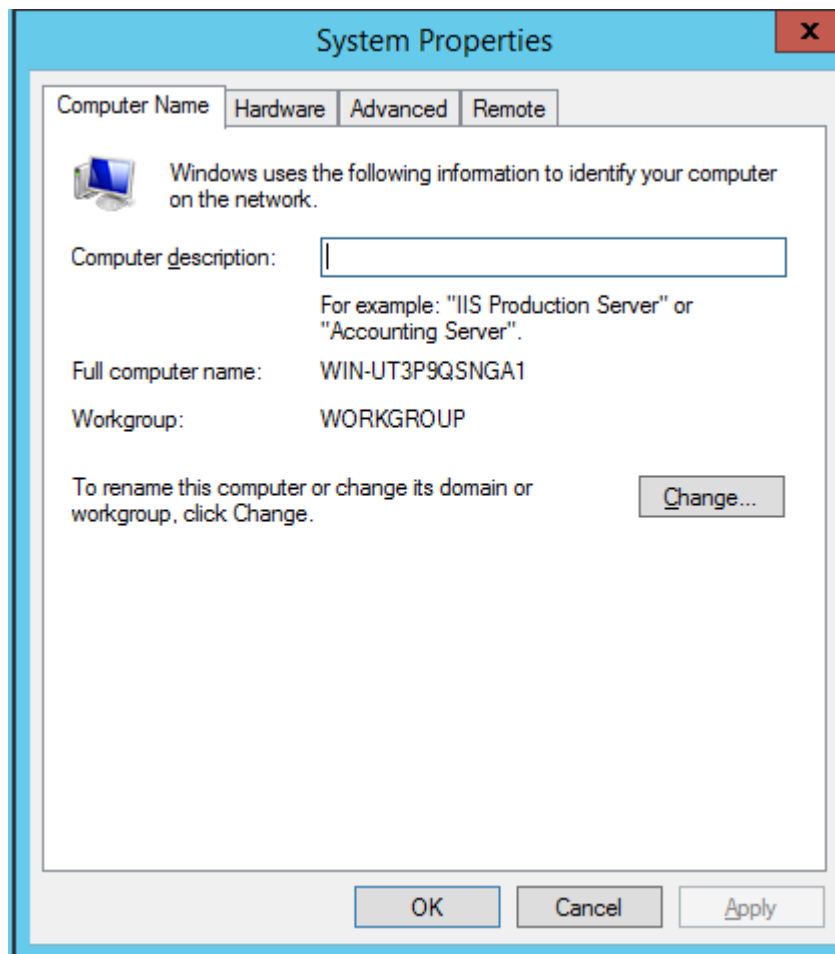
Note: To use DFS replication with Windows Storage Server, the TeraStation must join Active Directory domain.

Joining an Active Directory

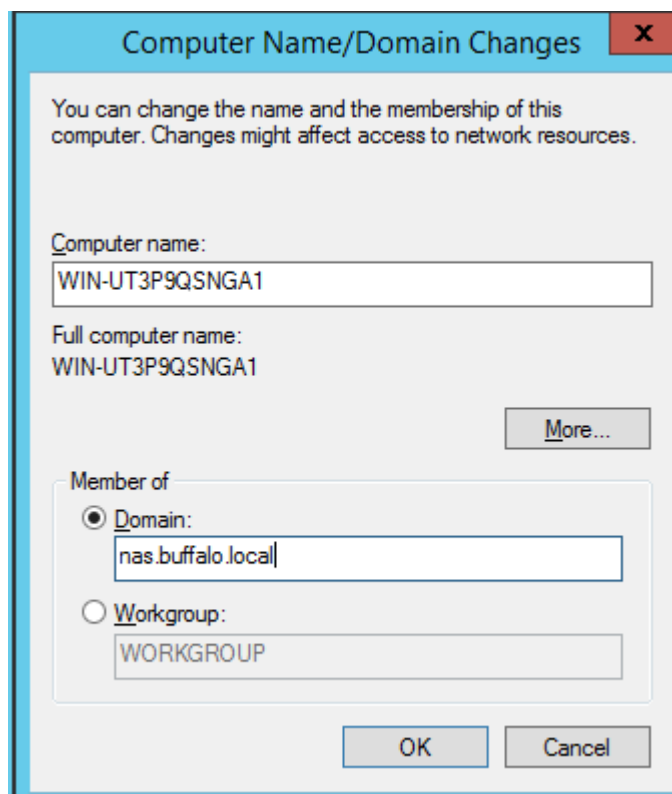
- 1 In Control Panel, go to *System* and click *Change settings* under "Computer name, domain, and workgroup settings".



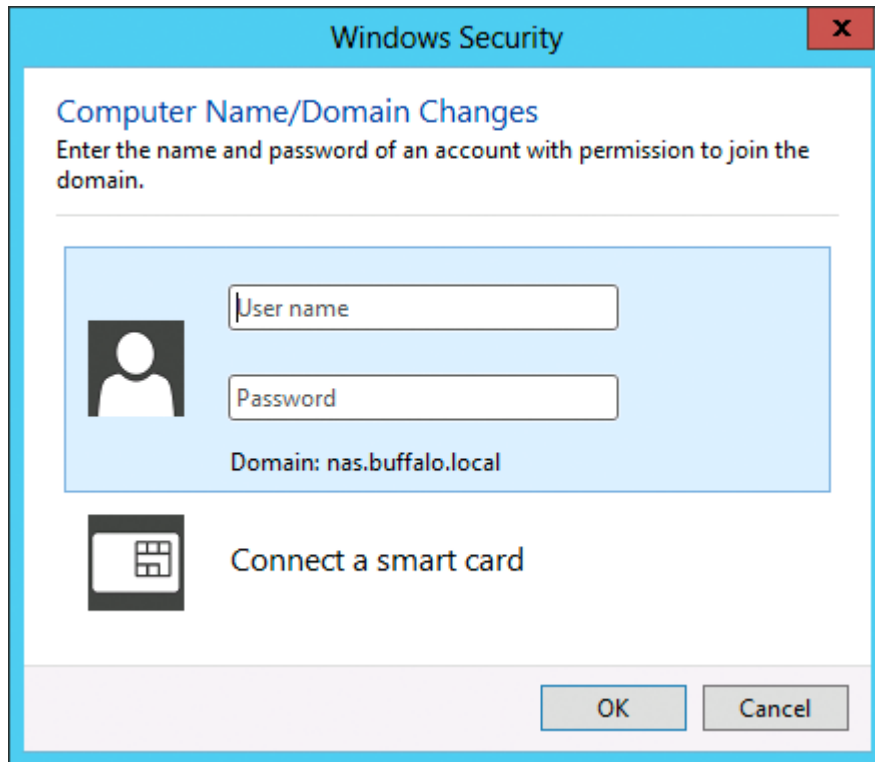
2 Click *Change*.



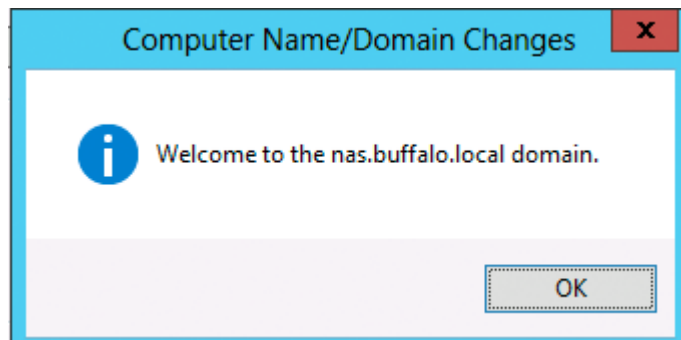
3 Select "Domain", enter a domain name, and click *OK*.



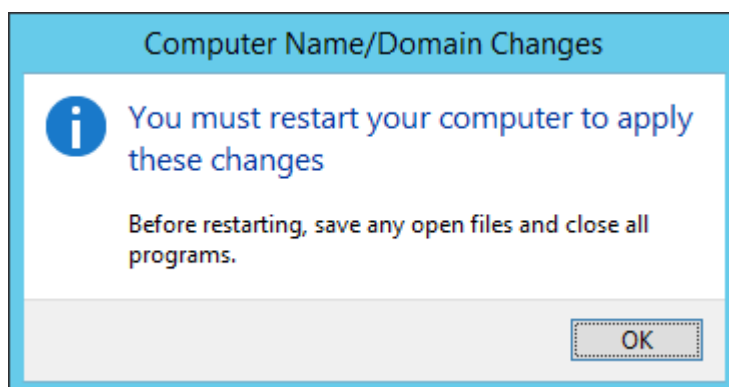
- 4** Enter an administrator username and password for the Active Directory domain controller.



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



- 6** Click *OK* again.

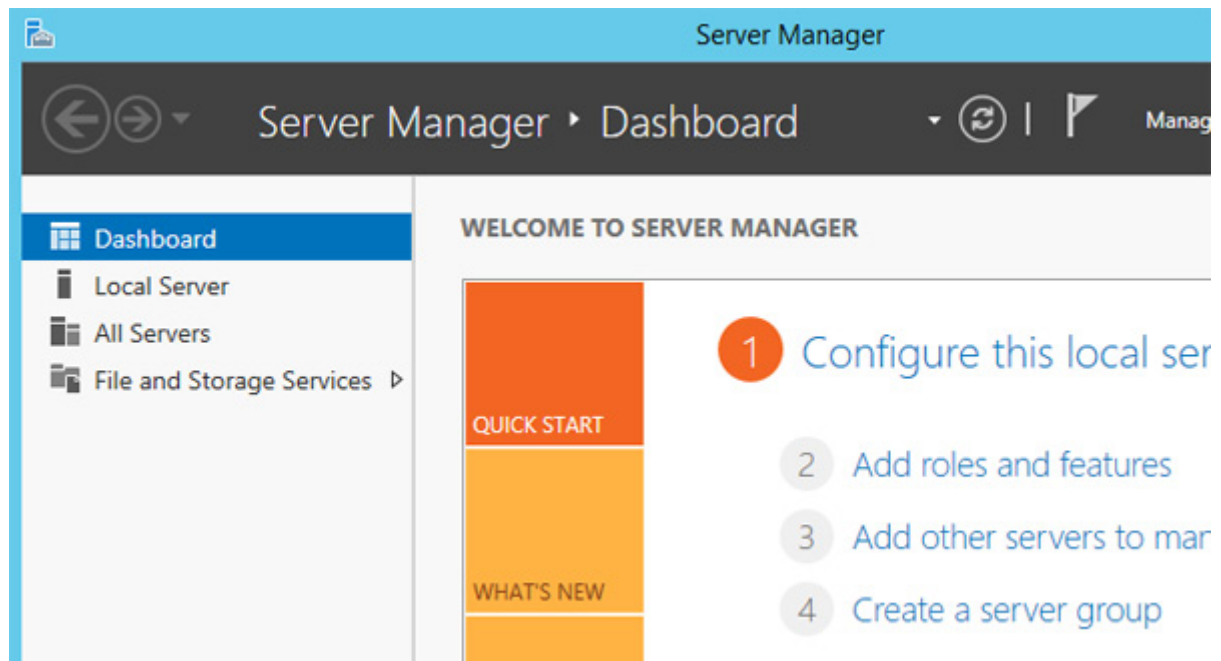


- 7** Click *Close*.

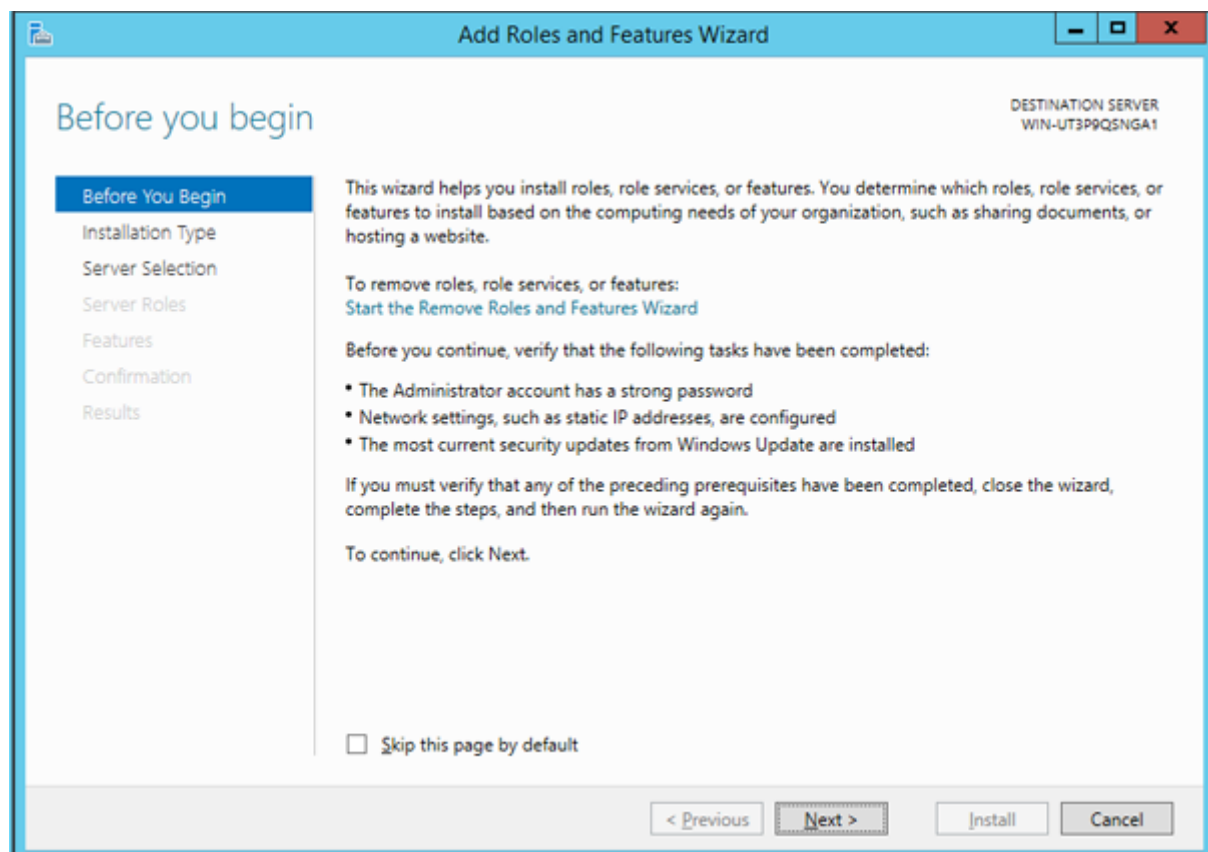
- 8** Click *Restart Now* and restart your computer to apply settings.

Installing DFS

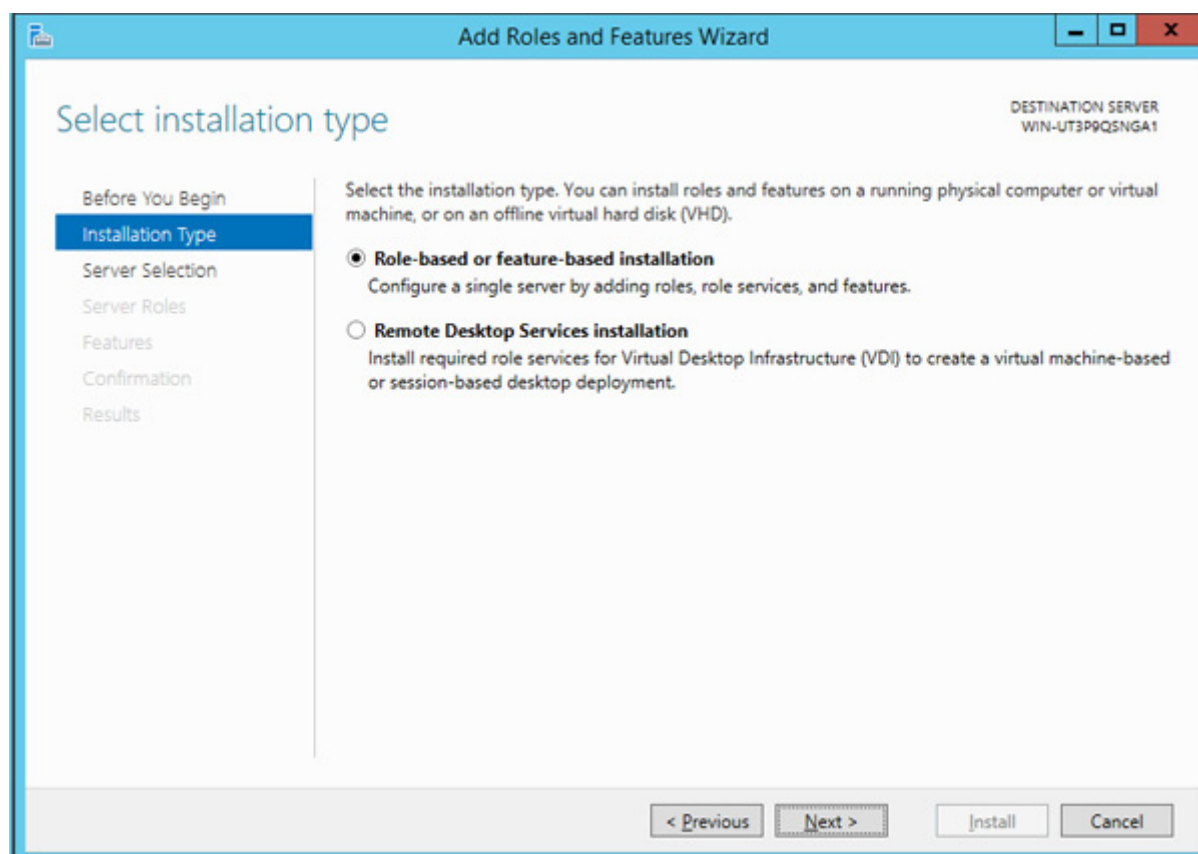
- 1 In Server Manager, click *Dashboard - Add roles and features*.



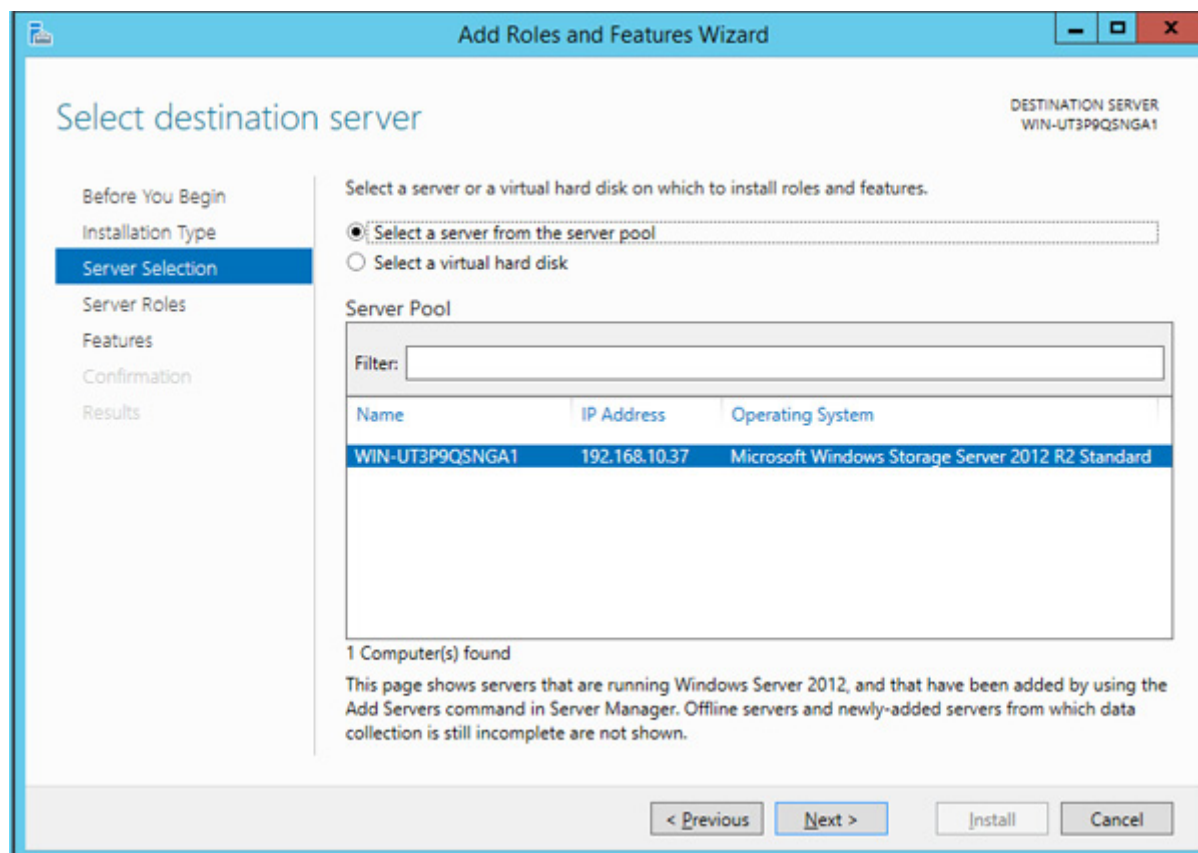
- 2 Click Next.



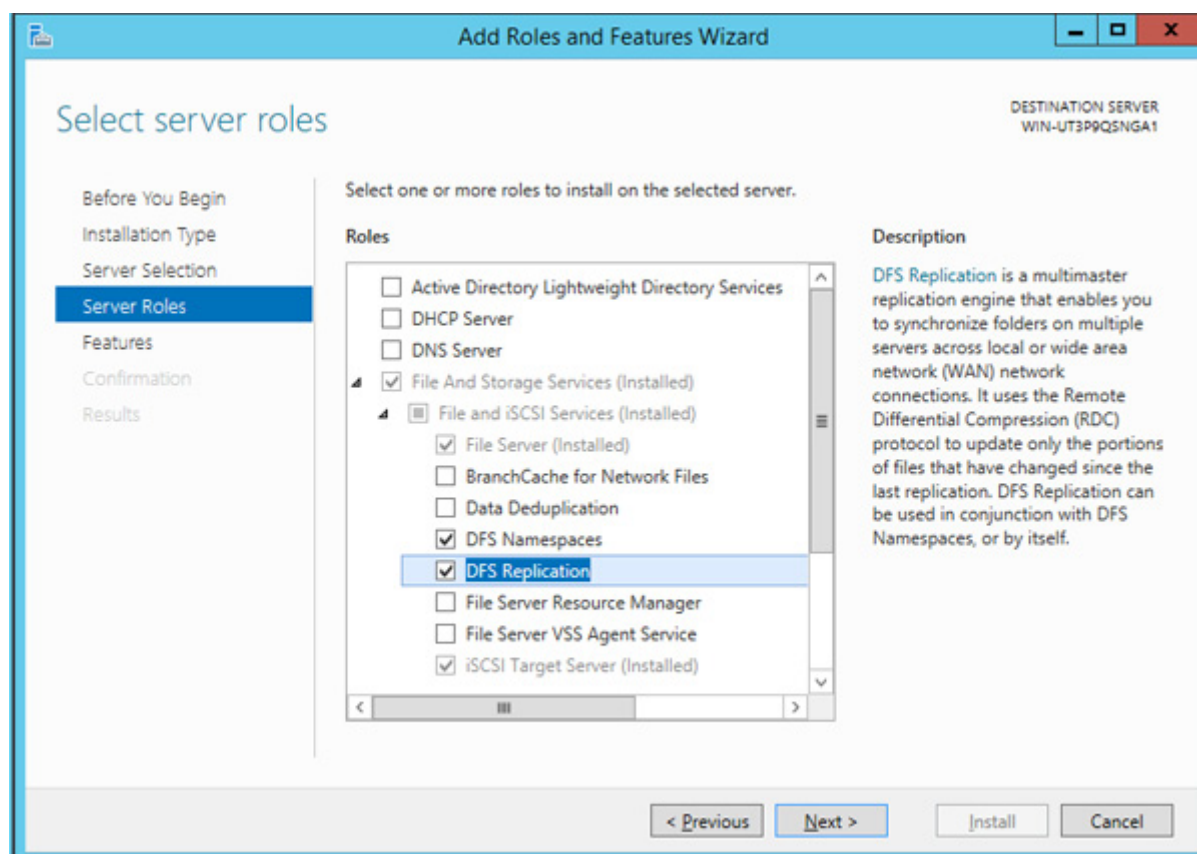
3 Select "Role-based or feature-based installation" and click *Next*.



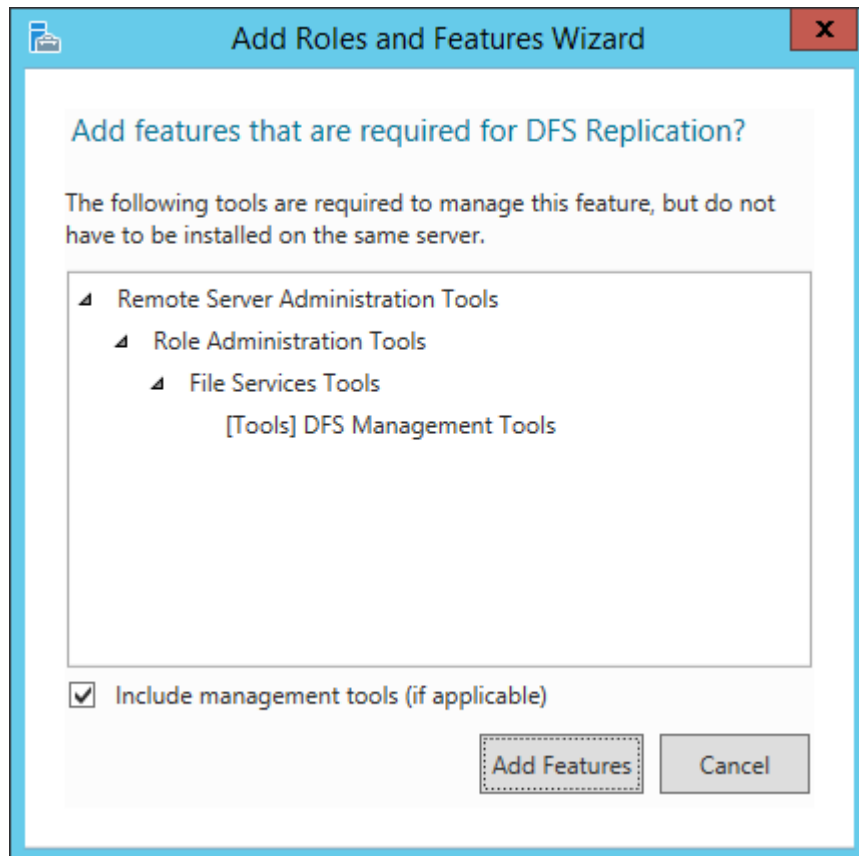
4 Click *Next*.



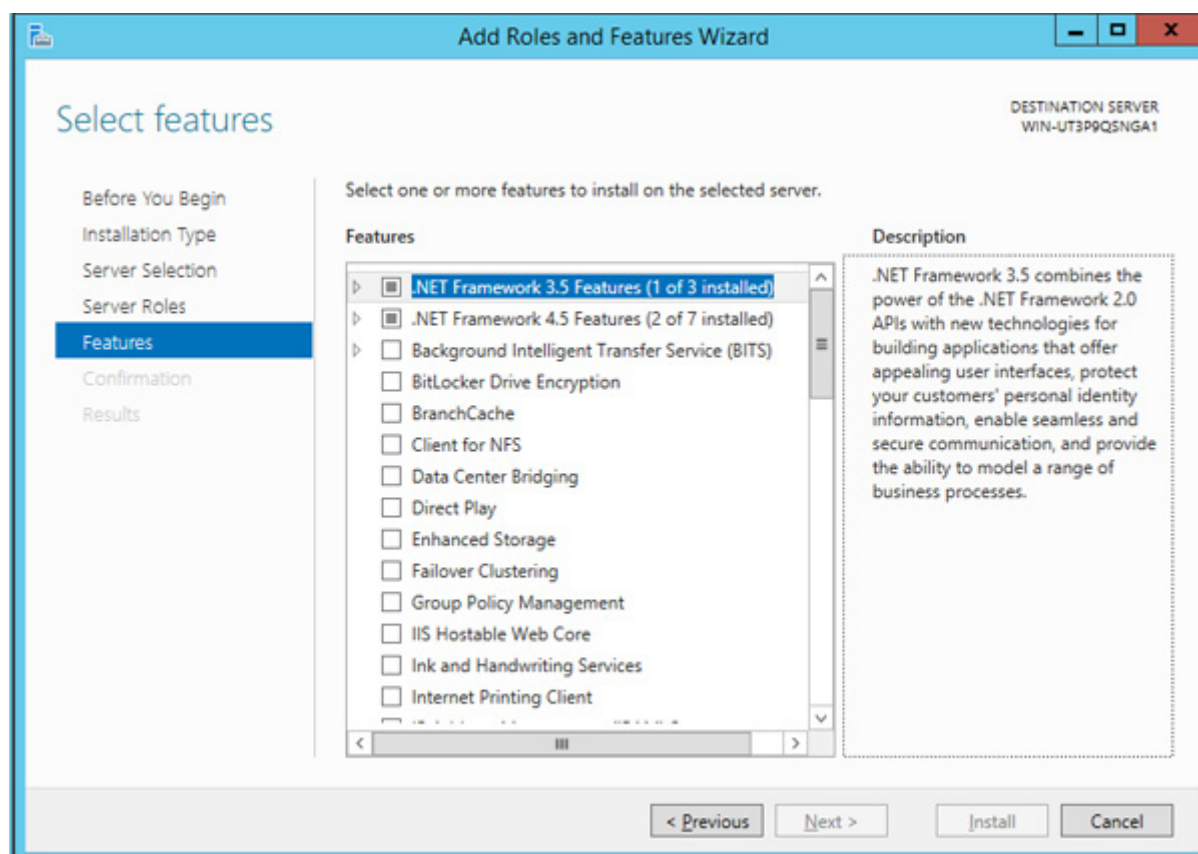
5 Select "DFS Namespaces" and "DFS Replication" in "File and Storage Services" - "File and iSCSI Services".



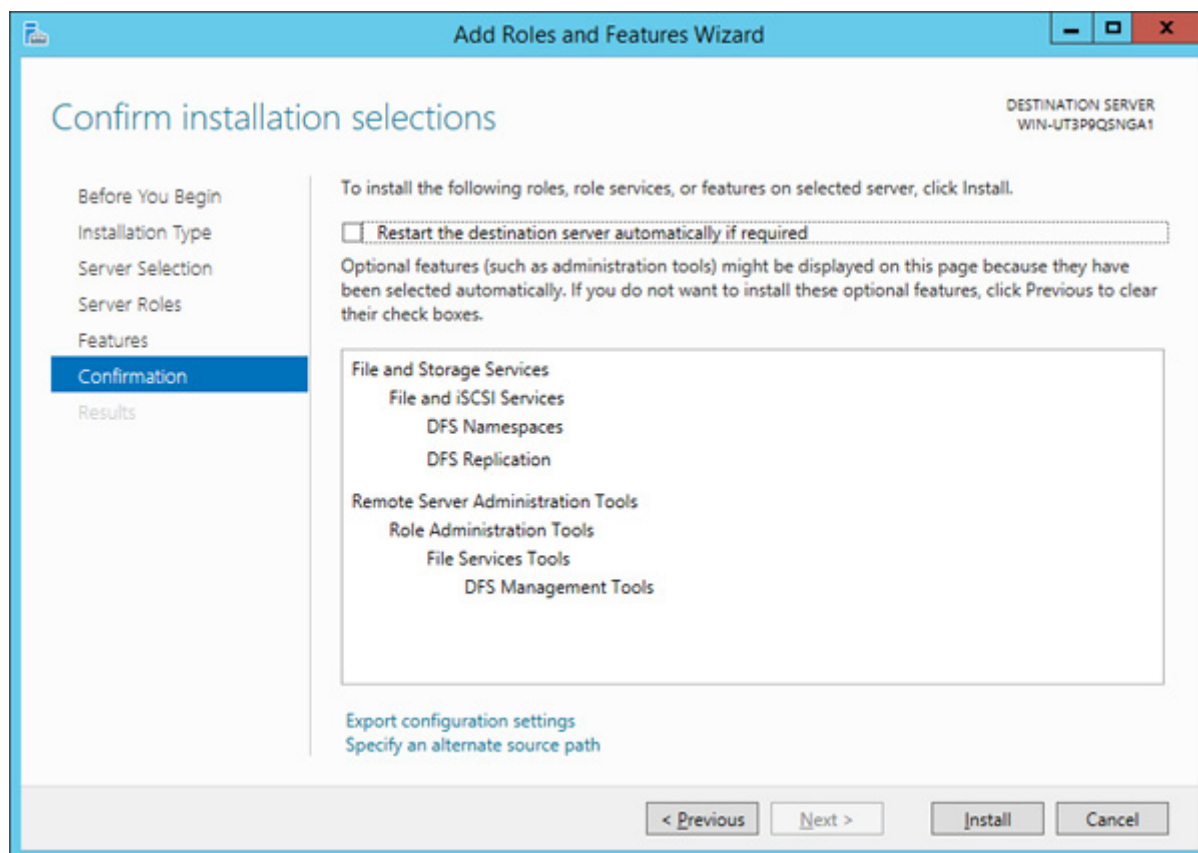
6 Select "Include management tools (if applicable)" and click *Add Features*.



7 Click Next.



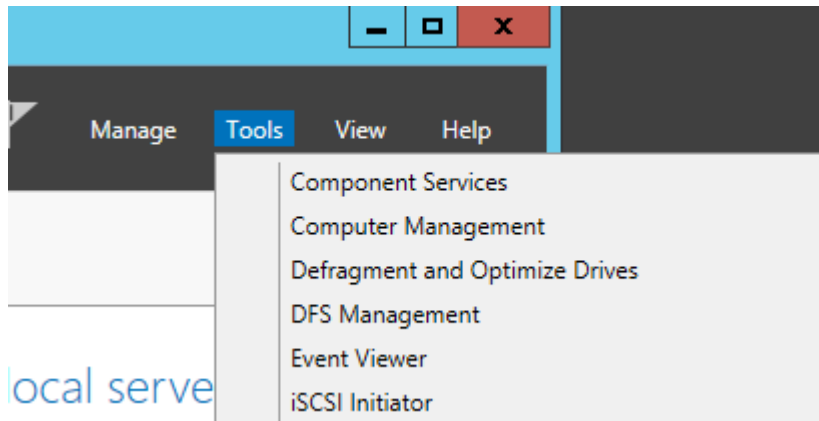
8 Click Install.



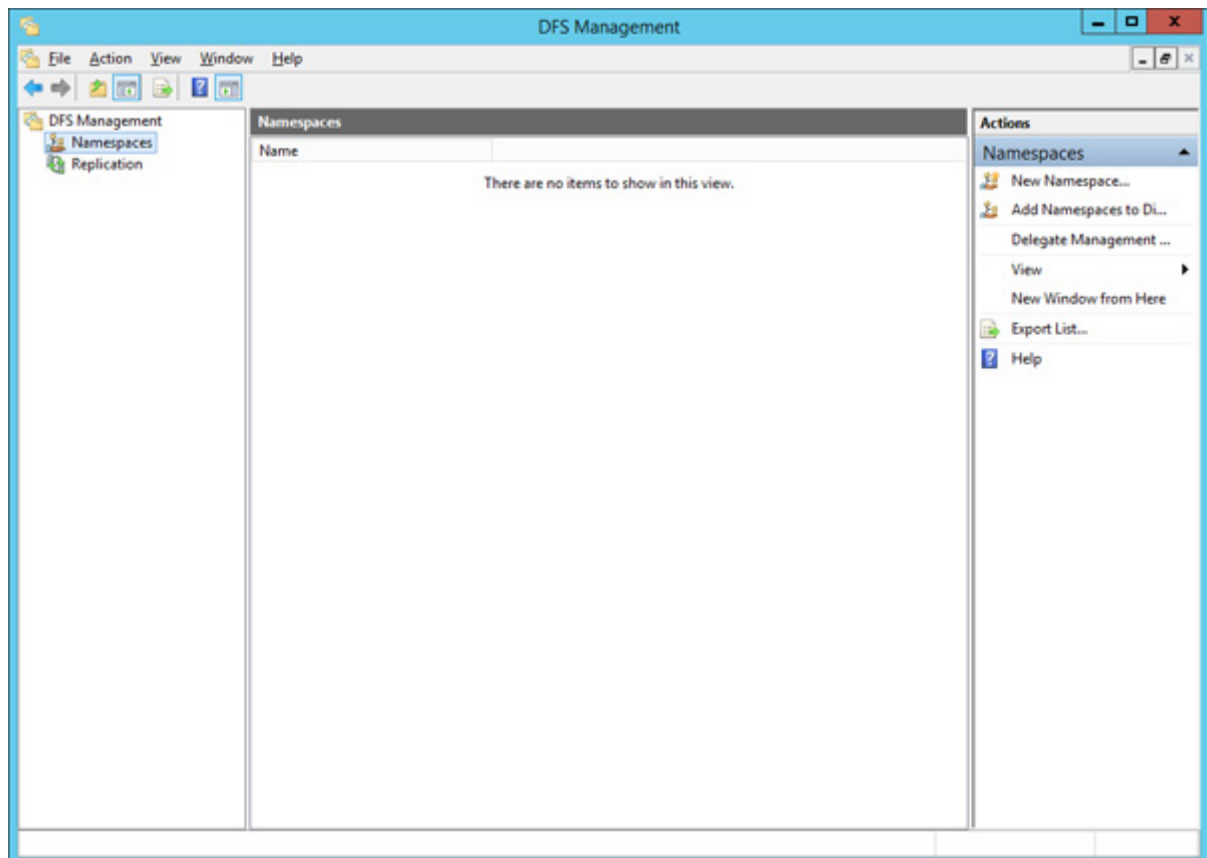
9 Click Close to finish.

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*.

The screenshot shows a Windows-style window titled "New Namespace Wizard". The window has a blue title bar with standard minimize, maximize, and close buttons. Inside the window, there's a header area with a folder icon and the title "Namespace Server". Below this is a "Steps:" section on the left, listing the wizard's steps: "Namespace Server" (highlighted), "Namespace Name and Settings", "Namespace Type", "Review Settings and Create Namespace", and "Confirmation". The main area of the wizard contains instructions: "Enter the name of the server that will host the namespace. The server you specify will be known as the namespace server." Below the instructions is a "Server:" label followed by a text input field containing "WIN-UT3P9QSNAG1" and a "Browse..." button. At the bottom right of the wizard, there are three buttons: "< Previous", "Next >" (highlighted in blue), and "Cancel".

New Namespace Wizard

Namespace Server

Steps:

- Namespace Server
- Namespace Name and Settings
- Namespace Type
- Review Settings and Create Namespace
- Confirmation

Enter the name of the server that will host the namespace. The server you specify will be known as the namespace server.

Server:

< Previous **Next >** Cancel

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

The screenshot shows the 'New Namespace Wizard' window. The title bar is blue with the text 'New Namespace Wizard' and standard window controls. The main area has a light blue header with a folder icon and the title 'Namespace Name and Settings'. On the left, a 'Steps:' pane lists the wizard's stages: 'Namespace Server' (highlighted in blue), 'Namespace Name and Settings' (current), 'Namespace Type', 'Review Settings and Create Namespace', and 'Confirmation'. The main content area contains instructions: 'Enter a name for the namespace. This name will appear after the server or domain name in the namespace path, such as \\Server\\Name or \\Domain\\Name.' Below this is a text box labeled 'Name:' with 'Public' entered. An 'Example: Public' is shown below the text box. A paragraph explains that the wizard will create a shared folder and that users can click 'Edit Settings...' to modify its path and permissions. An 'Edit Settings...' button is located below this text. At the bottom right, there are three buttons: '< Previous' (disabled), 'Next >' (active), and 'Cancel'.

Steps:

- Namespace Server
- Namespace Name and Settings
- Namespace Type
- Review Settings and Create Namespace
- Confirmation

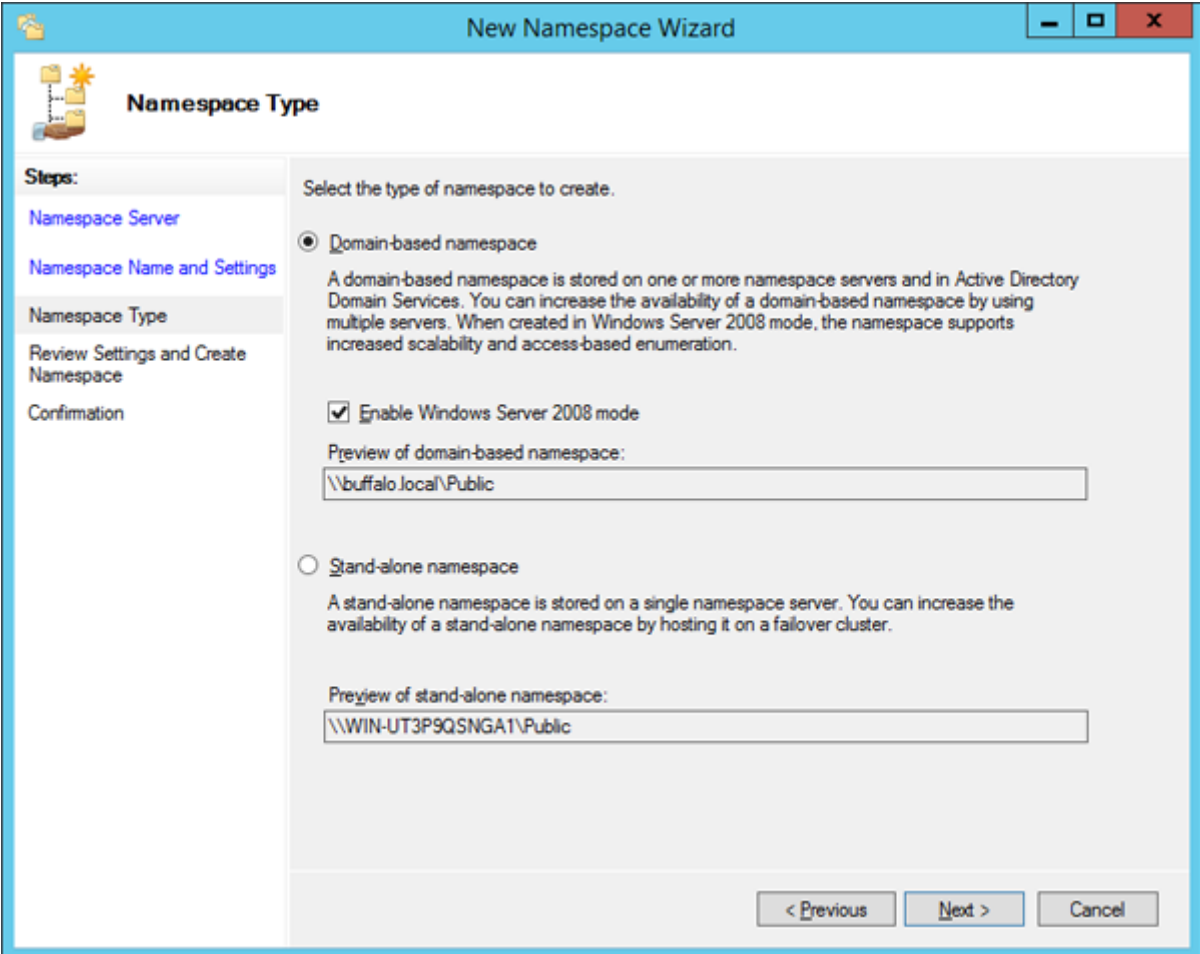
Enter a name for the namespace. This name will appear after the server or domain name in the namespace path, such as \\Server\\Name or \\Domain\\Name.

Name:

Example: Public

If necessary, the wizard will create a shared folder on the namespace server. To modify the settings of the shared folder, such as its local path and permissions, click Edit Settings.

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

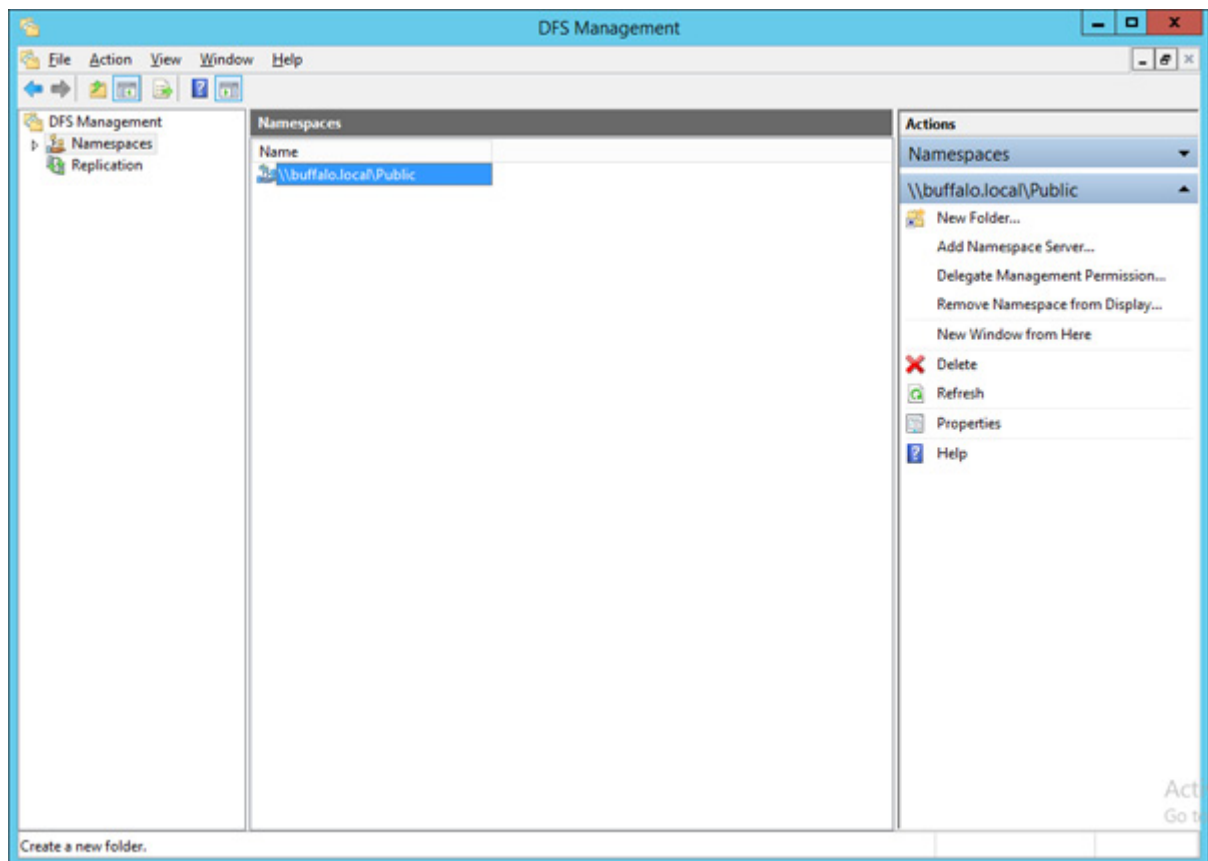


The screenshot shows the 'New Namespace Wizard' window, specifically the 'Namespace Type' step. The window has a blue title bar and a sidebar on the left with the following steps: 'Namespace Server', 'Namespace Name and Settings', 'Namespace Type' (highlighted), 'Review Settings and Create Namespace', and 'Confirmation'. The main area is titled 'Namespace Type' and contains the instruction 'Select the type of namespace to create.' There are two radio button options: 'Domain-based namespace' (selected) and 'Stand-alone namespace'. The 'Domain-based namespace' option includes a description: 'A domain-based namespace is stored on one or more namespace servers and in Active Directory Domain Services. You can increase the availability of a domain-based namespace by using multiple servers. When created in Windows Server 2008 mode, the namespace supports increased scalability and access-based enumeration.' Below this is a checked checkbox for 'Enable Windows Server 2008 mode' and a text box for 'Preview of domain-based namespace:' containing '\\buffalo.local\\Public'. The 'Stand-alone namespace' option includes a description: 'A stand-alone namespace is stored on a single namespace server. You can increase the availability of a stand-alone namespace by hosting it on a failover cluster.' Below this is a text box for 'Preview of stand-alone namespace:' containing '\\WIN-UT3P9Q5NGA1\\Public'. At the bottom right are three buttons: '< Previous', 'Next >', and 'Cancel'.

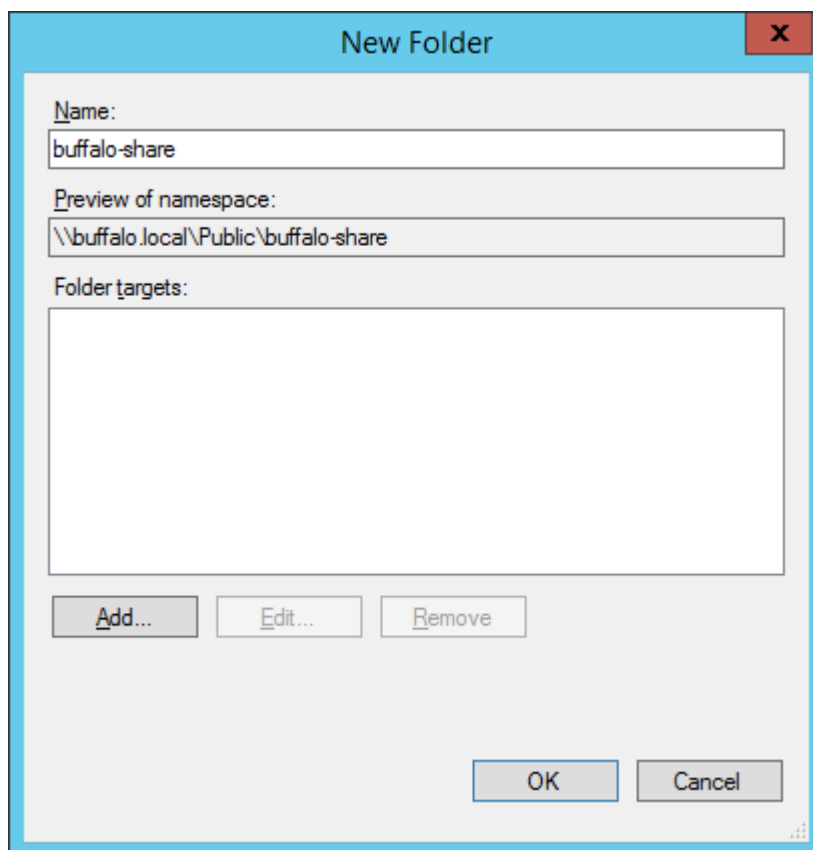
6 Click *Create*.

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

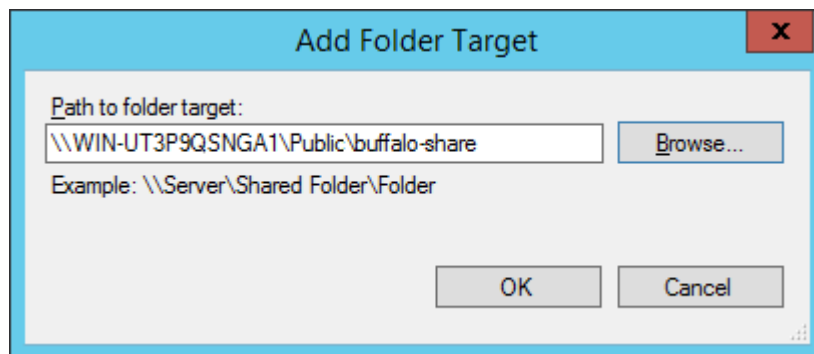
8 In DFS Management, click *Namespaces* and the name you created through the wizard. Then click *New Folder*.



9 Enter a folder name and click OK.

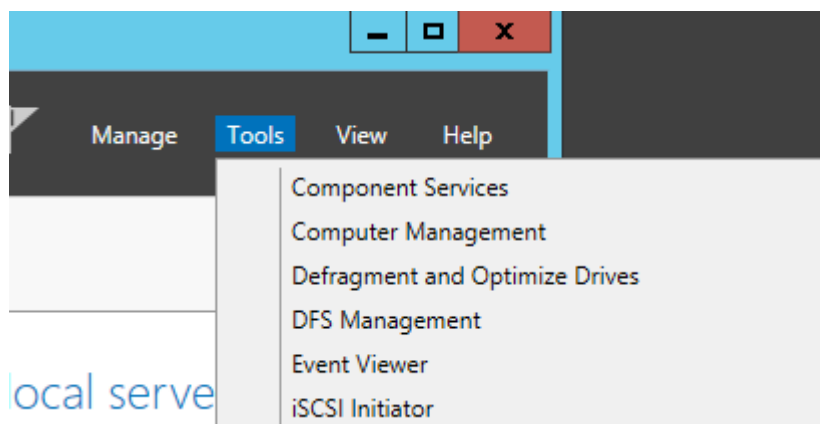


- 10** Enter a path to the folder or select from the list by clicking *Browse*. Click *OK*.

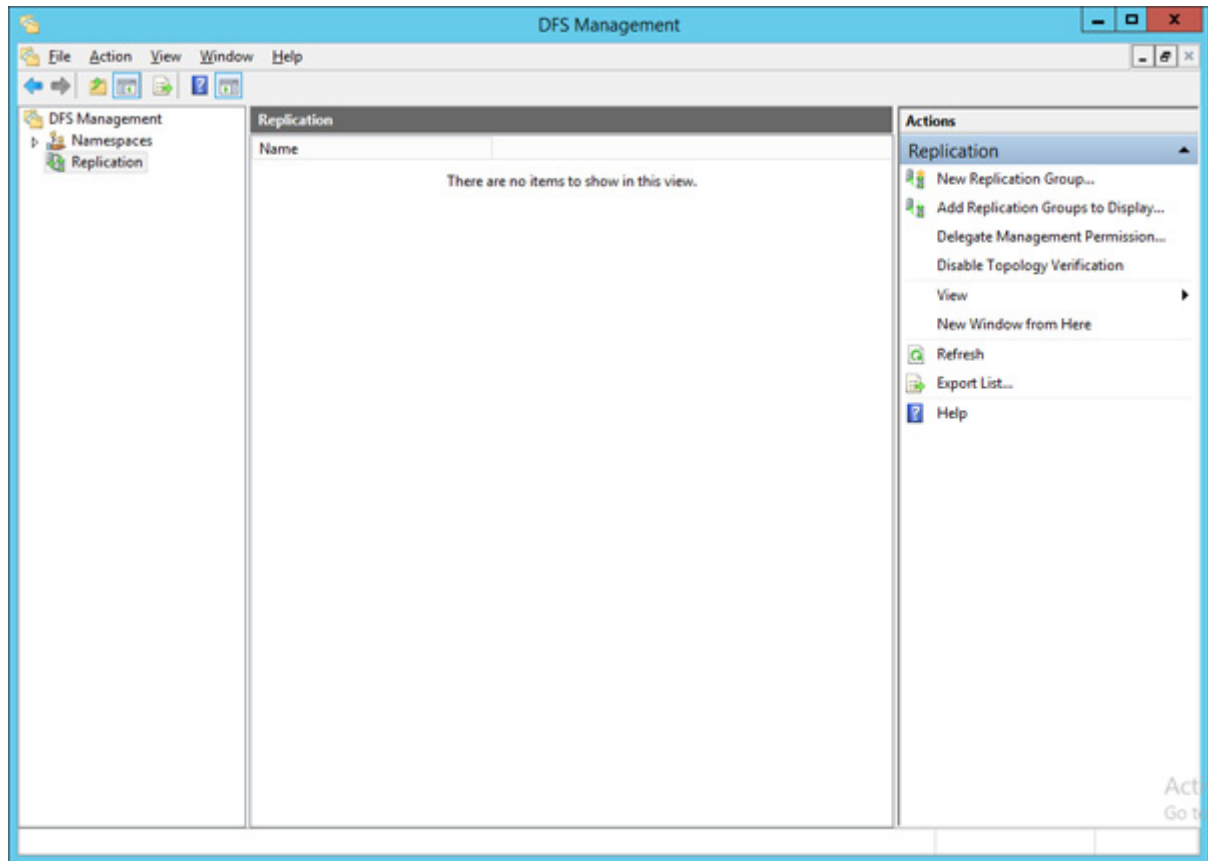


Configuring DFS Replication

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



2 Click *Replication* - *New Replication Group*.



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

The screenshot shows the 'New Replication Group Wizard' window. The title bar is blue and contains the text 'New Replication Group Wizard' and standard window control buttons (minimize, maximize, close). The main window has a light blue header with a server icon and the title 'Replication Group Type'. On the left, a 'Steps:' pane lists the wizard's steps: 'Replication Group Type' (highlighted), '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', and 'Confirmation'. The main area contains the instruction 'Select the type of replication group to create.' and two radio button options. The first option, 'Multipurpose replication group', is unselected and includes the description: 'This option configures replication between two or more servers for publication, content sharing, and other scenarios.' The second option, 'Replication group for data collection', is selected (indicated by a filled radio button) and includes the description: 'This option configures two-way replication between two servers, such as a branch server and a hub (destination) server. This allows you to collect data at the hub server. You can then use backup software to back up the data on the hub server.' At the bottom right, there are three buttons: '< Previous' (disabled), 'Next >' (active), and 'Cancel'.

Replication Group Type

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

Select the type of replication group to create.

☐ Multipurpose replication group
This option configures replication between two or more servers for publication, content sharing, and other scenarios.

☒ Replication group for data collection
This option configures two-way replication between two servers, such as a branch server and a hub (destination) server. This allows you to collect data at the hub server. You can then use backup software to back up the data on the hub server.

< Previous Next > Cancel

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

The screenshot shows the 'New Replication Group Wizard' window. The title bar is blue with the text 'New Replication Group Wizard' and standard window controls. The main area has a light blue header with a server icon and the text 'Name and Domain'. On the left, a 'Steps:' pane lists the wizard's steps: 'Replication Group Type' (highlighted in blue), 'Name and Domain' (current step), 'Branch Server', 'Replicated Folders', 'Hub Server', 'Target Folder on Hub Server', 'Replication Group Schedule and Bandwidth', 'Review Settings and Create Replication Group', and 'Confirmation'. The main content area has a light gray background. At the top, it says 'Type a name and domain for the replication group. The name of the replication group must be unique in the domain that hosts the replication group.' Below this, there are three input fields: 'Name of replication group:' with the text 'Buffalo_DFS', 'Optional description of replication group:' (empty), and 'Domain:' with the text 'buffalo.local'. A 'Browse...' button is next to the domain field. At the bottom right, there are three buttons: '< Previous' (highlighted with a dashed border), 'Next >', and 'Cancel'.

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

Type a name and domain for the replication group. The name of the replication group must be unique in the domain that hosts the replication group.

Name of replication group:
Buffalo_DFS

Optional description of replication group:

Domain:
buffalo.local

Browse...

< Previous Next > Cancel

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

The screenshot shows the 'New Replication Group Wizard' window. The title bar reads 'New Replication Group Wizard'. The left sidebar, titled 'Steps:', lists the following steps: 'Replication Group Type', 'Name and Domain', 'Branch Server' (which is highlighted), 'Replicated Folders', 'Hub Server', 'Target Folder on Hub Server', 'Replication Group Schedule and Bandwidth', 'Review Settings and Create Replication Group', and 'Confirmation'. The main area is titled 'Branch Server' and contains the instruction: 'Enter the name of the branch (source) server that contains the content you want to replicate to a hub (destination) server.' Below this, there is a 'Name:' label, a text input field containing 'WIN-UT3P9Q5NGA1', and a 'Browse...' button. An information icon (i) is followed by the text: 'The branch server will be the primary member during initial replication. This means that the folders and files on the branch server will be authoritative during initial replication.' At the bottom right, there are three buttons: '< Previous', 'Next >', and 'Cancel'.

6 Click Add.

The screenshot shows the 'New Replication Group Wizard' window, specifically the 'Replicated Folders' step. The window has a blue title bar with the text 'New Replication Group Wizard' and standard Windows window controls. On the left, a 'Steps:' pane lists the wizard's steps: 'Replication Group Type', 'Name and Domain', 'Branch Server', 'Replicated Folders' (which is highlighted), 'Hub Server', 'Target Folder on Hub Server', 'Replication Group Schedule and Bandwidth', 'Review Settings and Create Replication Group', and 'Confirmation'. The main area of the wizard contains the text 'Specify the replicated folders you want to replicate from the branch (source) server to the hub (destination) server.' Below this, a label 'Replicated folders:' is followed by a table. The table has two columns: 'Local Path' and 'Replicated Folder Name'. The table is currently empty. Below the table are three buttons: 'Add...', 'Edit...', and 'Remove'. At the bottom right of the wizard are three buttons: '< Previous', 'Next >', and 'Cancel'.

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.

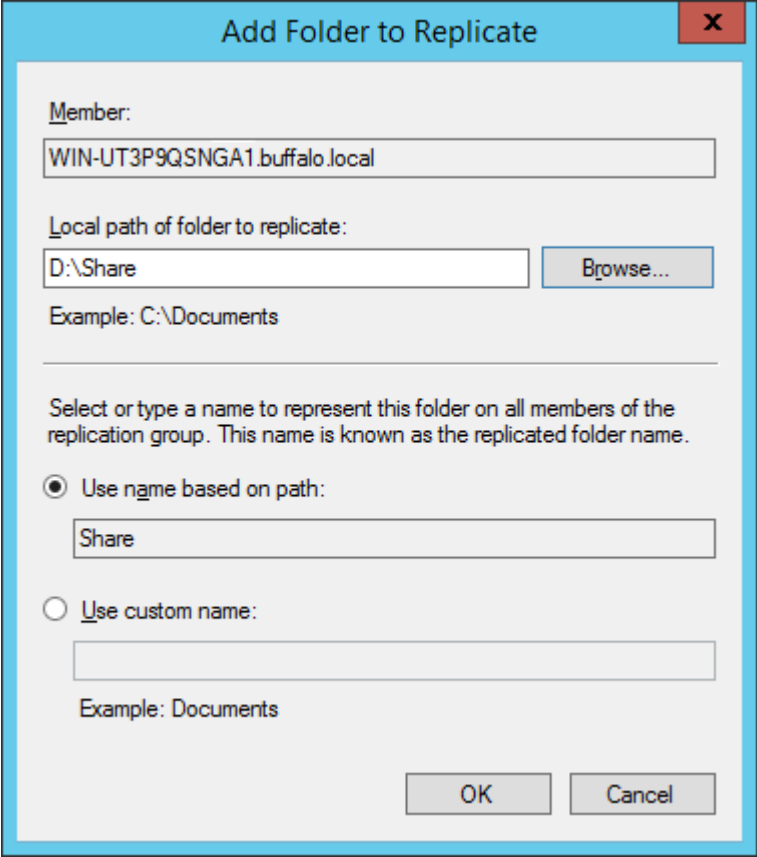
Replicated folders:

Local Path	Replicated Folder Name
------------	------------------------

Add... Edit... Remove

< Previous Next > Cancel

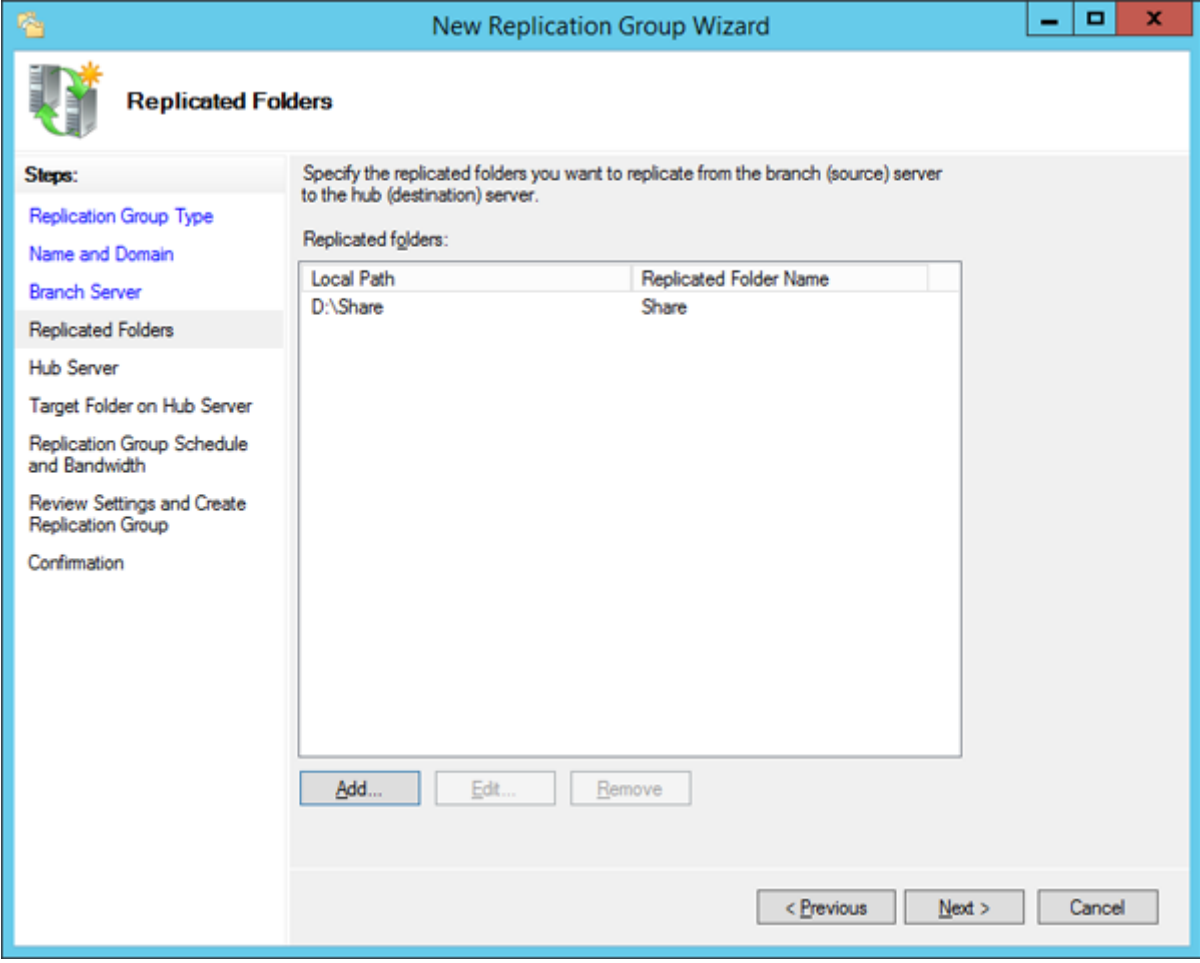
7 Enter the path of the replication source and click *OK*.



The dialog box is titled "Add Folder to Replicate" and has a standard Windows window border with a close button (X) in the top right corner. It contains the following fields and controls:

- Member:** A text box containing "WIN-UT3P9QSNAG1.buffalo.local".
- Local path of folder to replicate:** A text box containing "D:\Share" and a "Browse..." button to its right.
- Example:** The text "C:\Documents" is shown below the path box.
- Instruction:** "Select or type a name to represent this folder on all members of the replication group. This name is known as the replicated folder name."
- Radio Buttons:**
 - ☒ **Use name based on path:** A text box containing "Share" is positioned to the right of this option.
 - ☐ **Use custom name:** An empty text box is positioned to the right of this option.
- Example:** The text "Documents" is shown below the custom name box.
- Buttons:** "OK" and "Cancel" buttons are located at the bottom right of the dialog.

8 Click Next.



The screenshot shows the 'New Replication Group Wizard' window, specifically the 'Replicated Folders' step. The window has a blue title bar with the text 'New Replication Group Wizard' and standard Windows window controls. On the left, a 'Steps:' pane lists the wizard's steps: 'Replication Group Type', 'Name and Domain', 'Branch Server', 'Replicated Folders' (which is highlighted), 'Hub Server', 'Target Folder on Hub Server', 'Replication Group Schedule and Bandwidth', 'Review Settings and Create Replication Group', and 'Confirmation'. The main area of the wizard contains the instruction: 'Specify the replicated folders you want to replicate from the branch (source) server to the hub (destination) server.' Below this, a section labeled 'Replicated folders:' contains a table with two columns: 'Local Path' and 'Replicated Folder Name'. The table has one row with the values 'D:\Share' and 'Share'. Below the table are three buttons: 'Add...', 'Edit...', and 'Remove'. At the bottom right of the wizard are three buttons: '< Previous', 'Next >', and 'Cancel'.

Replicated Folders

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

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

The screenshot shows the 'New Replication Group Wizard' window. The title bar is blue with the text 'New Replication Group Wizard' and standard window controls. The main area has a light blue header with a server icon and the text 'Hub Server'. On the left, a 'Steps:' list includes: 'Replication Group Type', 'Name and Domain', 'Branch Server', 'Replicated Folders', 'Hub Server' (highlighted), 'Target Folder on Hub Server', 'Replication Group Schedule and Bandwidth', 'Review Settings and Create Replication Group', and 'Confirmation'. The main content area has a text box with the instruction: 'Enter the name of the destination server where you will collect the replicated folders for backup or other purposes. This server is typically a hub server in a datacenter or other central location.' Below this is a 'Name:' label, a text input field containing 'WS5600DR20AD', and a 'Browse...' button. At the bottom right are three buttons: '< Previous', 'Next >', and 'Cancel'.

New Replication Group Wizard

Hub Server

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

Enter the name of the destination server where you will collect the replicated folders for backup or other purposes. This server is typically a hub server in a datacenter or other central location.

Name:

WS5600DR20AD

< Previous Next > Cancel

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

The screenshot shows the 'New Replication Group Wizard' window, specifically the 'Target Folder on Hub Server' step. The window has a blue title bar and a sidebar on the left with a 'Steps' list. The main area contains instructions, a text box for the target folder, a 'Browse...' button, a table for source and target locations, and a note at the bottom. Navigation buttons are at the bottom right.

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

Enter the local path of the target folder on the hub (destination) server that will contain the replicated folders.

Target folder:
D:\Sever Browse...

Source and target locations:

Replicated Folder Name	Source on Branch Server	Target on Hub Server
Share	D:\Share	D:\Sever\Share

i If you do not want the target folders to be in the same parent folder, go back to the Replication Group Type page in this wizard and select the option to create a multipurpose replication group.

< Previous Next > Cancel

11 Click Next again.

New Replication Group Wizard

Replication Group Schedule and Bandwidth

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

Select the replication schedule and bandwidth to be used by default for all new connections in the replication group.

☒ Replicate continuously using the specified bandwidth

Use this option to enable replication 24 hours a day, seven days a week using the following bandwidth:

Bandwidth:

Full

☐ Replicate during the specified days and times

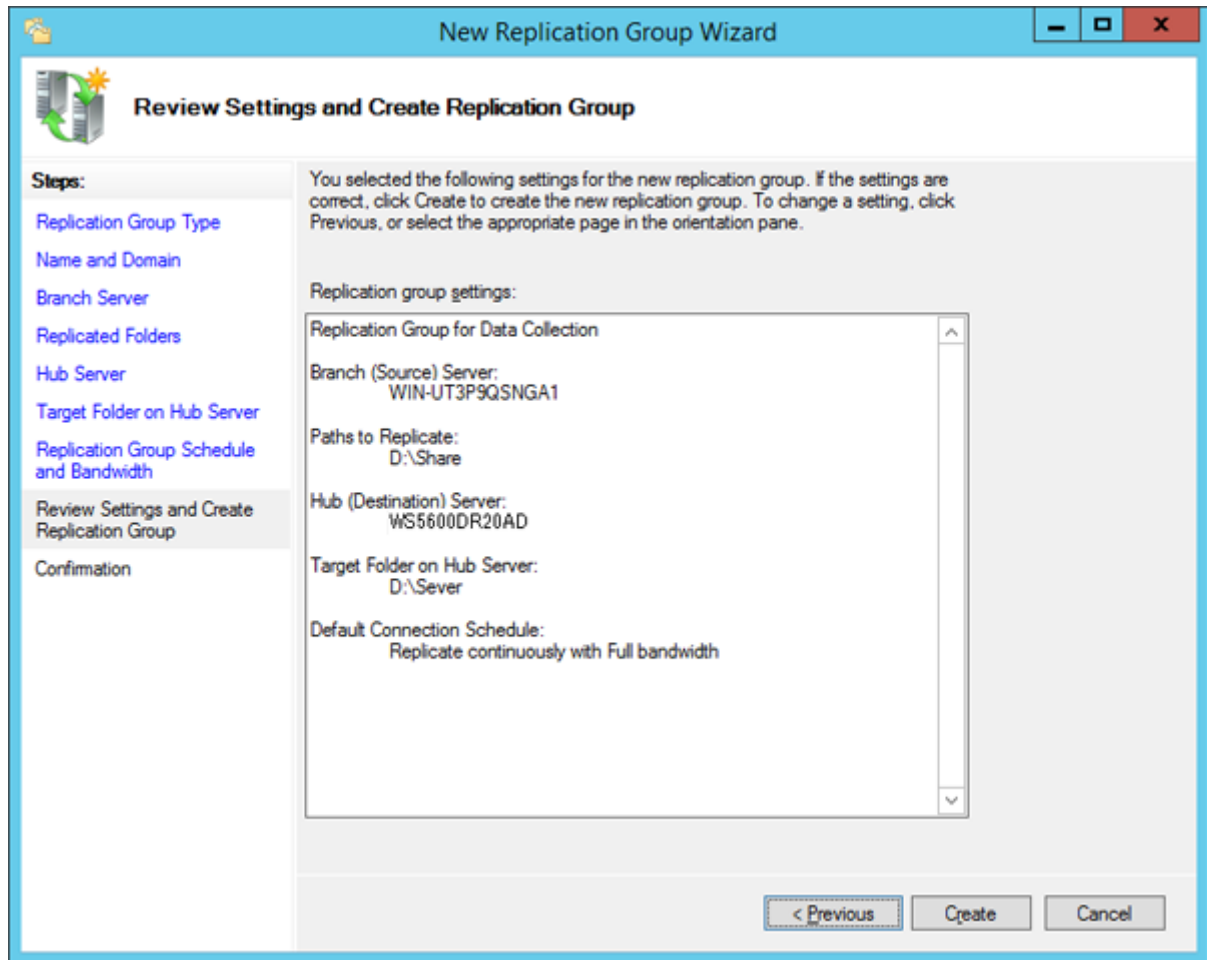
Use this option to specify the days and times at which replication occurs by default. The initial replication schedule has no replication intervals; you must create at least one replication interval before replication can occur.

Edit Schedule...

< Previous Next > Cancel

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.

12 Click *Create*.



13 Click *Close* when finished. DFS replication is now configured.

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

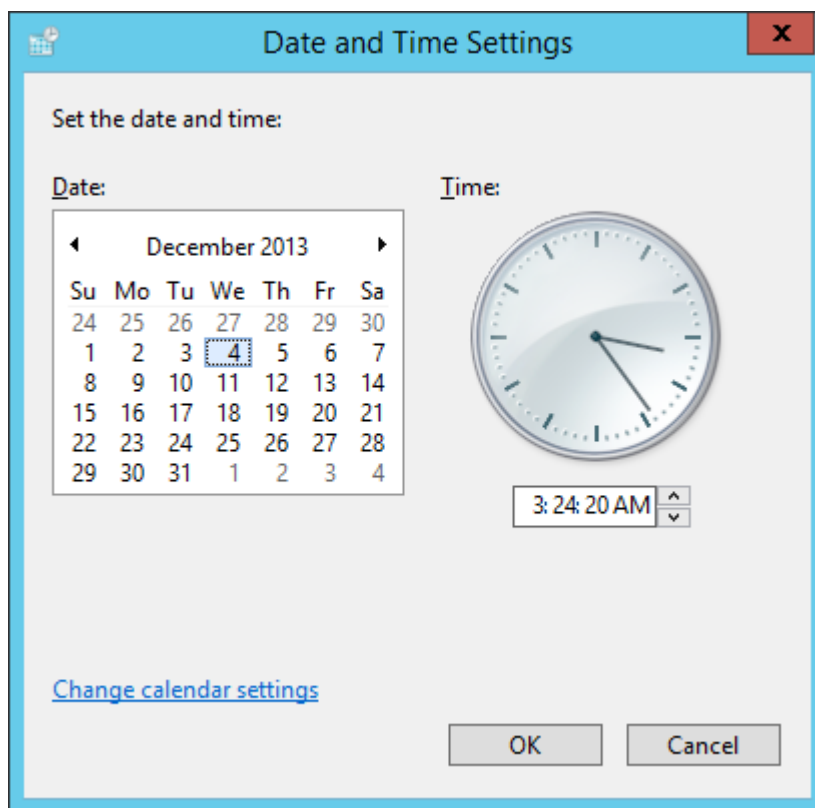
Chapter 7 Settings

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.

Server Name, Workgroups, and Domains

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

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

Computer name, domain, and workgroup settings

Computer name:	WIN-UT3P9QSNAG1	 Change settings
Full computer name:	WIN-UT3P9QSNAG1	
Computer description:		
Workgroup:	WORKGROUP	

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

System Properties

Computer Name Hardware Advanced Remote

 Windows uses the following information to identify your computer on the network.

Computer description:

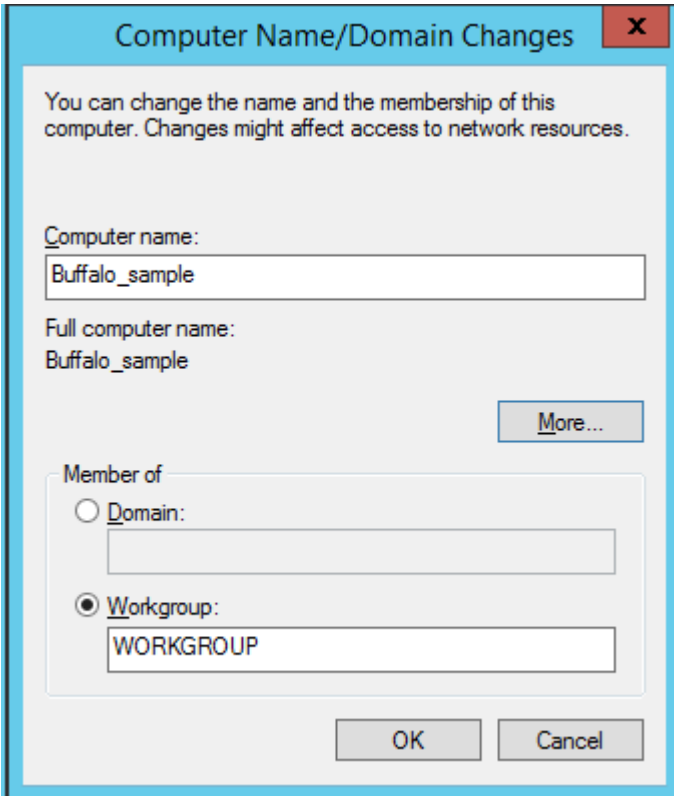
For example: "IIS Production Server" or "Accounting Server".

Full computer name: WIN-UT3P9QSNAG1

Workgroup: WORKGROUP

To rename this computer or change its domain or workgroup, click Change.

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



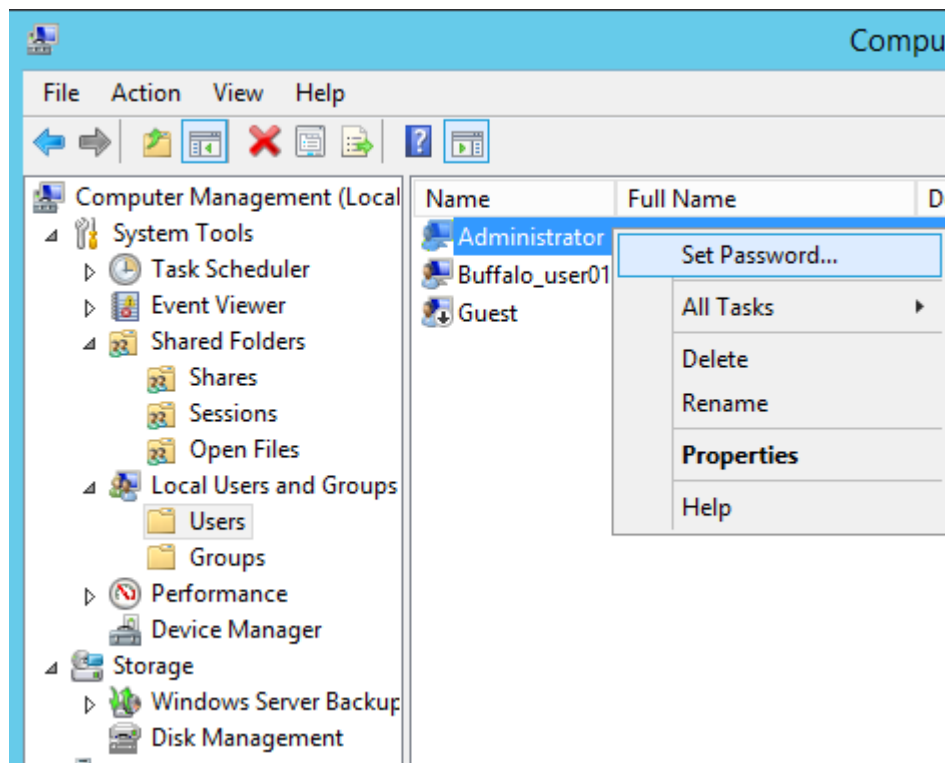
Note: The computer name should have 16 characters or less. If more than 16 characters are entered, all characters from the 17th character on are ignored.

Changing the Password

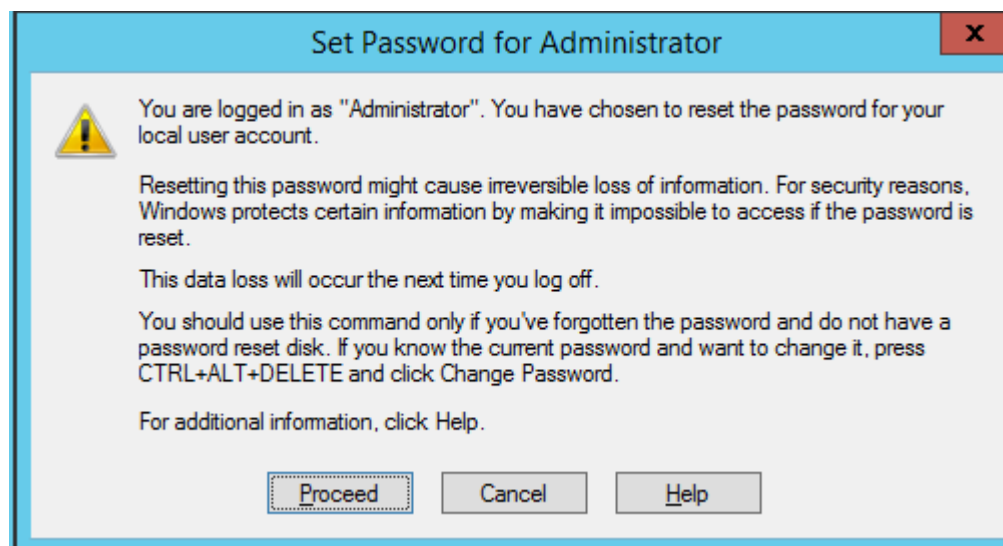
The default password for the TeraStation's administrator account is "password". This is public knowledge, so for security, you should change it immediately. Follow the procedure below to change the password.

- 1** From the Windows Storage Server Start menu, open *Administrative Tools*, then double-click *Computer Management*.
- 2** Click *Local Users and Groups*, then double-click *Users*.

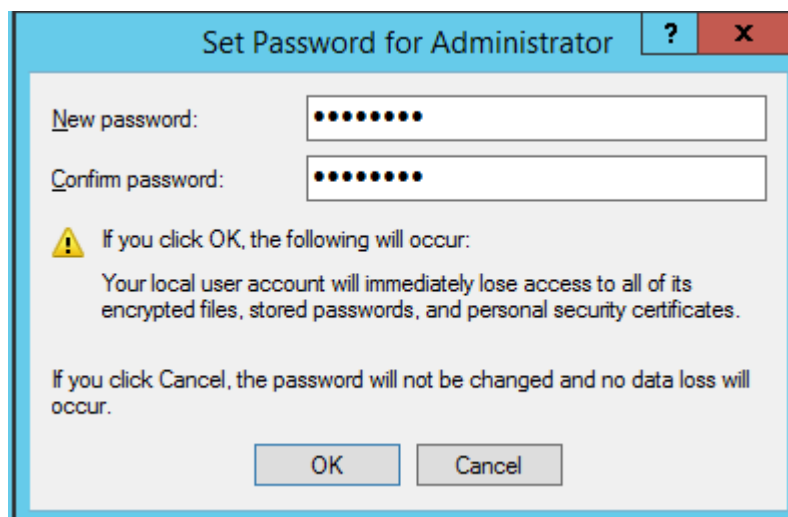
3 Right-click the user whose password will be changed and click *Set Password*.



4 Click *Proceed*.

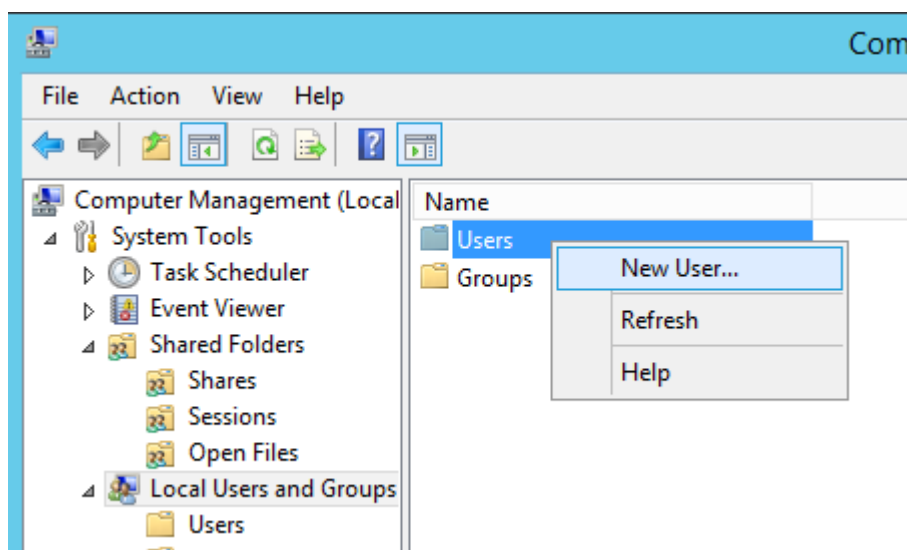


- 5** Enter a new password (twice).



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*.

The screenshot shows a 'New User' dialog box. The title bar is blue with a question mark icon and a red close button. The main area is light gray. It contains the following fields and controls:

- User name:** A text box containing 'Buffalo_user01'.
- Full name:** An empty text box.
- Description:** An empty text box.
- Password:** A text box filled with 10 black dots.
- Confirm password:** A text box filled with 10 black dots.
- Checkboxes:**
 - ☒ User must change password at next logon
 - ☐ User cannot change password
 - ☐ Password never expires
 - ☐ Account is disabled
- Buttons:** 'Help', 'Create', and 'Close' buttons at the bottom.

5 Click *Close*.

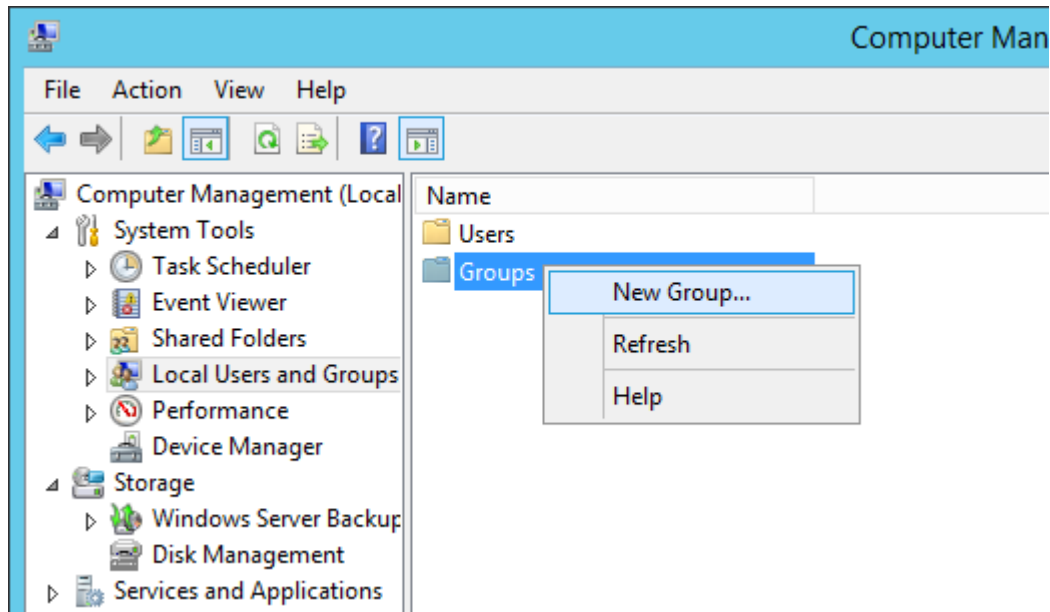
Note: Accounts not belonging to the Administrators group cannot be connected by the remote desktop.

Adding a Group

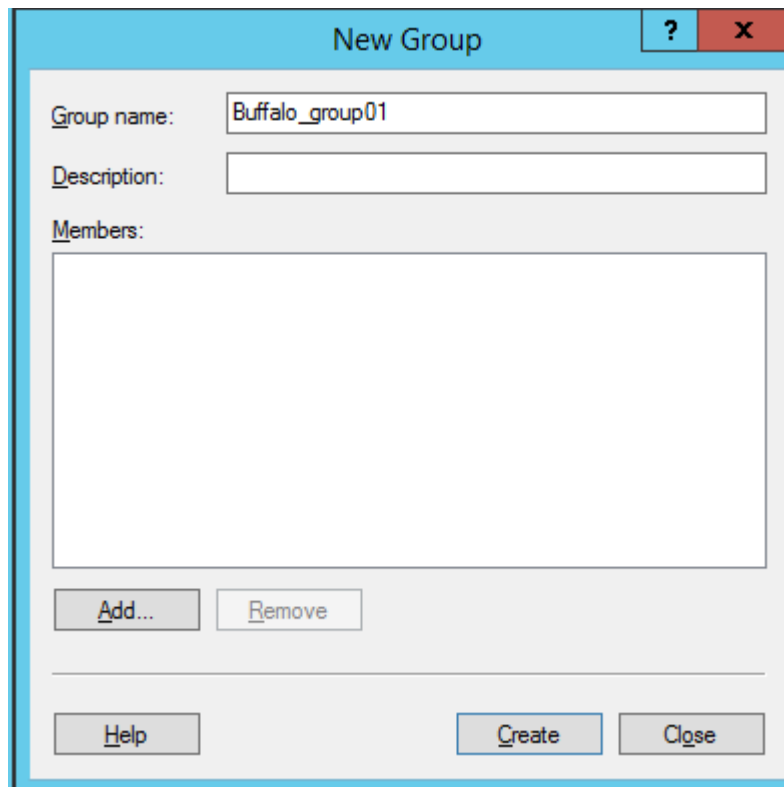
1 From the Windows Storage Server Start menu, open *Administrative Tools*, then double-click *Computer Management*.

2 Click *Local Users and Groups*.

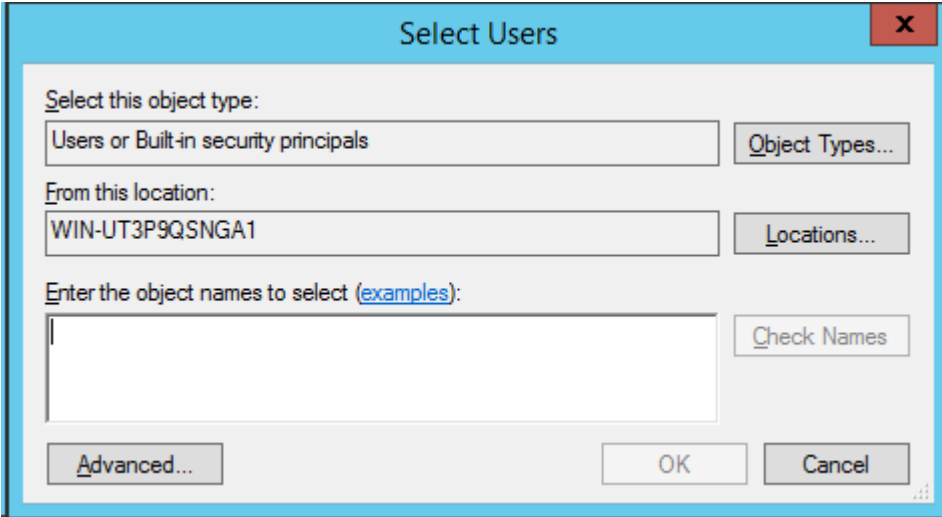
3 Right-click *Groups* and choose *New Group*.



4 Enter a group name and click *Add*.

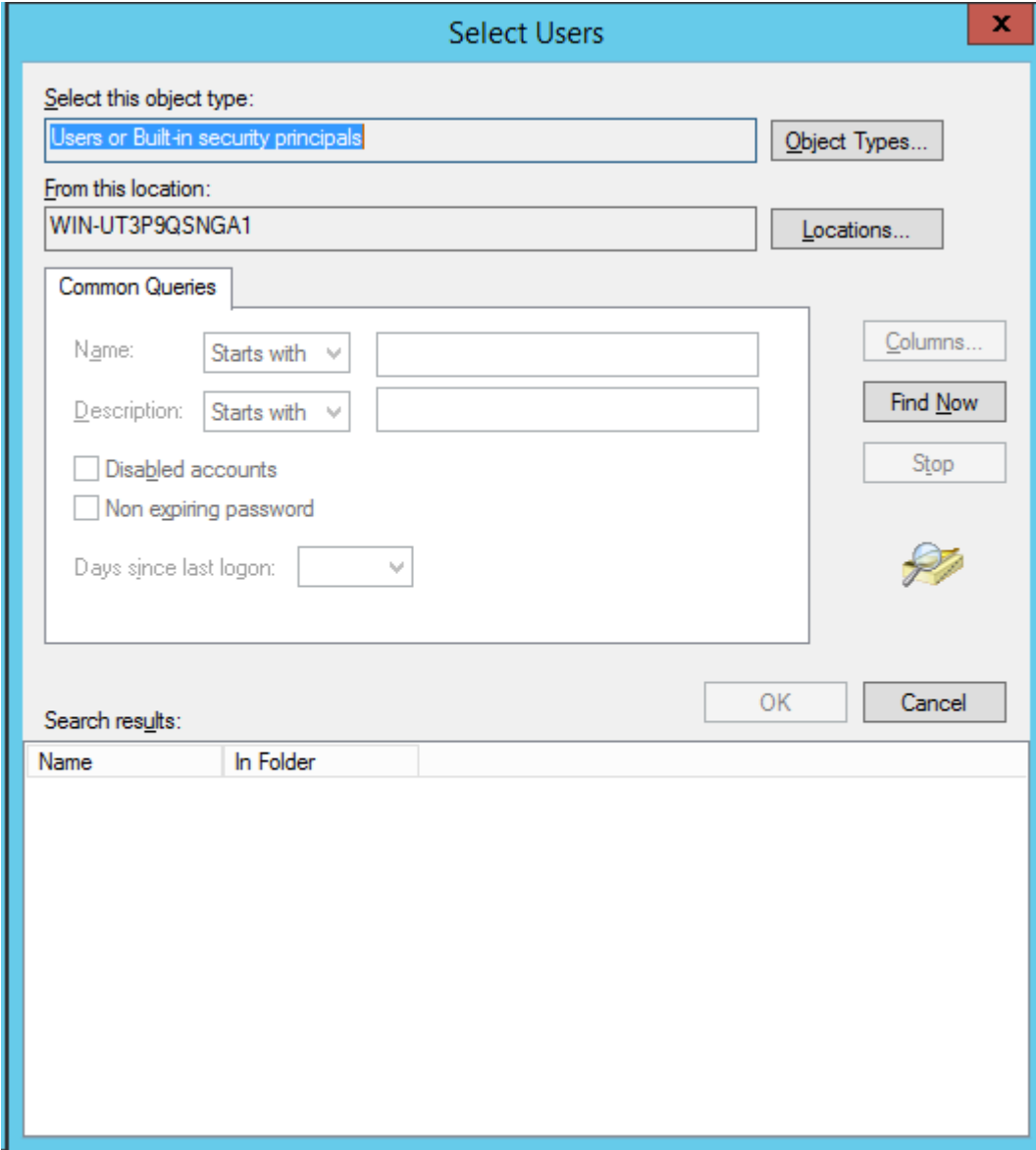


5 Click *Advanced*.



The 'Select Users' dialog box has a blue title bar with a close button. It contains three main sections: 'Select this object type:' with a dropdown menu showing 'Users or Built-in security principals' and an 'Object Types...' button; 'From this location:' with a dropdown menu showing 'WIN-UT3P9Q SNGA1' and a 'Locations...' button; and 'Enter the object names to select (examples):' with a text input field and a 'Check Names' button. At the bottom are 'Advanced...', 'OK', and 'Cancel' buttons.

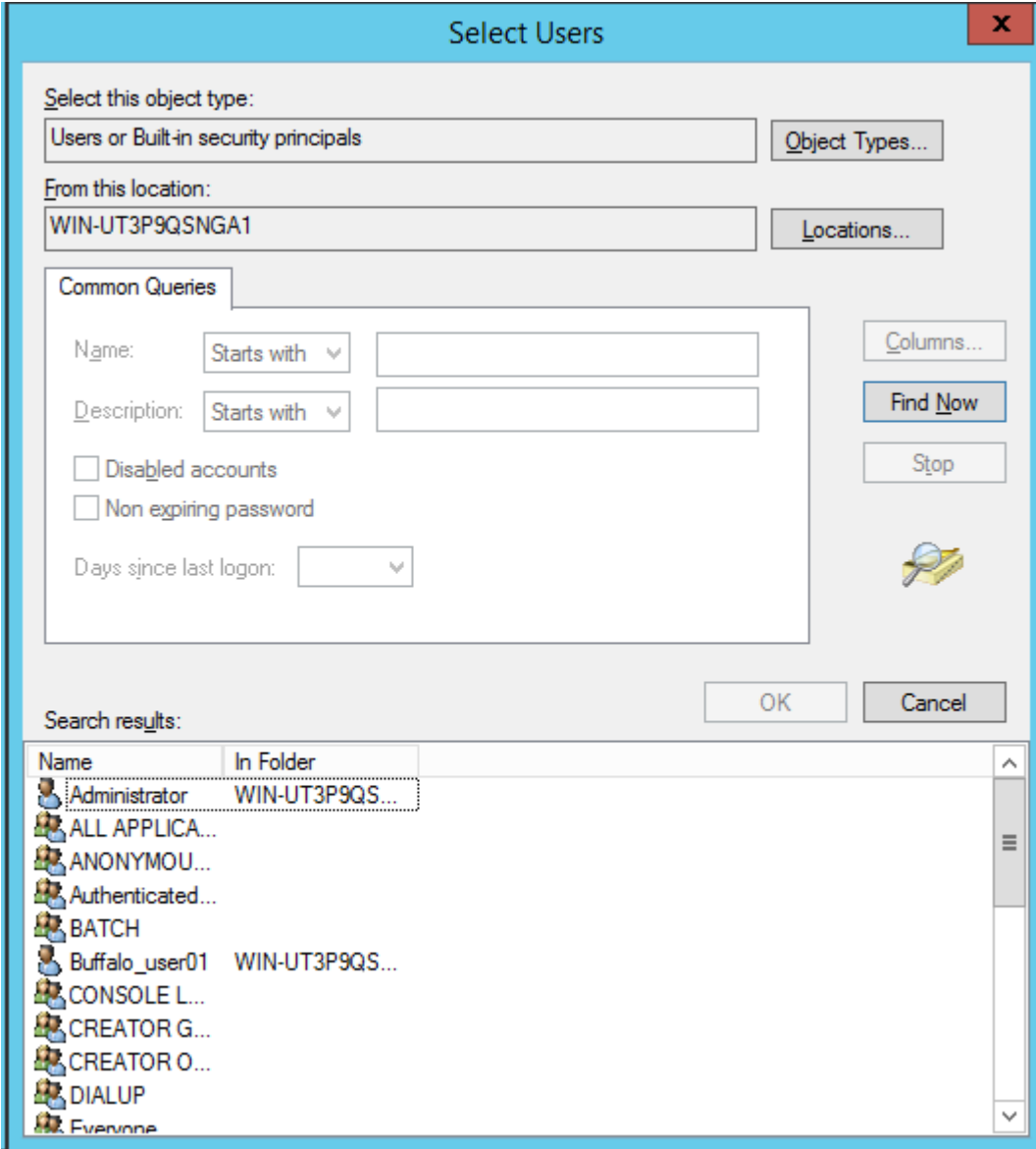
6 Click *Find Now*.



The 'Select Users' dialog box is shown with the 'Advanced' tab selected. It includes a 'Common Queries' section with filters for 'Name' and 'Description' (both set to 'Starts with'), checkboxes for 'Disabled accounts' and 'Non expiring password', and a 'Days since last logon' dropdown. To the right of these filters are 'Columns...', 'Find Now', and 'Stop' buttons, along with a magnifying glass icon. At the bottom are 'OK' and 'Cancel' buttons. Below the buttons is a 'Search results:' section with a table header.

Name	In Folder
------	-----------

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



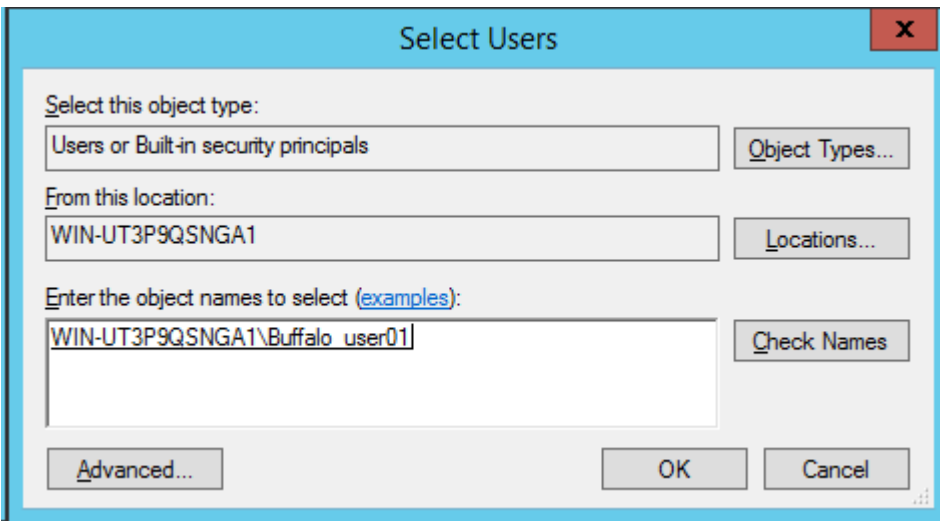
The 'Select Users' dialog box is shown with the following configuration:

- Select this object type:** Users or Built-in security principals
- From this location:** WIN-UT3P9QSGA1
- Common Queries:**
 - Name: Starts with []
 - Description: Starts with []
 - ☐ Disabled accounts
 - ☐ Non expiring password
 - Days since last logon: []
- Buttons:** Object Types..., Locations..., Columns..., Find Now, Stop, OK, Cancel

Search results:

Name	In Folder
Administrator	WIN-UT3P9QS...
ALL APPLICA...	
ANONYMOU...	
Authenticated...	
BATCH	
Buffalo_user01	WIN-UT3P9QS...
CONSOLE L...	
CREATOR G...	
CREATOR O...	
DIALUP	
Everyone	

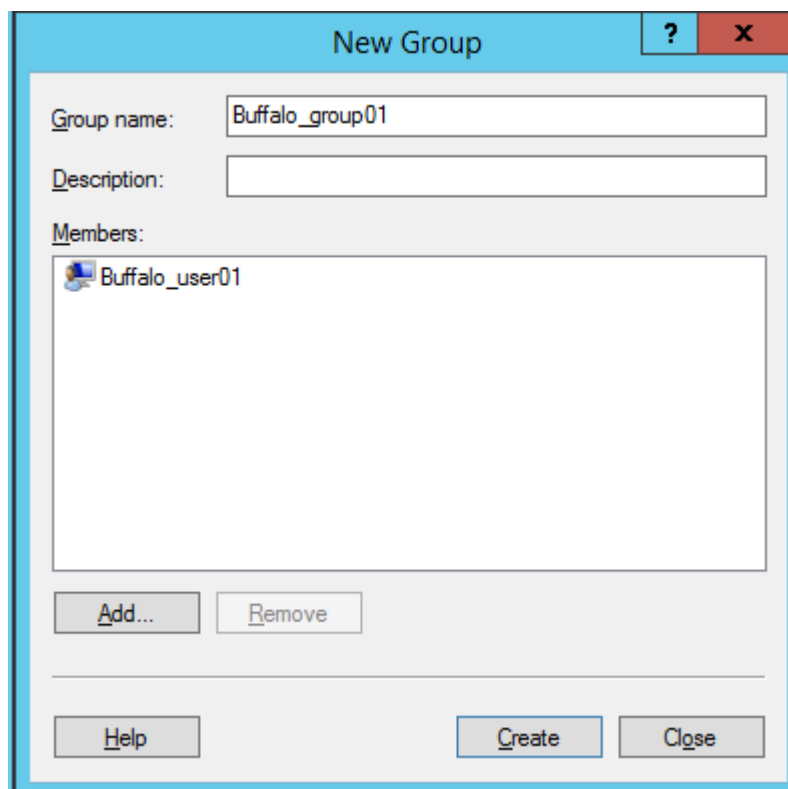
- 8 Click *OK*.



The 'Select Users' dialog box is shown with the following configuration:

- Select this object type:** Users or Built-in security principals
- From this location:** WIN-UT3P9QSGA1
- Enter the object names to select (examples):** WIN-UT3P9QSGA1\Buffalo_user01
- Buttons:** Object Types..., Locations..., Check Names, Advanced..., OK, Cancel

9 Click *Create*.



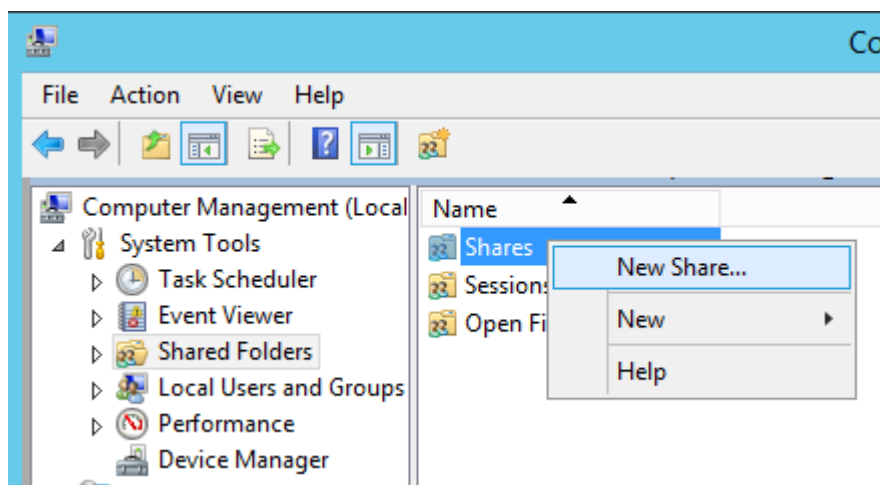
10 Click *Close*.

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.

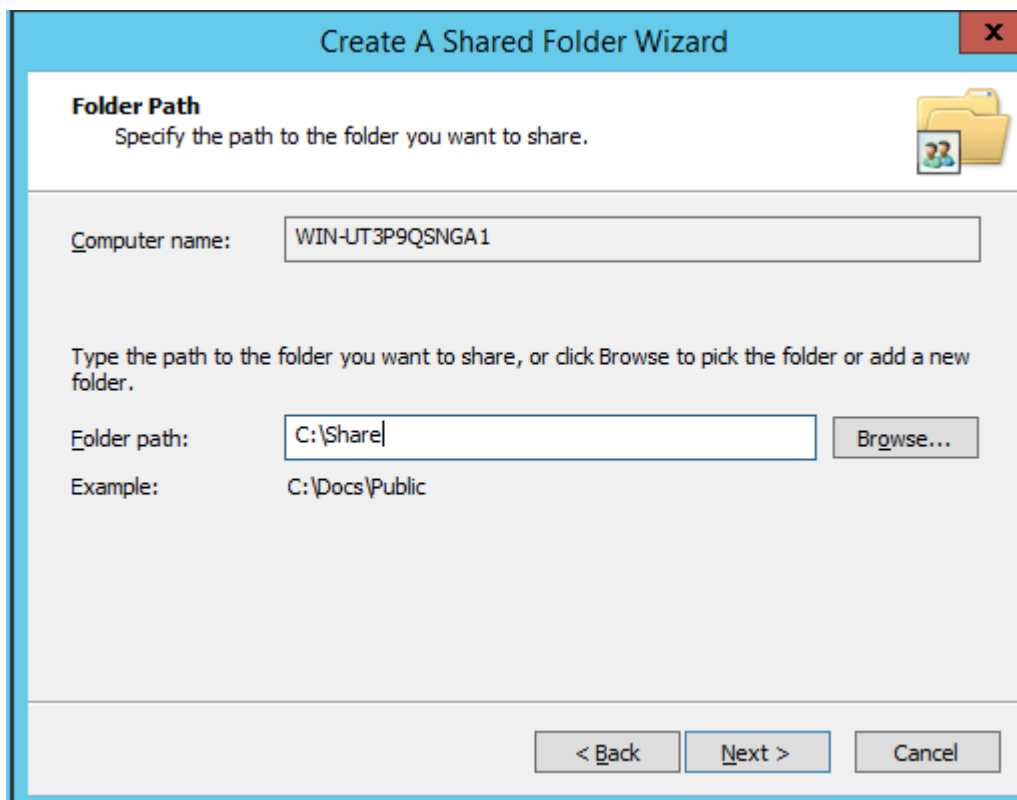
- 1** From the Windows Storage Server Start menu, open *Administrative Tools*, then double-click *Computer Management*.
- 2** Click *Shared Folders*.
- 3** Right-click *Shares* and click *New Share*.



4 Click Next.



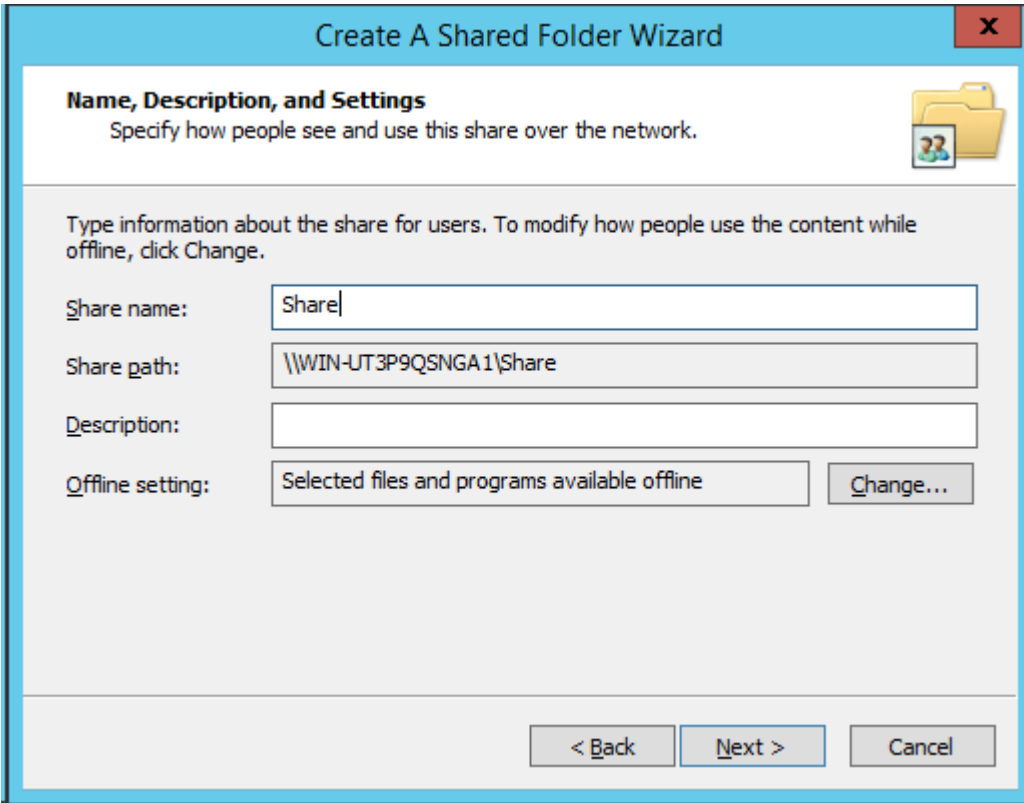
5 Enter the path of an existing folder or a new folder, then click Next.



Notes:

- Enter "D:\Share" in 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*.



The screenshot shows the 'Create A Shared Folder Wizard' dialog box. The title bar is blue with the text 'Create A Shared Folder Wizard' and a close button (X). The main area has a light blue header with the text 'Name, Description, and Settings' and a sub-header 'Specify how people see and use this share over the network.' Below this, there is a text box for 'Share name:' containing the text 'Share'. Below that is a text box for 'Share path:' containing the text '\\WIN-UT3P9Q5NGA1\Share'. Below that is a text box for 'Description:'. Below that is a text box for 'Offline setting:' containing the text 'Selected files and programs available offline'. To the right of the 'Offline setting:' text box is a button labeled 'Change...'. At the bottom of the dialog box are three buttons: '< Back', 'Next >', and 'Cancel'.

Create A Shared Folder Wizard

Name, Description, and Settings
Specify how people see and use this share over the network.

Type information about the share for users. To modify how people use the content while offline, click *Change*.

Share name:

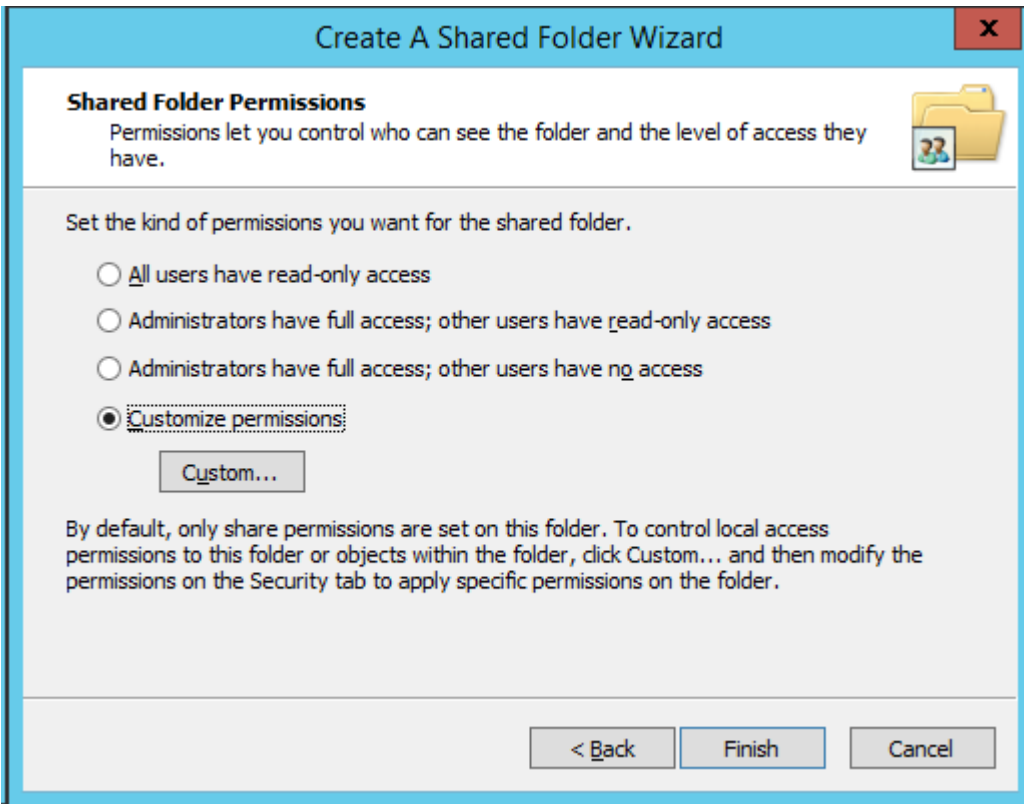
Share path:

Description:

Offline setting: *Change...*

< Back Next > Cancel

- 7 Check *Customize permissions*, then click *Custom*.



The screenshot shows the 'Create A Shared Folder Wizard' dialog box. The title bar is blue with the text 'Create A Shared Folder Wizard' and a close button (X). The main area has a light blue header with the text 'Shared Folder Permissions' and a sub-header 'Permissions let you control who can see the folder and the level of access they have.' Below this, there is a text box for 'Set the kind of permissions you want for the shared folder.' Below that are four radio buttons: 'All users have read-only access', 'Administrators have full access; other users have read-only access', 'Administrators have full access; other users have no access', and 'Customize permissions:'. The 'Customize permissions:' radio button is selected. Below the radio buttons is a button labeled 'Custom...'. At the bottom of the dialog box are three buttons: '< Back', 'Finish', and 'Cancel'.

Create A Shared Folder Wizard

Shared Folder Permissions
Permissions let you control who can see the folder and the level of access they have.

Set the kind of permissions you want for the shared folder.

☐ All users have read-only access

☐ Administrators have full access; other users have read-only access

☐ Administrators have full access; other users have no access

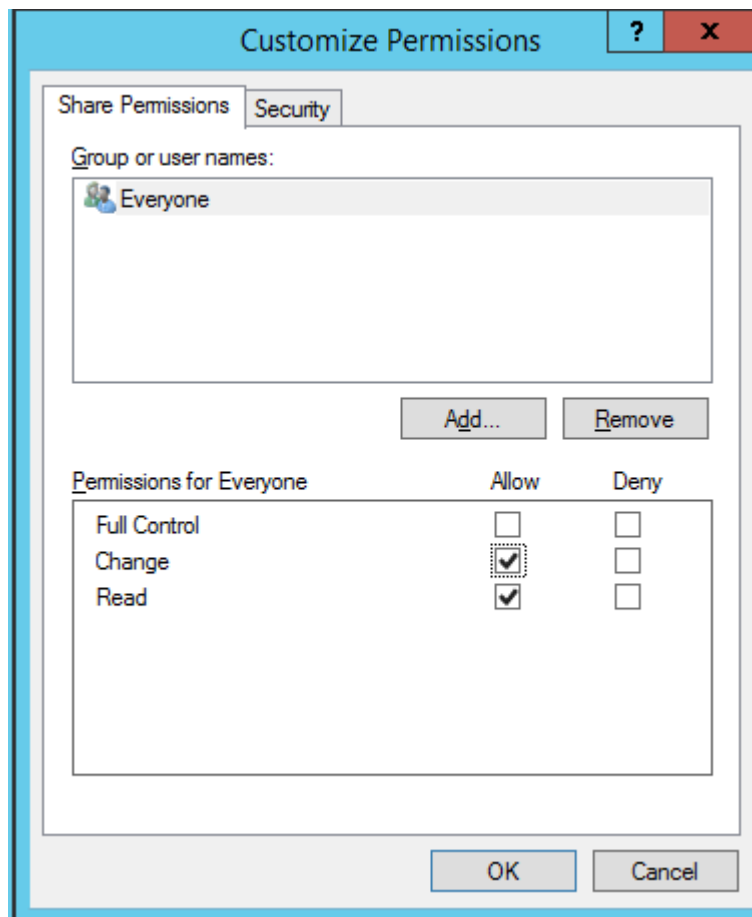
☒ Customize permissions:

Custom...

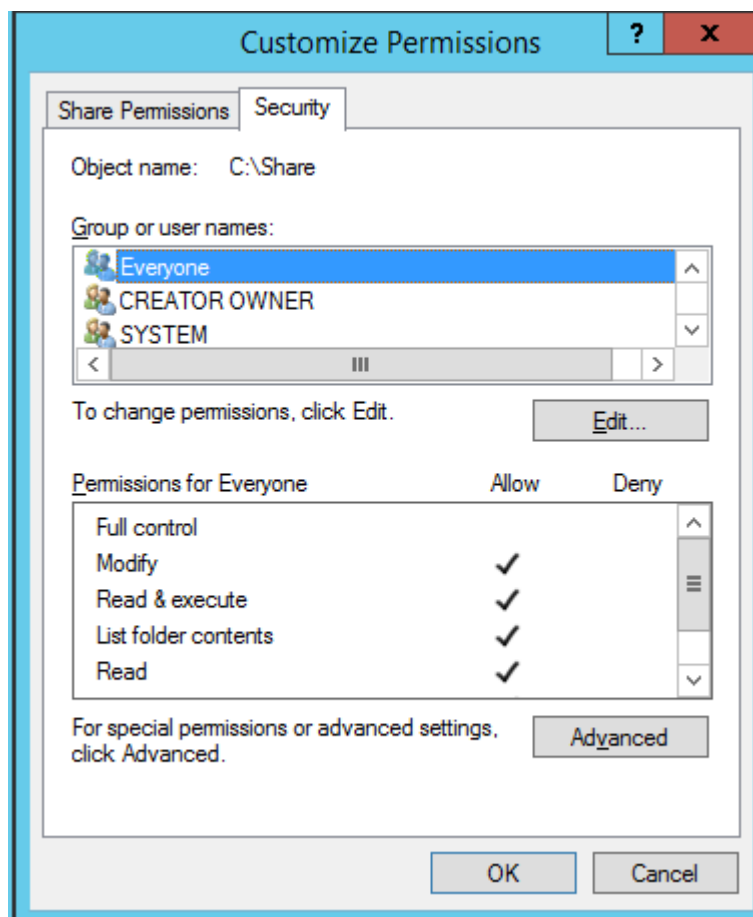
By default, only share permissions are set on this folder. To control local access permissions to this folder or objects within the folder, click *Custom...* and then modify the permissions on the Security tab to apply specific permissions on the folder.

< Back Finish Cancel

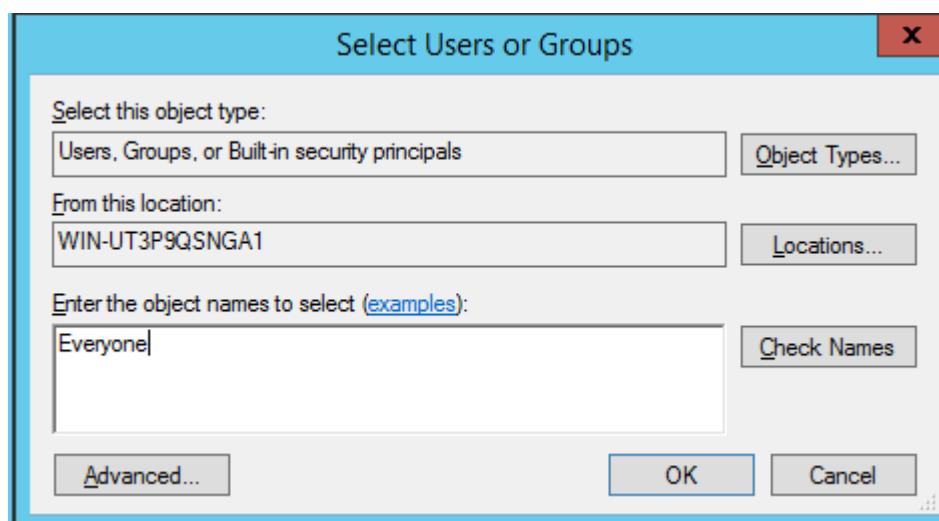
8 Choose *Everyone* and check *Allow* for "Change".



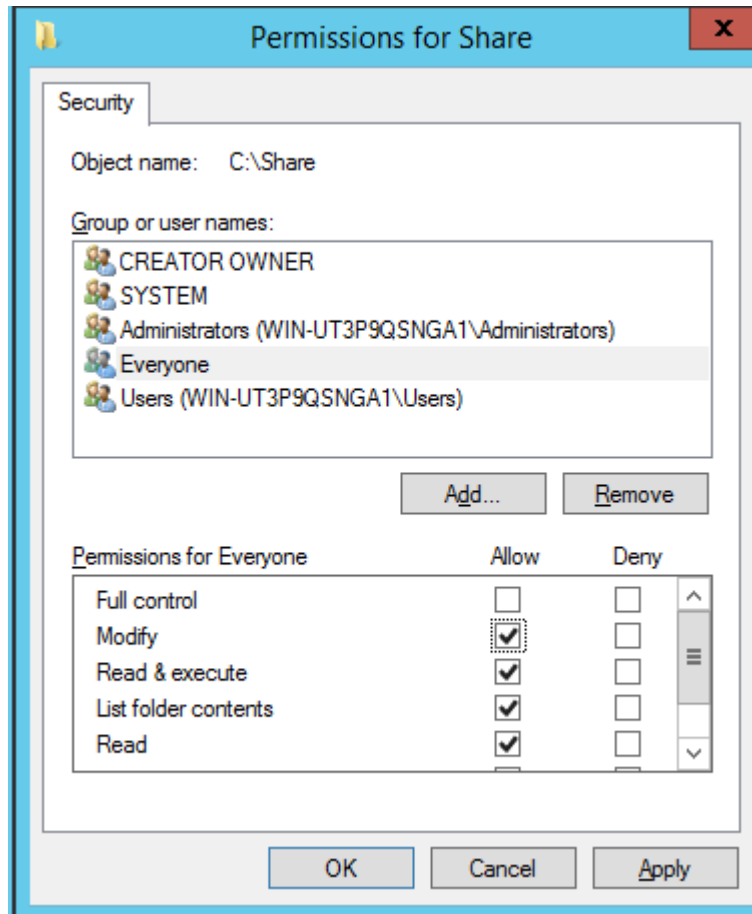
9 In the *Security* tab, click *Edit - Add*.



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



11 Choose "Everyone", then check *Allow 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, uncheck *Account is disabled*, 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, uncheck *Account is disabled*, 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 by all users, add a guest and change Administrator's "Access Permission" to "Full Control".

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 the following events:

- Hard drive status at scheduled time
- Hard drive read error
- TeraStation booted
- Fan error
- Temperature exceeded
- Specified event ID logged

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

2 Check "Enable email notification".

Email Notification

☒ Enable email notification

Send to

Email Address

New

Edit

Delete

SMTP Server

Server Address: ☐ Port

Authentication

User Authentication

POP Server Address: Port

Username: Password:

SSL/TLS

☐ Accept untrusted or self-signed certificates

Title:

Contents

Email Server Address: ☒ IPv4 ☐ IPv6

☐ Status report ☐ Disk error

☐ At boot ☐ Fan failure

☐ Backup error ☐ Replication error

☐ Temperature error ☐ PSU failure

☐ Specify event ID

Log Type	Source	Event ID

New

Edit

Delete

Test Message

Apply

Close

3 Click New and enter an email address. You may enter up to five email addresses to receive notifications.

4 Enter your mail server settings and choose what events will trigger notification. Click Apply to finish the email notification settings. You can send a test email when clicking Test Message.

Items	Descriptions
Enable email notification	If enabled, email reports will be sent during specific events.

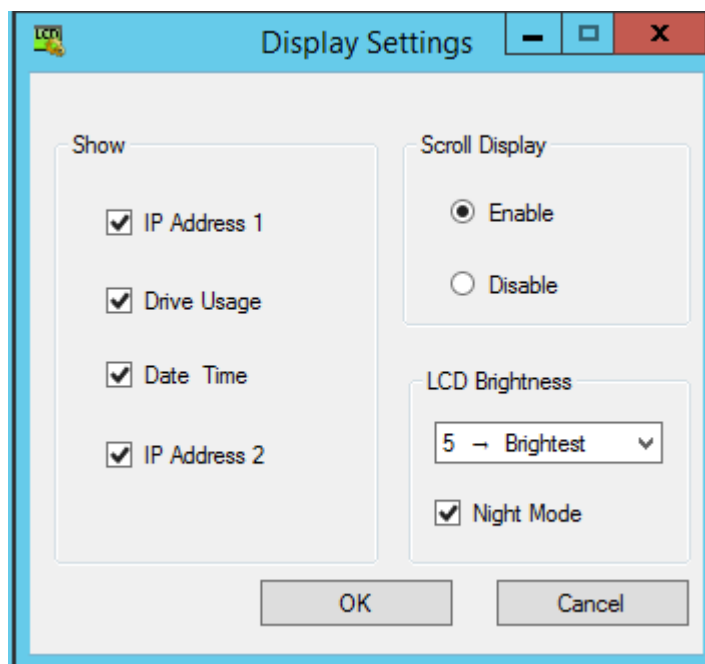
Items	Descriptions
Send to	Adds a new receiver for the notification email. Click <i>New</i> to add a new email address. Click <i>Edit</i> to change the receiver settings or <i>Delete</i> to remove an address from the list. Note: Up to 5 email address may be added.
SMTP Server	Enter your email SMTP server's 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".
Authentication	Select the user authorization type from "None", "POP before SMTP", "LOGIN (SMTP-AUTH/LOGIN)", and "CRAMMD5 (SMTP-AUTH/CRAM-MD5)". If "POP before SMTP" is selected, enter the POP server address, port number, username, and password. Unless specified otherwise, the standard port number (110) is used.
SSL/TLS	If "LOGIN (SMTP-AUTH/LOGIN)" or "CRAMMD5 (SMTP-AUTH/CRAM-MD5)" is selected, select whether to use SSL or TLS.
Title	Enter the subject of the notification email.
Contents	Email server address: Check "IPv6" to add IPv6 compatibility to the email notifications. Select the event that will trigger the notification emails to be sent. Status report: Sends regular notification emails at the specified time. Disk error: Sends an email when a hard drive error occurs. At boot: Sends an email when the system is booted or restarted. Fan failure: Sends an email when a fan error occurs. Temperature error: Sends an email when the TeraStation temperature exceeds normal levels. Specify event ID: Sends an email when the specified event IDs are logged. Enter an event ID to trigger email notifications.
Test Message	Sends a test email to the email address which is configured.

LCD Panel Settings

You may configure the LCD on the front of the TeraStation.

- 1 From the Windows Storage Server Start menu, click *Display Settings*.

2 Configure the desired settings and click *OK*.



Items	Descriptions
Show	Select the item(s) to be displayed on the LCD panel.
Scroll Display	If enabled, the LCD scrolls through display items at a regular interval.
LCD Brightness	Change the brightness of the LCD panel from level 1 (darkest) to 5 (brightest).
Night Mode	If checked, the LCD brightness will be set at level 2 (dark) from 6 pm to 8:59 am the next day. Note: If the LCD brightness is already set to level 1 (darkest) or level 2 (dark), night mode will be grayed out and cannot be selected.

Chapter 8 Utilities

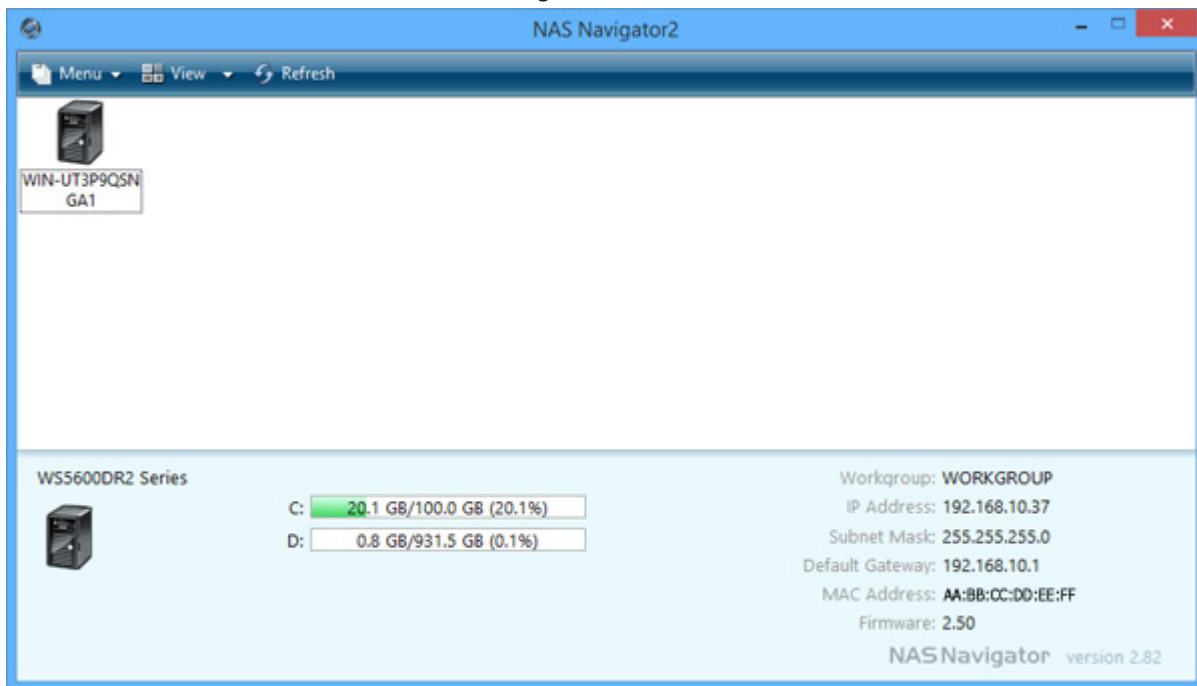
NAS Navigator2 for Windows

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:

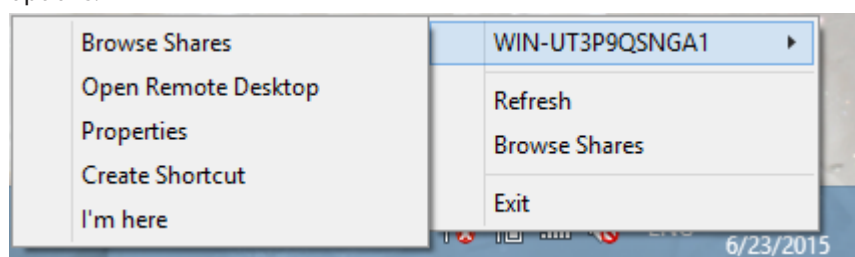
- Total capacity
- Capacity in use
- IP address
- Workgroup
- Subnet mask
- Default gateway
- MAC address
- Firmware version

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.
I'm here*		Causes your TeraStation to beep.
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.
	I'm here	Causes your TeraStation to beep.

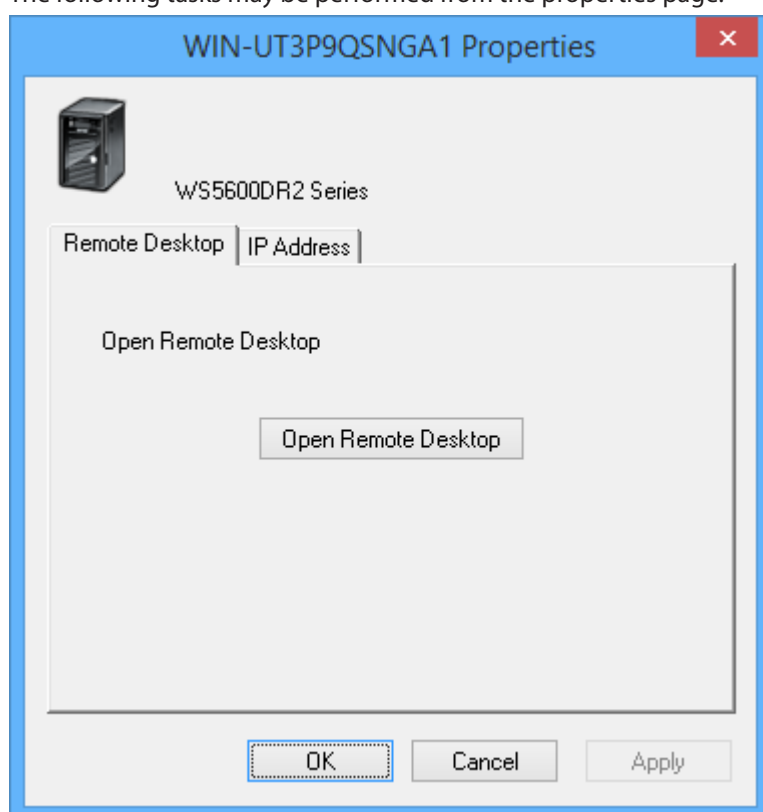
*Click on the selected LinkStation's or TeraStation's icon to display these options.

When NAS Navigator2 is minimized, 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.
	I'm here	Causes your TeraStation to beep.
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.

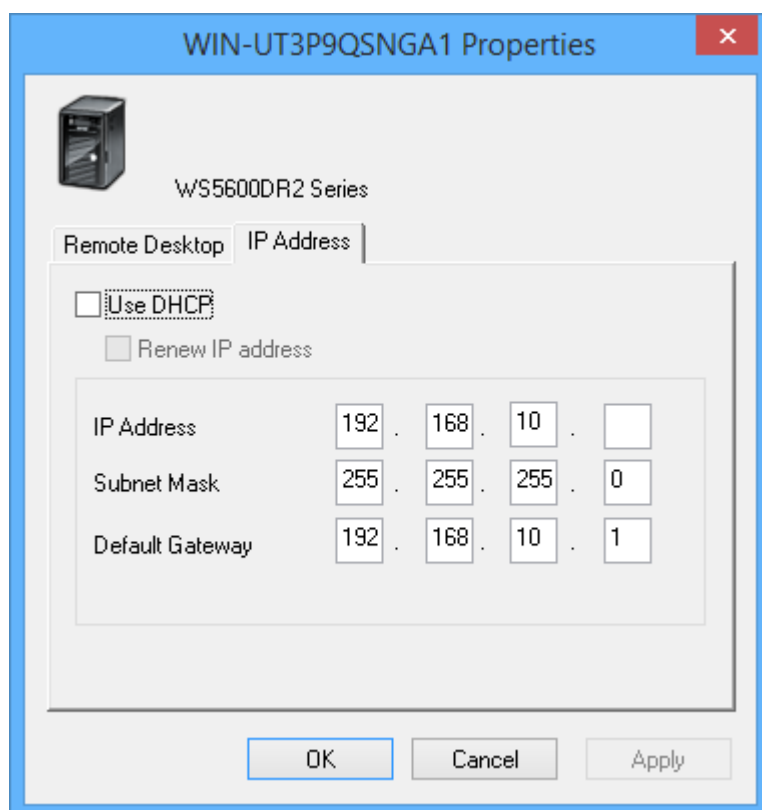


Name	Description
Remote Desktop	Click <i>Open Remote Desktop</i> to open Windows Storage Server.
IP Address	Select the "Use DHCP" checkbox to assign an IP address from the DHCP server automatically. If there is no DHCP server in the network, you cannot use this function. Select the "Renew IP address" 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.

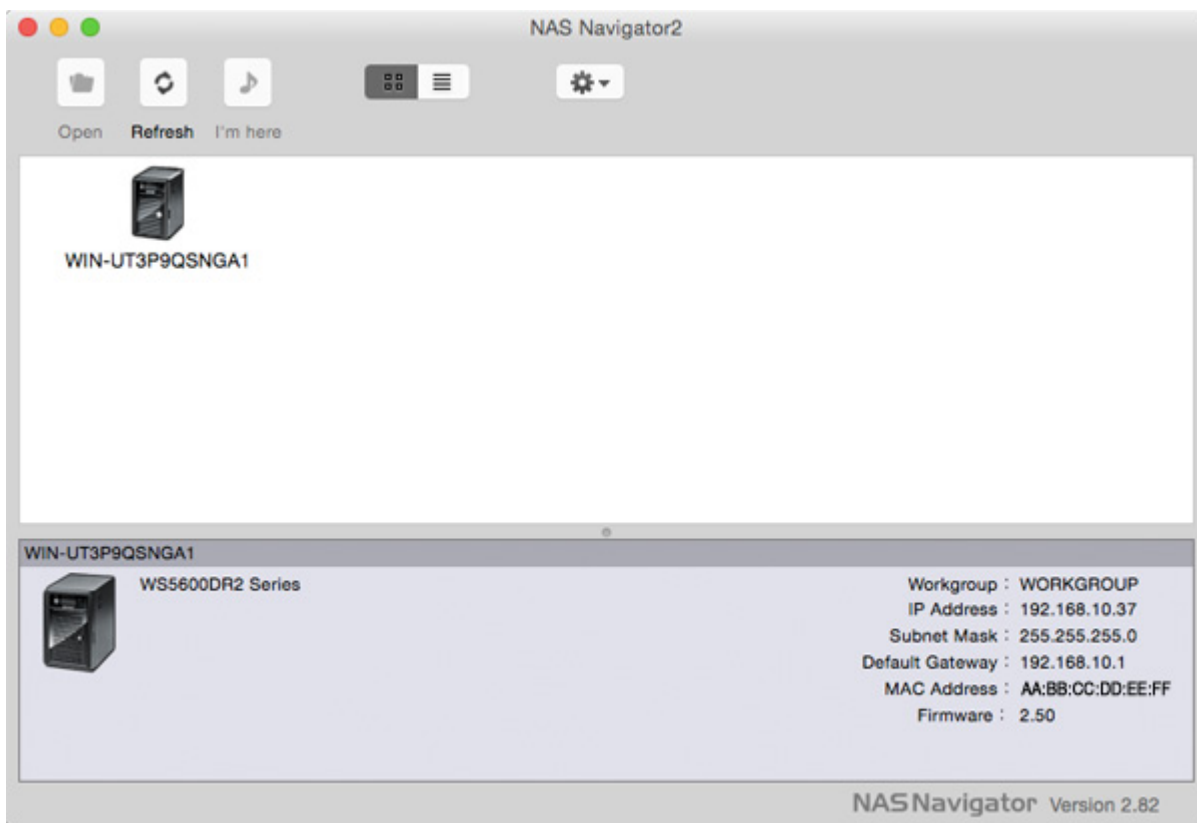


NAS Navigator2 for macOS

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.
I'm here	Causes your TeraStation to beep.
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 the remote desktop screen.
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 the remote desktop screen.
	I'm here	Causes your TeraStation to beep.
	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*.

WIN-UT3P9QSNAG1
WS5600DR2 Series

Remote Desktop IP Address

☐ Use DHCP
☐ Renew IP address

IP Address:

Subnet Mask: 0 0 0 0

Default Gateway: 192 168 10 1

Administrator Username

Administrator Password

NovaBACKUP

NovaBACKUP is a Windows utility that lets you back up the data on your computer or TeraStations. The NovaBACKUP installer is available from either <http://d.buffalo.jp/WS5000R2/> for the WS5000R2 series and <http://d.buffalo.jp/WS5000N2/> for the WS5000N2 series. 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 or top of the unit.

Chapter 9 Appendix

LCD Panel

The LCD panel can be cycled through different modes by pressing the display button on the front of the TeraStation.

Modes

LCD Message		Description
Link Speed Note: When an Ethernet cable is connected to LAN Port 2, "LINK SPEED 2" is displayed.	LINK SPEED No LINK	Not connected to network.
	LINK SPEED 10Mbps	Connected at 10 Mbps.
	LINK SPEED 100Mbps	Connected at 100 Mbps.
	LINK SPEED 1000Mbps	Connected at 1000 Mbps full duplex.
Disk Space Used	HDD USED 	Bar graphs are shown to indicate the used space for the C, D, E, and F internal drives of the TeraStation. When a hard drive is full, it is indicated by "^".
Hostname/IP Address	WS5200DR2xxx 192.168.11.150	Displays the hostname and IP address. Note: If the hostname contains multibyte characters, they will be replaced with question marks (?) on the LCD panel.
Calendar/Clock	DATE TIME 2013/1/1 11:11	Displays the date and time set in the TeraStation.
Installed OS	Windows Storage Server 2012 R2	Displays the OS installed on the TeraStation.
IP Address 2	NETWORK2 192.168.11.151	Displays the IP address of LAN port 2 when an Ethernet cable is connected to LAN port 2.

Errors and Status

LCD 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 other 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.

LCD Message	Description	Corrective Action
HDx Error E16 HDx Not Found	Unable to find hard drive X.	Hard drive X may be disconnected or may have failed. After shutting down, reinstall the hard drive.
HDx Broken E30 Replace the DISK	An error occurred, so hard drive X was removed from the RAID array.	Replace hard drive X.
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 5.
RAID I18 X Drive Rebuilding	Rebuilding drive X in the array. Note: Transfer speeds are slower during the rebuilding 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 <i>Sync</i> 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.
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.

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	Drive C: A mirrored array using drives 1 and 2 Drive D: A RAID 5 array using all drives* * WS5200DN2 and WS5200DR2: Drive D is a mirrored array using drives 1 and 2.

Specifications

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

Installed System	Workgroup Edition Model: Microsoft Windows Storage Server 2012 R2 Workgroup Edition Standard Edition Model: Microsoft Windows Storage Server 2012 R2 Standard Edition Note: The Microsoft Software License is on the d.buffalo website, http://d.buffalo.jp/WS5000R2/ for the WS5000R2 series and http://d.buffalo.jp/WS5000N2/ for the WS5000N2 series. 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	WS5600DN2, WS5600DR2, WS5400RN2, WS5400RR2: USB 2.0 port (type A) x 2, USB 3.0 port (type A) x 3 WS5400DN2, WS5400DR2, WS5200DN2, WS5200DR2: USB 2.0 port (type A) x 2, USB 3.0 port (type A) x 2	
UPS Port	D-sub 9 pin (male) x 1 Compatible UPS are manufactured by Omron or APC.	
Internal Hard Drive	If a hard drive in the TeraStation malfunctions, replace it with a Buffalo drive of the same capacity. Use a Buffalo OP-HDWR series drive for WS5000N2 series and a OP- HDS series drive for WS5000R2 series. The drives listed above are available from the Buffalo website.	
Power Supply	AC 100–240 V, 50/60 Hz	
Power Consumption (Max.)	WS5600DN2, WS5600DR2: 120 W WS5400RN2, WS5400RR2: 100 W WS5400DN2, WS5400DR2: 86 W WS5200DN2, WS5200DR2: 47 W	
Dimensions (W x H x D)	WS5600DN2, WS5600DR2: 170 x 260 x 230 mm; 6.7" x 10.2" x 9.1" in WS5400RN2, WS5400RR2: 430 x 44 x 430 mm; 16.9" x 1.7" x 16.9" in WS5400DN2, WS5400DR2: 170 x 215 x 230 mm; 6.7" x 8.5" x 9.1" in WS5200DN2, WS5200DR2: 170 x 170 x 230 mm; 6.7" x 6.7" x 9.1" in	
Weight	WS5600DN2, WS5600DR2: 10.0 kg; 22.1 lb WS5400RN2, WS5400RR2: 9.0 kg; 19.8 lb WS5400DN2, WS5400DR2: 7.5 kg; 16.5 lb WS5200DN2, WS5200DR2: 4.0 kg; 8.8 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*, 8*, 7*, Vista*, XP, XP Media Center Edition (2004 or 2005), 2000**, Windows Server 2012 R2, 2012, 2008 R2, 2008 R2, 2003, 2000 Server**, Windows RT macOS 10.12, 10.11, 10.10, 10.9, 10.8, 10.7, 10.6, 10.5, 10.4** * 32-bit and 64-bit ** WS5000R2 series only.
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Data Backup

While using the TeraStation, you may lose your important data due to sudden accidents, hard disk failure, or accidental misoperation. Back up your data regularly! For best results, back up your data to Buffalo drives like the TeraStation, LinkStation, or DriveStation series.

Troubleshooting

If you can't access your TeraStation:

Typical problems and when you are unable to search using NAS Navigator2 and when the remote desktop screen does not open are described 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 TeraStation.

Cause 2. Security software in the background is blocking communication:

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 LAN 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 to 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 software is not installed on your Mac:

If using macOS, download and install "Microsoft Remote Desktop" from the Mac App Store.

When TeraStation 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, follow the procedure in chapter 2 to open the TeraStation's shared folder with NAS Navigator2.

If you are unable to access the shared folder or the 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.

Windows Storage Server Recovery Procedure

If Windows Storage Server no longer functions properly, perform recovery using the supplied SD card.

This recovery procedure erases your data. Backing up regularly is highly recommended to avoid losing your important data.

Do not connect the SD card to another TeraStation or your computer. The recovery process that involves using this SD card is intended for this product only.

Recovery is performed by deleting the area for drive 1, setting up a new 100 GB (Basic Disk/Simple) area, and then copying the Windows Storage Server image to this area.

Note: If there are system areas (or mirrored locations) on hard drives other than drive 1, be sure to delete the system areas (or disable the mirrored locations) before performing the recovery procedure. If recovery is performed without deleting these areas, Windows Storage Server may not run after recovery is performed. If Windows Storage Server fails to run, turn off the TeraStation and perform the recovery procedure again while all hard drives except for drive 1 (disk 0) are disconnected. After recovery is complete, reconnect the disconnected drives, which will appear in "Disk Management" as "Foreign". In "Disk Management", right-click *Foreign*, select *Import Foreign Disks*, then right-click this area and click *Reactivate Volume* to rebuild the RAID array.

- 1** Turn off the TeraStation, following the procedure in "Turning the TeraStation On and Off" in chapter 1.
- 2** Insert the SD card into the card reader (not included).
- 3** Connect the card reader to the TeraStation using a USB 3.0 or 2.0 port.
- 4** Set the boot mode switch to "USB", then press the power button.
This executes the recovery process.
- 5** The TeraStation shuts down automatically when the recovery process is complete.
- 6** Remove the card reader, set the boot mode switch to "HDD", and press the power button.
When the initial setup is complete, the TeraStation will reboot into Windows Storage Server.

After the recover process is completed, the TeraStation is set to the state below when running under default settings.

- Drive 1

100 MB (EFI System partition)

100 GB (Basic Disk/Simple)

The remaining space is an unallocated area.

- Drives 2 to 6

The data on the drives cannot be viewed. They appear as a "Foreign" in "Disk Management".

Note: The data on the drives can be viewed by right-clicking the area displayed as "Foreign" in "Disk Management" and then selecting *Import Foreign Disks*.

Notes

Using an Omron UPS

The TeraStation's LCD panel will not display information correctly when an Omron UPS is first connected. This is because the LCD panel control and the Omron UPS both use COM port 2. To resolve, refer to the Omron's user manual and change its UPS communication port to a port other than COM 2, then restart the TeraStation.

Ethernet port number is not correct on the Windows Storage Server

Ethernet port numbers on the Windows Storage Server are assigned as the ports are recognized. They might be different from printed port numbers.

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.

CAUTION: Slide/rail mounted equipment is not to be used as a shelf or a work space.

Ne déposez jamais des instruments au dessus de l'appareil et ne l'utilisez jamais comme un tiroir.

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

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.

Svenska

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.

EU Declaration of Conformity



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.

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.

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.

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.

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.

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.

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.

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.

Utilisez uniquement les câbles et accessoires inclus dans ce package. N'utilisez aucun autre accessoire ou câble sauf instruction spécifique de la documentation.

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.

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.

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.

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.

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.

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.

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.

Utilizar apenas cabos e acessórios incluídos na embalagem. Não utilizar outros acessórios ou cabos, salvo se especificamente indicado na documentação.

Suomi

Tämä on luokan A tuote. Tämä tuote voi aiheuttaa radiohäiriöitä kotikäytössä, jolloin käyttäjän on ehkä ryhdyttävä tarvittaviin toimenpiteisiin.

Käytä ainoastaan pakkauksen mukana toimitettuja kaapeleita ja varusteita. Älä käytä muita varusteita tai kaapeleita ellei näin ole erityisesti ohjeistettu asiakirjoissa.

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.

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.

Türk

Bu, A Sınıfı bir üründür. Evde kullanım sırasında bu ürün radyo girişimine yol açabilir ve bu durumda kullanıcının gerekli önlemleri alması gerekebilir.

Yalnızca pakette bulunan kablo ve aksesuarları kullanın. Belgelerde özellikle belirtilmedikçe başka aksesuar ve kablolar kullanmayın.

For Customers in Russia

TR-CU

Country of Origin	Made in China or Made in Japan
Manufacturer	Buffalo Inc. Akamondori Bldg., 30-20, Ohsu 3-chome, Naka-ku, Nagoya 460-8315, Japan
For manufacturing date and country, refer to the product package. Дату изготовления и страну-производителя см. на упаковке. Өнімнің шығарылу мерзімі мен мемлекеті бойынша ақпаратты қаптамадан қараңыз. Дату и країну вирабу гл. на упаковці.	

For Customers in China

CCC

插座应当装在设备的附近,而且应当便于触及到

警告

此为A级产品，在生活环境中，该产品可能会造成无线电干扰。在这种情况下，可能需要用户对其干扰采取切实可行的措施。

For Customers in Taiwan

BSMI

警告使用者：

此為甲類資訊技術設備，於居住環境中使用時，可能會造成射頻擾動，在此種情況下，使用者會被要求採取某些適當的對策。

For Customers in Korea

KC

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