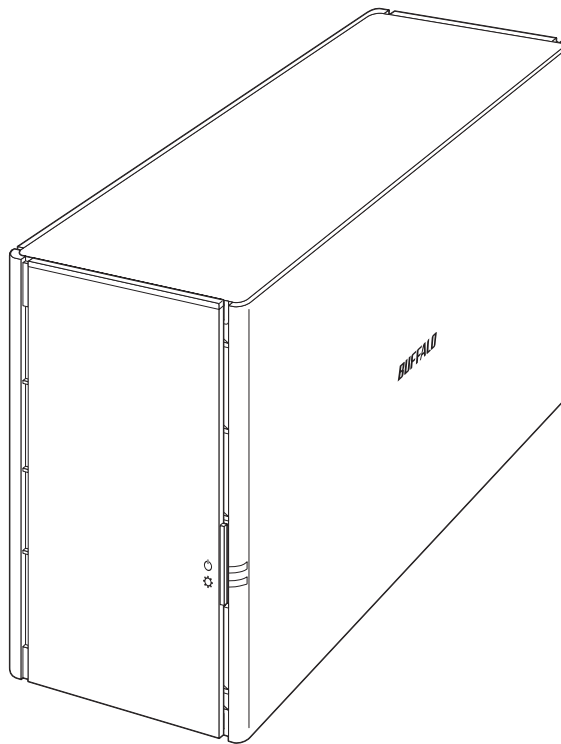


**Network Attached Storage**

**LinkStation 200B**

# **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.

***[www.buffaloamericas.com](http://www.buffaloamericas.com)***

35021611-01  
August 2019

# Notice

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## Regulatory Compliance Information

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### For Customers in the United States

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.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:





- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

---

## Warning Symbols and Graphical Icons on the Product

---

Warning symbols are used on the product for safety operation and prevention of injury to you and damage to the unit. The following explains the meanings of symbols used on the product.

	This symbol indicates important warnings or cautions for operation and maintenance. Additional information will follow this symbol.
	This symbol indicates the presence of a direct current.
	This symbol indicates polarity of DC connector.
	This symbol indicates that the equipment meets the safety requirements specified for class II.

---

## Safety Precautions

---

Before using your device, basic safety instructions should always be followed.

- (1) Read these instructions.
- (2) Keep these instructions.
- (3) Heed all warnings and follow all instructions.

Notice

- (4) The socket-outlet shall be installed near the equipment and shall be easily accessible.
- (5) 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.

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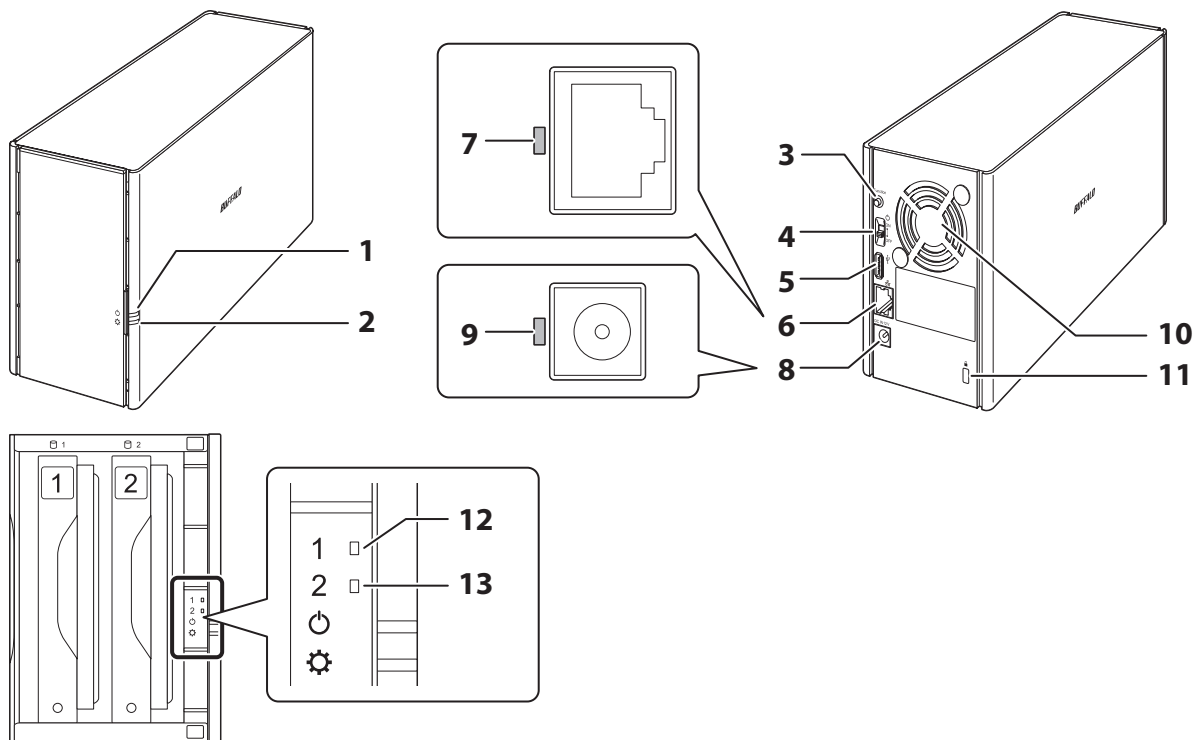
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# Chapter 1 Getting Started

## Diagrams

### LS220DB



#### **1** Power LED

The power LED glows white while the LinkStation is on.  
The power LED blinks white while the LinkStation is booting or shutting down.  
If an error occurs, the power LED blinks red.  
If there is a status message, the power LED blinks amber.  
If there is new firmware available, the power LED glows amber.

#### **2** Function LED

This LED glows white while the LinkStation is being initialized and while dismounting USB devices. It blinks white during Direct Copy.

#### **3** Function Button

Use this button for Direct Copy, dismounting USB devices, and initializing settings.

#### **4** Power Switch

Move the switch up and down to power on and off.

#### **5** USB 2.0 Port

Compatible USB drives, USB printers, and UPS devices can be connected. USB hubs are not supported.

**6** LAN Port

Connect to a router, hub, or switch on your Ethernet network with the included Ethernet cable.

**7** Link and Activity LED

This LED shows network activity. It blinks green when the LinkStation is accessed over the network.

**8** Power Connector

Use the included power cable to connect to a surge protector or outlet.

**9** Power Status LED

The LED glows green when the power cable is connected.

**10** Fan

Do not block the fan.

**11** Anti-Theft Security Slot

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

**12** Drive 1 Error LED

If there is an error on drive 1, this LED will light.

**13** Drive 2 Error LED

If there is an error on drive 2, this LED will light.

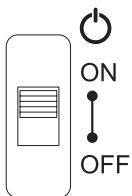
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## Turning the LinkStation On and Off

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Move the power switch on the back of the LinkStation to the **on** position to turn it on. To turn it off, move the switch to the **off** position and wait for the unit to fully shut down before unplugging it. Never unplug the AC adapter without properly shutting down the LinkStation first.

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



# Chapter 2 Configuration

Configure and manage your LinkStation using the Settings interface, accessible from a browser window. Open the interface using the procedure below or type the LinkStation's IP address into the URL field of your browser. Within Settings, the Easy Admin page gives you quick access to commonly-used settings.


## Opening Settings from a Computer

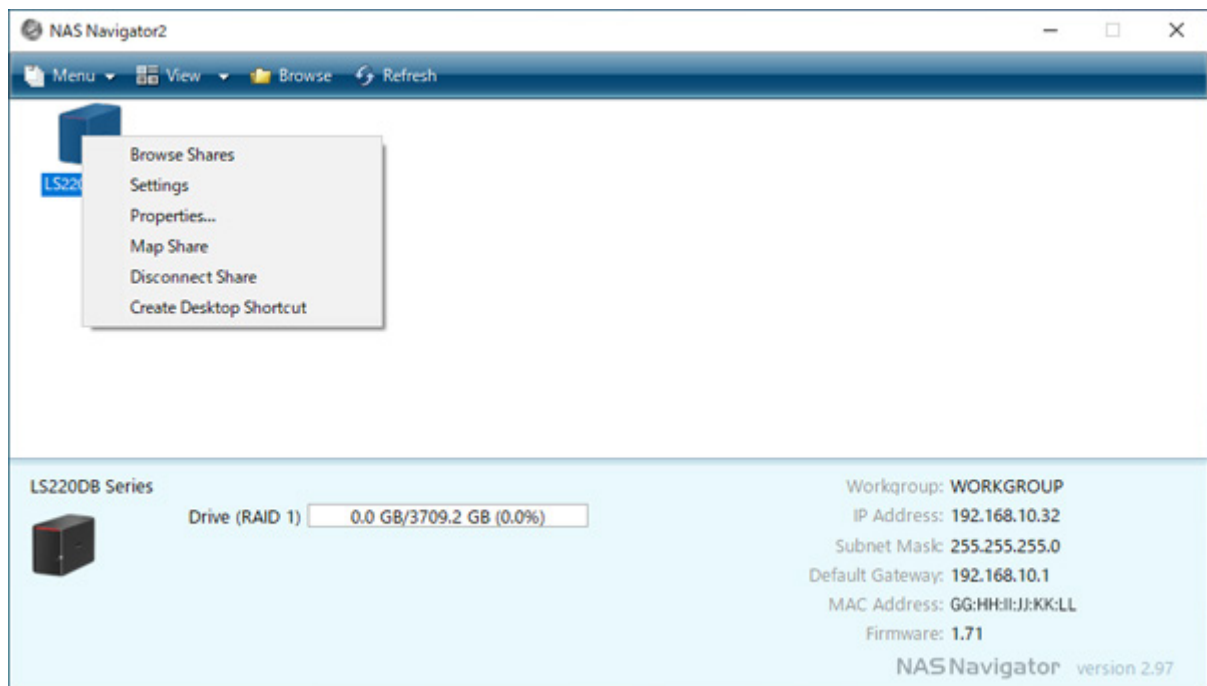
### Notes:

- To access Settings, we recommend using NAS Navigator2, which should already be installed on your computer if you followed the quick setup guide included with your LinkStation for initial setup. If you do not have NAS Navigator2 installed, refer to the "[Chapter 10 Utilities](#)" for instructions on how to download and install it.
- Internet Explorer 9, Microsoft Edge, Firefox 18, Google Chrome 24, Safari 5, and later are supported. If you have difficulty viewing Settings, check whether you have a proxy server enabled in the browser settings. If you do, disable the proxy server.

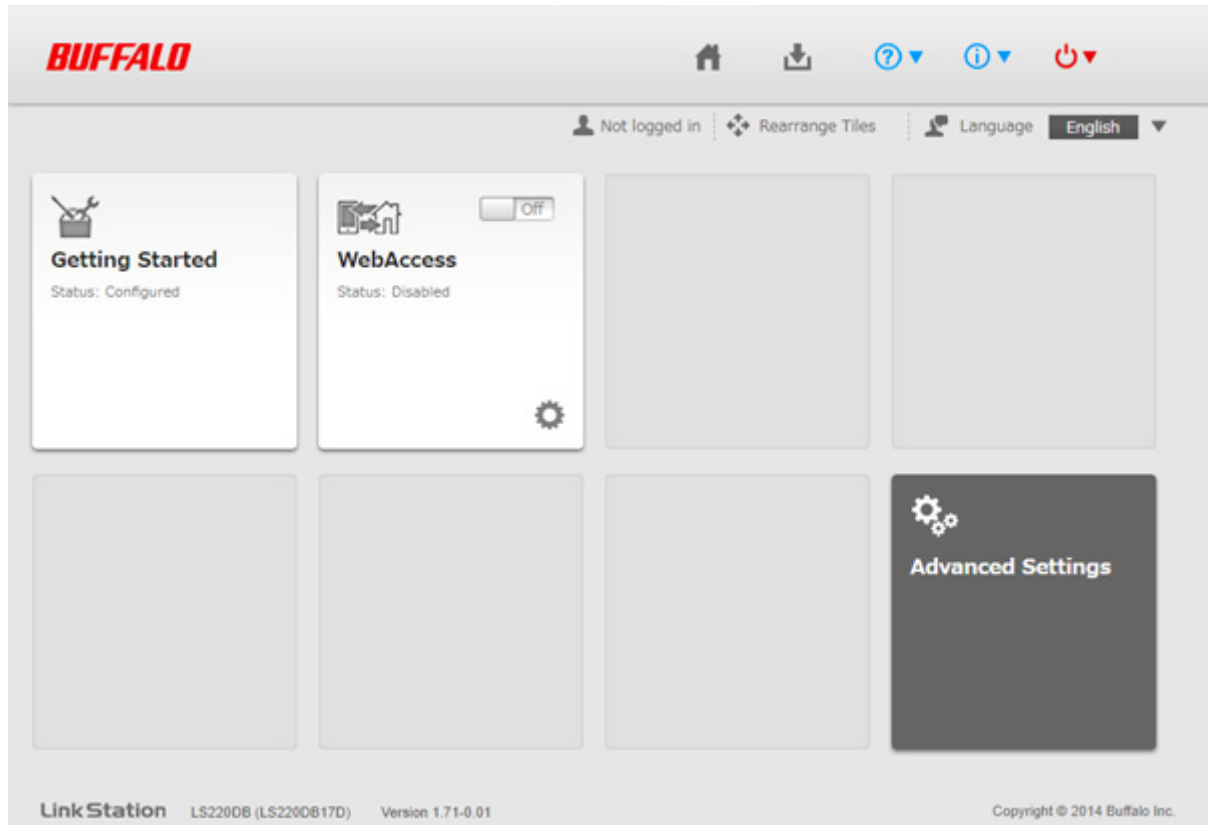
## Opening Easy Admin

The Easy Admin page makes it easy to change common settings. Follow the procedure below to open Easy Admin.

- 1 Double-click the NAS Navigator2 icon (  ) to start NAS Navigator2.
- 2 Right-click your LinkStation's icon and select *Settings*. For macOS, select the LinkStation's icon while holding down the control key, then select *Settings*.



**3** Easy Admin will open.

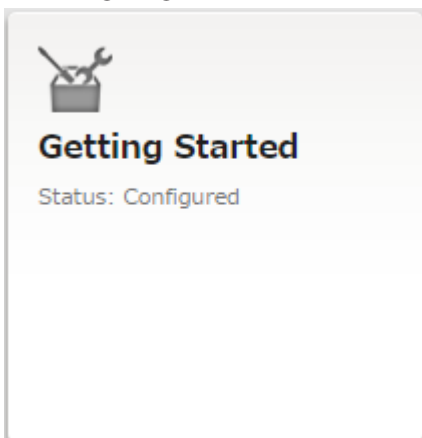


**Note:** If you click any buttons, you will need to enter a username and password.

## Getting Started

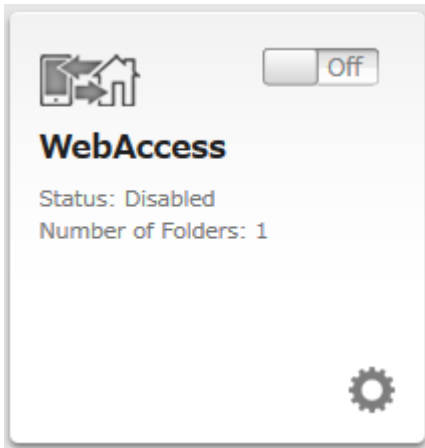
The wizard lets you configure the following settings:

- Changing the administrator password
- Creating shared folders
- Configuring access restrictions




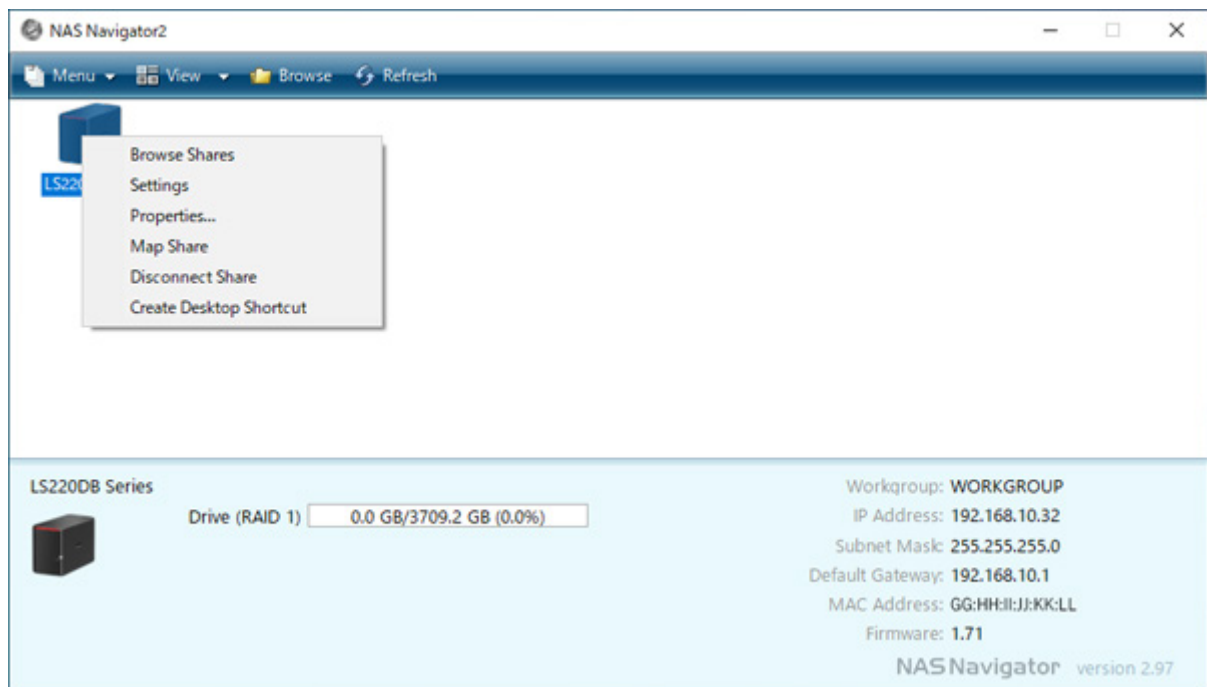
## WebAccess

Configure WebAccess to access your LinkStation remotely. Refer to the [“WebAccess”](#) section in chapter 5 for more information.

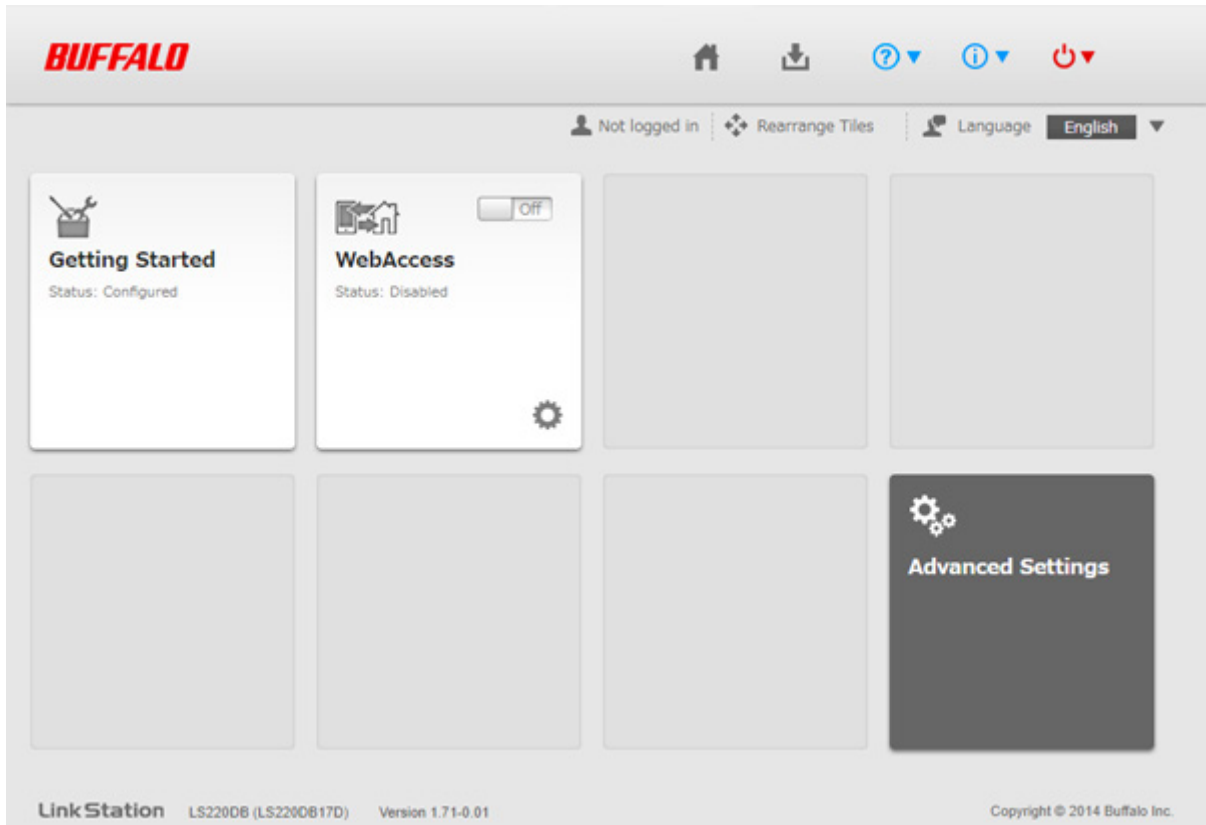


## Opening Advanced Settings

- 1 Double-click the NAS Navigator2 icon (  ) to start NAS Navigator2.
- 2 Right-click your LinkStation's icon and select *Settings*. For macOS, select the LinkStation's icon while holding down the control key, then select *Settings*.



**3** Easy Admin will open. Click *Advanced Settings*.

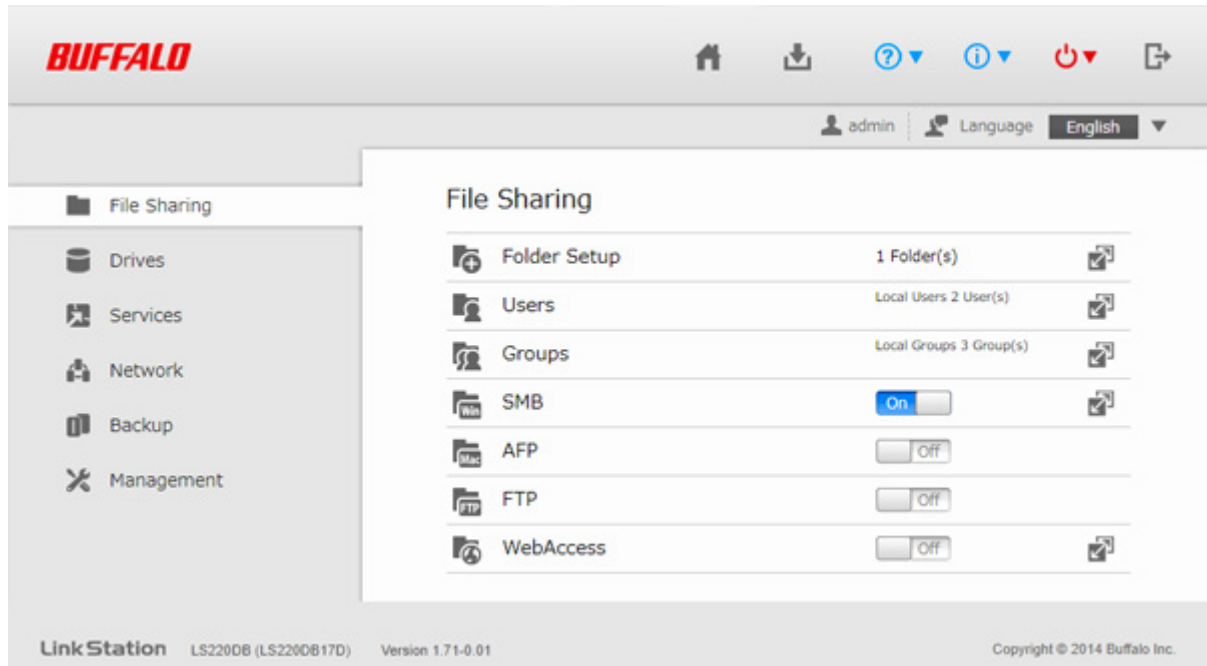


**4** Enter the username and password, then click *OK*.

**Notes:**

- If the time-out period is set to “10 minutes”, you will be logged out of Settings after 10 minutes of inactivity.
- Click *Secure Connection* to log in using an encrypted connection.

## 5 Advanced Settings will open.



### Notes:

- Username/Password Combinations:

Username	Password	Settings Available
admin (default)	password (default)	All
guest	blank	System information (read-only)
Your username	Your password	If a user is assigned as an administrator, all settings are available. If assigned as a power user, the user can create and edit shared folders, users, and general user groups. If assigned as a general user, the user can only access read-only system information and change their own password.

- To go back to Easy Admin, click the home icon (  ).

## Opening Settings from a Mobile Device

You can access your LinkStation's Settings from your iOS or Android device. Download and install "SmartPhone Navigator" from the App Store or Google Play.

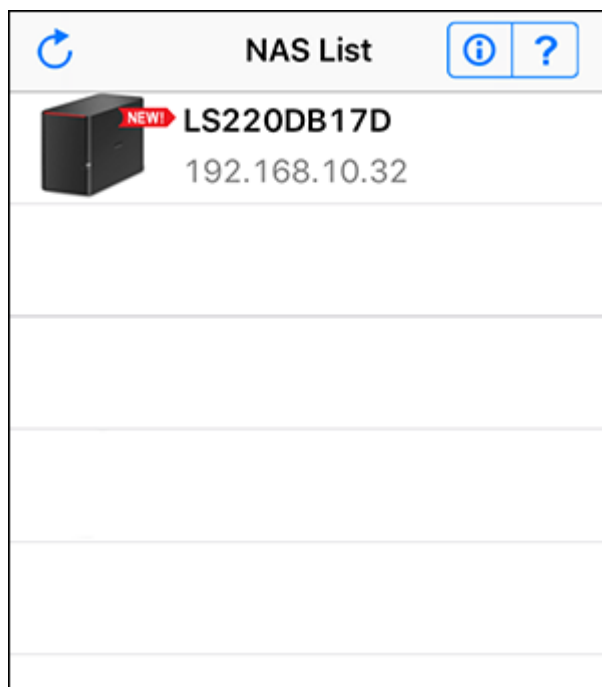
### Notes:

- If you have an older version of SmartPhone Navigator installed on your device, update it to the latest version. Your icons and software may be slightly different from the examples in this manual.
- You must be logged in as a member of the administrator group.
- Mobile devices that support mobile-optimized Settings display are described in the "[Specifications](#)" section in chapter 11.

**1** Open SmartPhone Navigator on your mobile device.

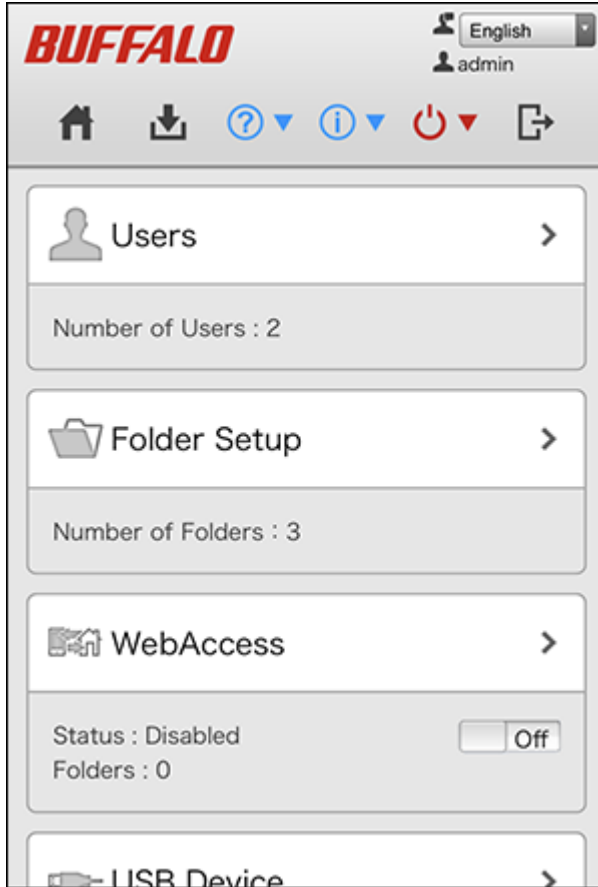


**2** Tap *Open Settings*.





**3** Settings will be displayed.



**Notes:**

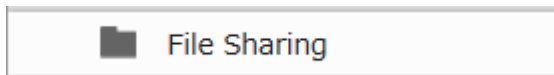
- The first time you go through setup, you'll be given a chance to change the default password, correct the time zone settings, and select the RAID mode. Step through the wizard to change these settings.
- If you tap any buttons, you will need to enter a username and password.


# Chapter 3 File Sharing

## Configuring Shared Folders

### Adding a Shared Folder

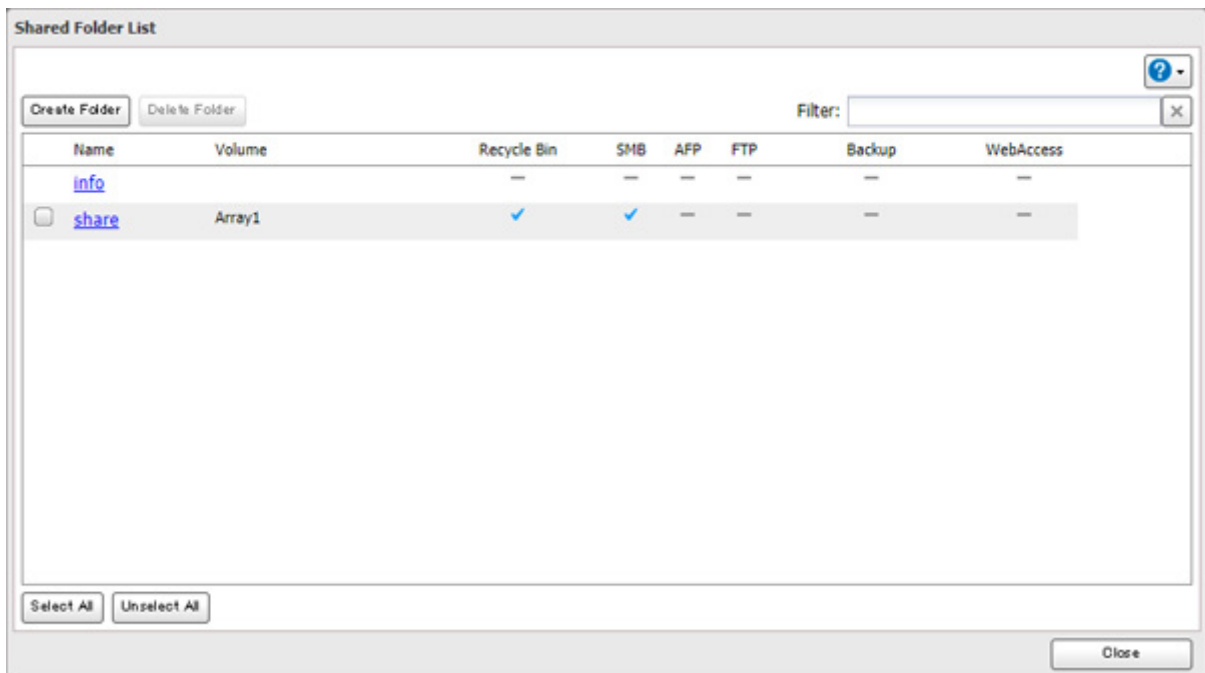
- 1 From Advanced Settings, click *File Sharing*.



- 2 Click  to the right of "Folder Setup".



- 3 Click *Create Folder*.



#### 4 Configure the desired settings, then click *OK*.

**Shared Folder Settings**

Copy settings from:

Name \* :

Shared Folder Description:

Volume:

Attribute:  Read Only  Read & Write

Recycle Bin:  Enable  Disable

LAN Protocol Support:  SMB (Win/Mac)  AFP (Mac)  
 FTP  Backup  WebAccess

Folder Attributes:  Hidden Share (SMB Only)

Remote Backup Password:

WebAccess Public Mode:

Access Restrictions:  Enable  Disable

Local Users Local Groups Domain Users Domain Groups External Users

Filter:

Local Username	W	R	
guest	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

OK Cancel

#### Notes:

- Names may contain up to 27 alphanumeric characters, hyphens (-), and underscores (\_). Multibyte characters are supported. The first character should not be a symbol.
- Descriptions may contain up to 75 alphanumeric characters, hyphens (-), underscores (\_), and spaces. Multibyte characters are supported. The first character should not be a symbol or space.
- You may create up to 400 shared folders.
- The names of shared folders should not use characters from more than one language. For example, mixing Japanese and Korean characters in names is not supported.
- If the names of shared folders accessed via AFP and FTP connections contain multibyte characters, configure the client language in *Management > Name/Time/Language* to match the characters. If the setting does not match, the shared folder name will not be displayed correctly.
- The following characters are handled differently by macOS and Windows. Avoid using these characters when sharing data between macOS and Windows:  
 — ~ // — ¢ £ ¬
- Windows does not support some characters that macOS and the LinkStation allow. If you create a filename on a Mac using any of the following symbols, it will not display correctly on a Windows computer. You may have to connect to the LinkStation via AFP in order to display or copy files that contain these symbols in their filenames.



**Notes:**

- If protocols other than “SMB (Win/Mac)” or “Backup” under “LAN Protocol Support” are enabled, the hidden shares option will be grayed out and cannot be selected.
- Configure hidden share attribute in Settings. Configuring them from within Windows is not supported and may cause unexpected behavior.

To access a hidden folder, open File Explorer in your computer and enter “\\LinkStation name\shared folder name\$” into the address bar. For example, if the LinkStation name is “LSXXX001” and the shared folder name is “share”, enter “\\LSXXX001\share\$” to open it.

---

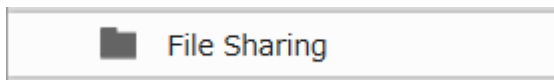
## Configuring Users


---

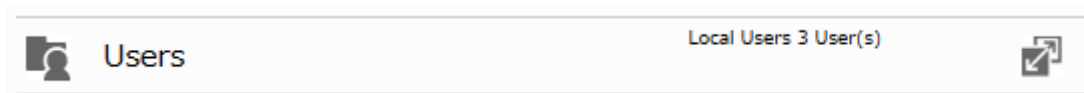
### Adding a User

---

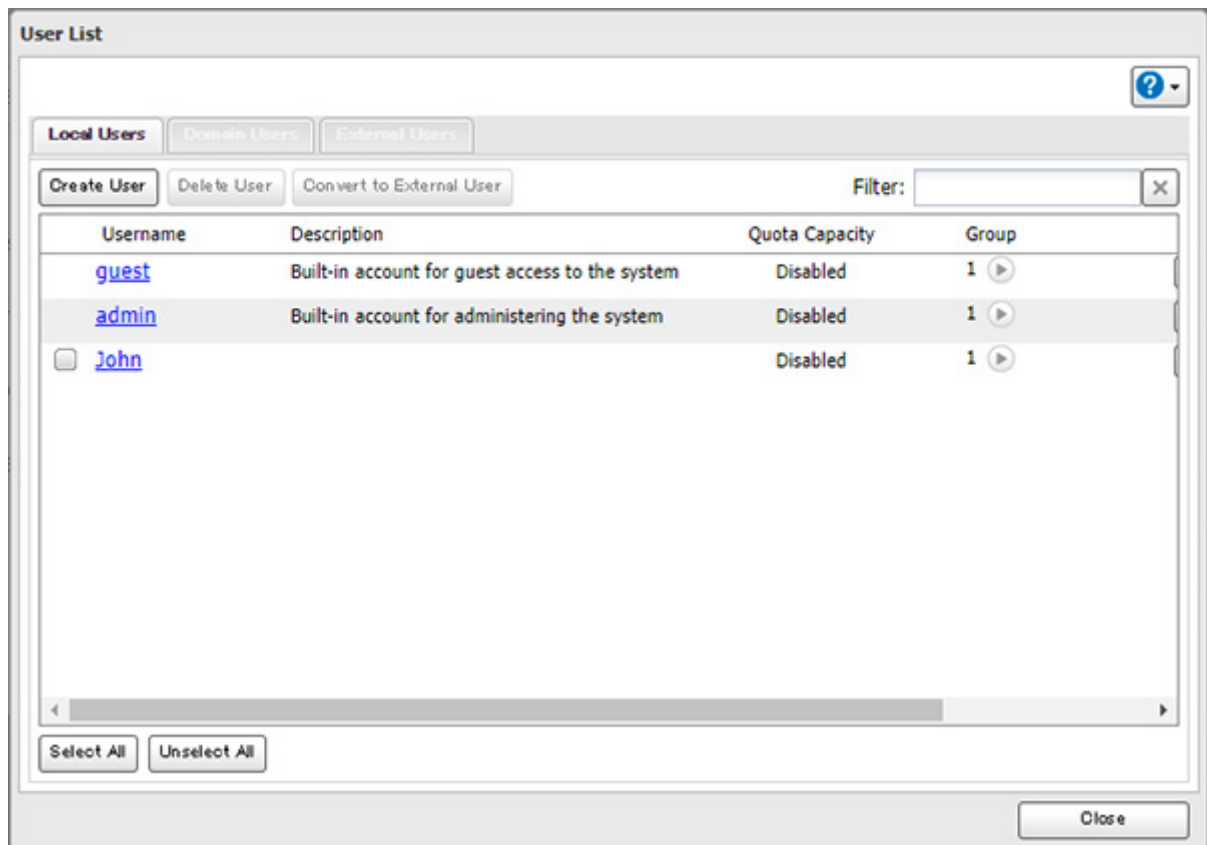
- 1 From Advanced Settings, click *File Sharing*.



- 2 Click  to the right of “Users”.



- 3 Click *Create User*.



#### 4 Enter the desired settings, then click *OK*.

**User Settings**

Username: \*

User ID:  
 Enter a number from 1000 to 1999.

Email:

Password: \*

Confirm Password: \*

Description:

Quota:  
 Enable (Units: GB)  
 Quota Capacity:   
 Disable

Filter:

Group

<input type="checkbox"/>	admin
<input checked="" type="checkbox"/>	hdusers

Select All Unselect All

Primary Group:

\* Required

OK Cancel

#### Notes:

- The LinkStation can register a maximum of 300 users, which includes the default users “admin” and “guest”.
- Usernames may contain up to 128 alphanumeric characters, hyphens (-), underscores (\_), periods (.), and the symbols ! # & @ \$ \* ^ %. The first character should not be a symbol.
- The user ID should be a number from 1000 to 1999. Each user ID should be unique. If this field is left blank, a user ID is assigned automatically.
- Do not duplicate user IDs, group IDs, usernames, or group names. Each should be distinct and unique.
- User descriptions may contain up to 75 alphanumeric characters, hyphens (-), underscores (\_), and spaces. Multibyte characters are supported. The first character should not be a symbol or space.
- Passwords may contain up to 20 alphanumeric characters, hyphens (-), underscores (\_), commas (,), periods (.), semicolons (;), tildes (~), and the symbols @ ! # \$ % & ' ) ( \* + / > < = ? " ] [ ^ } { |. The first character should not be a symbol unless it is an underscore.
- Use the same username and password for both Windows and the LinkStation or you may be unable to access shared folders.

- Do not use any of the following words as a username as these words are reserved for internal use by the LinkStation: adm, admin, administrator, all, apache, bin, daemon, disk, ftp, ftpuser, guest, halt, hdusers, kmem, lp, mail, man, mysql, news, nobody, nogroup, none, operator, root, shadow, shutdown, sshd, sync, sys, tty, users, utmp, uucp, www


## Converting Local Users into External Users

---

If using an external SMB server for authentication, you may convert any local users into external users. This way, the LinkStation will have a user list that matches the users in the external SMB server, and access restrictions for this LinkStation's shared folders may be assigned to the converted "external" users.

Follow the procedure below to convert a local user into an external user. If a local user is converted, their user information (including passwords) will be removed from the LinkStation. External users cannot be reverted to local users.

**Note:** External authentication should be enabled before local users can be converted. For more information on external authentication, refer to the "[Authority Delegation via External SMB Servers](#)" section.

- 1 From Advanced Settings, click *File Sharing*.
- 2 Click  to the right of "Users".
- 3 From the user list screen, select the checkboxes of any users to be converted to an external user, then click *Convert to External User*.
- 4 Click *OK*.
- 5 The "Confirm Operation" screen will open. Enter the confirmation number, then click *OK*.

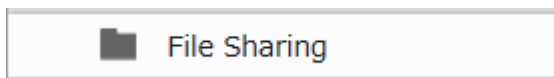
Converted users are displayed under the "External Users" tab. You can then configure access restrictions for external users.


---

## Adding a Group

---

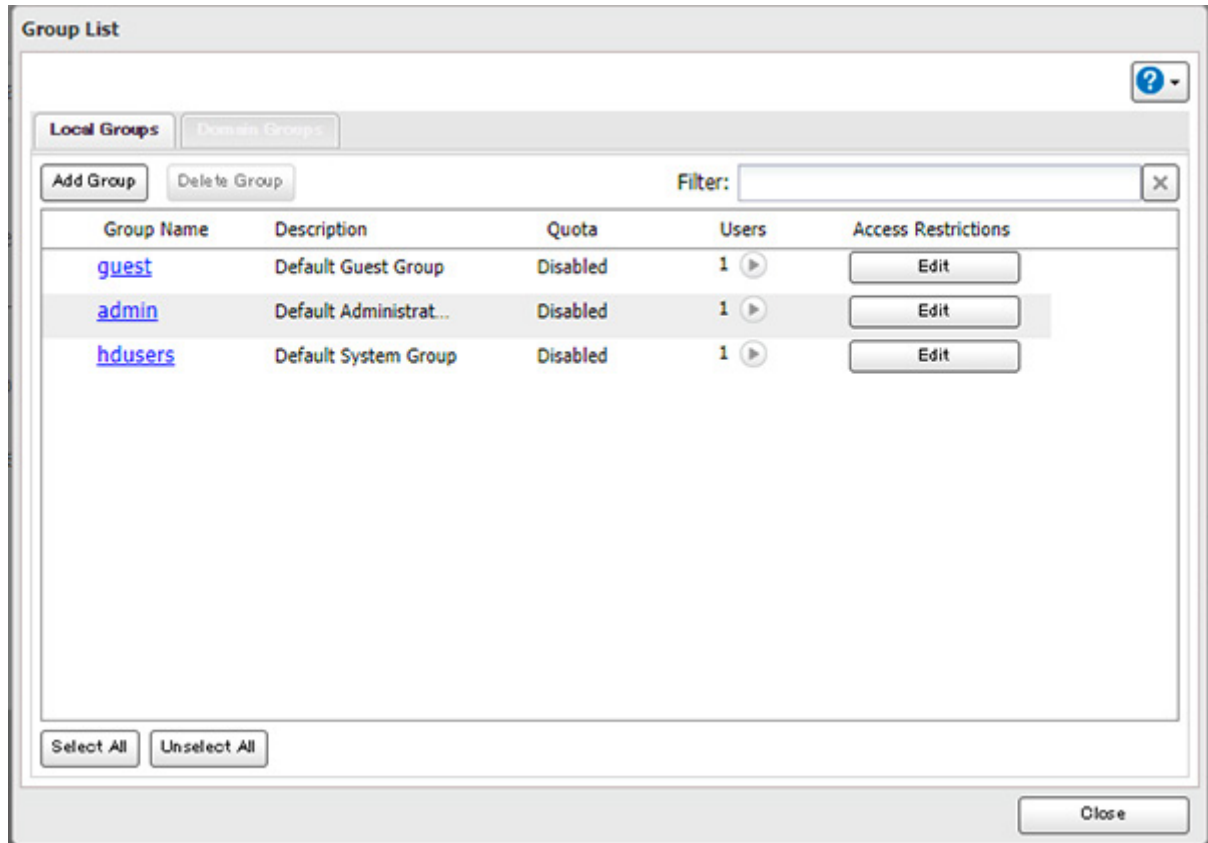
- 1 From Advanced Settings, click *File Sharing*.



- 2 Click  to the right of "Groups".



**3** Click *Add Group*.





#### 4 Enter the desired settings, then click *OK*.

**Group Settings**

Group Name: \*

Group ID:  
 (\*Enter a number from 1000 to 1999.)

Group Privileges:  
 General Users

Select a recipient for group notifications:  
 User (with email address configured)  
 Email address

User (with email address configured):  
 Disabled

Description:

Quota:  
 Enable(Units: GB)  
 Quota Capacity: 1  
 Disable

Filter:

Username	
<input type="checkbox"/>	admin
<input type="checkbox"/>	test

Select All Unselect All

\* Required

OK Cancel

#### Notes:

- Group names may contain up to 20 alphanumeric characters, hyphens (-), underscores (\_), and periods (.). The first character should not be a symbol unless it is an underscore.
- Group descriptions may contain up to 75 alphanumeric characters, hyphens (-), underscores (\_), and spaces. Multibyte characters are supported. The first character should not be a symbol or space.
- If the group ID field is left blank, a group ID is automatically assigned. Use numbers between 1000 and 1999 to set a group ID manually. Don't use duplicate group IDs.
- You may register up to 300 groups with the LinkStation.
- If you are logged in as an administrator, you can change any setting, including other users' passwords. If you are logged in as a member of the power users group, you can create and edit shared folders, users, and groups. If you are logged in as a member of the general users group, you can change only your own password.
- Do not use any of the following words as a group as these words are reserved for internal use by the LinkStation: adm, admin, administrator, all, apache, bin, daemon, disk, ftp, ftpuser, guest, halt, hdusers, kmem, lp, mail, man, mysql, news, nobody, nogroup, none, operator, root, shadow, shutdown, sshd, sync, sys, tty, users, utmp, uucp, www

## Configuring Access Restrictions

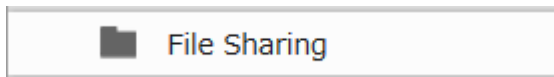
You may restrict access to specific shared folders, including external USB drives.


### Notes:

- Access restrictions can be set separately for each shared folder, but not for subfolders within the shared folders.
- Configure access restrictions through Settings. Configuring access restrictions through Windows is not supported and may cause unexpected behavior.

## Local Users and Groups

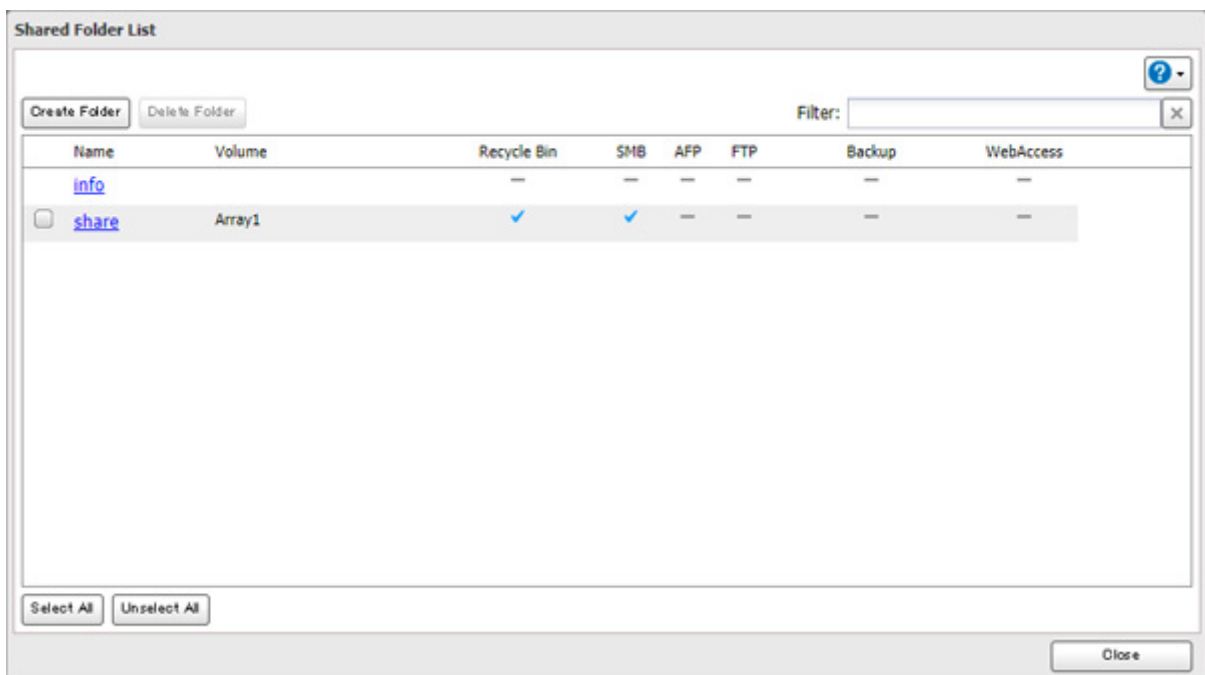
**1** From Advanced Settings, click *File Sharing*.



**2** Click  to the right of "Folder Setup".



**3** Click the shared folder that you want to set access restrictions for.



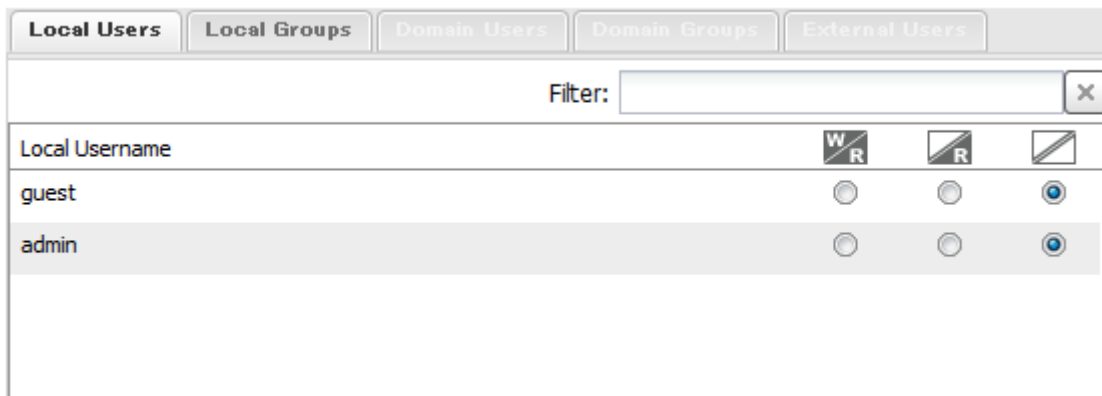
**4** Click *Edit*.

**5** Enable "Access Restrictions".



**6** Select the level of access for the user or group.

 : Read and write  
  : Read-only  
  : No access



**7** Click *OK*.

#### Notes:

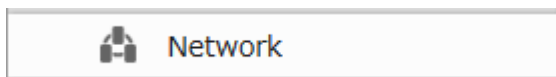
- The example above shows configuring access restrictions for users. To configure access restrictions for groups, click the *Local Groups* tab and select group permissions.
- If both read-only and read and write permissions are given to a user, the user will have read-only access.


## Active Directory

If there is an Active Directory environment, the LinkStation will use account information from the Active Directory domain controller to set access restrictions for LinkStation's shared folders. There is no need to perform individual account management for the LinkStation. If multiple LinkStations are installed on the network, the account information is centrally managed in Active Directory, greatly reducing the operations required for installation and management.

**Note:** The LinkStation supports a domain environment with a maximum 1000 users and 1000 groups.

**1** From Advanced Settings, click *Network*.

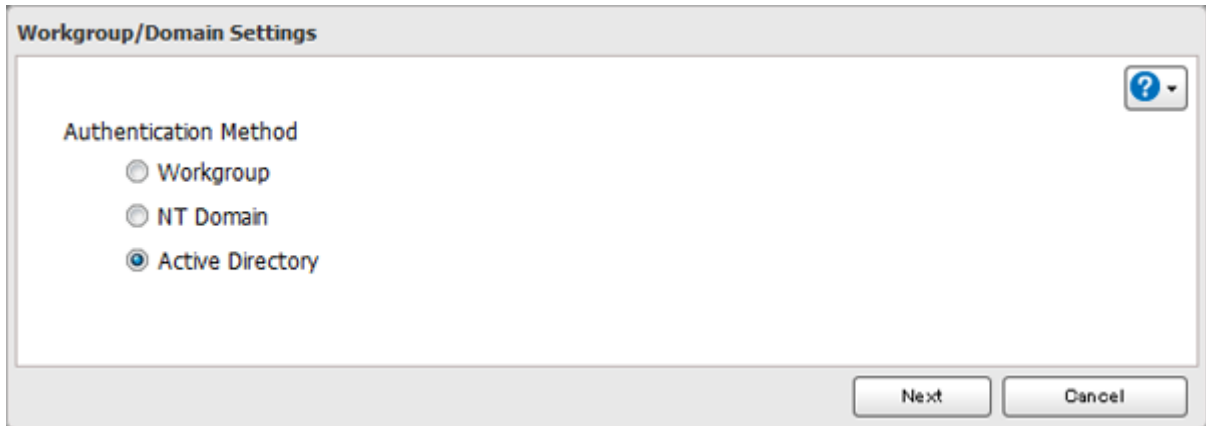


**2** Click  to the right of "Workgroup/Domain".



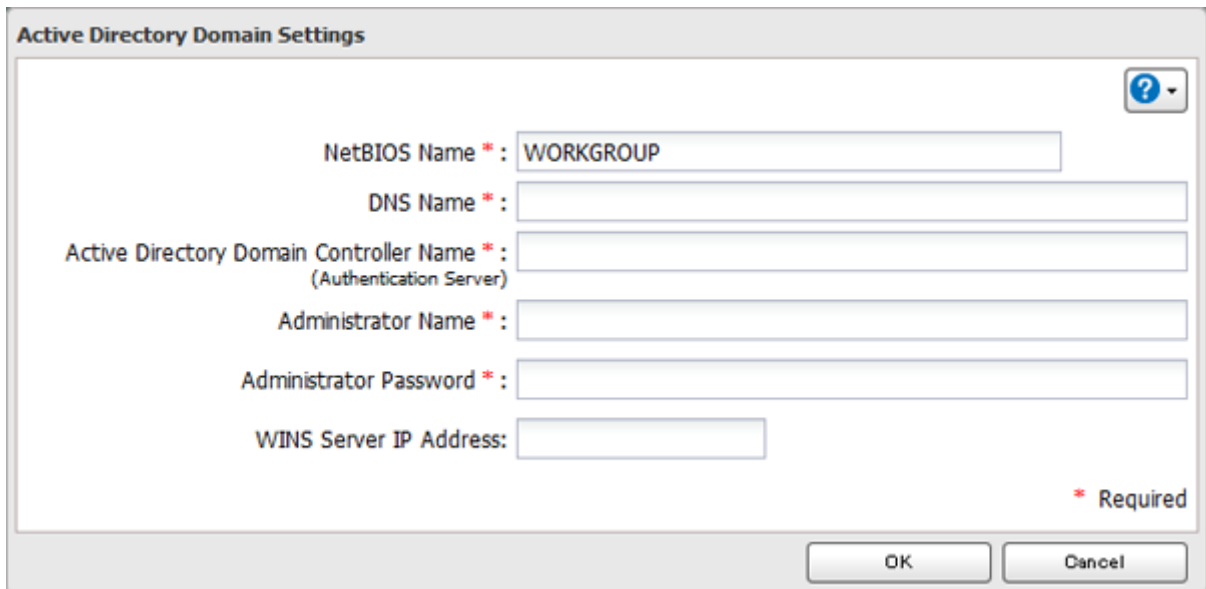
**3** Click *Edit*.


**4** Select "Active Directory", then click *Next*.



**5** Click *Yes*.

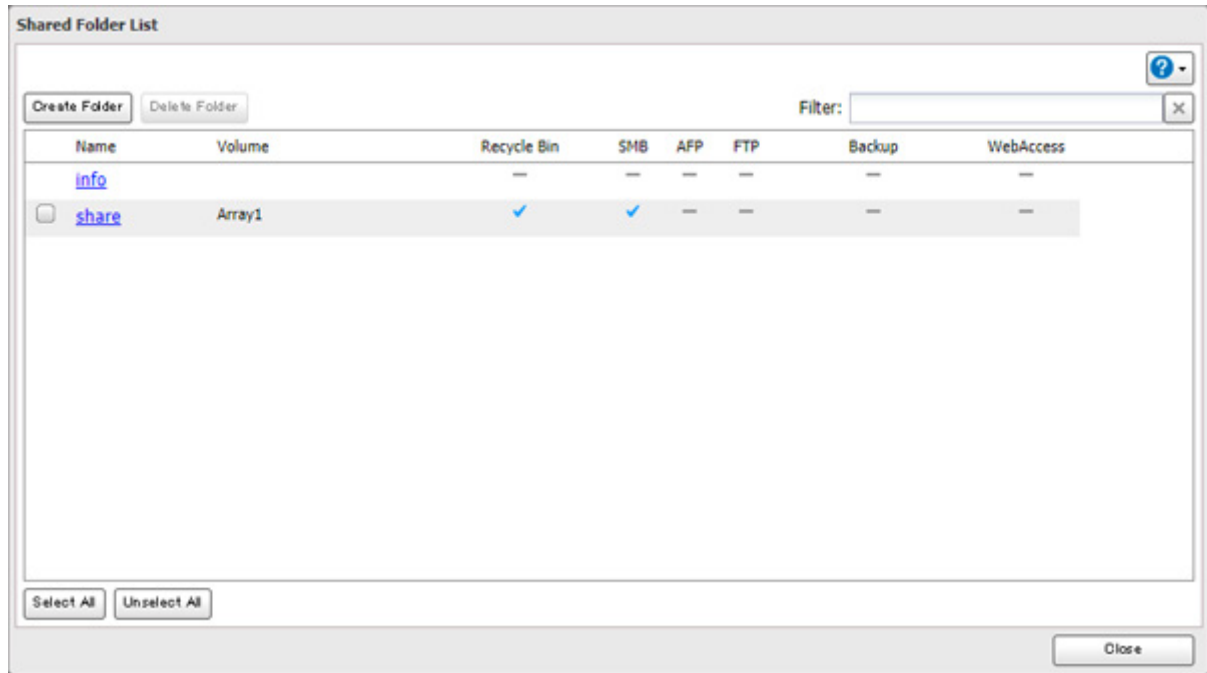
**6** Enter the desired settings, then click *OK*.



**7** Click  to the right of "Folder Setup".



**8** Click the shared folder that you want to set access restrictions for.



**9** Click *Edit*.

**10** Enable “Access Restrictions”.

Access Restrictions:  Enable  Disable

**11** Select the level of access for the user or group.

: Read and write     : Read-only     : No access

**12** Click *OK*.

**Notes:**

- If you change the LinkStation’s name, you will no longer be able to use domain users and groups or access restrictions. To repair this, rejoin the domain.
- To have the LinkStation join an Active Directory domain, configure it to use a DNS server that can resolve names for the Active Directory domain.
- After building an Active Directory domain, the administrator password for joining the domain must be changed at least once, or joining the Active Directory domain will fail.
- The DNS name and NetBIOS name of Active Directory domains should be identical.
- If both read-only and read and write permissions are given, the user will have read-only access. The most restrictive access setting will apply.
- If there are more than five minutes difference between the LinkStation’s clock and the domain controller’s clock, joining the domain or authenticating domain users and groups may fail. For best results, use an NTP server to set the time for all network devices.
- To use the LinkStation as a member server in an Active Directory domain, the LinkStation should be logged in to the domain and accessed from a computer that is not a member of the domain with a valid domain account.
- If the LinkStation is a member server of an Active Directory domain, you cannot connect as a guest user via AFP.
- If your LinkStation is a member server in an Active Directory domain and you change the authentication method to “Workgroup”, the account on the domain controller will not be deleted automatically.

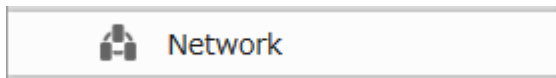
- When the LinkStation joins an Active Directory domain, FTP is disabled. Before using FTP, move the FTP switch back to the **on** position.
- Don't disable the SMB protocol while Active Directory is used for access restrictions. If you do, you will need to enable SMB again and reconfigure AD from scratch.


## NT Domain

If there is an NT domain environment, the LinkStation will use account information from the NT domain server to set access restrictions for files and folders on the LinkStation. There's no need to perform individual account management for the LinkStation. If multiple LinkStations are installed on the network, the account information is centrally managed in the NT domain, greatly reducing the operations required for installation and management.

**Note:** The LinkStation supports a domain environment with a maximum of 1000 domain users and 1000 groups.

- 1 From Advanced Settings, click *Network*.

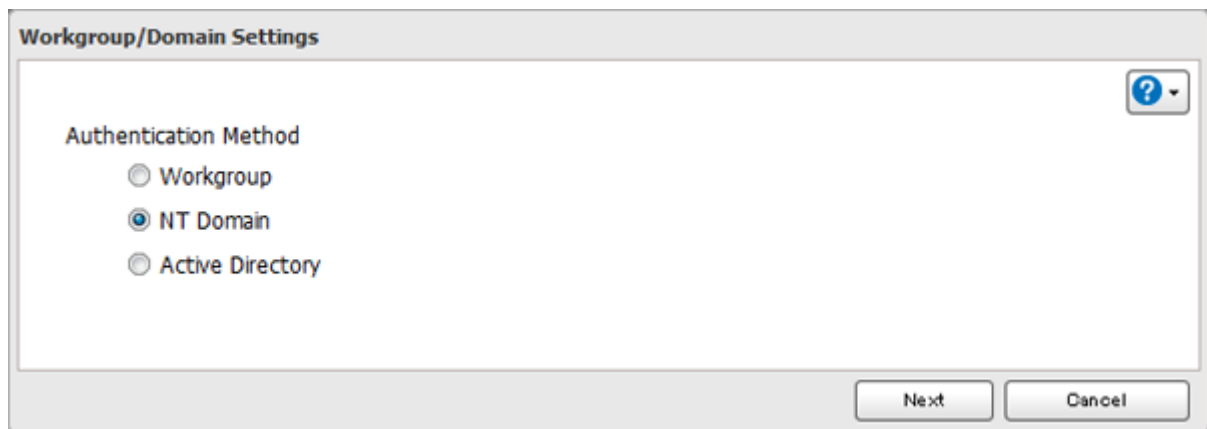


- 2 Click  to the right of "Workgroup/Domain".



- 3 Click *Edit*.

- 4 Select "NT Domain", then click *Next*.



- 5 Click *Yes*.

**6** Enter the desired settings, then click *OK*.

**NT Domain Settings**

NT Domain Name \* : WORKGROUP  
(NetBIOS Name)

NT Domain Controller Name \* :  
(Computer Name)

Administrator Name \* :  
Administrator Password \* :  
WINS Server IP Address:

\* Required

OK Cancel

**7** Click to the right of "Folder Setup".

Folder Setup 2 Folder(s)

**8** Click the shared folder that you want to set access restrictions for.

**Shared Folder List**

Create Folder Delete Folder Filter:

Name	Volume	Recycle Bin	SMB	AFP	FTP	Backup	WebAccess
<a href="#">info</a>		--	--	--	--	--	--
<input checked="" type="checkbox"/> <a href="#">share</a>	Array1	✓	✓	--	--	--	--

Select All Unselect All

Close

**9** Click *Edit*.

**10** Enable "Access Restrictions".

Access Restrictions:  Enable  Disable

**11** Select the level of access for the user or group.

: Read and write  : Read-only  : No access

**12** Click *OK*.**Notes:**

- If you change the LinkStation's name, you will no longer be able to use domain users and groups or access restrictions. To repair this, rejoin the domain.
- If both read-only and read and write permissions are given to a user, the user will have read-only access. The most restrictive attribute will apply.
- If a domain username is more than 20 bytes long, the LinkStation truncates it to 20 bytes.
- To use the LinkStation as a member server in an NT domain, the LinkStation should be logged in to the domain and accessed from a computer that is not a member of the domain with a valid domain account.
- If the LinkStation is a member server of an NT domain, you cannot connect as a guest user via AFP.
- When you change the user or group settings on the domain controller, these changes may not take effect immediately on the LinkStation until it is rebooted.
- If your LinkStation is a member server in an NT domain and you change the external authentication method to "Workgroup", the account on the domain controller will not be deleted automatically.
- If the LinkStation has joined a domain network, you cannot connect to it via FTP.
- Don't disable the SMB protocol while an NT domain server is used for access restrictions. If you do, you will need to enable SMB again and reconfigure the NT domain settings from scratch.

## Authority Delegation via External SMB Servers

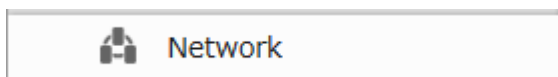
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LinkStations on your network can be linked to an authentication server for centralized management of user accounts and passwords. The authentication server should be another Buffalo NAS device. Other external SMB authentication servers are not supported.

**Notes:**

- Disable SMB2 before using external authentication.
- Access restrictions for local users and groups will still apply to shared folders if an external SMB server is used for authentication.
- If using a Windows PC for external authentication, the default Windows SMB security settings may need to be changed. An easy way to do this is to run File Sharing Security Level Change Tool, available from this product's download page on the [Buffalo website](#). This utility will let you easily change or restore your Windows security settings to work with external authentication.
- The procedure below contains methods to automatically register external users. You can also manually add external users by converting them from local users. Refer to the "[Converting Local Users into External Users](#)" section above for more details on converting local users.

**1** From Advanced Settings, click *Network*.



**2** Click  to the right of "Workgroup/Domain".



**3** Click *Edit*.



- 4 Select “Workgroup”, then click *Next*.

- 5 Click *Yes*.


- 6 Enter a workgroup name. Select “Authenticate local and external SMB server users” and enter the SMB server’s IP address. You can also specify a server from another subnet.

- 7 If “Automatically register users who access LinkStation folders” is checked, users that access any of the LinkStation’s folders will be automatically registered as external users. This process only applies with folders that have access restrictions disabled. After new external users are added, disable this option to limit the number of authenticated user accounts.

If “Restrict user registration to a single folder” is checked, the LinkStation will automatically create a read-only shared folder. Enter the shared folder name. Users that access this specific folder will be automatically registered as external users. If this setting is de-selected at a later time, the LinkStation will automatically delete the folder.

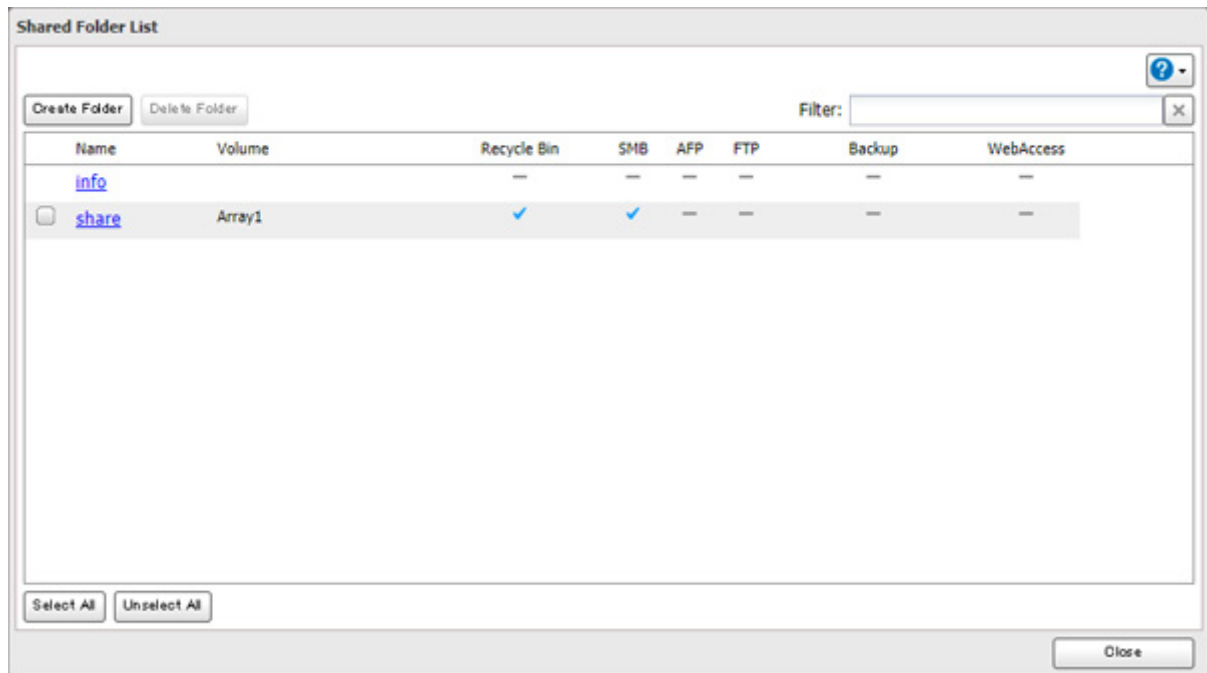
**Note:** Connect to the authentication folder via SMB, not FTP or AFP. Automatic user registration may not work with macOS 10.8 (or later) the first time. If this occurs, try rebooting the LinkStation, then access the authentication shared folder again.

**8** Click *OK* to save any changes. When saving changes to the external authentication server settings, you may not to convert all current local users to external users. If a local user is converted to an external user, their user information (including passwords) will be removed from the NAS. External users cannot be reverted to local users.

**9** Click  to the right of “Folder Setup”.



**10** Click the shared folder that you want to set access restrictions for.



**11** Click *Edit*.

**12** Enable “Access Restrictions”.

Access Restrictions:  Enable  Disable

**13** Click the *External Users* tab and select the level of access for each external user.

 : Read and write  : Read-only  : No access

**14** Click *OK*.

#### Notes:

- Users that are automatically registered belong to the “hdusers” group. They can be added to other groups from within groups settings. Added users will be listed in “Users” > “External Users”. To delete a user that was registered automatically, select that user and click *Delete External User*.
- If both read-only and read and write permissions are given to a user, the user will have read-only access. The most restrictive attribute will apply.
- To access access-limited shared folders from OS X 10.7, use AFP instead of SMB, under “LAN Protocol Support”, select the “AFP (Mac)” checkbox on the destination folders to use AFP.

- If access restrictions are set for users and groups from the authentication server, guest and anonymous connections will not be possible with AFP connections.
- FTP connections do not support authentication with an external SMB server.

# Chapter 4 Storage Management

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## RAID Modes

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LinkStations support many types of RAID. The type of RAID arrays available for use depends on how many drives are installed in your LinkStation.

### Notes:

- If you change the RAID mode, all data on the array is deleted. This is true for every procedure in this chapter. Always back up any important data before performing actions that affect your RAID array.
- Drive capacity is displayed in Settings in actual gigabytes. The Properties window in Windows may show GiB instead, which will be smaller number.
- After the RAID mode is changed (except when creating a RAID 0 array or JBOD), the LinkStation performs a RAID scan that will take about 10 hours per TB. File transfers are slower during this period. While the I17 message is displayed in NAS Navigator2, do not turn off the LinkStation. If you do, the RAID scan will start over.

### RAID 1

Combines two drives into a mirrored array. The usable space is equal to the capacity of a single drive. Identical data is written to each drive. If a drive becomes damaged, data can be recovered by replacing the damaged drive. As long as one drive in the array remains undamaged, all data in the array can be recovered.

### RAID 0

Combines two drives into a single array. The usable space is equal to the total capacity of all drives in the array. This simple RAID mode offers faster performance than RAID modes that include parity. If a single drive in the array becomes damaged, then all data in the array will be lost.

### JBOD

This mode uses the drives inside the LinkStation as individual drives. The usable space is equal to the total capacity of all drives in the LinkStation. If any of the drives become damaged, then the data on that drive will be lost.

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## Working with RAID Arrays

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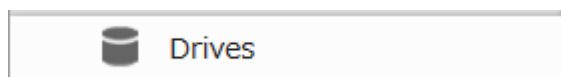
To change RAID settings, navigate to *Drives > RAID* in Advanced Settings.


### Using JBOD

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With JBOD, each drive in the LinkStation is addressed separately. To put drives from an array into JBOD, follow the procedure below.

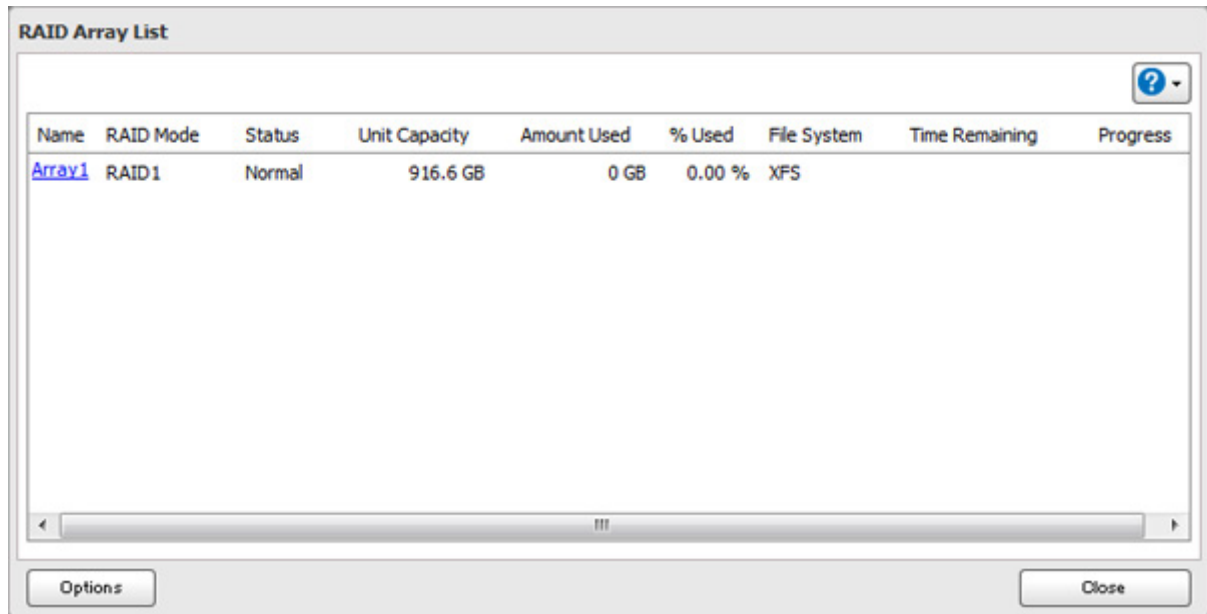
- 1 From Advanced Settings, click *Drives*.



- 2 Click  to the right of "RAID".



- 3 Click the array to delete.



- 4 Click *Delete RAID Array*.

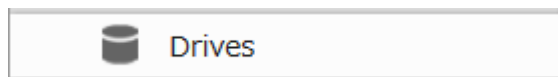
- 5 The "Confirm Operation" screen will open. Enter the confirmation number, then click *OK*.


- 6 Click *OK* when completed. Next, create a shared folder by referring to the ["Adding a Shared Folder"](#) section in chapter 3.

## Changing RAID Mode

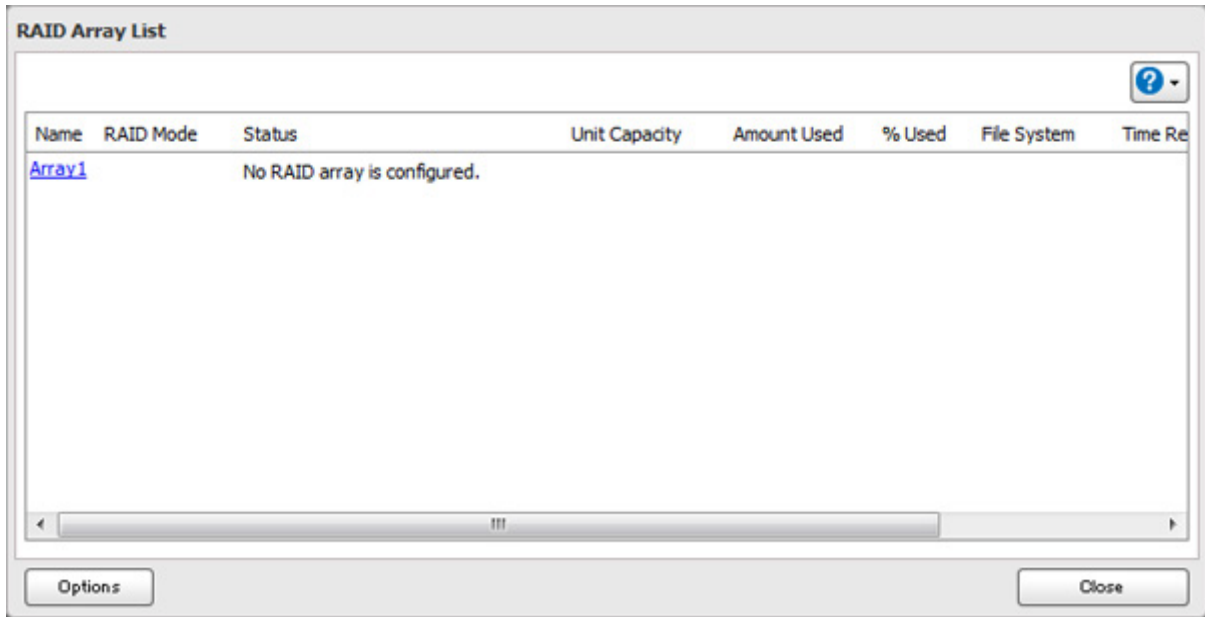
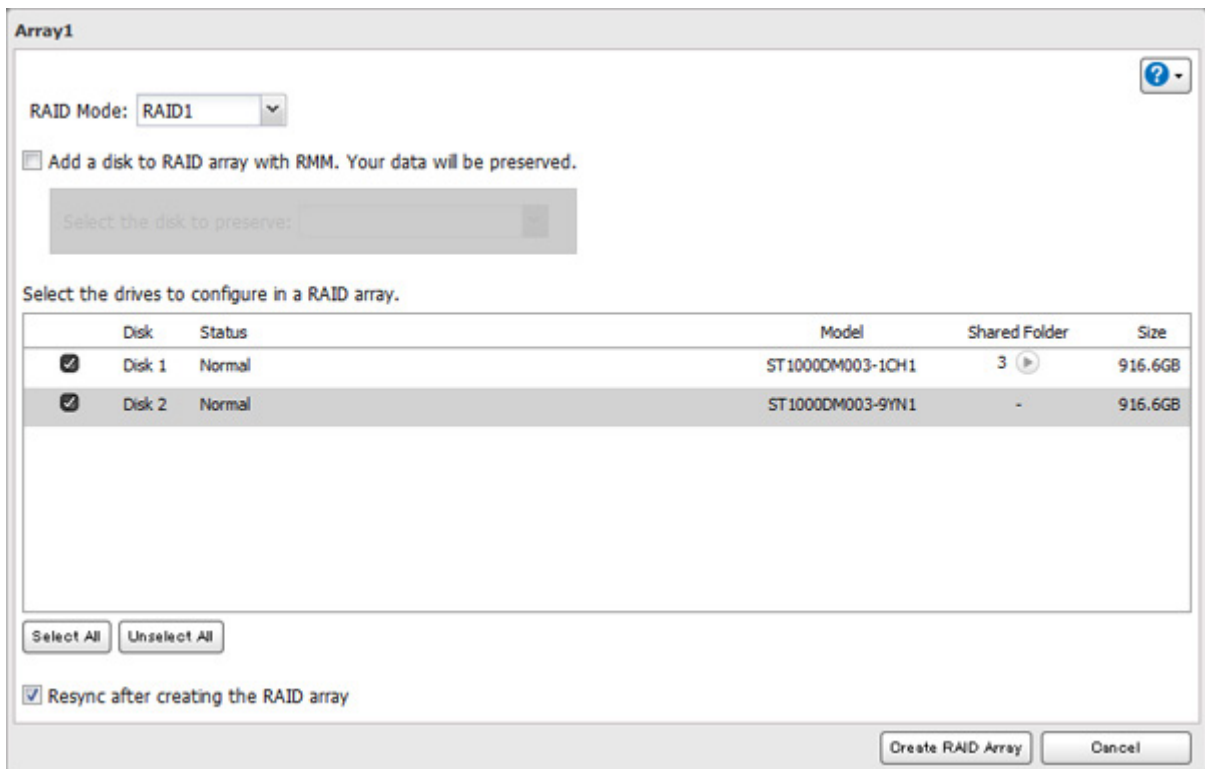
To change the RAID mode, first put the drives into JBOD by referring to the ["Using JBOD"](#) section above. Then, follow the procedure below.

- 1 From Advanced Settings, click *Drives*.



- 2 Click  to the right of "RAID".



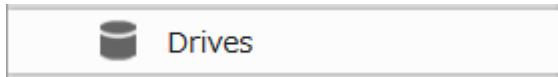
**3** Choose a RAID array.**4** Select a RAID mode and the drives to be used, then click *Create RAID Array*.**5** The “Confirm Operation” screen will open. Enter the confirmation number, then click *OK*.**6** Click *OK* when completed. Next, create a shared folder by referring to the [“Adding a Shared Folder”](#) section in chapter 3.


**Note:** Normally, after a RAID array is created, it is “resynced”, which optimizes the array and makes it more stable. The resyncing process will take about one hour per terabyte of space in the array. File transfers will be slower during this period, but the array will remain fully usable. The I17 message will also be displayed in NAS Navigator2 during the resync. If you clear the “Resync after creating the RAID array” checkbox, the resync process will be skipped. If the LinkStation is rebooted during the resync process, resyncing will begin again from the beginning.

## Expanding RAID Capacity Without Deleting Data

You can create a RAID array without erasing the data on the drive by using RMM (RAID Mode Manager). You must have two drives available in JBOD (not in a RAID array) to build the RAID 1 array with RMM.

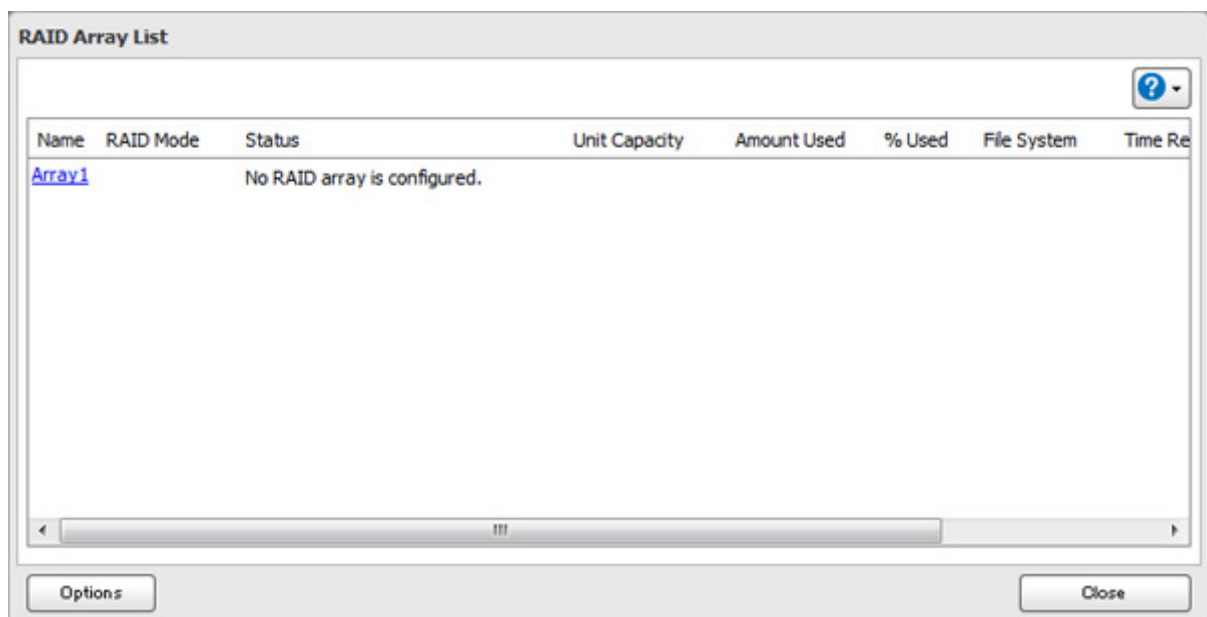
- 1 From Advanced Settings, click *Drives*.

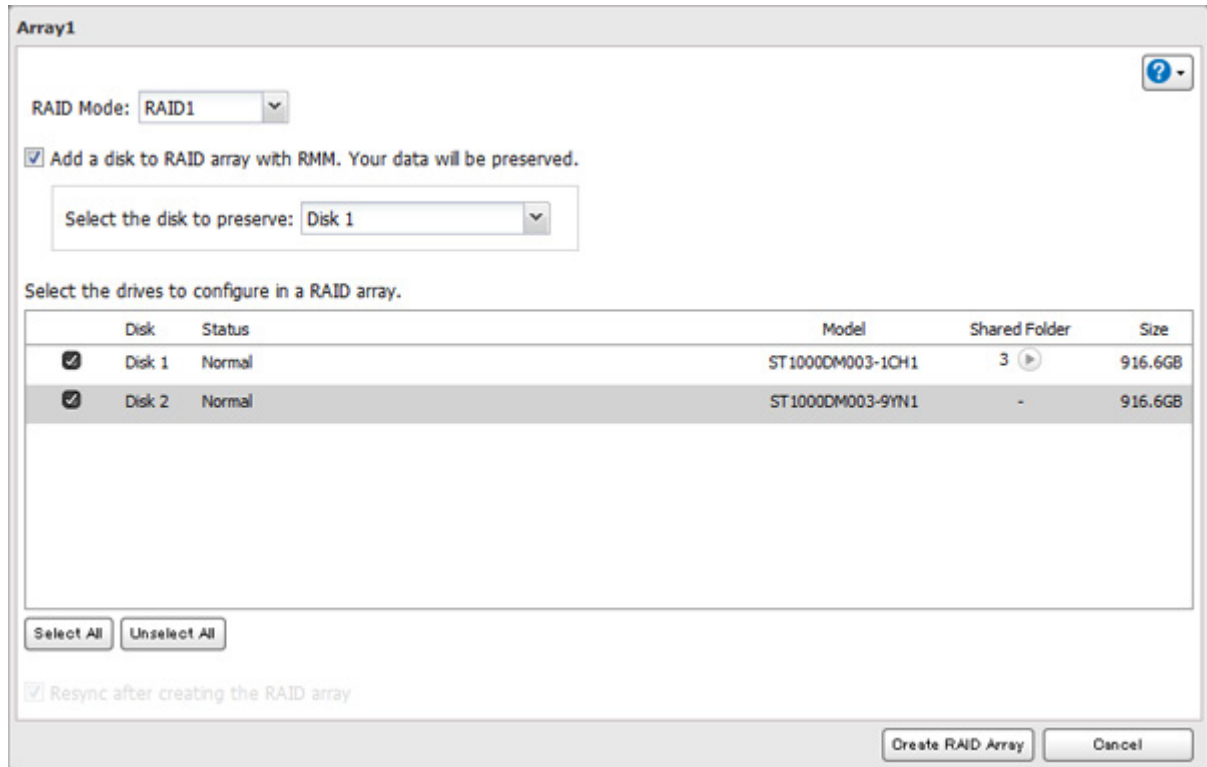


- 2 Click  to the right of "RAID".



- 3 Choose a RAID array.



**4** Set the RAID mode to “RAID 1”.

**5** Select the “Add a disk to RAID array with RMM. Your data will be preserved.” checkbox.

**6** Select the drive whose data will be saved from the drop-down list.

**7** Select the drive to add to the RAID array.

**8** Click *Create RAID Array*.

**9** The “Confirm Operation” screen will open. Enter the confirmation number, then click *OK*.

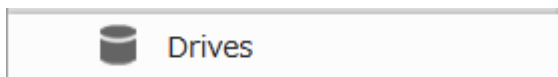
**10** Click *OK* when completed.

## RAID Scanning

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A RAID scan checks your RAID array for bad sectors and if it finds any, it automatically repairs them. Only RAID 1 arrays are supported. For best results, run a RAID scan regularly.

**1** From Advanced Settings, click *Drives*.



**2** Move the RAID scanning switch to the  position to enable RAID scanning.

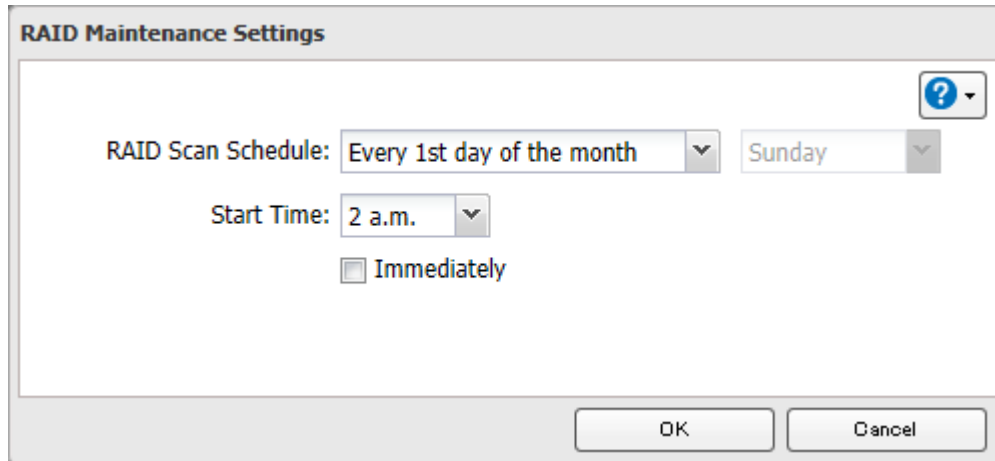


**3** Click  to the right of “RAID Scanning”.



**4** Click *Edit*.

**5** Select when to run the scan and click *OK*.



**Notes:**

- Select the “Immediately” checkbox to run a RAID scan immediately.
- To stop a RAID scan, click *Cancel RAID Scan*.

## Adding an External Drive

### Connecting an External Drive

Your LinkStation includes a USB port and you can connect an external drive to this port. Once connected, it appears as a shared folder on the LinkStation. Formatted drives are detected automatically. Unformatted drives should be formatted in Settings.

After a USB drive is recognized, Windows adds “usbdisk x” in File Explorer, where “x” is the USB port to which the drive is connected.

### Compatibility

The following devices are supported by the LinkStation. Buffalo external USB drives are recommended but DUB and DIU series drives are not supported.

- USB storage devices
- Card readers (except for card readers that can recognize two or more memory cards)

Supported file systems for external drives and the types of allowed access are listed below:

	Ext3*	XFS	NTFS*	exFAT*	FAT32	HFS Plus*
Accessing via SMB	R	R/W	R/W	R/W	R/W	R
Using as a backup drive	R/W	R/W	R/W	R/W	R/W	R
Using for Direct Copy	R/W	R/W	R/W	R/W	R/W	R

R/W: Read and write, R: Read-only

\*This cannot be formatted from Settings.

Connect only one device to a USB port of the LinkStation. Some external drives with automatic power-on don’t turn on automatically when connected to the LinkStation. Use their manual switch to turn them on. Be sure to connect

only one bus-powered drive at a time. If there is insufficient bus power for your USB drive, connect its AC adapter. Note that only the first partition of a connected USB drive is mounted. Additional partitions are not recognized.

## Dismounting Drives

If the LinkStation is powered on, dismount drives (internal and external) before unplugging them. You may dismount external drives using the function button, or dismount any drive from Settings. If the LinkStation is off, then all drives are already dismounted and may be unplugged safely.

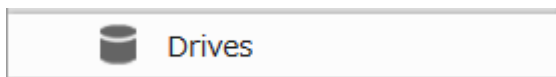
**Note:** If you unplug your external drives without dismounting them, Settings may still show “usbdisk” in the shared folder list. Reboot your LinkStation to clear it.

### Dismounting with the Function Button

Press and hold the function button for three seconds. The white function LED will go out as all attached USB drives are dismounted. You may now unplug them safely.

### Dismounting from Settings

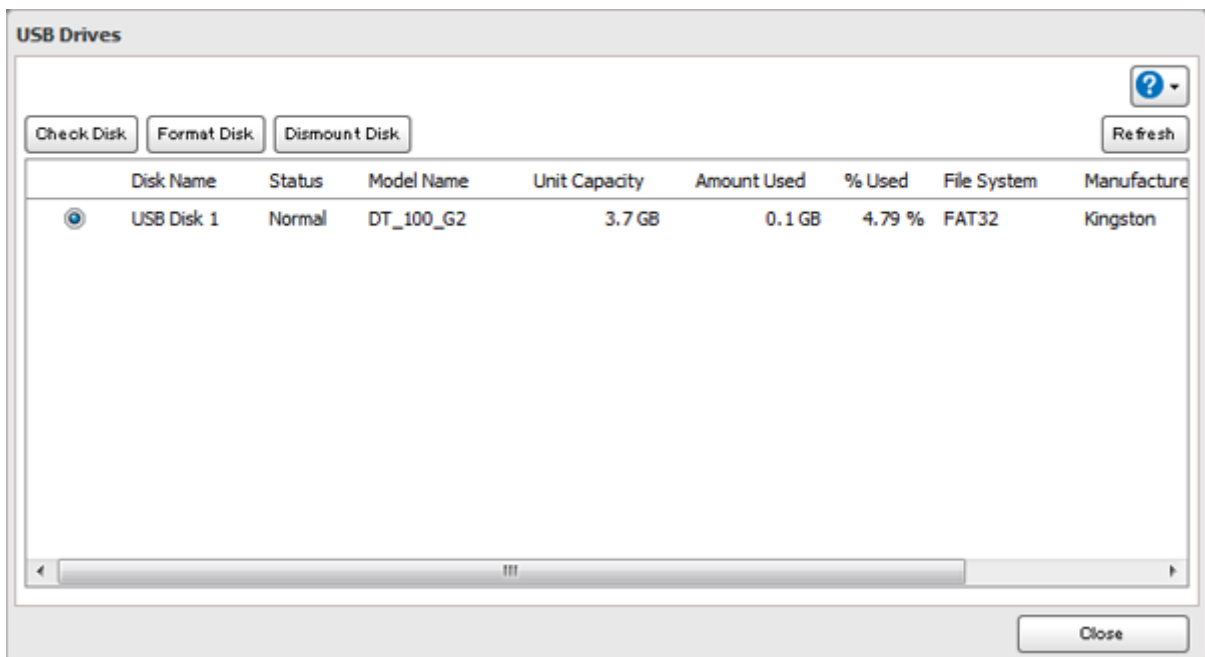
- 1 From Advanced Settings, click *Drives*.



- 2 Click *Drives* to dismount an internal drive or *USB Drives* to dismount an external drive.



- 3 Select the drive to dismount and click *Dismount Disk*.



- 4 The “Confirm Operation” screen will open. Enter the confirmation number, then click *OK*.

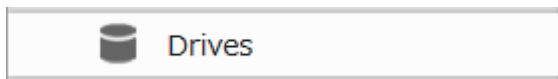
- 5 When the dismounting process is completed, it is safe to unplug the drive. Disconnect the drive from the LinkStation.

**Note:** To remount the drive, unplug it and then plug it back in.

## Checking Drives

A drive check tests the data on a drive in the LinkStation or one that is connected via USB for integrity. Errors are fixed automatically. With large drives, a drive check may run for many hours. Shared folders cannot be accessed during a drive check. Do not turn off the LinkStation until the drive check is finished. Use the procedure below to run a drive check.

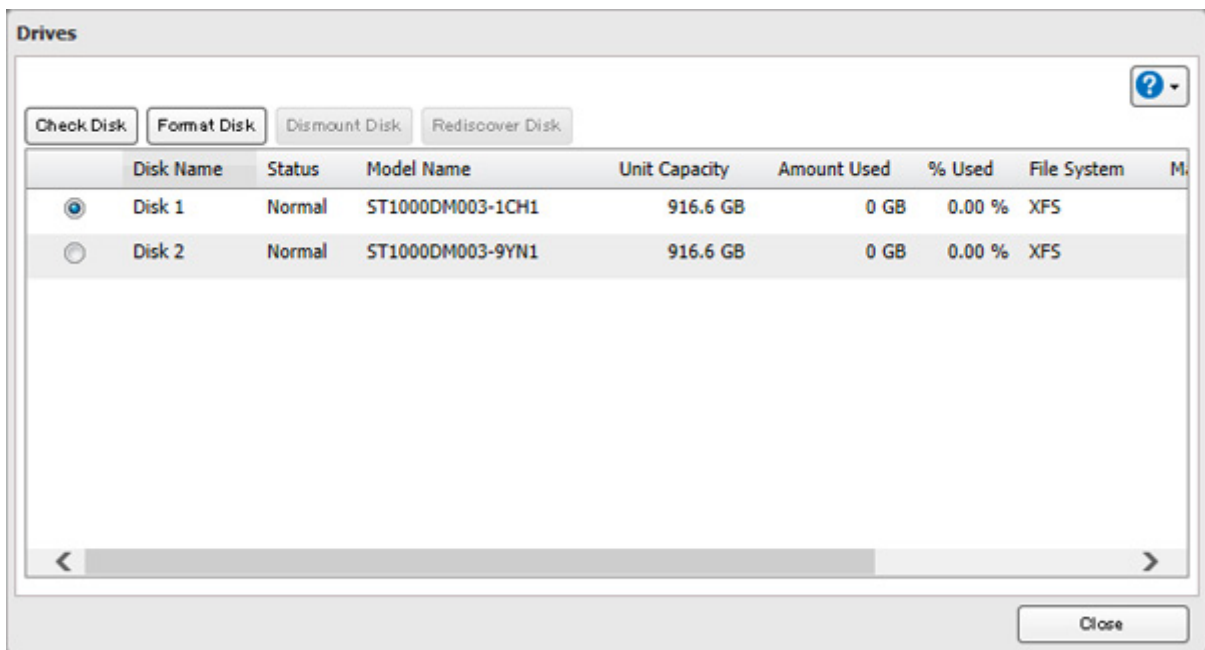
- 1 From Advanced Settings, click *Drives*.



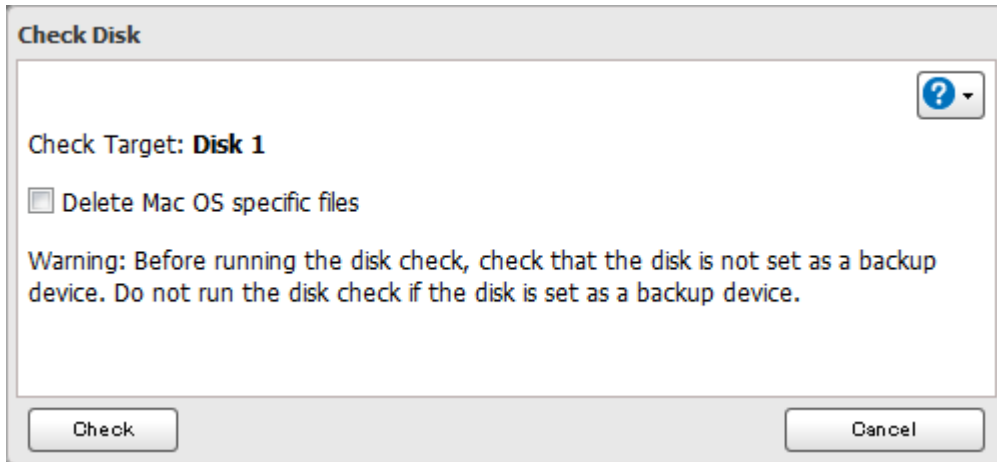
- 2 Click *Drives* to check an internal drive or *USB Drives* to check an external drive.



- 3 Select the drive or array to test, then click *Check Disk*.



**4** Click *Check*. You have the option of deleting information files from macOS during the check if desired.



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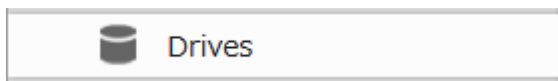
## Formatting Drives

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**Notes:**

- Under some circumstances, data deleted when a drive is formatted can be recovered. To ensure that data is “gone forever”, a format might not be sufficient. Refer to the [“Erasing Data on the LinkStation Completely”](#) section below.
- After a drive is formatted, the “% Used” and “Amount Used” in Settings will not be 0. This is because some drive space is used for the system area.

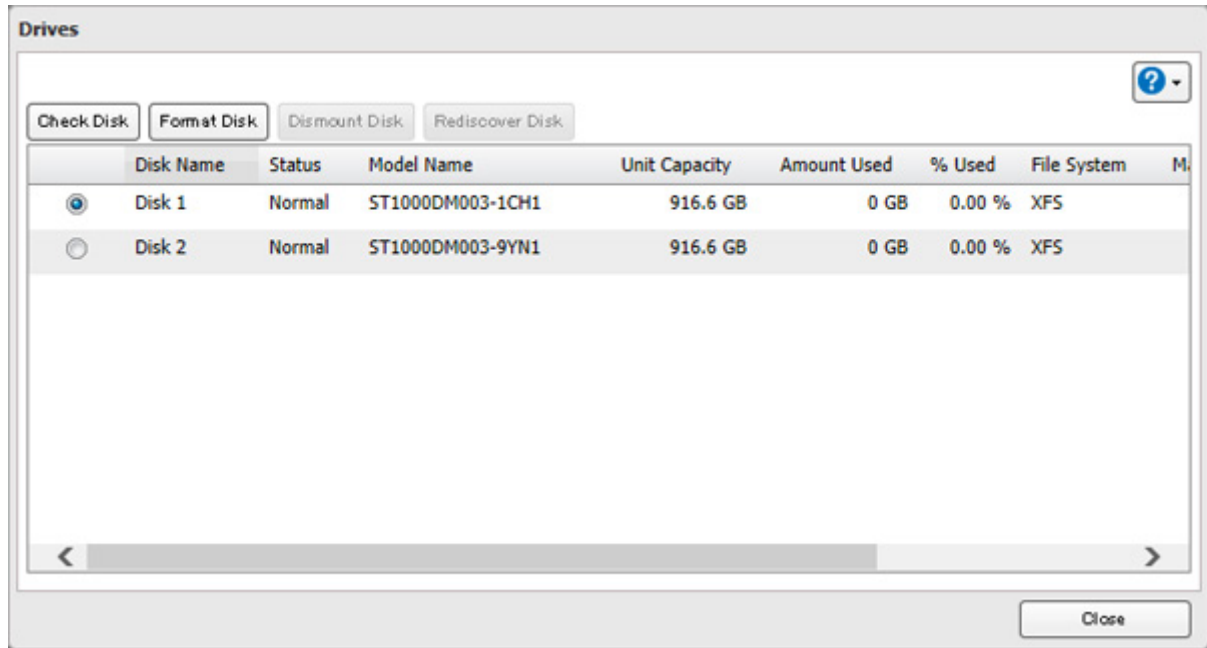
**1** From Advanced Settings, click *Drives*.



**2** Click *Drives* to format an internal drive or *USB Drives* to format an external drive.

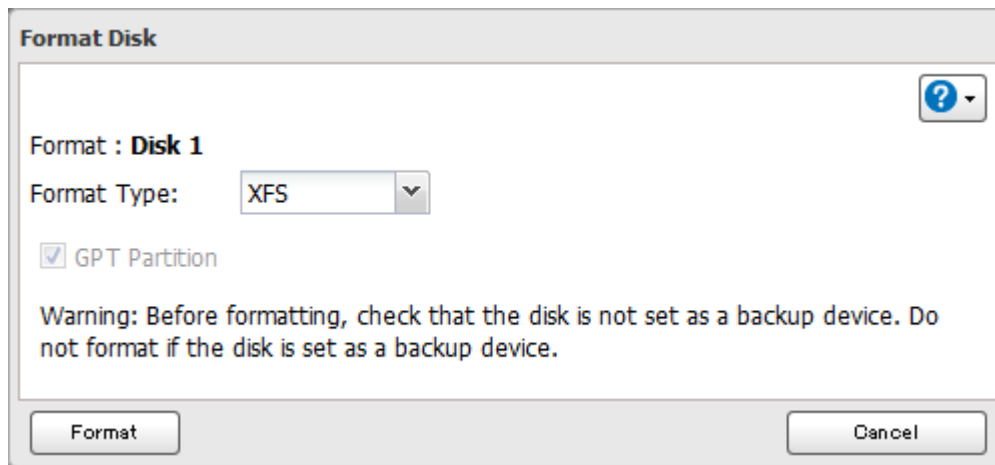


**3** Select the drive or array to format, then click *Format Disk*.



**Note:** If you connect an external drive to the LinkStation and the drive status is still shown as "Unformatted", refresh the status by clicking *Rediscover Disk*. If the status doesn't change, disconnect and reconnect the USB drive.

**4** Select a format type, then click *Format*.



**5** The "Confirm Operation" screen will open. Enter the confirmation number, then click *OK*.

**6** Depending on the size of your drive, the format may take several minutes or several hours to complete. The power LED will flash during the format. Shared folders cannot be accessed during a format. Click *OK* when completed.

**Notes:**

- Do not turn off or disconnect power to the LinkStation while formatting a drive.
- For drives of 2.2 TB or larger, make sure that the "GPT Partition" checkbox is selected. If you accidentally format a larger drive without GPT, disconnect and then reconnect it before reformatting with GPT.

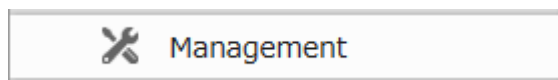
## Erasing Data on the LinkStation Completely


Under some circumstances, data from formatted drives can be recovered. The drive erasure process in this section does a much more thorough job of erasing data. This procedure is recommended for removing all data from a drive in a way that makes it nearly impossible to recover with current tools. The LinkStation will then be in the following state:

- Both drives in JBOD
- An empty shared folder on each drive
- All settings returned to their default values
- All logs deleted

Follow the procedure below to completely and permanently erase all data from your LinkStation.

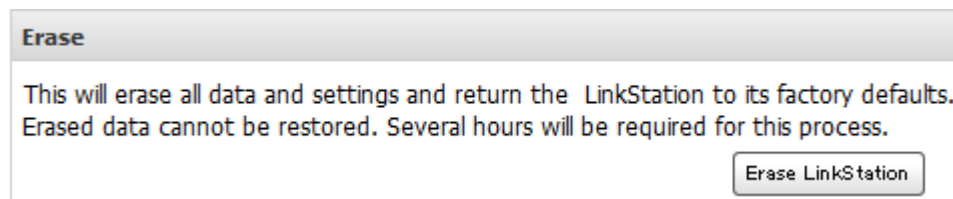
- 1 From Advanced Settings, click *Management*.



- 2 Click  to the right of "Restore/Erase".



- 3 Click *Erase LinkStation*.



- 4 The "Confirm Operation" screen will open. Enter the confirmation number, then click *OK*.

- 5 All data on the LinkStation will be permanently erased.

## Quotas

You can set a quota for each user or group as well as a threshold alert where you will receive an email notification if the space used exceeds the configured threshold. To configure email notifications for the drive quota, refer to the ["Email Notification"](#) section in chapter 8.

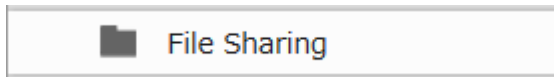
### Notes:


- When using quotas, disable the recycle bin or empty the trash folder often. The limited space includes the space used for trash.
- Quotas apply per drive or per array. If a quota is set to 1 GB, each array or drive can use a maximum of 1 GB.
- Quotas cannot be set for external drives connected to the LinkStation.
- If both user and group quotas are configured for a user, the most restrictive quota will always apply.

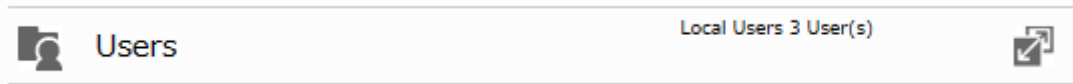
## Quotas for Users

Follow this procedure to limit the shared folder drive space available for a user.

- 1 From Advanced Settings, click *File Sharing*.

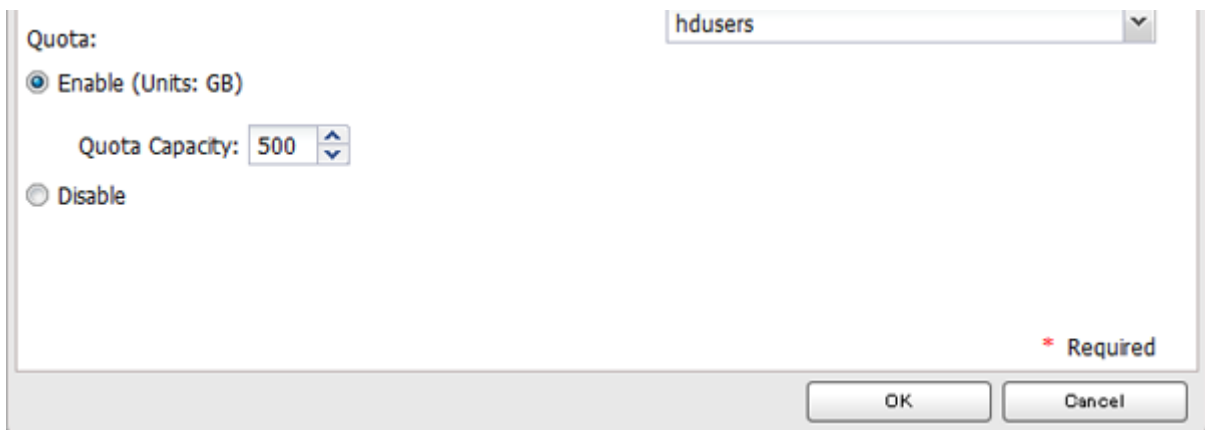


- 2 Click  to the right of "Users".




- 3 Select the user that will be given a quota and click *Edit*. If you want to set a quota for a new user, create a user by referring to the ["Adding a User"](#) section in chapter 3.

- 4 Enable quotas, choose the maximum amount of space the user will be allowed to use, and click *OK*.



**Note:** If you change the primary group, restart the LinkStation to apply the quota settings.

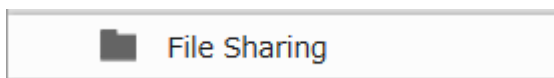
- 5 Click *Close*.


- 6 Click  at the top-right of Settings and select *Restart*.

## Quotas for Groups

Follow the procedure below to limit the space for shared folders that each group can use.

- 1 From Advanced Settings, click *File Sharing*.



- 2 Click  to the right of "Groups".



- 3 Select the group that will be given a quota and click *Edit*. If you want to set a quota for a new group, create a group by referring to the ["Adding a Group"](#) section in chapter 3.

- 4** Enable quotas, choose the maximum amount of space the group will be allowed to use, and click *OK*.

Quota:

Enable(Units: GB)


Quota Capacity: 500

Disable

\* Required

OK Cancel

- 5** Click *Close*.


- 6** Click  to the right of "Users".

Users Local Users 3 User(s)

- 7** Select the user that will inherit the group quota settings and click *Edit*. If you want to add a new user to a group with a quota, create a user by referring to the ["Adding a User"](#) section in chapter 3.

- 8** Select the group's checkbox to join and change the user's primary group to the group with the quota, then click *OK*.

- 9** Click *Close*.

- 10** Click  at the top-right of Settings and select *Restart*.

---

## Drive Replacement

---

If a drive fails, an error message will be displayed in both NAS Navigator2 and Settings.

### Notes:

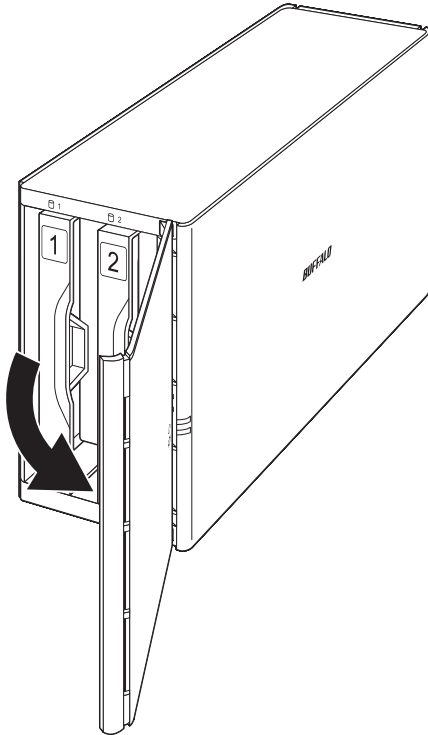
- Do not replace a running drive while the LinkStation is turned on. Power down the LinkStation before changing the drive. While the LinkStation is running, never unplug or remove drives without dismounting them first.
- For the replacement drive, use a Buffalo OP-HDBST series drive. The replacement drive should be the same size or larger as the original drive. If a larger drive is used, the extra space will not be usable in a RAID array.
- If sending a defective drive to Buffalo for replacement, please keep the cartridge as Buffalo will only replace the drive and not the cartridge.
- To avoid damaging the LinkStation with static electricity, ground yourself by touching something made of metal before handling any sensitive electronic parts.
- After a drive is replaced, it will take about 30 minutes before normal file reading and writing are restored. Settings may not be accessible during this period.
- Do not change the order of the drives in the LinkStation. For example, pulling out drive 1 and replacing it with drive 2 may cause data to be corrupted or lost.
- If a new drive is not recognized after installing it, click *Rediscover Disk* in Settings.



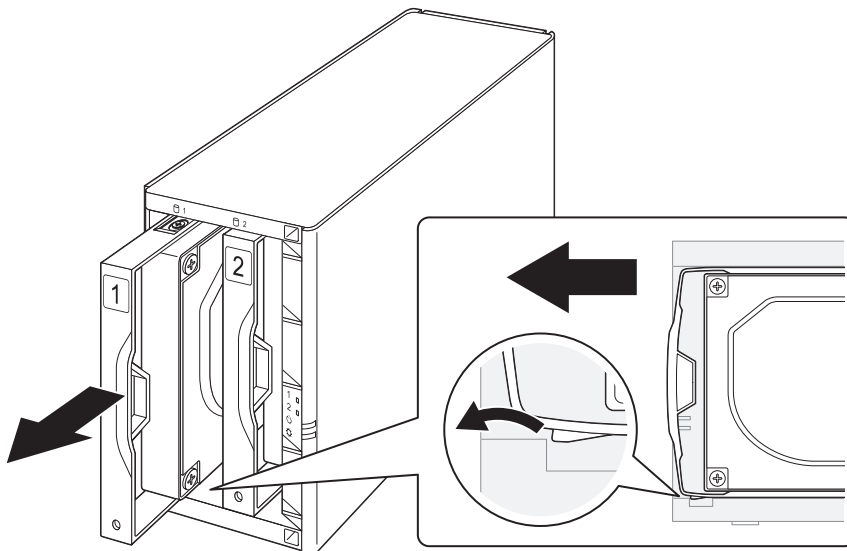
## Replacing a Defective Drive

---

- 1 Turn the LinkStation off and remove all cables.
- 2 Squeeze the left side of the front panel and swing it open.



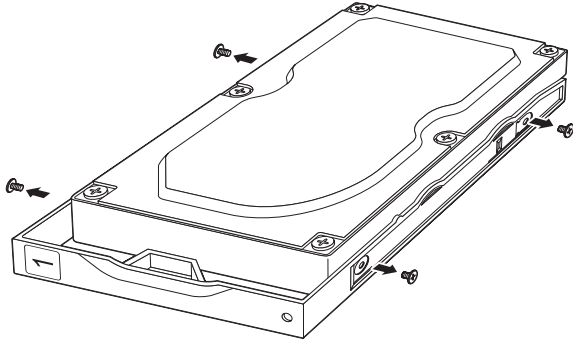
- 3 Push the failed drive's cartridge up and remove it from the LinkStation.



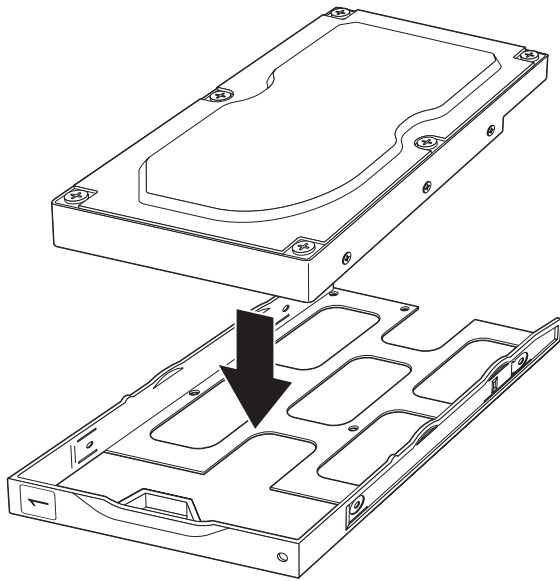
**Notes:**

- Do not press hard on the top of the LinkStation.
- Pull the drive straight out the front of the chassis.

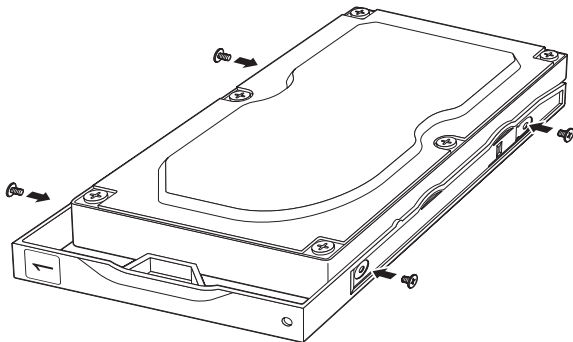
**4** Remove the drive from the cartridge.



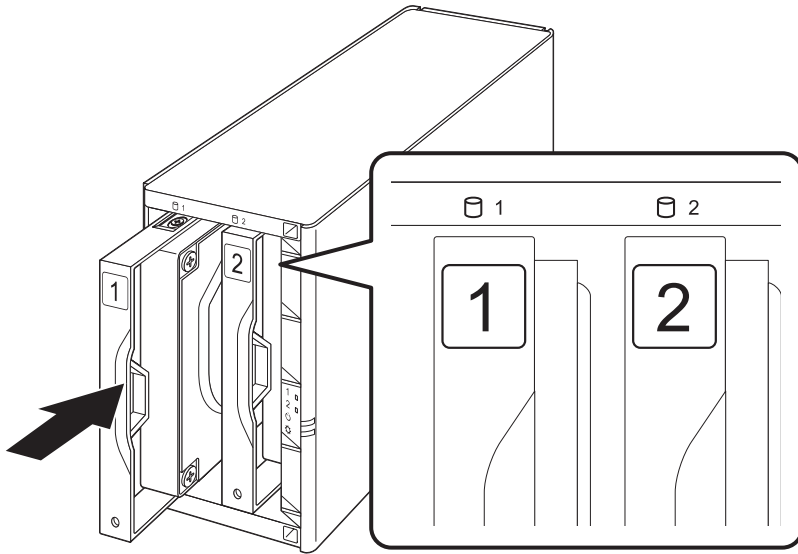
**5** Install a new drive (sold separately) into the cartridge.



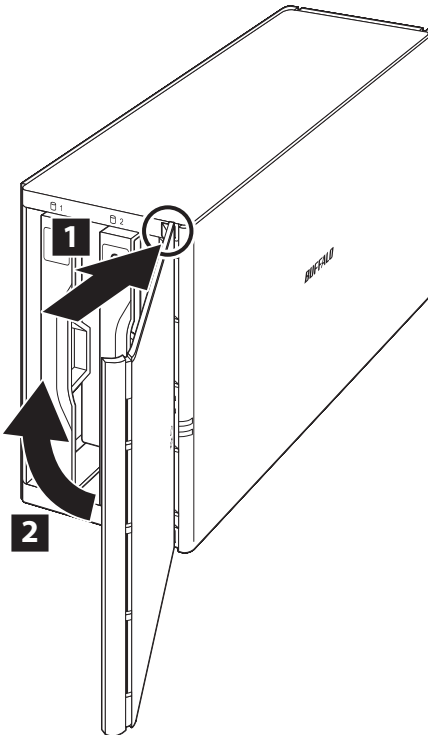
**6** Replace the four screws.



**7** Insert the new drive in the empty slot.



**8** Close the front panel.



**9** Connect all cables, then turn on the LinkStation.

## Rebuilding the RAID Array

---

Depending on the RAID mode you have configured, the procedure after replacing the defective drive may vary. Refer to the section of the configured RAID mode and follow the described procedure.

### For RAID 1

**1** From Advanced Settings, navigate to *Drives > RAID*.

- 2** Click the RAID array that held the failed drive.
- 3** Select the replaced drive and click *Recover RAID Array*.
- 4** Enter the confirmation number, then click *OK*.

### For RAID 0

- 1** From Advanced Settings, navigate to *Drives > RAID*.
- 2** Click the RAID array that held the failed drive and click *Delete RAID Array*.
- 3** The “Confirm Operation” screen will open. Enter the confirmation number, then click *OK*.
- 4** From *Drives > Drives*, select the replaced drive and click *Format Disk*.
- 5** The “Confirm Operation” screen will open. Enter the confirmation number, then click *OK*.
- 6** From *Drives > RAID*, choose “RAID 0” from the RAID mode drop-down list and click *Create RAID Array*.
- 7** The “Confirm Operation” screen will open. Enter the confirmation number, then click *OK*.
- 8** Click *OK* when completed.

The new RAID 0 array will be created. Next, create a shared folder by referring to the [“Adding a Shared Folder”](#) section in chapter 3.

### For JBOD

- 1** From Advanced Settings, navigate to *Drives > Drives*.
- 2** Select the replaced drive and click *Format Disk*.
- 3** The “Confirm Operation” screen will open. Enter the confirmation number, then click *OK*.

The drive will be formatted. Next, create a shared folder by referring to the [“Adding a Shared Folder”](#) section in chapter 3.

# Chapter 5 Remote Access

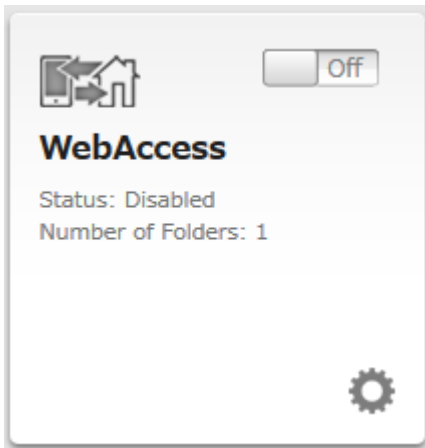
## WebAccess

WebAccess is a software utility for accessing the files in the shared folder of your LinkStation from your computer or mobile device through the Internet. **Be careful when configuring WebAccess. Certain settings can make the files in the shared folder available to anyone on the Internet, without any access restrictions.**

**Note:** WebAccess supports downloading up to 60,000 files at a time. Attempting to download 60,000 or more files at a time may result in unexpected behavior.

### Configuring from Easy Admin

1 From Easy Admin, click *WebAccess*.



2 Move the WebAccess switch to the  position to enable WebAccess.



WebAccess allows you to create a secure personal cloud for easy remote access and file sharing with anyone, anywhere over the Internet while your data remains securely stored in one place on your home network.



3 Select the level of access for each shared folder from the drop-down list.

Target Shared Folder	Level of Access
usbdisk1	No remote access
share	No remote access
	No remote access
	Allow access to anyone
	Only registered groups and users
	Sync with shared folder settings

BuffaloNAS.com Name

- 4** Enter a BuffaloNAS.com name for your BuffaloNAS account.

BuffaloNAS.com Name

BuffaloNAS.com name is a username to access your shared folder(s) via WebAccess.


**Note:** The BuffaloNAS.com name may contain between 3 and 20 alphanumeric characters, underscores (\_), and hyphens (-). The BuffaloNAS.com name is case-sensitive.


- 5** Click *Apply*.

- 6** Continue with the procedure at <http://buffalonas.com/manual/setup/en/>.

## Configuring from Advanced Settings

- 1** From Advanced Settings, click *File Sharing*.

 File Sharing

- 2** Click  to the right of "WebAccess".

 WebAccess  Off 

- 3** Click *Edit*.

**WebAccess Settings**

HTTPS/SSL Encryption: Disabled

BuffaloNAS.com Registration: Enabled

BuffaloNAS.com Name:

BuffaloNAS.com Key:

Disabled

Other DNS Service Hostname:

Automatic Router Setup (UPnP): Enabled

Disabled

External Port:

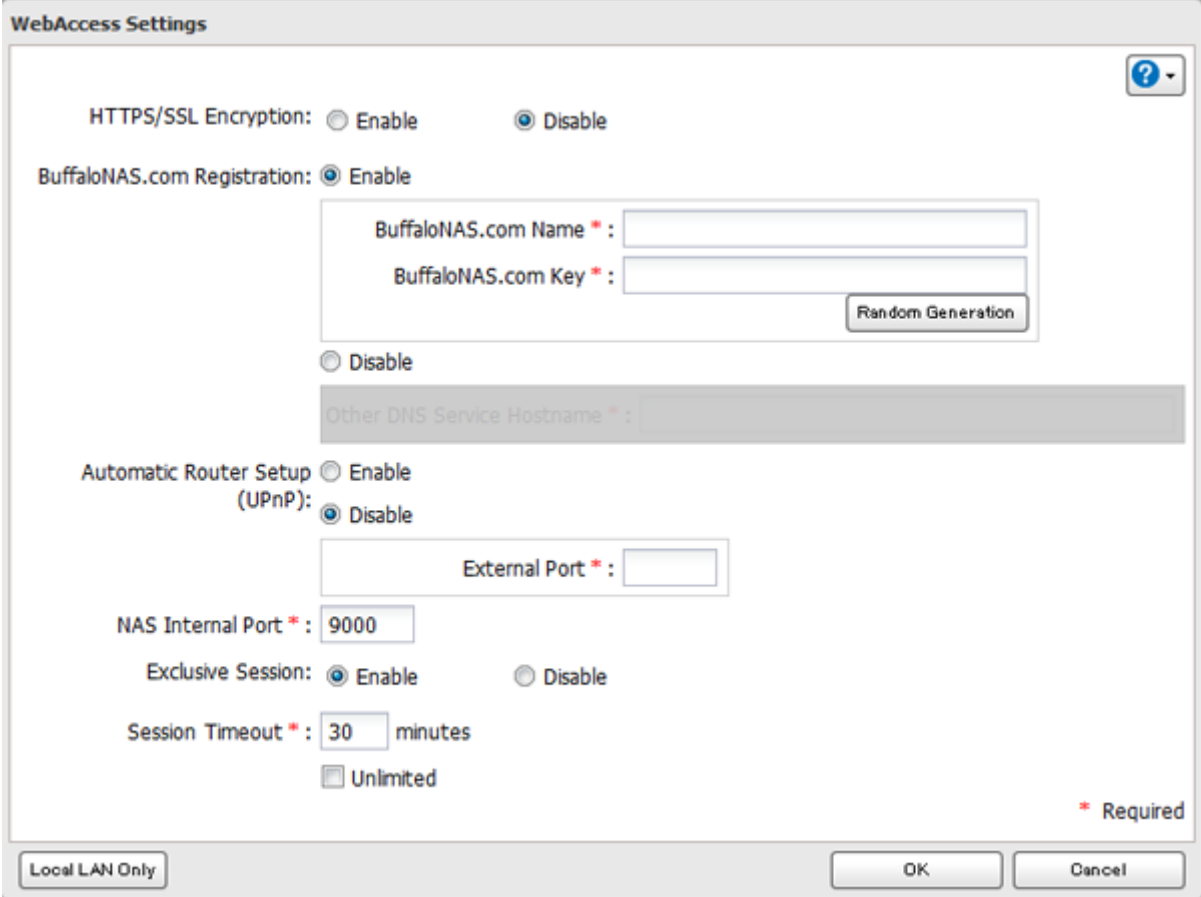
NAS Internal Port: 9000

Exclusive Session: Disabled

Session Timeout: 30 minutes

WebAccess URL: -

#### 4 Configure the desired settings, then click *OK*.



The image shows the 'WebAccess Settings' dialog box. It contains the following settings:

- HTTPS/SSL Encryption:**  Enable  Disable
- BuffaloNAS.com Registration:**  Enable
  - BuffaloNAS.com Name \* :
  - BuffaloNAS.com Key \* :
  - 
  - Disable
  - Other DNS Service Hostname \* :
- Automatic Router Setup (UPnP):**  Enable  Disable
  - External Port \* :
- NAS Internal Port \* :**
- Exclusive Session:**  Enable  Disable
- Session Timeout \* :**  minutes
  - Unlimited

At the bottom, there is a 'Local LAN Only' checkbox, 'OK' and 'Cancel' buttons, and a '\* Required' indicator.

- To use SSL encryption for more secure data transfers, enable “HTTPS/SSL Encryption”. However, some WebAccess applications may not support HTTPS/SSL encryption. Disable it if this is an issue. For more details, refer to the WebAccess Help Guide.
- You may use the BuffaloNAS.com server as a DNS server, or disable it to use a different DNS server.
- Choose a “BuffaloNAS.com Name” and “BuffaloNAS.com Key” for your WebAccess account. Names and keys may contain between 3 and 20 alphanumeric characters, underscores (\_), and hyphens (-).
- If “Exclusive Session” is enabled, multiple users cannot be logged in to WebAccess at the same time. Only the last login will be active.
- Enter a time in minutes (1 to 120, or “Unlimited”) before inactive users are logged out of WebAccess.

#### 5 Move the WebAccess switch to the position to enable WebAccess.

#### 6 Click to the right of “Folder Setup”.



#### 7 Select a shared folder to publish.

##### Notes:

- For best results, create a new dedicated share for WebAccess.
- When accessing shared folders through WebAccess from a remote location, a username and password may be required for certain operations. For best results, create a user account with permissions on the WebAccess share before using WebAccess.

#### 8 Click *Edit*.

**9** Under “LAN Protocol Support”, select the “WebAccess” checkbox.

**10** Select the desired WebAccess security level for “WebAccess Public Mode”.

**Allow anonymous:** Anyone can access (view) shared folders. (Access restrictions configured for shared folders will not work.)

**Allow all groups and users:** All groups and users registered on the Buffalo NAS device can use WebAccess. (Access restrictions configured for shared folders will not work.)

**Use inherited folder permissions:** Users and groups have the same access permissions with WebAccess that they do locally. If access restrictions are not set for the shared folder, then this option will not be shown.

Whether a user or group can access a folder through WebAccess depends on a combination of WebAccess settings and the shared folder’s settings.

		Not logged in	Access restrictions for the logged-in users		
			No access	Read-only	Read and write
WebAccess public mode	Allow anonymous	R	R/W	R/W	R/W
	Allow all groups and users	-	R/W	R/W	R/W
	Use inherited folder permissions	-	-	R	R/W

R/W: Read and write, R: Read-only, -: No access

**11** Click *OK*.

There are many ways to access WebAccess folders depending on your device:

- From a computer, supported browsers include Microsoft Edge, Firefox, Google Chrome, Internet Explorer 9 or later, Safari 9 or later. Refer to the help guide at the BuffaloNAS.com website after connecting with your BuffaloNAS.com name for more detailed information.
- To access from an iOS device, install the “WebAccess i” application from the App Store. Refer to the help guide for the app for more detailed information.
- To access from an Android device, install the “WebAccess A” application from Google Play. Refer to the help guide for the app for more detailed information.

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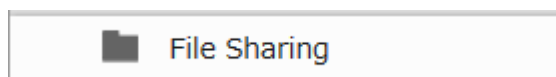
## FTP

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By default, the LinkStation’s shares are only accessible by users connected to the same network or router as the LinkStation. The optional FTP server allows users outside the local network to access the LinkStation.

**Note:** FTP is intended for users who already have FTP client software and have experience with it.


**1** From Advanced Settings, click *File Sharing*.

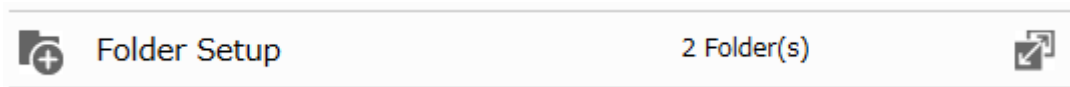


**2** Move the FTP switch to the  position to enable FTP.





**3** Click  to the right of "Folder Setup".



**4** Choose a folder to enable remote FTP access on.

**5** Click *Edit*.

**6** Under "LAN Protocol Support", select the "FTP" checkbox; select read-only or read and write for the shared folder's attribute and click *OK*.

### Accessing the LinkStation with an FTP Client

To access the LinkStation via FTP, configure your FTP client software with the following settings:

- Hostname: IP address of the LinkStation
- Username: the LinkStation's username
- Password: the LinkStation's password
- Port: 21

### Accessing the LinkStation with an Anonymous User

To allow anonymous access to your FTP share, disable access restrictions. Configure your FTP client software with the following settings for anonymous FTP access:

- Hostname: IP address of the LinkStation
- Username: "Anonymous"
- Password: any character string
- Port: 21

### Notes:

- If the LinkStation joins a domain, domain and anonymous users cannot remote access via FTP.
- Shared folders connected by FTP are available from the "/mnt" folder. The examples of default locations are:  
/mnt/array1/share  
/mnt/disk1/share  
/mnt/usbdisk1
- Don't use FTP to share files and folders with multibyte characters in their names with a Mac. Use an AFP or SMB connection instead.
- If a file was created or copied using AFP, you may be unable to delete it using an FTP connection. If this occurs, use an SMB or AFP connection instead to delete the file.
- For FTP connections, make sure that the total filename including the directory path is 250 single-byte characters or less.

# Chapter 6 Backup

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## Backing Up Data on the LinkStation

---

You can back up the LinkStation folders to another shared folder on the same LinkStation, a connected USB drive, or a shared folder on another Buffalo NAS device, either on the same network or on another network. The following describes what can be configured as backup sources and backup destinations.

### Folders Available as Backup Sources

- Shared folders on this LinkStation (excluding the “info” folder)
- USB drives connected to this LinkStation
- Shared folders on another Buffalo NAS device\*

### Folders Available as Backup Destinations

- Shared folders on this LinkStation (excluding the “info” folder)
- USB drives connected to this LinkStation\*
- Shared folders on another Buffalo NAS device\*\*

\*The folder should have the “Backup” checkbox selected for “LAN Protocol Support” on the shared folder settings.

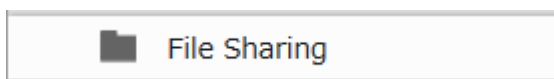
\*\*Subfolders cannot be selected.


## Preparing a Backup Destination

---

First, configure a shared folder on a Buffalo NAS device or connected USB drive as a backup destination. The procedure below details using another shared folder on the same LinkStation as a backup destination. The procedure may vary depending on what device is selected as a destination.

- 1** From Advanced Settings, click *File Sharing*.



- 2** Click  to the right of “Folder Setup”.



- 3** Choose the folder to set as a backup destination.
- 4** Click *Edit*.
- 5** Under “LAN Protocol Support”, select the “Backup” checkbox.

- 6** Enter the desired characters into the remote backup password field and click *OK*.



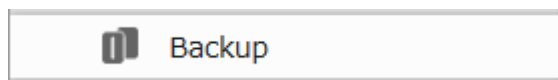
**Notes:**


- You may leave this field blank if you do not want a backup password, but for security reasons we highly recommend entering one for the shared folder. If a backup password is configured for the shared folder, that folder will not show up as a target for the backup source or backup destination when configuring a backup job on another Buffalo NAS device unless it's entered. You may create multiple folders using different backup passwords for backup, but only one password can be used on the LinkStation. Folders that are configured with a different password cannot be used.
- A backup password is not available when a new shared folder is created by a power user.

## Configuring a Backup Job

You can configure backup jobs by using a shared folder or a USB drive connected to the LinkStation as a destination. You can also back up to a Buffalo NAS device on another network as long as the two networks are connected by a VPN or the route is configured properly.

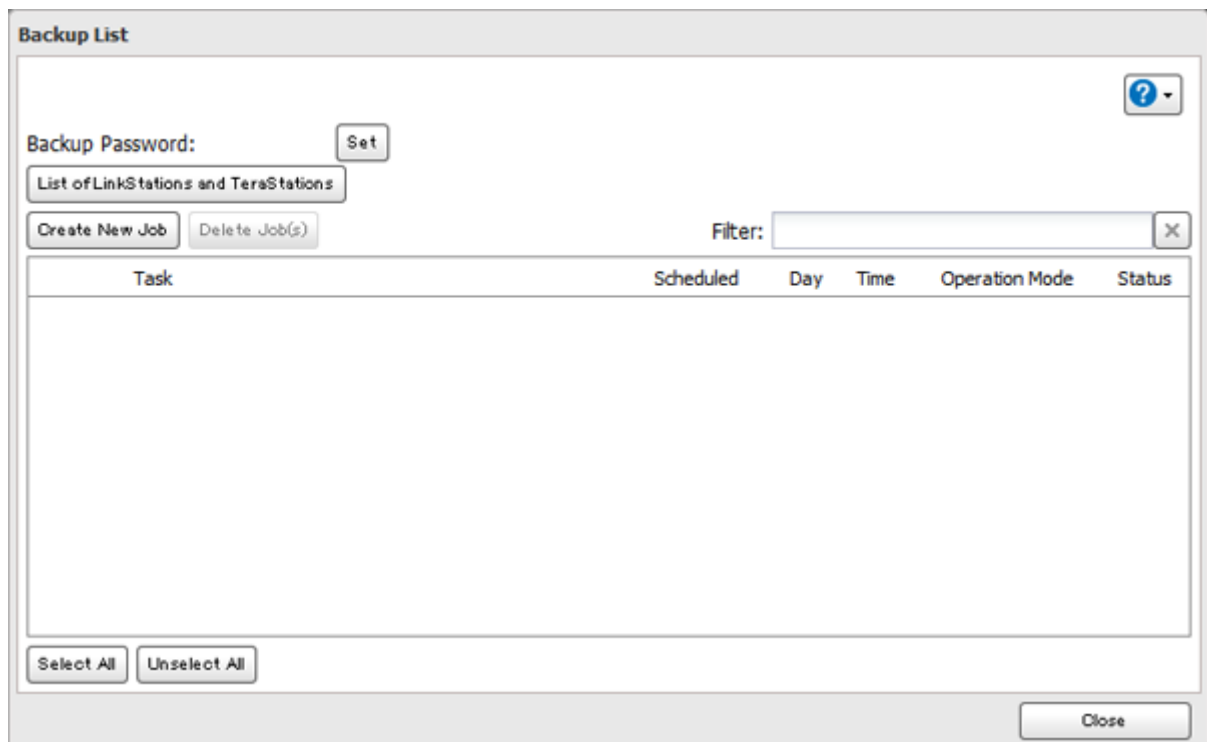
- 1** From Advanced Settings, click *Backup*.



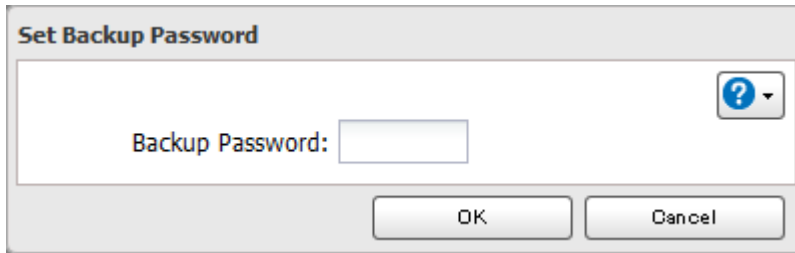
- 2** Click  to the right of "Backup".



- 3** If you had configured a backup password for the backup source folder on another Buffalo NAS device or the backup destination folder, click *Set*. If you hadn't, skip to step 5.

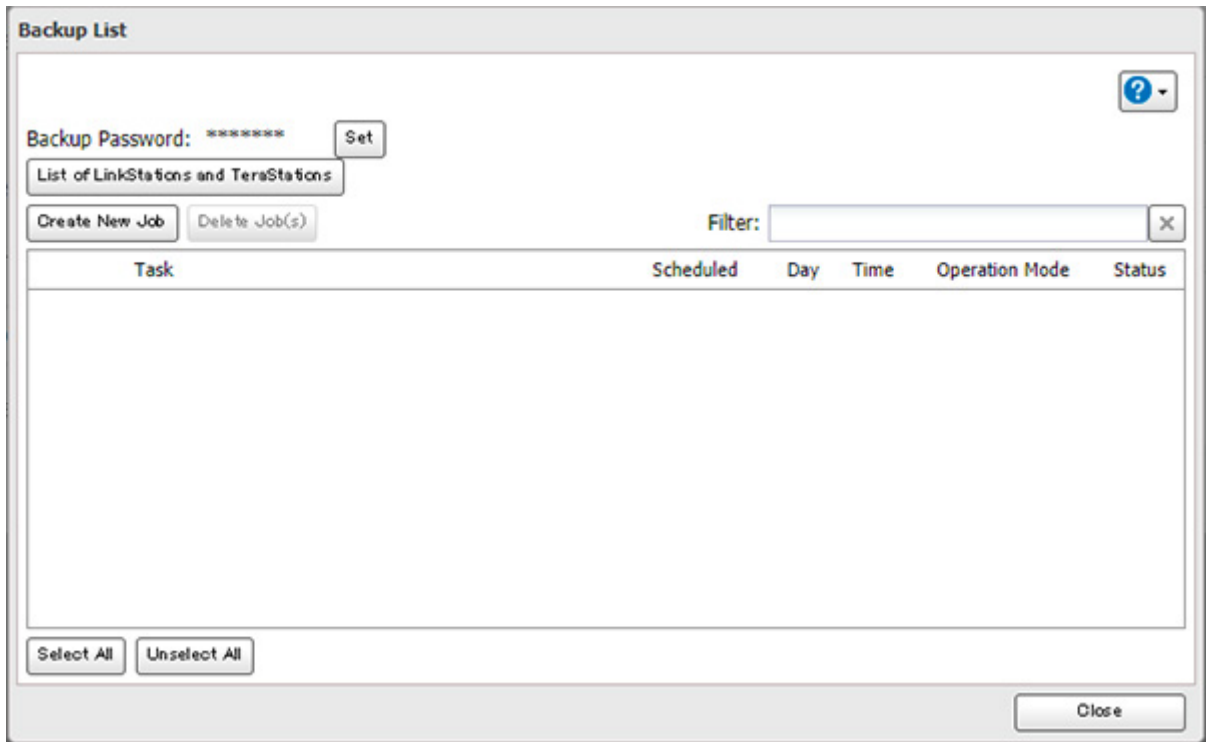


**4** Enter the backup password and click *OK*.



The dialog box is titled "Set Backup Password". It features a text input field labeled "Backup Password:" with a small blue question mark icon to its right. Below the input field are two buttons: "OK" and "Cancel".

**5** Click *Create New Job*.



The dialog box is titled "Backup List". It contains a "Backup Password: \*\*\*\*\*" field with a "Set" button. Below this is a "List of LinkStations and TeraStations" field. There are "Create New Job" and "Delete Job(s)" buttons. A "Filter:" field with a clear button (X) is also present. The main area is a table with the following headers: "Task", "Scheduled", "Day", "Time", "Operation Mode", and "Status". The table body is currently empty. At the bottom left are "Select All" and "Unselect All" buttons. A "Close" button is at the bottom right.

Task	Scheduled	Day	Time	Operation Mode	Status
------	-----------	-----	------	----------------	--------

- 6** Select backup settings such as date and time to run. Refer to the differences between the backup modes in the following [“Backup Modes”](#) section.

**Backup Job Settings**

Name:

Schedule:

Date and Time:   Hour  Minutes

Operation Mode:

Options:

- Create a subfolder for backup
- Create backup log file
- Encrypted data transfer
- Compress and transfer
- Ignore backup errors and continue backup job on schedule
- Do not back up recycle bin
- Overwrite unchanged files

Filter:

Backup Source Folder Name	Backup Target Folder Name

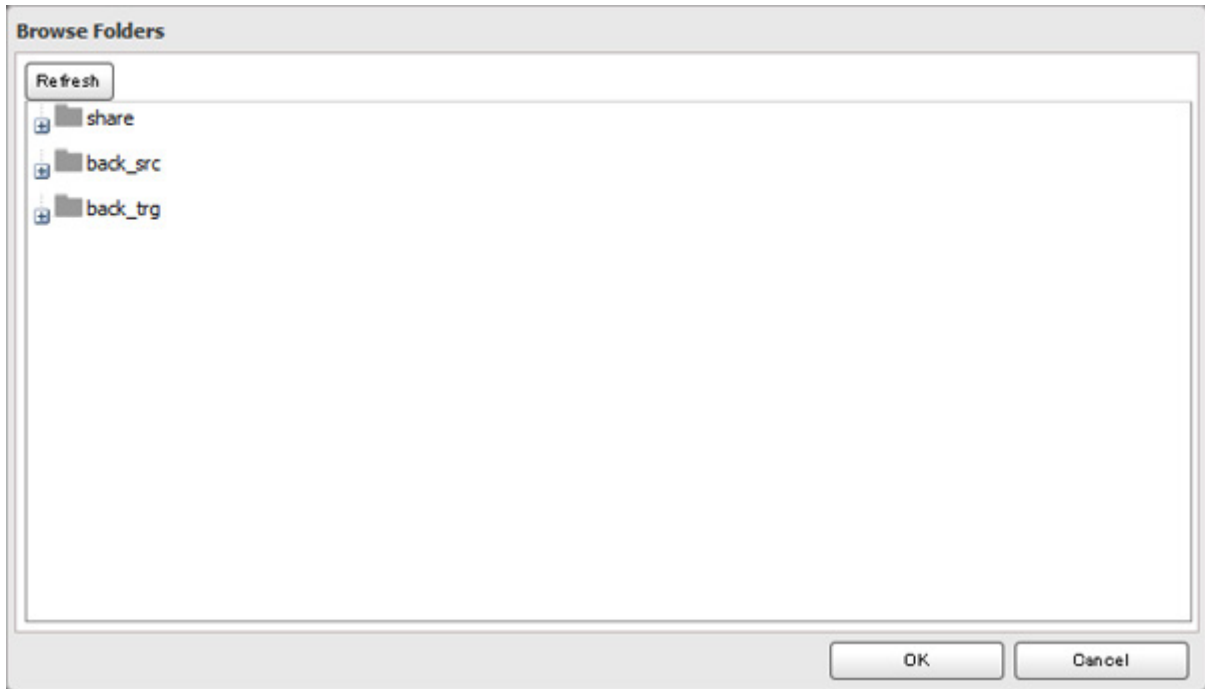
**Note:** If you want to back up to a Buffalo NAS device on another network, follow the procedure below to add the Buffalo NAS device on another network before selecting the backup folders.

- a. Click *LinkStation and TeraStation List*.
- b. Click *Add*; enter the IP address or hostname/FQDN of the destination Buffalo NAS device and click *OK*.
- c. Click *Close* when completed.
- d. Click *Refresh* and make sure the desired Buffalo NAS device has been added to the list.

- 7** Click *Add*.

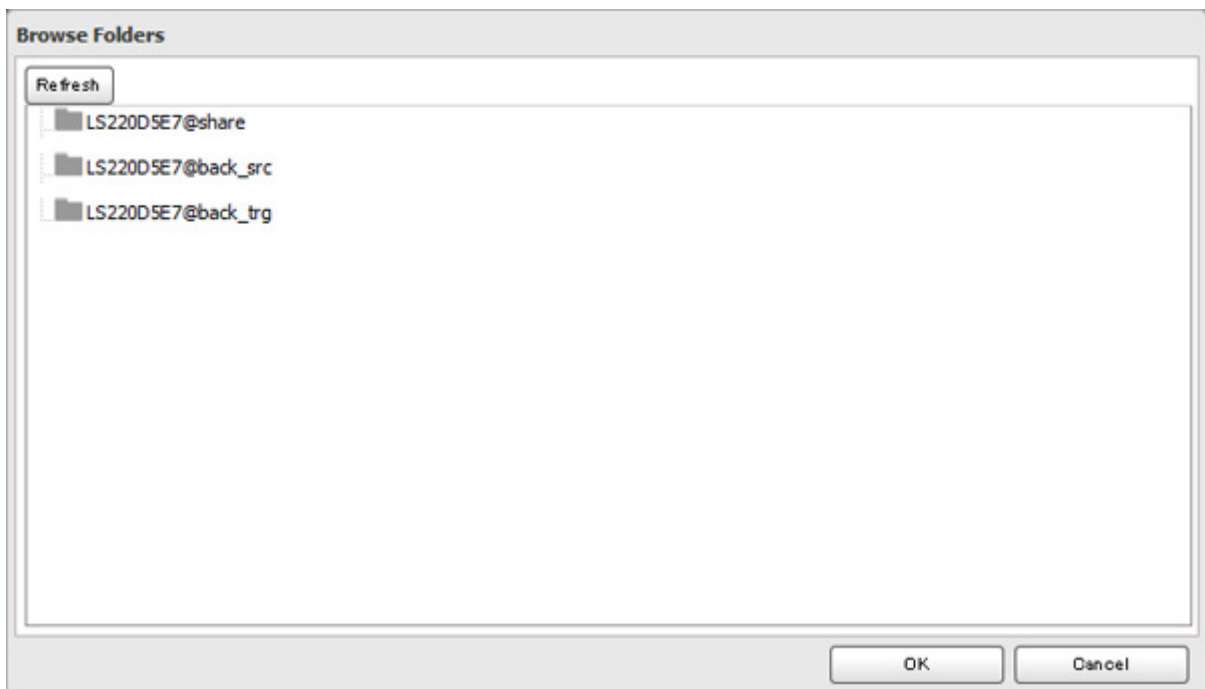
- 8** Click *Browse* under “Backup Source Folder Name”.

- 9** Select the shared folder that will be the backup source, then click *OK*.



- 10** Click *Browse* under “Backup Target Folder Name”.

- 11** Select the shared folder that will be the backup destination, then click *OK*.



- 12** Click *OK*. Jobs will be added to the backup list.

**Notes:**

- Up to eight backup jobs can be configured.
- To back up data between Buffalo NAS devices on a network using jumbo frames, make sure that both devices are configured to use identical (or similar) Ethernet frame sizes. If Ethernet frame sizes are significantly different, the backup job may not be properly performed. In such a case, select the default frame size (1500 bytes) for both devices.

- Backup data, such as “.DS\_Store” files, from macOS may include characters that cannot be read on FAT32-formatted drives in its filename. For best results, reformat the drive before using it as a backup target.

## Backup Modes

The following types of backup jobs may be selected:

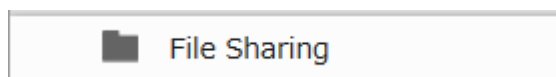
Type	Files included
Normal backup	All files in the source will be backed up to the destination. Whenever the backup job runs, the folder with the name as the date when the backup job runs will be created automatically and the backed up data will be stored here.
Overwrite (differential)	The first backup job runs like a normal backup. The backed up data will be stored under the automatically-created folder of the job name. As each additional backup job runs, files are added to and deleted from the backup folder. The backup destination folder will always be the same size as the backup source folder.
Overwrite (incremental)	The first backup job runs like a normal backup. The backed up data will be stored under the automatically-created folder of the job name. In subsequent backups, files added to the source as well as files deleted from the source are kept in the backup folder.

## Backing Up Your Mac with Time Machine

Time Machine is a backup program included with macOS. Configure your LinkStation as shown below to use Time Machine.


### 1. Preparing a Shared Folder for Time Machine

- 1 From Advanced Settings, click *File Sharing*.



- 2 Move the AFP switch to the  position to enable AFP.



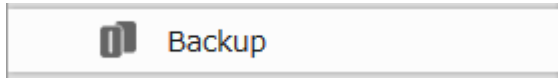
- 3 Click  to the right of "Folder Setup".




- 4 Choose a shared folder as your backup destination for Time Machine.
- 5 Click *Edit*.
- 6 Under "LAN Protocol Support", select the "AFP (Mac)" checkbox and click *OK*.
- 7 Click *OK*, then click *Close*.

## 2. Configuring a Shared Folder as a Backup Destination

1 From Advanced Settings, click *Backup*.

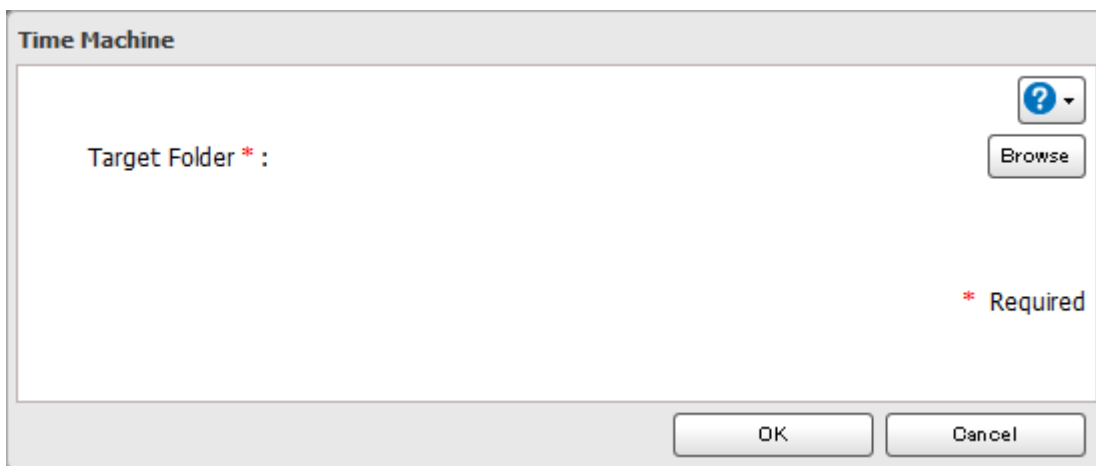


2 Click  to the right of "Time Machine".

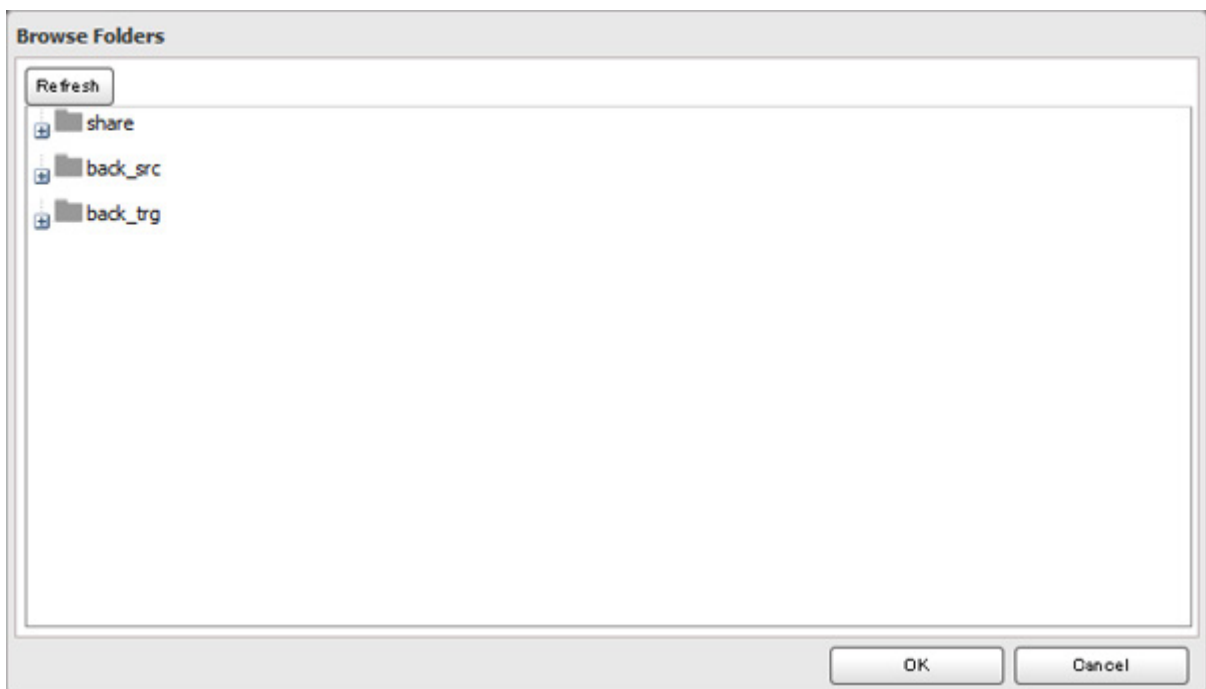


3 Click *Edit*.

4 Click *Browse*.



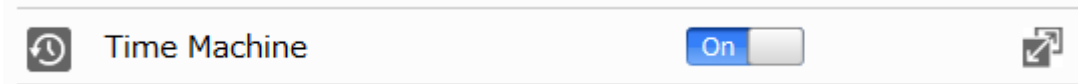
5 Select the shared folder that you enabled AFP for in the previous steps, then click *OK*.



6 Click *OK*, then click *OK* again.

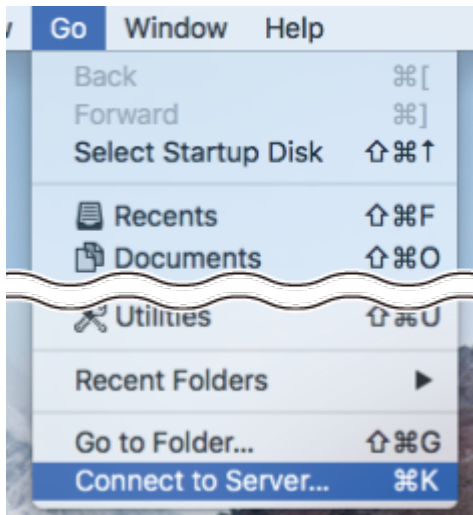


- 7 Move the Time Machine switch to the  position to enable Time Machine.

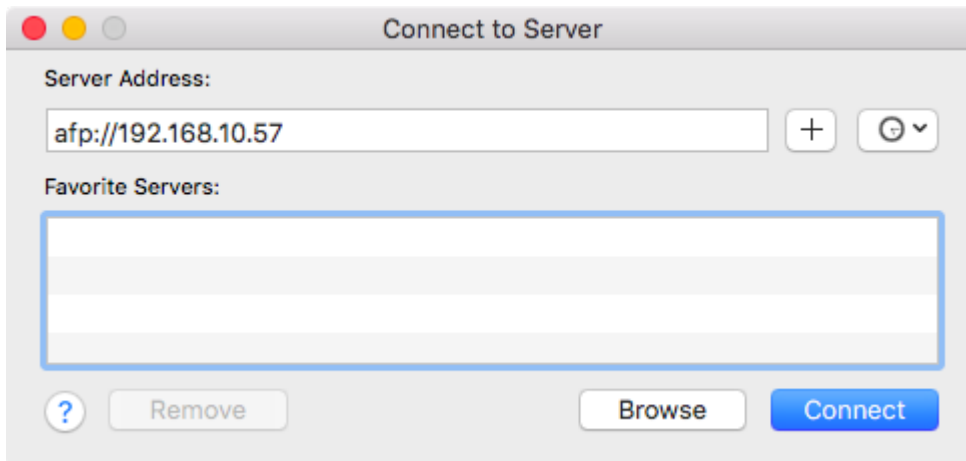


### 3. Configuring Time Machine on macOS

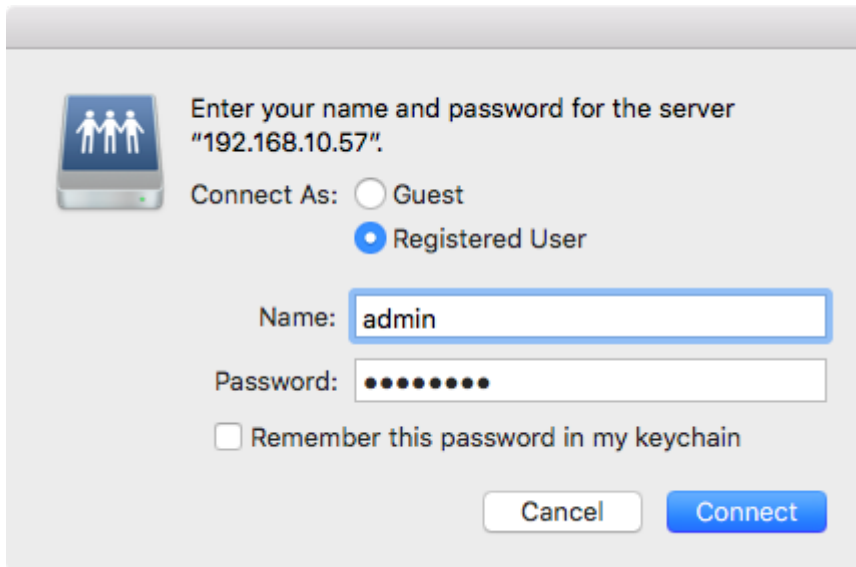
- 1 From the Finder menu bar, navigate to *Go > Connect to Server*.



- 2 Enter "afp://" and then the IP address or hostname of your LinkStation, then click *Connect*.

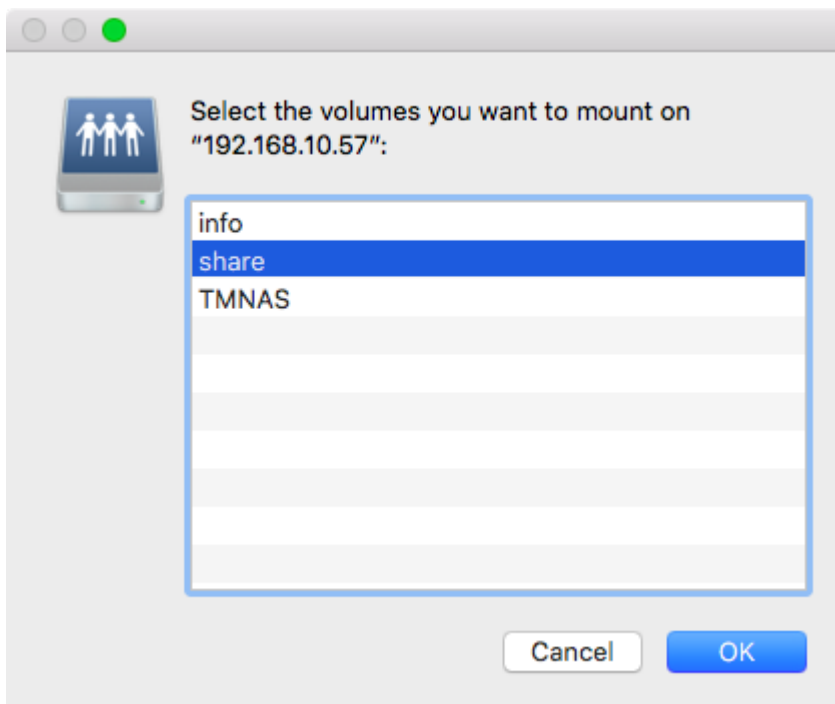


- 3 Enter a username and password with the rights to access the shared folder of the LinkStation, then click *Connect*.



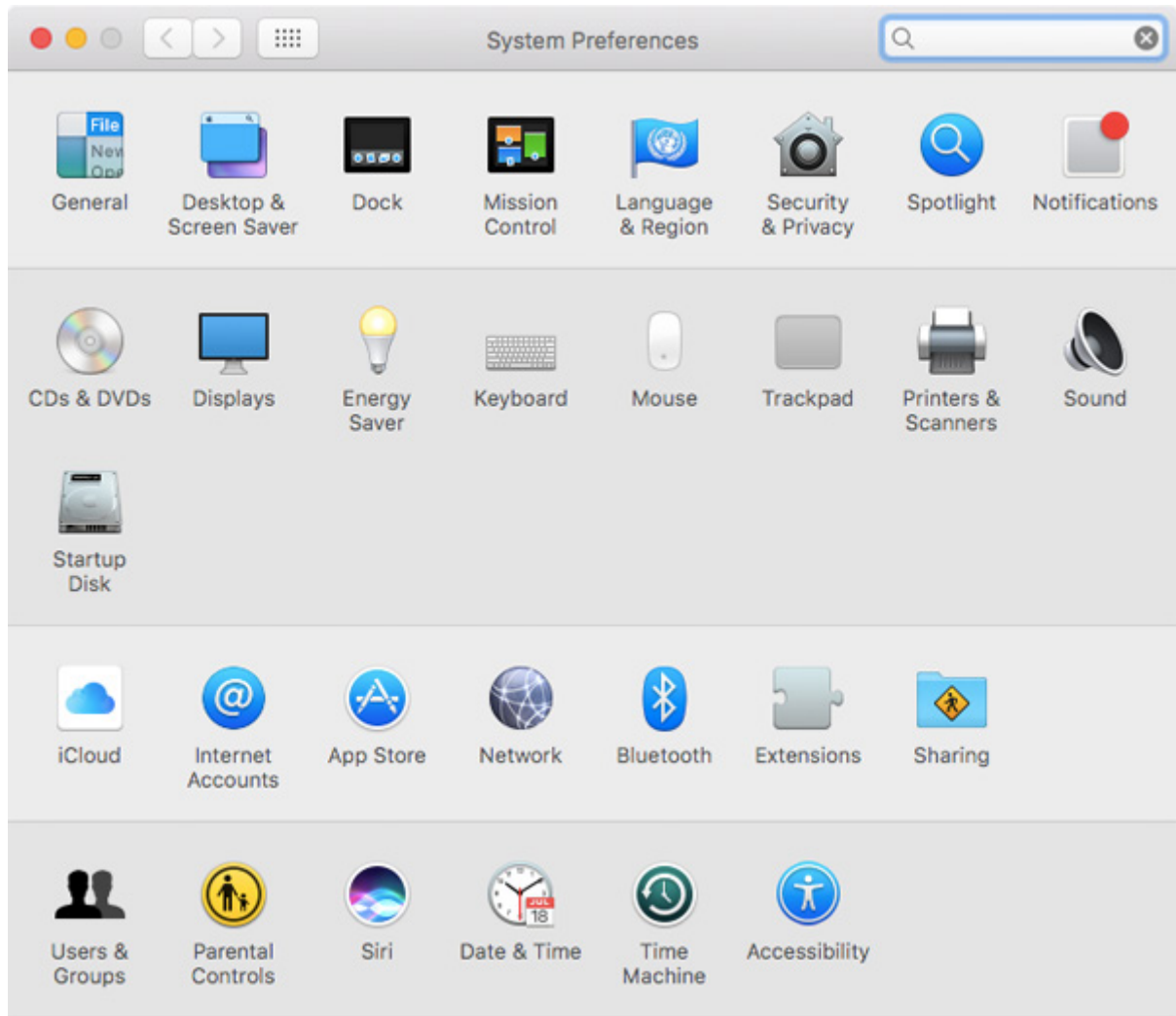
**Note:** If access restrictions are not configured on the destination share, log in with the administrator account. The default username and password for the administrator account are “admin” and “password”. If access restrictions are configured, log in with an account with write privileges.

- 4 Select the shared folder that has been configured as the backup destination and click *OK*.

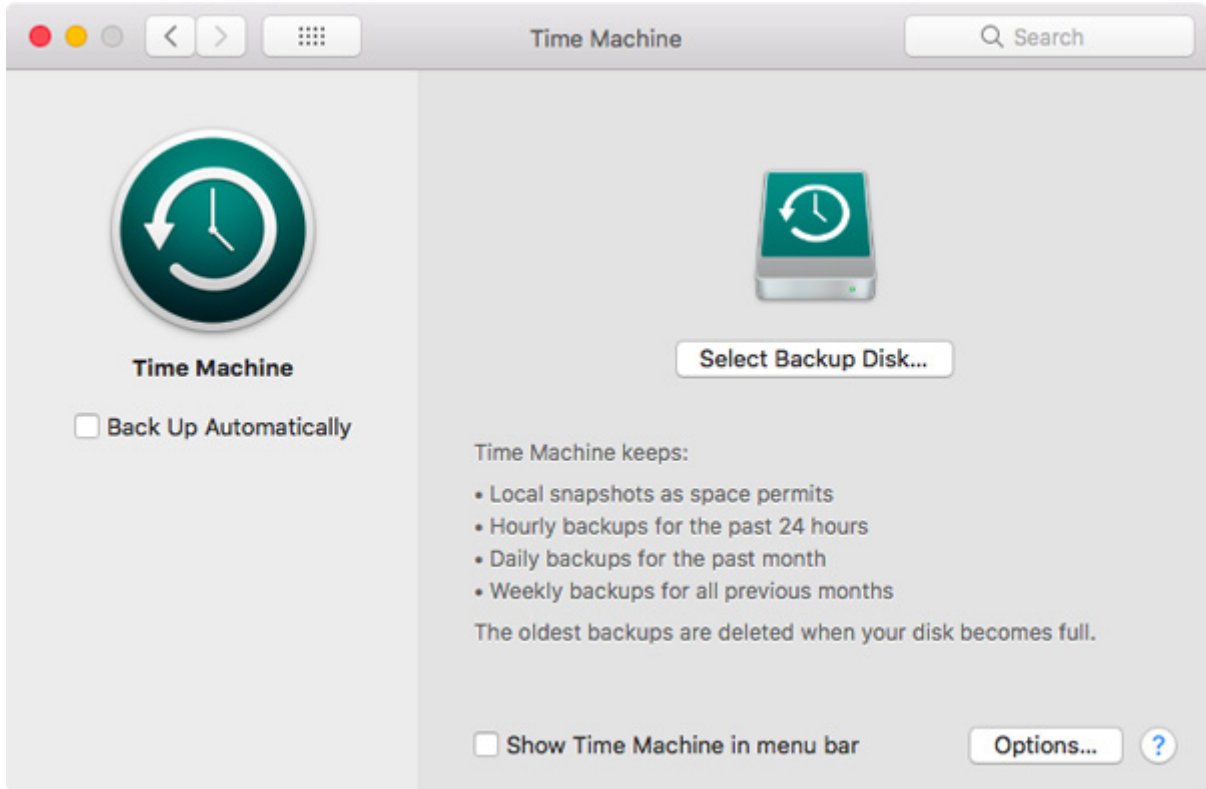


- 5 From the Apple menu, open *System Preferences*.

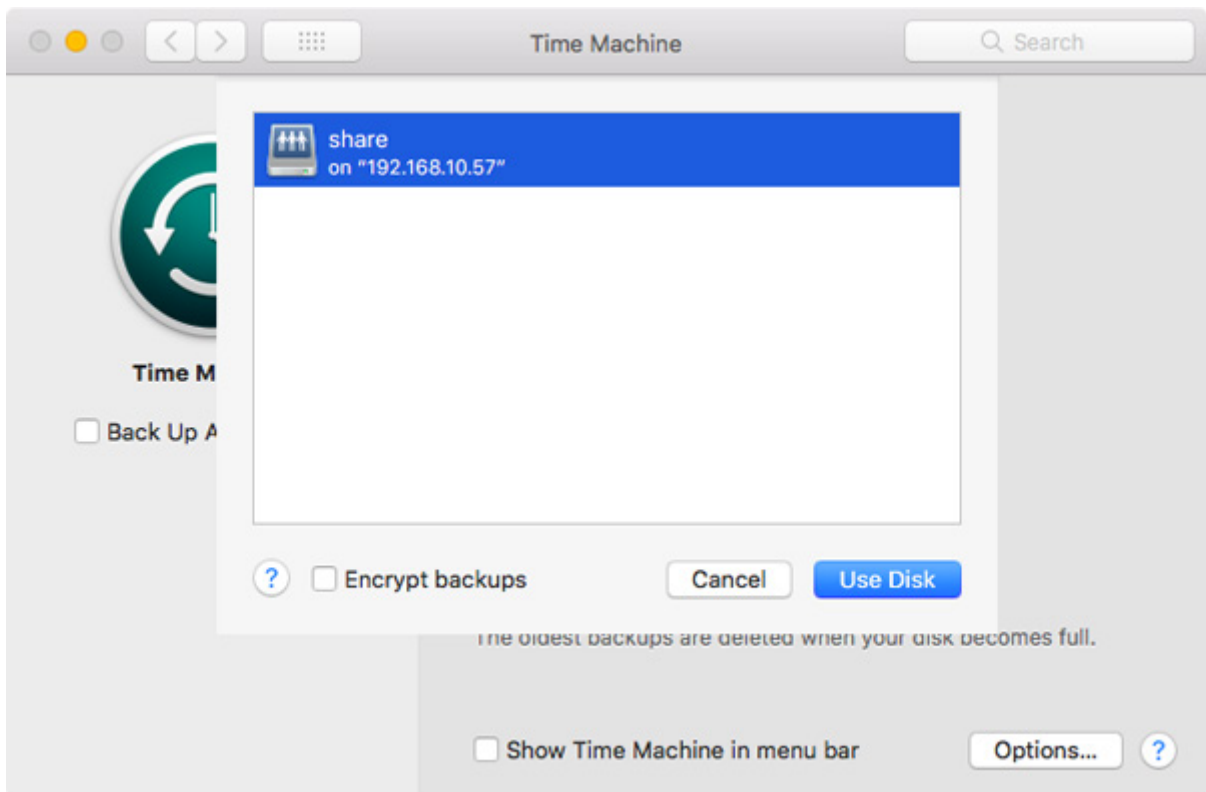
**6** Click *Time Machine*.



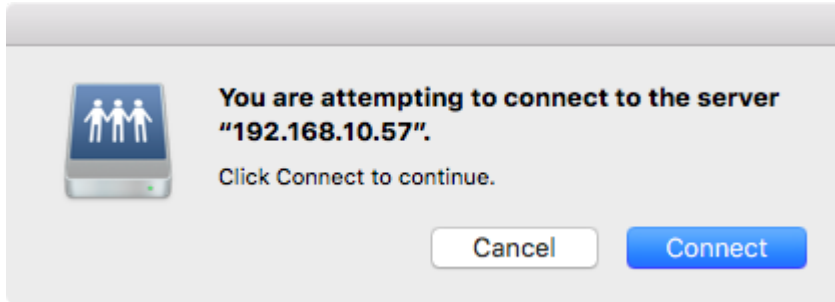
**7** Click *Select Backup Disk*.



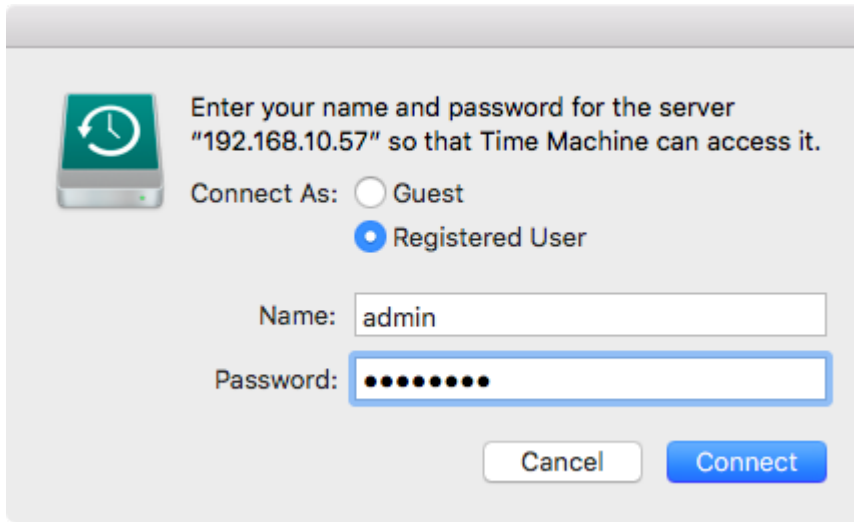
**8** Select the shared folder, then click *Use Disk*.



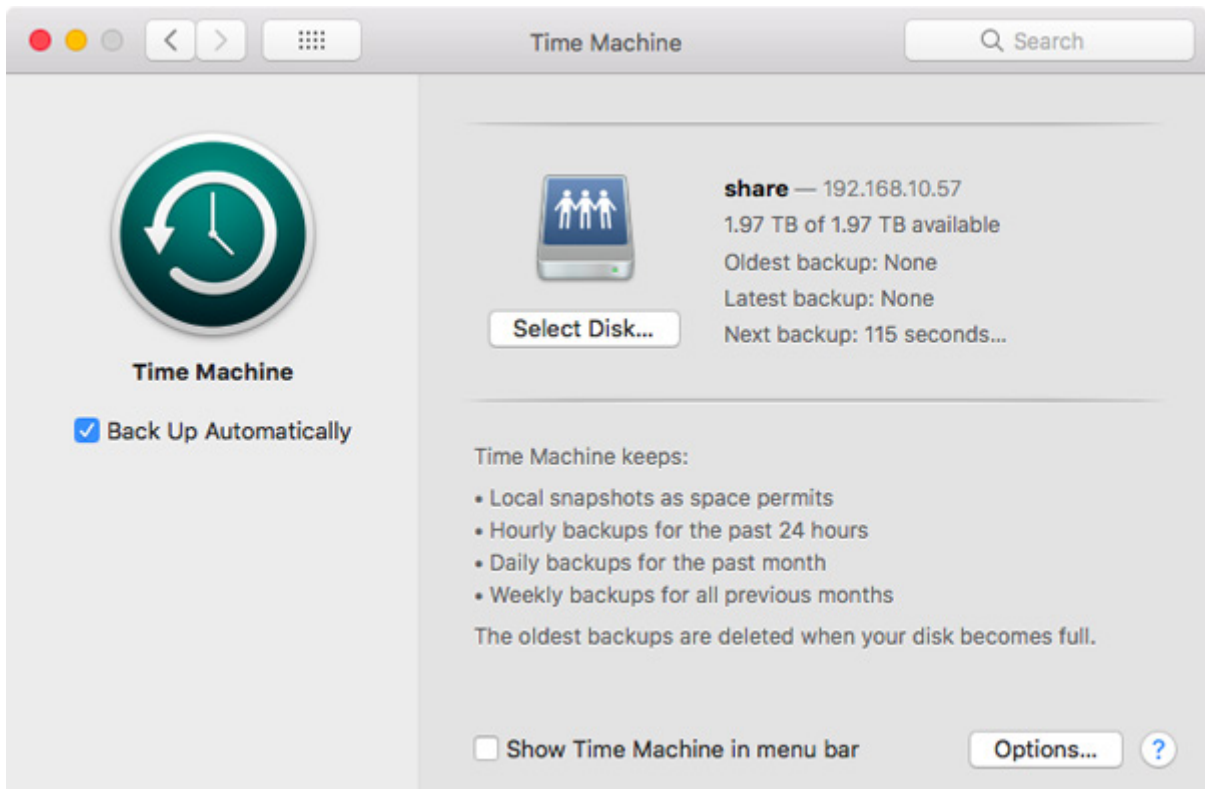
9 Click *Connect*.



10 Enter a username and password to be used for accessing the shared folder and click *Connect*.



11 Time Machine will count down from 120 seconds, then the backup will begin.



## Copying from a USB Device

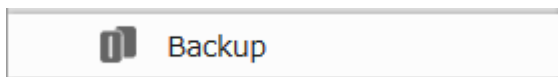
Use Direct Copy to copy from a USB device directly to the LinkStation.

### Supported Devices:

- USB mass storage devices
- Card readers (except for card readers that can recognize two or more memory cards)
- Digital cameras and other PTP devices

## Configuring Direct Copy

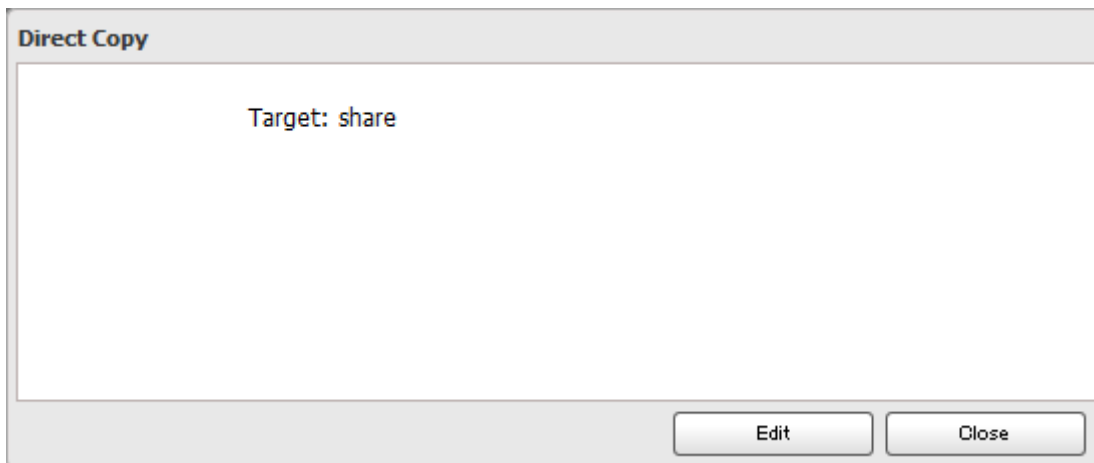
**1** From Advanced Settings, click *Backup*.



**2** Move the Direct Copy switch to the  position to enable Direct Copy.



To change the Direct Copy target folder, navigate to *Backup > Direct Copy > Edit*, select a new folder, and click *OK*.



## Starting Direct Copy

**1** Connect the USB device. When it mounts (about 10 seconds), the function LED will light up.

#### Notes:

- Devices that don't trigger the function LED to light up are not supported.
- When you connect PTP devices, the function LED may not light up. In such case, disconnect the PTP device from the LinkStation once, then reconnect it.

**2** You now have 60 seconds to press the function button once. If you do, the function LED will flash as all the files on the USB device are copied to the Direct Copy folder of the LinkStation.

#### Notes:

- While the function LED is flashing, press the function button once to cancel Direct Copy.
- For digital cameras that are not in the USB mass storage class, all files from the digital camera are copied.

- 3** When the copy operation is finished, the access LED of the USB device will stop flashing. Dismount the USB drive by referring to the [“Dismounting Drives”](#) section in chapter 4.


# Chapter 7 Multimedia

## iTunes Server

If the iTunes server is enabled, computers on your network with iTunes can play music files stored on the LinkStation and transfer them to your iOS devices. The iTunes server supports playback from up to five computers.

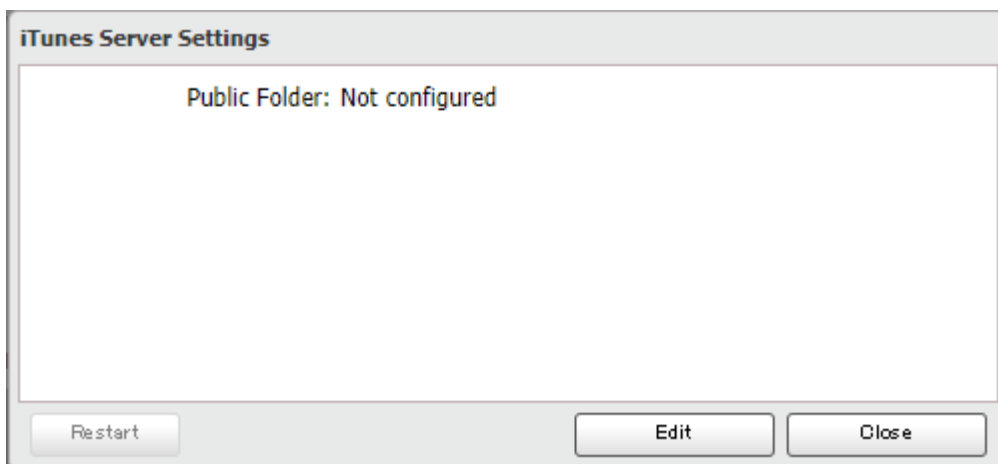
- 1 From Advanced Settings, click *Services*.



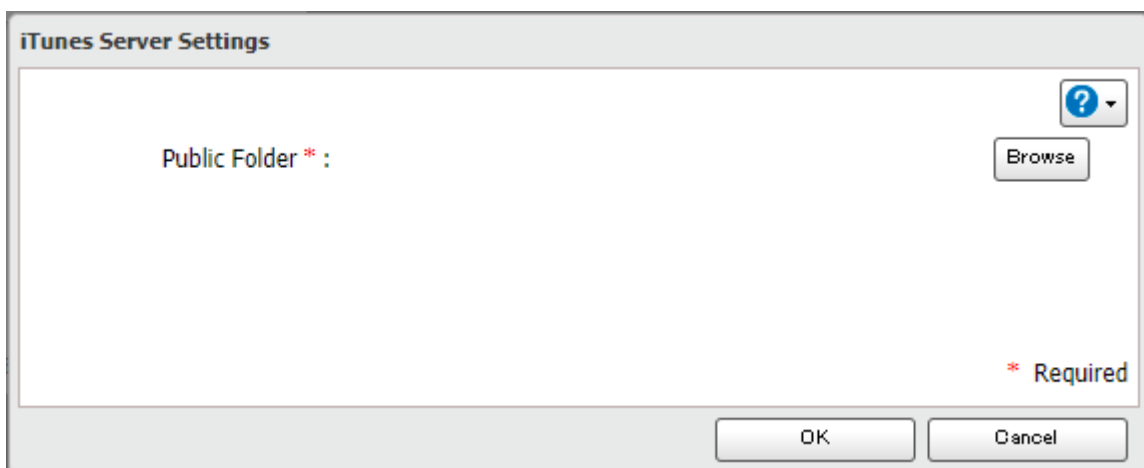
- 2 Click  to the right of "iTunes Server".



- 3 Click *Edit*.

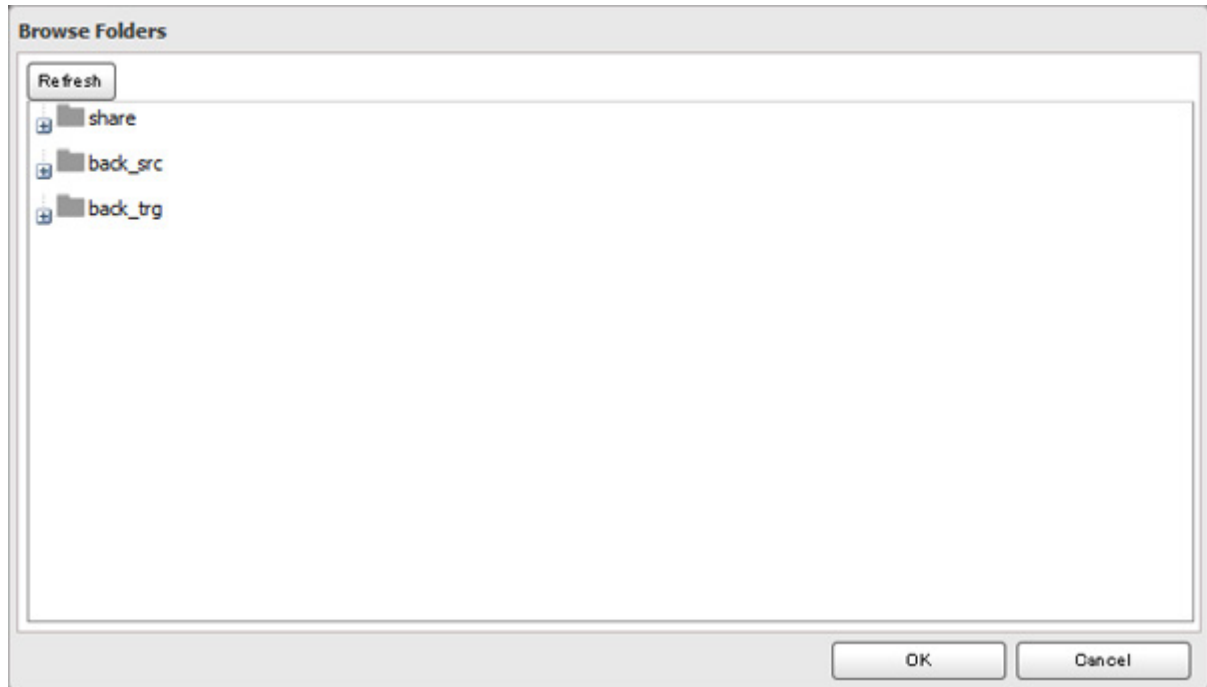


- 4 Click *Browse*.





**5** Select the shared folder that you want to make available to iTunes, then click *OK*.



**6** Click *OK*.

**7** Move the iTunes server switch to the  position to enable iTunes server.



## Connecting a Printer

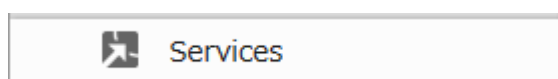
You can connect a printer to the USB port on the LinkStation.

### Notes:

- Only one USB printer can be connected to the LinkStation.
- Bidirectional communication is not supported i.e., remaining ink quantities and other printer status information is not supported.
- Don't disable the SMB protocol while the print server is enabled. If you do, you will need to enable SMB again and reconfigure the print server from scratch.

**1** Connect a printer to the LinkStation's USB port, then turn the printer on.

**2** From Advanced Settings, click *Services*.



**3** Move the print server switch to the  position to enable the print server.



**4** Refer to the manual supplied with the printer and install the printer drivers.

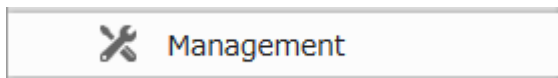
- 5** Launch NAS Navigator2. Double-click your LinkStation's icon.
- 6** Double-click the icon of the connected printer (shared name is displayed).
- 7** Click *OK*.
- 8** Select your printer, then click *OK*.
- 9** Register the printer.


# Chapter 8 Advanced Features

## Email Notification


Your LinkStation can send you email reports daily, or when settings are changed or an error occurs. You can configure the events that will trigger notifications from any of the following functions: quota, drive error, scheduled drive status report, fan, backup.

- 1 From Advanced Settings, click *Management*.



- 2 Move the email notification switch to the  position to enable email notification.



- 3 Click  to the right of "Email Notification".

- 4 Click *Edit*.

- 5** Enter your email server settings, notification email's default subject, then configure recipients and the time when email reports will be sent. Click *OK* to send a test email.

**Email Notification**

SMTP Server Address \* :

SMTP Port \* :

Authentication Type:

POP3 Server Address:

POP3 Port:

SSL/TLS:

Username:

Password:

Subject \* :

Recipient(s) \* :

Name	Recipient(s)	Class

System:  HDD status report  Hour

Fan error

Disk error

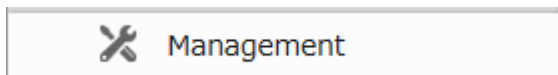
Backup complete


\* Required

## Sleep Mode

To save energy, you can specify times to put the LinkStation into sleep (standby) mode, during which the drives and LEDs are turned off.

- 1** From Advanced Settings, click *Management*.



- 2** Click  to the right of "Sleep Timer".



- 3** Click *Edit*.

#### 4 Specify the timer interval, wake-up time, and time to go into sleep mode, then click *OK*.

**Sleep Timer Settings**

Timer 1  
 Schedule: Weekly  
 Monday  Tuesday  Wednesday  Thursday  Friday  Saturday  Sunday  
 Wake Up at: 09 Hour 00 Minutes  
 Begin Sleep at: 18 Hour 00 Minutes

Timer 2  
 Schedule: Disable  
 Monday  Tuesday  Wednesday  Thursday  Friday  Saturday  Sunday  
 Wake Up at: 00 Hour 00 Minutes  
 Begin Sleep at: 00 Hour 00 Minutes

Timer 3  
 Schedule: Disable  
 Monday  Tuesday  Wednesday  Thursday  Friday  Saturday  Sunday  
 Wake Up at: 00 Hour 00 Minutes  
 Begin Sleep at: 00 Hour 00 Minutes

OK Cancel

#### Notes:

- Up to three timers can be set.
- The time to enter sleep mode can be set from 12:00 a.m. to 3:45 a.m. of the next day. The time to wake from sleep mode can be set from 12:00 a.m. to 11:45 p.m. If the time to enter sleep mode is after 12:00 a.m., the wake-up time setting may be from 4:00 a.m. to 11:45 p.m.
- The time to enter sleep mode should not be set to the same time as or earlier than the start time.
- If a timer is scheduled during checking or formatting a drive, running backup process, or setting backup job within five minutes of the current time, the LinkStation will not change to standby mode when the configured time is reached.
- If scheduled times in the timer overlap, the operation is performed using the widest time interval.
- Examples of timer settings are shown below:
  - **Example 1:**  
 If running at a current time of 10:00 a.m. Wednesday  
 Timer 1: Daily 12:00–24:00  
 Timer 2: Not used  
 Timer 3: Not used  
 No operation is performed at 12:00 p.m. and the unit goes into sleep mode at 12:00 a.m.
  - **Example 2:**  
 If running at a current time of 10:00 a.m. Wednesday  
 Timer 1: Daily 9:00–18:00  
 Timer 2: Wednesday 10:00–20:00  
 Timer 3: Not used  
 On days other than Wednesday, the unit goes into sleep mode at 6:00 p.m. On Wednesday, normal operation begins at 10:00 a.m. and the unit goes into sleep mode at 8:00 p.m.

- **Example 3:**

If running at a current time of 10:00 a.m. Wednesday

Timer 1: Daily 9:00–18:00

Timer 2: Wednesday 10:00–1:00 a.m. of the next day

Timer 3: Not used

On days other than Wednesday, normal operation begins at 9:00 a.m. and the unit goes into sleep mode at 6:00 p.m. On Wednesday, normal operation begins at 10:00 a.m. and the unit goes into sleep mode at 1:00 a.m. of the next day.

- **Example 4:**

If running at a current time of 10:00 a.m. Wednesday

Timer 1: Daily 9:00–18:00

Timer 2: Wednesday 7:30–22:00

Timer 3: Not used

On days other than Wednesday, normal operation begins at 9:00 a.m. and the unit goes into sleep mode at 6:00 p.m. On Wednesday, normal operation begins at 7:30 a.m. and the unit goes into sleep mode at 10:00 p.m.

- To wake the LinkStation from sleep mode manually, press the function button.

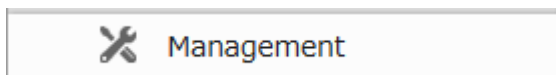
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## UPS (Uninterruptible Power Supply)

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If a UPS (sold separately) is attached, the LinkStation can be automatically shut down to protect data in the event of a power outage.

- 1 Plug the power cable of the UPS to a wall socket.
- 2 Connect the AC cable of the LinkStation to the UPS.
- 3 Connect the UPS and LinkStation using a USB cable or serial cable.
- 4 Turn on the UPS, then the LinkStation.
- 5 From Advanced Settings, click *Management*.

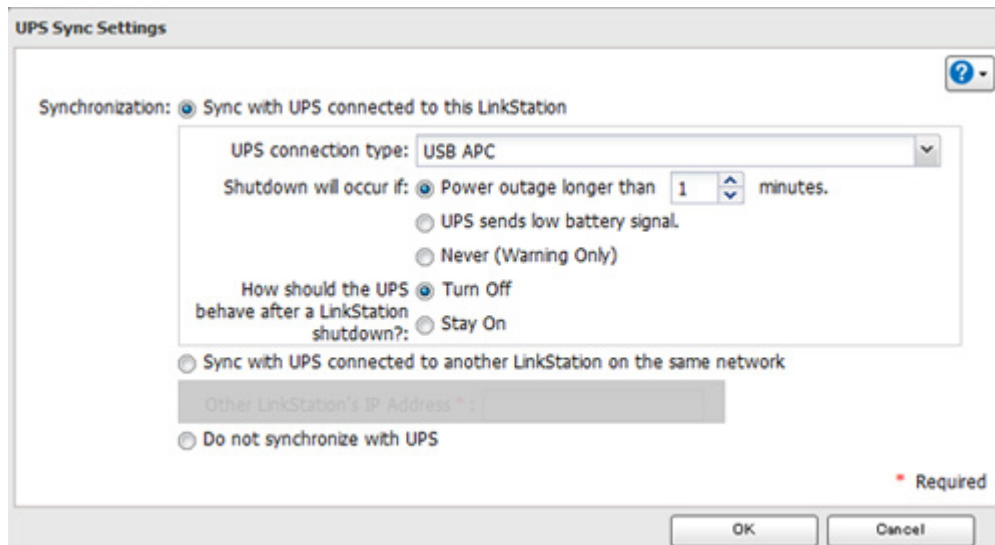


- 6 Click  to the right of "UPS Sync".



- 7 Click *Edit*.

## 8 Configure the desired settings, then click *OK*.



### Notes:

- If the LinkStation is connected directly to a UPS, select “Sync with UPS connected to this LinkStation”. If a different Buffalo NAS device is connected to the UPS, select “Sync with UPS connected to another LinkStation or TeraStation on the same network”. After making this selection, enter the IP address of the Buffalo NAS device that will be the sync source into “Other LinkStation or TeraStation's IP Address”.
- After the LinkStation restarts following an automatic shutdown such as from a power outage or power supply issues, verify that external power has been restored. If the LinkStation is turned on while it is still running on the UPS and external power has not been restored, automatic shutdown will not occur, even after the specified time elapses.

---

## Encrypting Data Transmission

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### Encrypting Settings Data

All communication with Settings can use SSL encryption if you access the Settings page by changing “http://” to “https://” in the browser address bar or click *Secure Connection* from the login window. Once you are logged in using the HTTPS connection and wish to disable SSL encryption, click *Normal Connection* from the login window.

### Encrypting FTP Transfer Data

You can encrypt passwords using SSL/TLS for secure FTP communication. First, open a shared folder’s settings and click *Edit*; under “LAN Protocol Support”, select the “FTP” checkbox and click *OK*. Enable SSL security in the setup screen for your FTP client. The procedure depends on the FTP client software.

### SSL Keys

SSL keys are used during setup screen operations and FTP communication. SSL (Secure Socket Layer) is a type of encryption system called public key encryption. Generally, SSL is managed by the two files below.

#### server.crt (SSL Certificates)

The LinkStation sends the file to a computer, and the computer uses it to perform encryption. The LinkStation receives the encrypted data and uses server.key (the private key) to decrypt the data.

In SSL, this key contains the server certificate, and depending on your computer environment, a check may be performed to determine the trustworthiness of the certificate. The server certificate included in the LinkStation’s

default settings was created by Buffalo, and in some cases, the security certificate warning message may appear in your browser or another security software. Disregard this message and continue.

### server.key (SSL Private Key)

This file is used as a pair with server.crt (server certificate). This is required for decrypting the data that was encrypted by the server certificate, and this is normally not revealed.

**Note:** The passphrase for the private key must be removed before importing to the LinkStation.

### Updating SSL Key Files

To update a server certificate and a private key for SSL, follow this procedure.

- 1** From Advanced Settings, click *Management*.
- 2** Click *SSL*.
- 3** Register "server.key" for "Secret Key" and "server.crt" for "Server Certificate (.crt)", then click *Import*.

---

## Restoring Factory Defaults

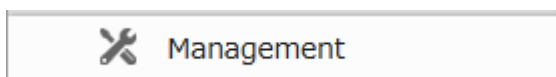
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To initialize the LinkStation to its factory default settings, follow this procedure.

### Initializing from Settings

---

- 1** From Advanced Settings, click *Management*.

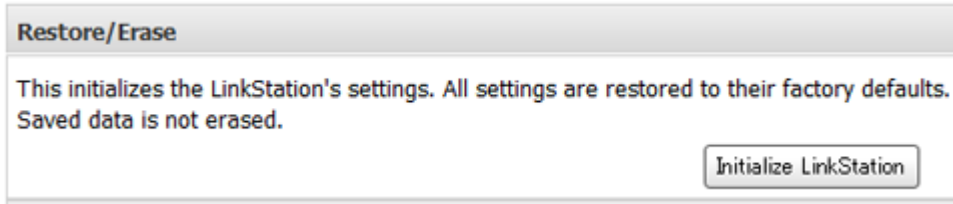


- 2** Click  to the right of "Restore/Erase".





**3** Click *Initialize LinkStation*.



**4** The “Confirm Operation” screen will open. Enter the confirmation number, then click *OK*.

**5** The LinkStation will restore its factory default settings.

## Initializing with the Function Button

---

You can also initialize the settings with the function button.

**1** Turn off the LinkStation.

**2** Turn the LinkStation on while holding down the function button. The function LED will flash white.

**3** Press the function button again while the LED is flashing.

**4** Initialization will take 5 to 10 minutes. Do not power down the LinkStation while it is initializing and showing the I23 message in NAS Navigator2 and with the power LED. When initialization is finished, the LinkStation will automatically reboot.

### Notes:

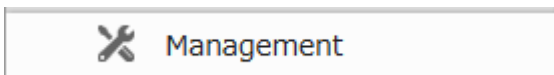
- The following settings will be initialized: admin username and password, IP address, and Ethernet frame size.
- To disable initializing username and password using the function button, navigate to *Management > Restore/Erase > Edit* and change “Restore factory default settings” to “Keep current settings”. Be careful with this option! If this is selected and you lose your admin password, you will not be able to reset it.


## Updating the Firmware

---

If a new firmware version is available, a message is displayed when the LinkStation boots. You can update the firmware as below:

**1** From Advanced Settings, click *Management*.



**2** Click  to the right of “Update”.



**3** Click *OK*.

**4** Click *Install Update*.

**5** The “Confirm Operation” screen will open. Enter the confirmation number, then click *OK*.

**Notes:**

- Settings will not be available while the firmware is updating. Don't try to access Settings from another computer until the update is complete.
- You can disable update notifications in *Management > Update*.
- To clear an update notification, press the function button.

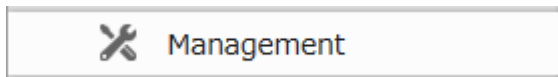
---


## Name, Date, Time, and Language

---

Configure the LinkStation's hostname, date, time, and language as shown below.

- 1** From Advanced Settings, click *Management*.



- 2** Click  to the right of "Name/Time/Language".



- 3** Click *Edit*.

- 4** Click the *Name* tab, then configure the LinkStation's name and description.

 A screenshot of a web-based configuration window titled "Name/Time/Language". The window has a grey header bar with a question mark icon on the right. Below the header is a tabbed interface with four tabs: "Name", "Time", "Language", and "Management Information". The "Name" tab is selected. The main content area contains two text input fields. The first is labeled "Name \*:" and contains the text "LS220DB17D". The second is labeled "Description:" and contains the text "LinkStation". At the bottom right of the main content area, there is a red asterisk followed by the text "\* Required". At the bottom of the window are two buttons: "OK" and "Cancel".

- 5 Click the *Time* tab. Enable the NTP server and select the “Use Default NTP Server” checkbox. If you disable the NTP function, click *Use Local Date/Time* to use your computer’s time settings for the LinkStation.

The screenshot shows the 'Name/Time/Language' configuration window with the 'Time' tab selected. The window has a title bar with a question mark icon. Below the title bar are four tabs: 'Name', 'Time', 'Language', and 'Management Information'. The 'Time' tab is active. Under 'Date/Time Source:', there are two radio buttons: 'Enable' (selected) and 'Disable'. The 'Enable' section contains a text field for 'NTP IP Address \*' with the value 'ntp.jst.mfeed.ad.jp', a checked checkbox for 'Use Default NTP Server', and a dropdown menu for 'NTP Synchronization Frequency' set to 'Daily'. The 'Disable' section contains a date field for 'Date \*' with the value '10/23/2013', a time field for 'Time \*' with the value '10 : 46 : 52', and a button labeled 'Use Local Date/Time'. Below these is a dropdown menu for 'Time Zone' set to '(UTC+09:00) Osaka, Sapporo, Tokyo'. At the bottom right, there is a red asterisk and the text '\* Required'. At the bottom of the window are 'OK' and 'Cancel' buttons.

By default, the LinkStation adjusts its clock automatically by using a default NTP server. This NTP server belongs to Internet Multi Feed Inc. For more information, visit <http://www.jst.mfeed.ad.jp>. To use a different NTP server, clear the “Use Default NTP Server” checkbox and enter a new NTP IP address or its hostname, then click *OK*.

If an NTP server is specified by name instead of IP address, make sure that a DNS server is configured for the LinkStation.

**Note:** The internal clocks of the LinkStation and other devices on your network may run at slightly different speeds. Over a long period of time, your network devices may show somewhat different times, which can cause network problems. If clocks on your network vary by more than five minutes it may cause unexpected behavior. For best results, keep all clocks on the network set to the same time by adjusting them regularly, or use an NTP server to correct them all automatically.

- 6** Click the *Language* tab. Select the language to be used and click *OK*.

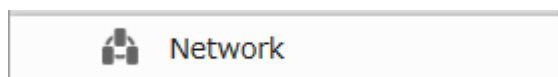
The screenshot shows a dialog box titled "Name/Time/Language". It has four tabs: "Name", "Time", "Language", and "Management Information". The "Language" tab is active. Inside the dialog, there are two dropdown menus: "Character Encoding" set to "CP932" and "Display Language" set to "English". At the bottom right, there is a red asterisk followed by the word "Required". Below the dialog are "OK" and "Cancel" buttons.


**Note:** This tab changes the language used by the LinkStation for email notifications and other functions. To change the language displayed in Settings, go to Settings and click *Language* from the menu bar. Choose your desired language from the drop-down list.

## Jumbo Frames

If your other network devices support jumbo frames, you may be able to improve network performance.

- 1** From Advanced Settings, click *Network*.



- 2** Click  to the right of "IP Address".



- 3** Click the LAN port where the jumbo frames will be used.

- 4 Select the desired Ethernet frame size and click *OK*.

**IP Address Settings:LAN Port 1**

DHCP:  Enable  
 Disable

IP Address \* : 192.168.10.8  
Subnet Mask \* : 255.255.255.0

Ethernet Frame Size: 1500 bytes

Ethernet frame sizes of 1500-9216 bytes are supported. The stated size doesn't include 14 bytes of header and 4 bytes of FCS. The default frame size is 1500 bytes. Frame sizes of 1501 bytes or more are considered jumbo frames.

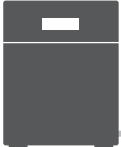



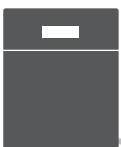











Network Settings

Default Gateway Address: 192.168.10.1  
Primary DNS Server: 192.168.10.1  
Secondary DNS Server:

Default gateway and DNS server addresses cannot be changed because DHCP is enabled for LAN port 1.

\* Required

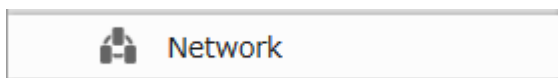
OK Cancel


Connection			Transmission	
				Transfer data using jumbo frames.
				Transfer data without using jumbo frames.
				Transfer data without using jumbo frames.
				No data can be transferred.

## Changing the IP Address

Normally, the LinkStation's IP address is set automatically from a DHCP server on your network. If you prefer, you can set it manually. An easy way to do this is to change it on NAS Navigator2 running on a computer connected to the same router (subnet) as the LinkStation. The procedure to change the IP address in Settings is below.

- 1 From Advanced Settings, click *Network*.



- 2 Click  to the right of "IP Address".



- 3 Click the LAN port where the IP address will be changed.

- 4** Disable “DHCP” and enter the desired IP address and subnet mask.

**IP Address Settings:LAN Port 1**

DHCP:  Enable  
 Disable

IP Address \* : 192.168.10.8  
 Subnet Mask \* : 255.255.255.0

Ethernet Frame Size: 1500 bytes

Ethernet frame sizes of 1500-9216 bytes are supported. The stated size doesn't include 14 bytes of header and 4 bytes of FCS. The default frame size is 1500 bytes. Frame sizes of 1501 bytes or more are considered jumbo frames.

Network Settings

Default Gateway Address: 192.168.10.1  
 Primary DNS Server: 192.168.10.1  
 Secondary DNS Server:

\* Required

OK Cancel

- 5** Under “Network Settings”, enter the default gateway and DNS server addresses. If no changes are necessary, keep them as is.

- 6** Click *OK*.

**Note:** The following IP addresses are reserved and should not be used. If you configure one of them by accident, initialize settings with the function button on the LinkStation.

Local loopback address: 127.0.0.1, 255.255.255.0

Network address: 0.0.0.0, 255.255.255.0

Broadcast address: 255.255.255.255, 255.255.255.0

The IP address range from 224.0.0.0 to 255.255.255.255

# Chapter 9 Configuring from Mobile Devices

## Settings Available from Your Mobile Device

You can change the following settings from your mobile device:

- Create or delete users, and change the user passwords.
- Create or delete shared folders.
- Configure WebAccess settings to remotely access your LinkStation.
- Configure and dismount a USB device connected to your LinkStation, including Direct Copy options.
- Configure UPS synchronization.

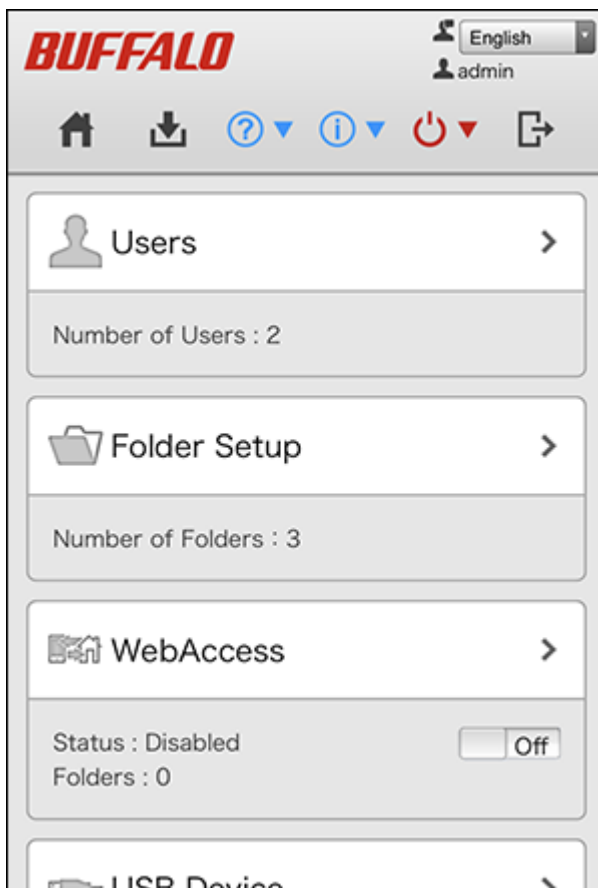
For the procedure of opening Settings from your mobile device, refer to the [“Opening Settings from a Mobile Device”](#) section in chapter 2.

## Configuring Users

You can create or delete users, or change the user password using the following procedure.

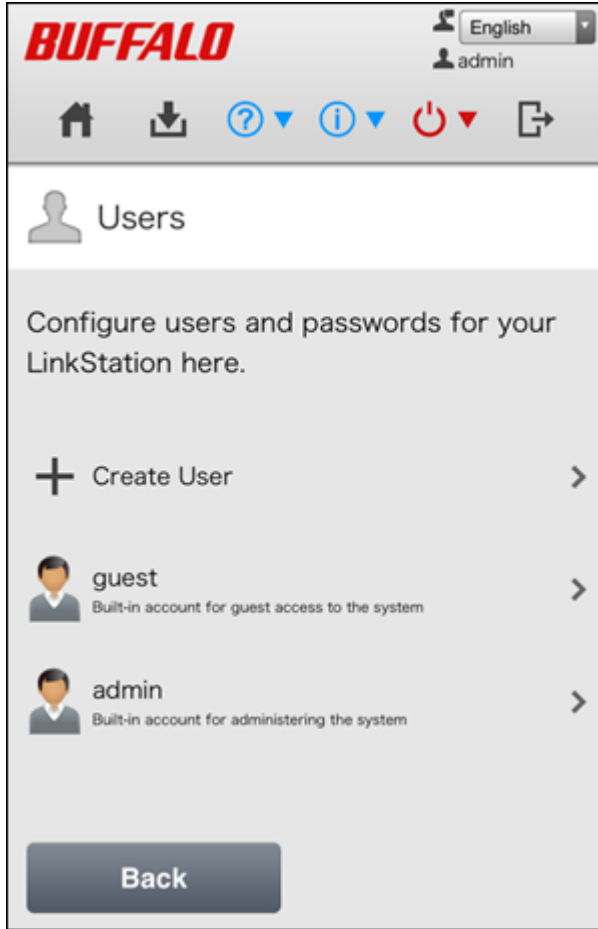
### Adding a User

**1** From Settings, tap *Users*.





**2** Tap *Create User*.



- 3** Enter the desired username and password (twice), then tap *Apply*.



**Create User**

Using the same username and password that you use to log in to Windows is recommended.

Username:

Create a folder for this use

Password:

Password (Confirm):

Description (Optional):

**Back** **Apply**

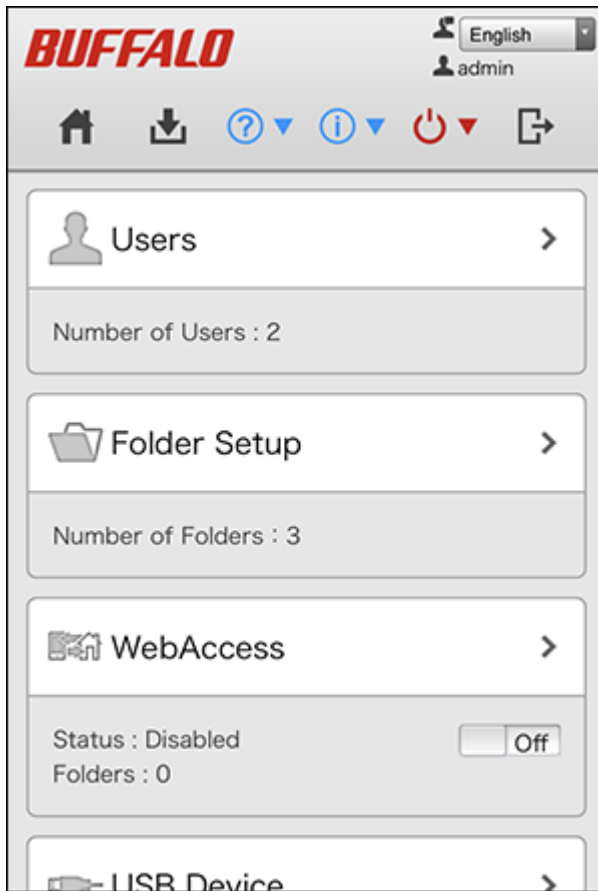
- 4** Tap *OK* when completed.

**Notes:**

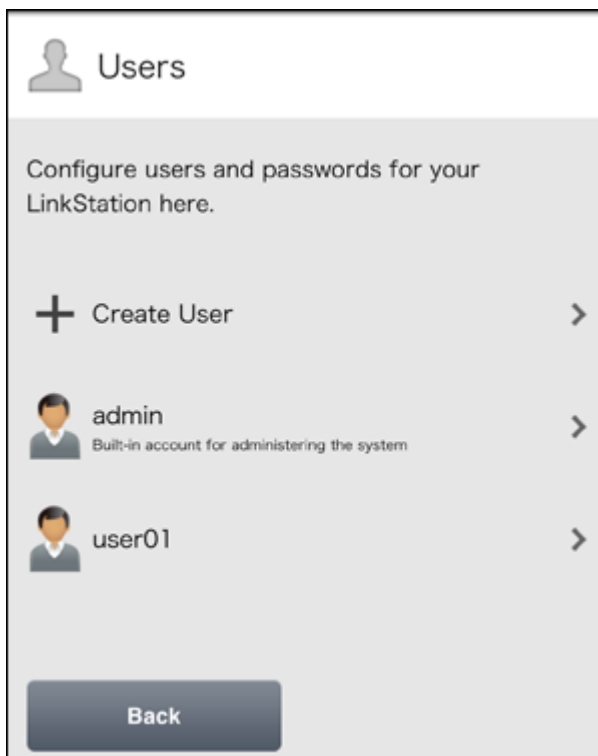
- Usernames may contain up to 32 alphanumeric characters, hyphens (-), underscores (\_), periods (.), and the symbols ! # + \$ ^ %. The first character should not be a symbol.
- Passwords may contain up to 20 alphanumeric characters, hyphens (-), underscores (\_), commas (,), periods (.), semicolons (;), vertical bars (|), tildes (~), single quotes ('), backquotes (`), and the symbols ! " # \$ % & ) ( \* + / : < = > ? @ \ ] [ ^ } { . The first character should not be a symbol unless it is an underscore.

## Changing the Password

1 From Settings, tap *Users*.



2 Tap an existing user from the list to change the user's password.



**3** Enter the new password (twice) and click *Apply*.

**Edit User**

If you change the username and password here, reconfigure your applications with the new username and password or you may not be able to access this LinkStation any longer.

Username:  
user01

Password:

Password (Confirm):

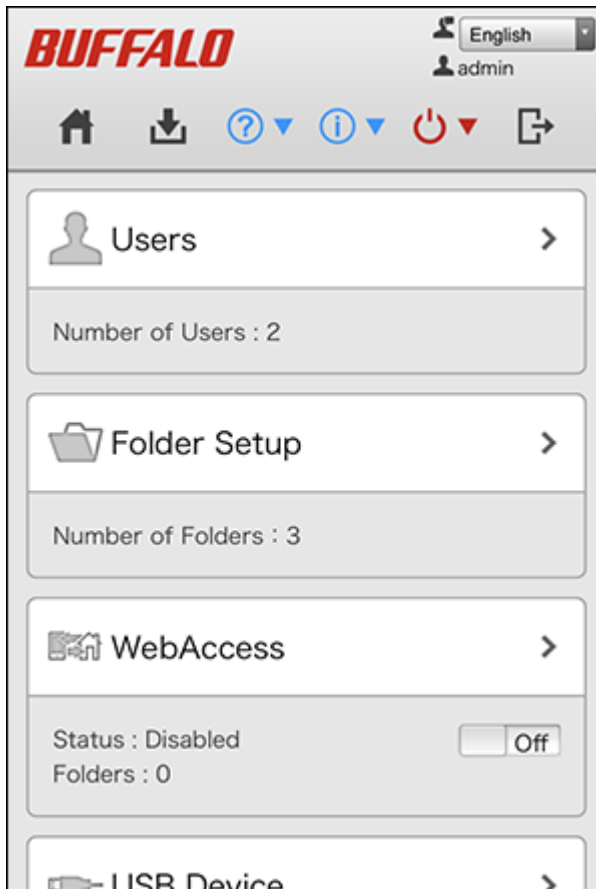
**Delete This User**

**Back**      **Apply**

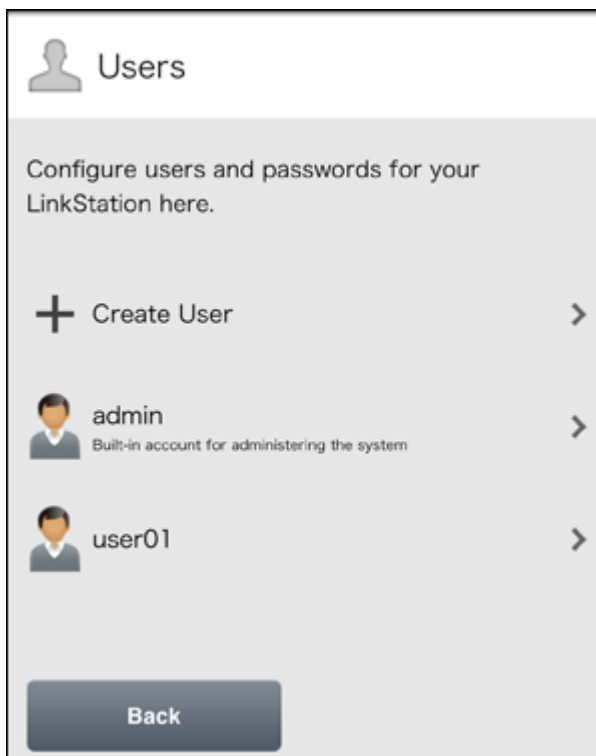
**4** Tap *OK* when completed.

## Deleting a User

1 From Settings, tap *Users*.



2 Tap an existing user from the list to be deleted.



**3** Tap *Delete This User*.

The screenshot shows a mobile application interface titled "Edit User". At the top left is a person icon. Below the title is a grey warning box with the text: "If you change the username and password here, reconfigure your applications with the new username and password or you may not be able to access this LinkStation any longer." Below the warning, the "Username:" field contains "user01". The "Password:" field is an empty white input box. Below it, the "Password (Confirm):" field is also an empty white input box. A prominent red button with white text "Delete This User" is centered below the password fields. At the bottom of the screen are two dark grey buttons: "Back" on the left and "Apply" on the right.

**4** Tap Yes.

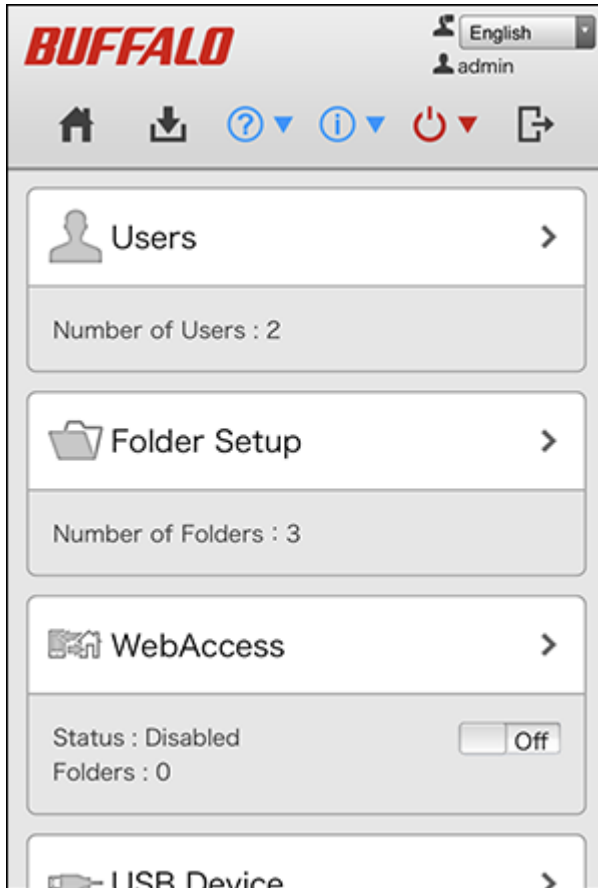
**5** The "Confirm Operation" screen will open. Enter the confirmation number, then tap *OK*.

**6** Tap *OK* when completed.

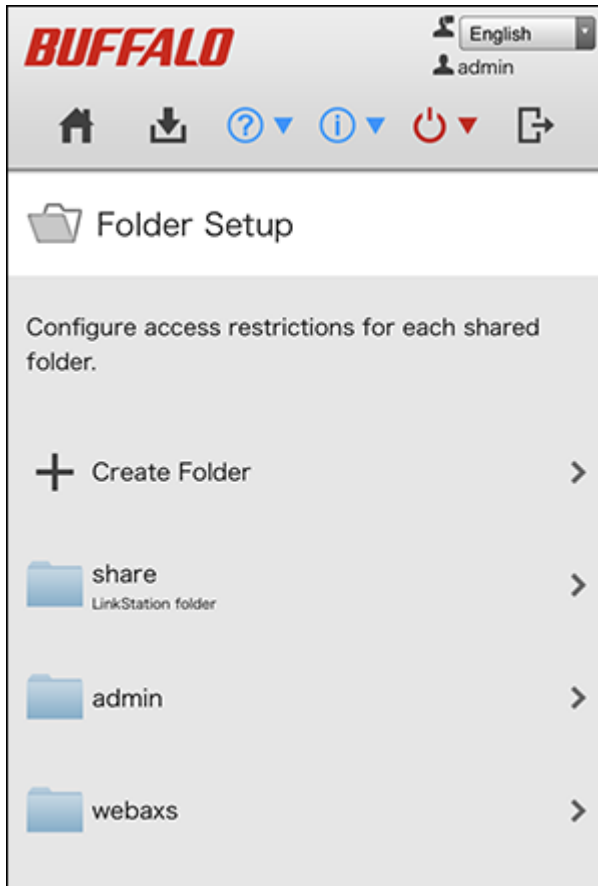
## Configuring Shared Folders

### Adding a Shared Folder

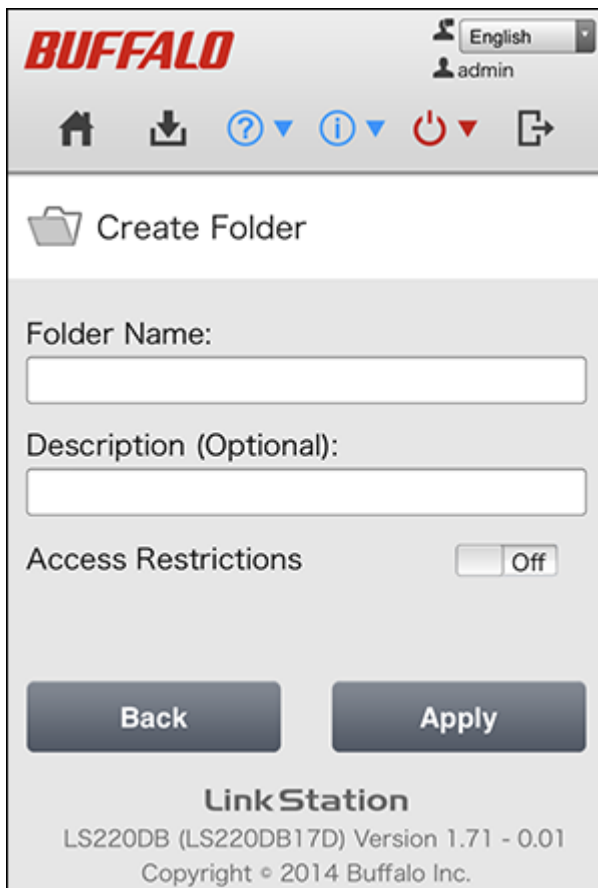
1 From Settings, tap *Folder Setup*.



**2** Tap *Create Folder*.



**3** Enter the desired folder name and tap *Apply*.



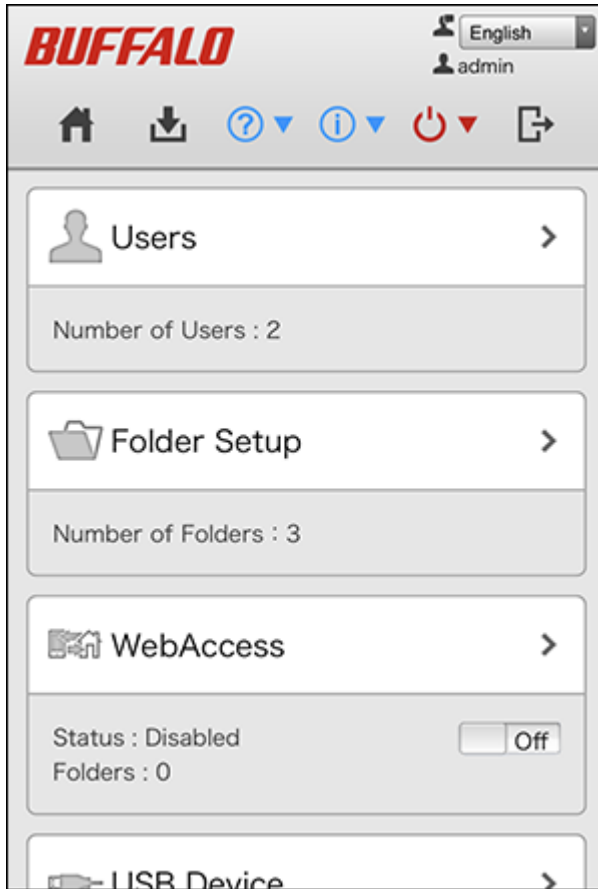


**4** Tap *OK* when completed.

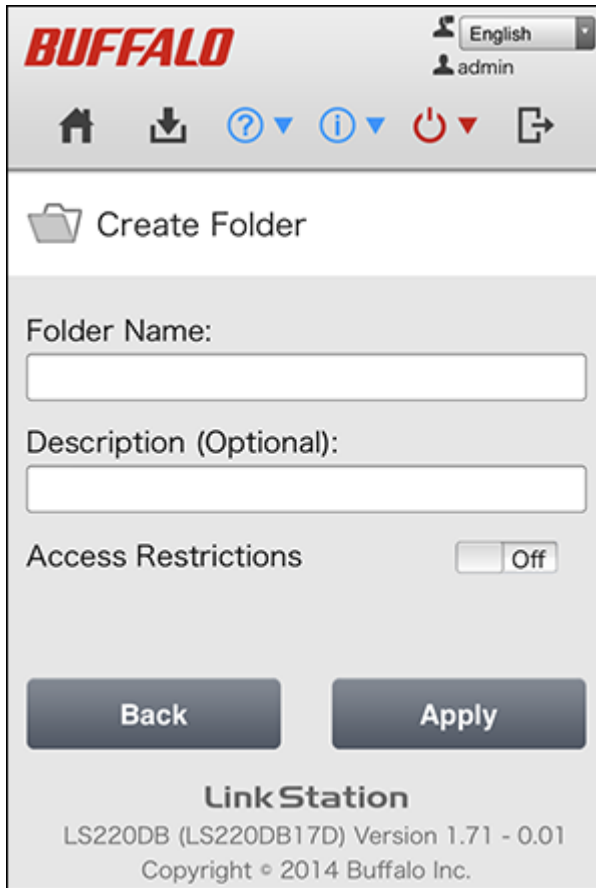
## Deleting a Shared Folder

---

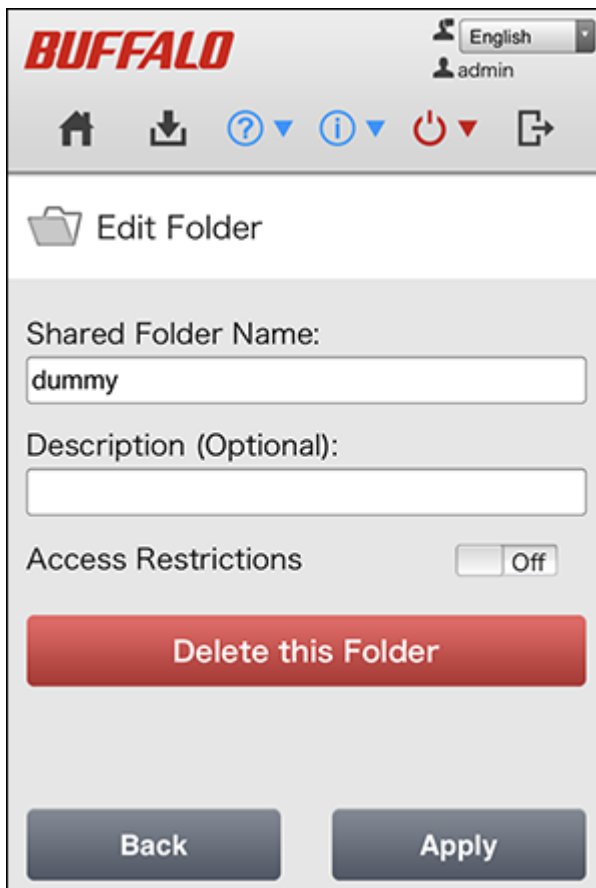
**1** From Settings, tap *Folder Setup*.



2 Tap an existing folder from the list to be deleted.



3 Tap *Delete this Folder*.



- 4 Tap Yes.
- 5 The “Confirm Operation” screen will open. Enter the confirmation number, then tap *OK*.
- 6 Tap *OK* when completed.

---

## Configuring WebAccess

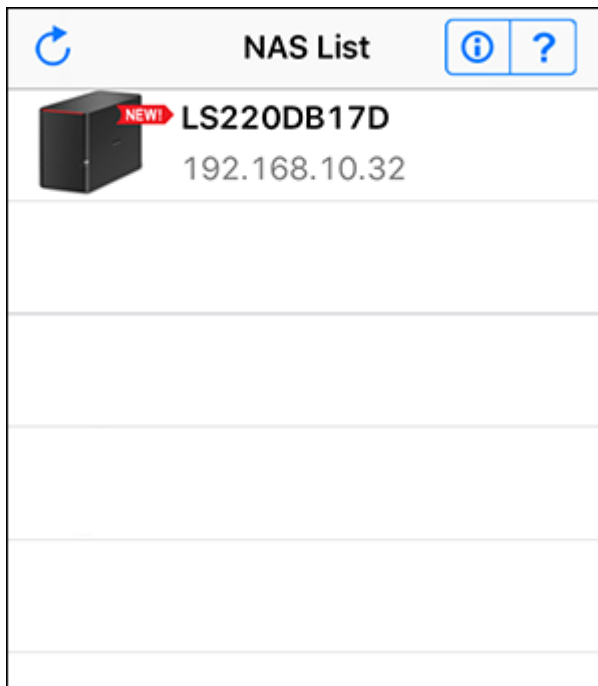
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**Note:** On your mobile device, download and install the “SmartPhone Navigator” and “WebAccess” apps from the App Store (iOS devices) or Google Play (Android devices).

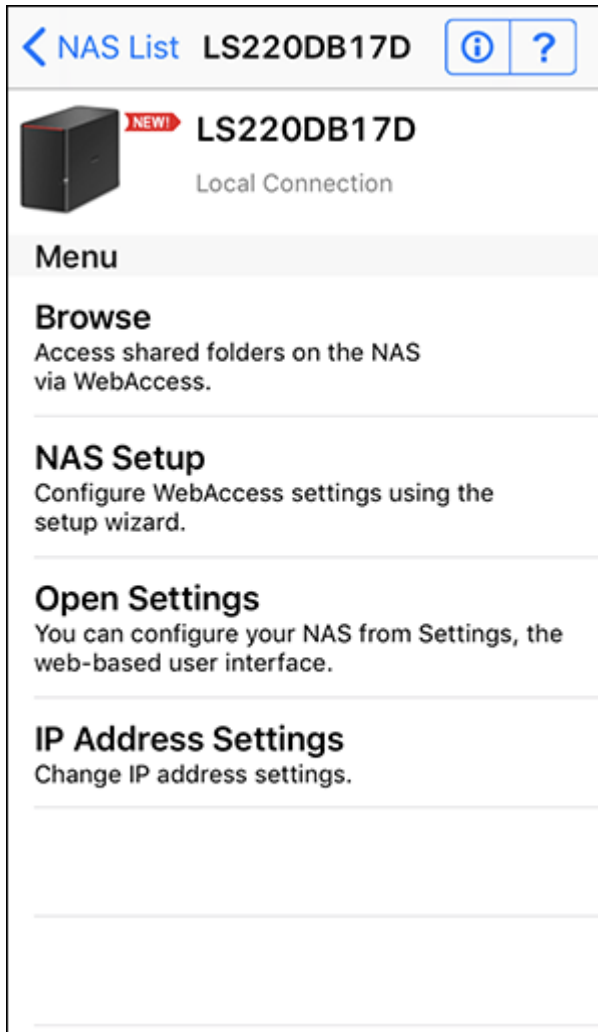
- 1 Open SmartPhone Navigator on your mobile device.



- 2 Select the LinkStation to configure WebAccess.



**3** Tap *NAS Setup*.



**4** Enter a username and password. This will create a new user. Tap *Next*.

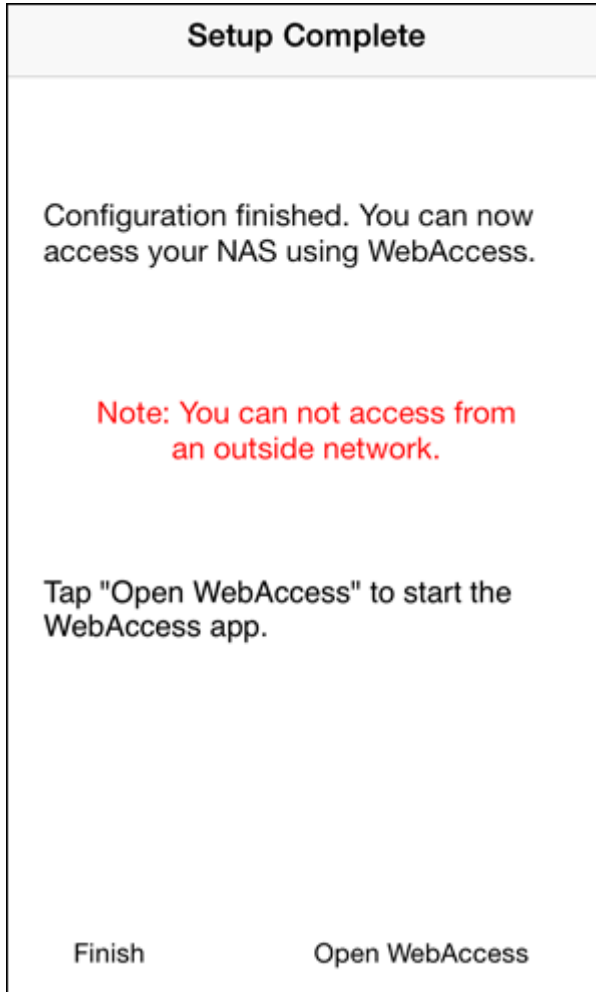
The screenshot shows a mobile application interface titled "NAS Setup". At the top left, there is a blue back arrow and the word "Back". The title "NAS Setup" is centered at the top. Below the title, there is a blue question mark icon. The main text reads: "Enter an username and password. If the account does not already exist, a new user will be created. A shared folder will be created with the same name as the username." Below this text are two input fields: "Username" and "Password". At the bottom of the screen, there are two buttons: "Cancel" on the left and "Next" on the right.

**5** Enter the password from the previous step again and tap *Next*.



A screenshot of a mobile application interface. At the top left, there is a blue back arrow and the text "Back". Below this, the text "Enter the password for admin." is centered. Underneath, the label "Password:" is positioned to the left of a rectangular text input field. At the bottom of the screen, there are two buttons: "Cancel" on the left and "Next" on the right.

If UPnP is not enabled on your network, you will only be able to access your LinkStation from the local network. To use WebAccess from outside your home, either enable UPnP on the router or open port 9000 for WebAccess in your router's settings.



**6** Enter the BuffaloNAS.com name and tap *Set*.

**Back** **NAS Setup**

Enter your BuffaloNAS.com name. You will use this name for opening the shared folder from outside network. The BuffaloNAS.com name may contain up to 20 alphanumeric characters.

Cancel

Set

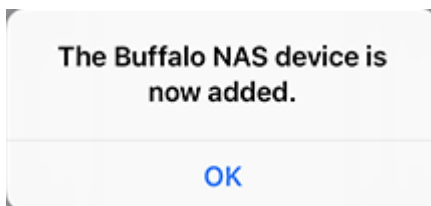


**7** Tap *Open WebAccess*.

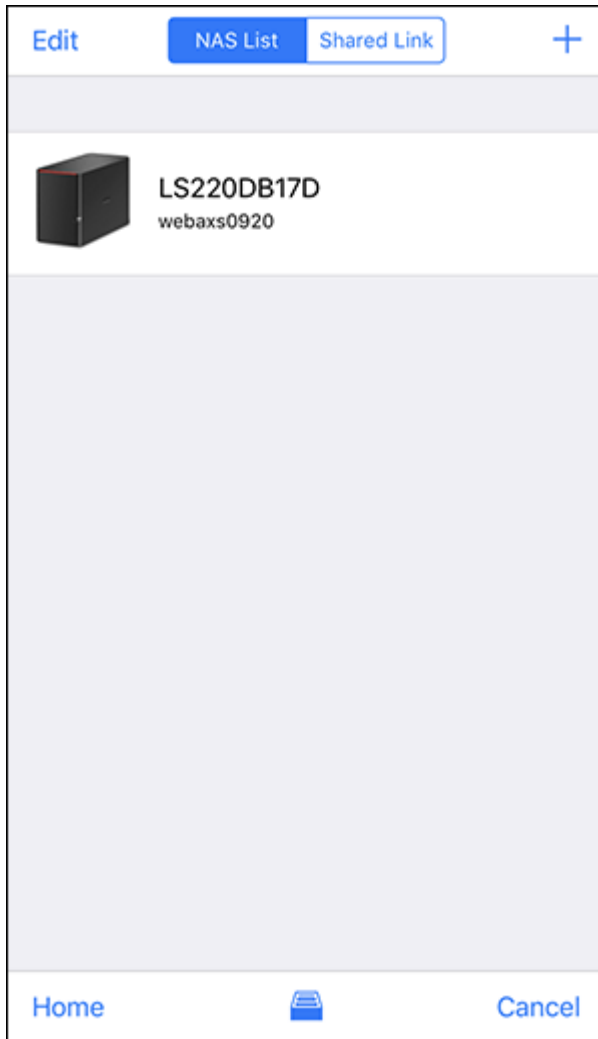


**8** WebAccess will launch.

**9** Tap *OK* if the following message is displayed.



**10** Tap your LinkStation's hostname to open the shared folder.

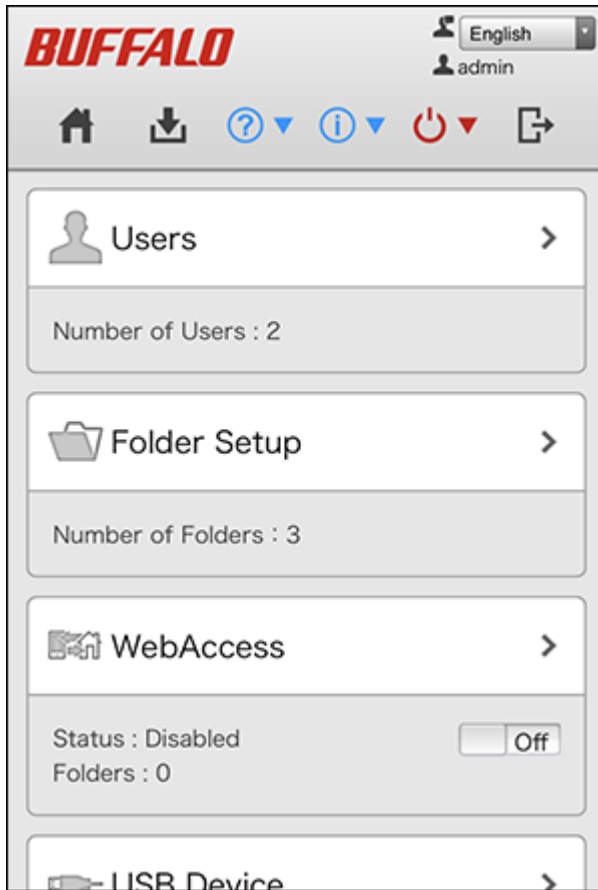


### If Unable to Create a BuffaloNAS.com Name

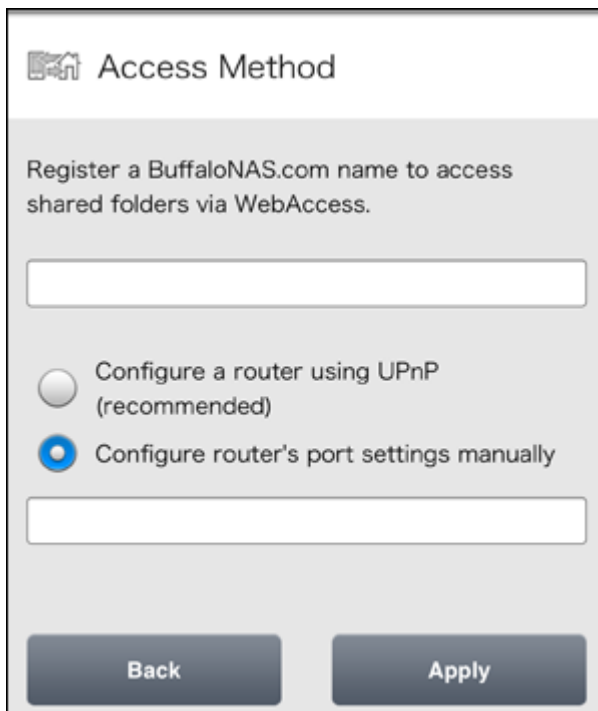
If UPnP is disabled on your router, creating the BuffaloNAS.com name from SmartPhone Navigator may fail. If this happens, try the following procedure.

- 1** Tap the "SmartPhone Navigator" icon on your mobile device.
- 2** Tap *Open Settings*.

**3** Tap *WebAccess*.



**4** Enter the desired BuffaloNAS.com name.



**5** Select "Configure router's port settings manually", enter the router's port number, and tap *Apply*.

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## Managing USB Devices

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From the “USB Device” option in Settings, you can dismount the USB drive, working with Direct Copy, and configuring UPS sync settings.

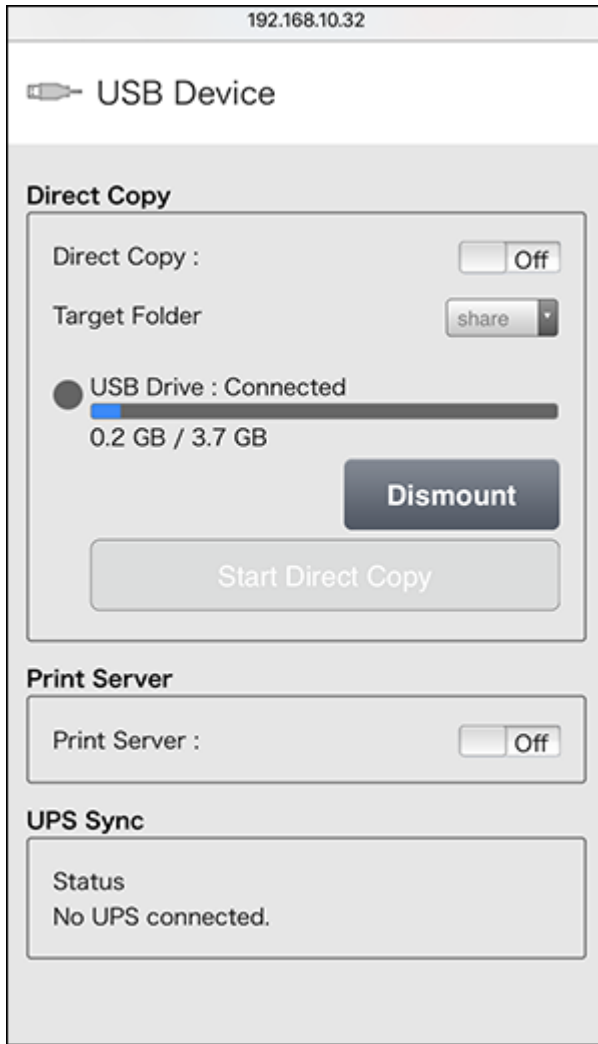
### Dismounting USB Drives

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- 1 From Settings, tap *USB Device*.



**2** Tap *Dismount*.



**3** When the completion message is displayed, unplug the USB device and tap *OK*.

## Starting Direct Copy

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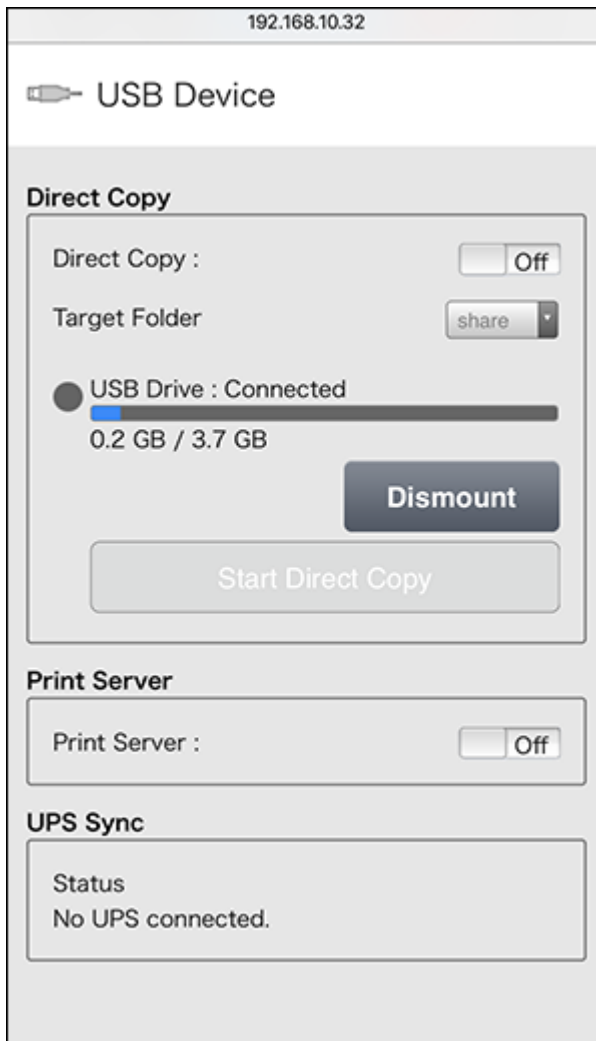
With the specific USB devices, you can copy the data in the USB device with your mobile device.

- 1** Connect the USB device. After it mounts (about 10 seconds), the function LED will light up. Unsupported devices will not cause the function LED to light.

**2** From Settings, tap *USB Device*.



**3** Tap *Start Direct Copy*.



**4** If you do, the function LED will flash as all the files on the USB device are copied to the Direct Copy folder to the LinkStation.

**Note:** By default, the Direct Copy folder is configured to the “usb\_backup” folder in the “Public” folder. You can change the destination folder from Settings using the computer. Refer to the [“Copying from a USB Device”](#) section in chapter 6 for the procedure.

- 5 When the copy operation is finished, the access LED of the USB device will stop flashing. Safely dismount the USB device by using the dismount process.

## Configuring UPS Sync

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You can enable/disable UPS sync settings from your mobile device. For other settings such as changing the shutdown process when using UPS sync, go to Settings from the computer. Refer to the [“UPS \(Uninterruptible Power Supply\)”](#) section in chapter 8 for the procedure.

- 1 From Settings, tap *USB Device*.




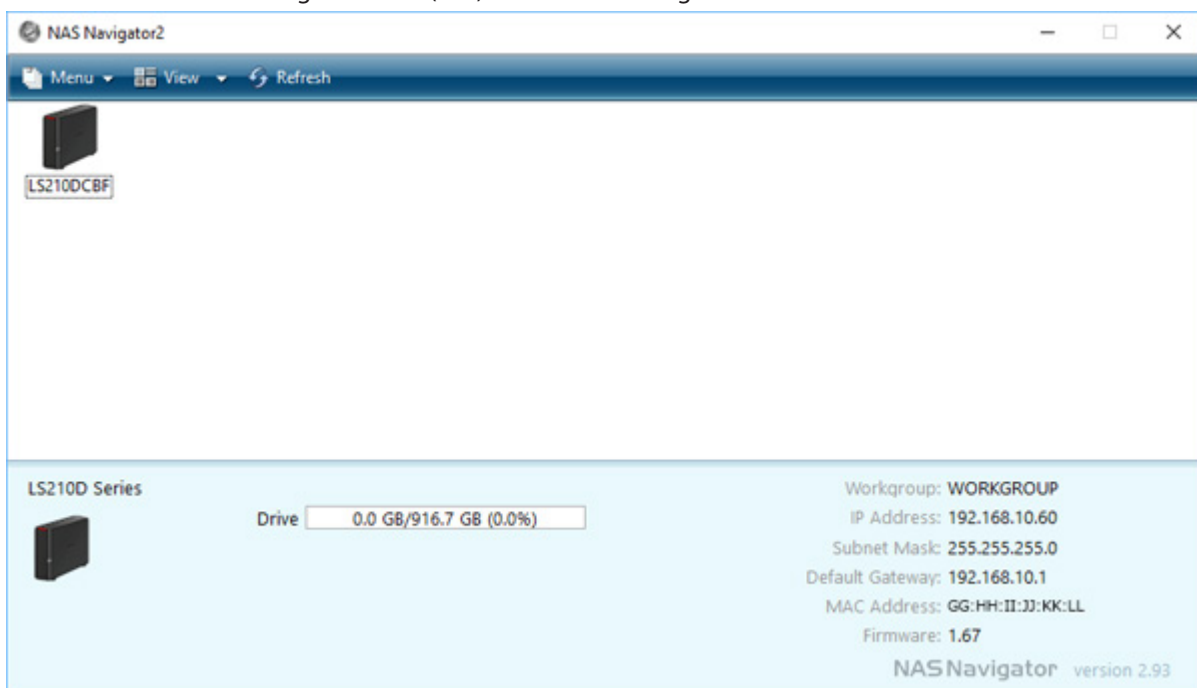
- 2 Move the UPS sync switch to the **on** or **off** position to enable or disable UPS sync.

# Chapter 10 Utilities

## NAS Navigator2 for Windows

NAS Navigator2 is a utility program that makes it easy to display Settings, change the Buffalo NAS device's IP address, or check its drive. To install NAS Navigator2, download the installer from <http://d.buffalo.jp/LS220DB/>. NAS Navigator2 will run in the system tray when the computer is on.

Double-click the NAS Navigator2 icon (  ) to start NAS Navigator2.



Click a Buffalo NAS device's icon to display total capacity, used space, workgroup name, IP address, subnet mask, default gateway, MAC address, and firmware version.

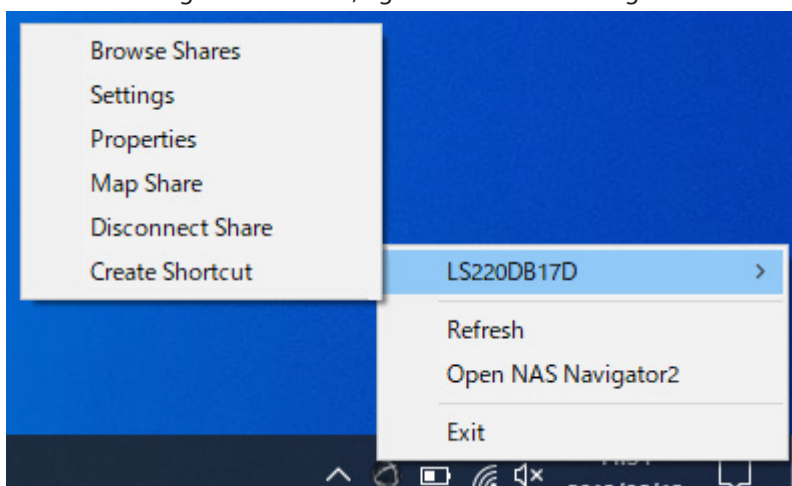
Double-click the icon to open a shared folder on the Buffalo NAS device.



Name		Description
Menu	Map Share*	Assigns the Buffalo NAS device's shared folder as a network drive.
	Disconnect Share*	Unmaps the network drive.
	Map All Remote Shares to Drive Letters	Assigns all Buffalo NAS devices' 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 Buffalo NAS device'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 appear from the NAS Navigator2 icon in the system tray.
	Properties*	Opens the properties page that lets you configure the Buffalo NAS device's IP address or open Settings.
	Close	Closes NAS Navigator2.
View	View	<b>Icons:</b> Displays icons. <b>Details:</b> Displays the hostname, product name, workgroup, IP address, subnet mask, and default gateway.
	Sort by	If you have multiple Buffalo NAS devices 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 Buffalo NAS device's shared folders.
Refresh		Searches for the Buffalo NAS devices on the network again.
Right-click your device's icon to show these menus.	Browse Shares	Opens the Buffalo NAS device's shared folders.
	Settings	Opens Settings for the Buffalo NAS device.
	Properties	Opens the properties page that lets you configure the Buffalo NAS device's IP address or open Settings.
	Map Share	Assigns the Buffalo NAS device's shared folder as a network drive.
	Disconnect Share	Unmaps the network drive.
	Create Desktop Shortcut	Creates a desktop shortcut to the Buffalo NAS device's shared folders.

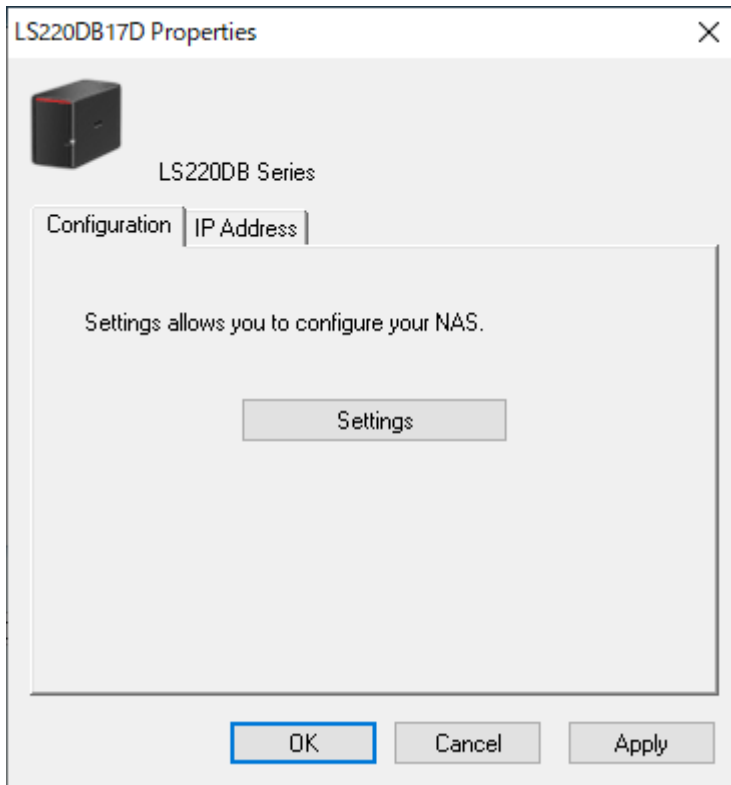
\*Click on the Buffalo NAS device's icon to display these options.

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



Name	Description	
Buffalo NAS device name	Browse Shares	Opens the Buffalo NAS device's shared folders.
	Settings	Opens Settings for the Buffalo NAS device.
	Properties	Opens the properties page that lets you configure the Buffalo NAS device's IP address or open Settings.
	Map Share	Assigns the Buffalo NAS device's shared folder as a network drive.
	Disconnect Share	Unmaps the network drive.
	Create Shortcut	Creates a desktop shortcut to the Buffalo NAS device's shared folders.
Refresh	Searches for the Buffalo NAS devices on the network again.	
Open NAS Navigator2	Opens the NAS Navigator2 window.	
Exit	Exits NAS Navigator2.	


The following menus may be accessed from the Buffalo NAS device's properties page.



Name	Description
Configuration	Click <i>Settings</i> to open the configuration interface.
IP Address	Select the "Use DHCP" checkbox to assign an IP address from the DHCP server automatically. If there is no DHCP server on 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 a static IP address, subnet mask, and default gateway.


## Mounting as a Network Drive

You can easily assign a shared folder as a network drive using NAS Navigator2.


- 1 Double-click the NAS Navigator2 icon (  ) to start NAS Navigator2.
- 2 Right-click your Buffalo NAS device's icon and select *Map Share*.

- 3 An icon for the mapped share will appear in Computer or This PC. You can use this network drive just like any other drive.

## Changing the IP Address

- 1 Double-click the NAS Navigator2 icon (  ) to start NAS Navigator2.
- 2 Right-click your Buffalo NAS device's icon and select *Properties > IP Address*.
- 3 Clear the "Use DHCP" checkbox and enter the desired settings, then click *OK*. If the username and password prompt appears, enter the admin username and password.

## NAS Navigator2 for macOS

NAS Navigator2 is a utility program that makes it easy to display Settings, change the Buffalo NAS device's IP address, or check its drive. To install NAS Navigator2, download the installer from <http://d.buffalo.jp/LS220DB/>. Click the NAS Navigator2 icon (  ) in the Dock to start NAS Navigator2.



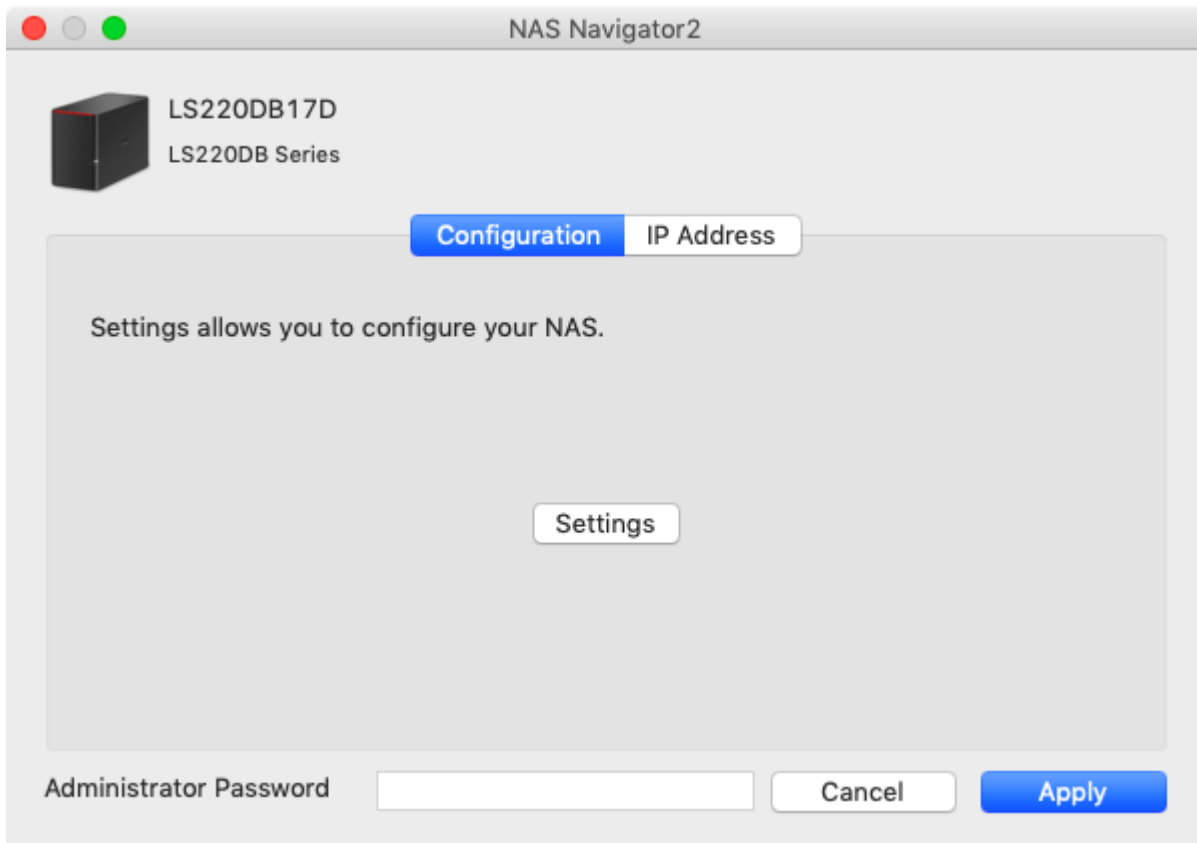
Click a Buffalo NAS device's icon to display total capacity, used space, workgroup name, IP address, subnet mask, default gateway, MAC address, and firmware version.

Double-click the icon to open a shared folder on the Buffalo NAS device.

Name	Description
Open	Opens the Buffalo NAS device's shared folders.
Refresh	Searches for the Buffalo NAS devices on the network again.
Settings	Opens Settings for the Buffalo NAS device.
Configure	Opens the properties page that lets you configure the Buffalo NAS device's IP address or open Settings.
Label Color	Selects the color of the name displayed below the icon.

Name	Description	
View Options	Lets you choose the icon size, position, and view mode.	
Auto Power Mode	Auto power mode can turn supported Buffalo NAS devices on the network on and off automatically.	
To display these options, hold down the control key and click your device's icon.	Open Folder	Opens the Buffalo NAS device's shared folders.
	Settings	Opens Settings for the Buffalo NAS device.
	Configure	Opens the properties page that lets you configure the Buffalo NAS device's IP address or open Settings.
	Label Color	Selects the color of the name displayed below the icon.


The following menus may be accessed from the Buffalo NAS device's properties page.



Name	Description
Configuration	Click <i>Settings</i> to open the configuration interface.
IP Address	Select the "Use DHCP" checkbox to assign an IP address from the DHCP server automatically. If there is no DHCP server on 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 a static IP address, subnet mask, and default gateway.

## Mounting as a Network Drive

You can map a shared folder as a network drive using NAS Navigator2 on macOS.

- 1 Click the NAS Navigator2 icon (  ) in the Dock to start NAS Navigator2.
- 2 Double-click the Buffalo NAS device's icon or click the Buffalo NAS device's icon while holding down the control key, then select *Open Folder*. Enter a username and password with the rights to access the shared folder.

**3** Select the shared folder that you want to mount, then click *OK*.

**4** The shared folder is now mounted as a network drive.

## Changing the IP Address

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**1** Click the NAS Navigator2 icon (  ) in the Dock to start NAS Navigator2.

**2** Click the Buffalo NAS device's icon while holding down the control key, then select *Configure > IP Address*.

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

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## NovaBACKUP

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NovaBACKUP is a Windows utility that lets you back up data on your computer.

The NovaBACKUP installer is available from <http://d.buffalo.jp/LS220DB/>. Download the NovaBACKUP installer and install it onto your computer.

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

# Chapter 11 Appendix

## Power LED Operations

This section explains the details of power LED patterns when an event occurs. If there is a corresponding corrective action described for the code, try it first. If the LED still blinking due to an issue outlined below, contact Buffalo technical support for assistance.

### White

The power LED will blink white during bootup or shutdown.

### Red

If there is an error, the power LED will blink red. The pattern of the blink gives the error code. You can also check for any error messages in NAS Navigator2.

Place of Error Code	Status
10s Place of Error Code	The LED flashes for 1.0 second every 0.3 seconds. This gives the tens place of the error code.
1s Place of Error Code	The LED flashes for 0.5 seconds every 0.3 seconds. This gives the ones place of the error code.

Error Code	Description	Corrective Action
E04	The firmware is corrupted.	Contact Buffalo technical support for assistance.
E10	The LinkStation is running on the UPS battery due to a power outage.	Shut down the LinkStation safely and wait until the power outage ends.
E11	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 tools to remove them.
E12	A rise in the system temperature may have exceeded the allowable safety value.	Move the LinkStation to a cool location. Do not place objects in the area around the LinkStation.
E14	The RAID array cannot be mounted.	Run the drive check on the RAID array by referring to the <a href="#">“Checking Drives”</a> section in chapter 4.
E15	The bad sectors have reached a dangerous level.	Replace the drive by referring to the <a href="#">“Drive Replacement”</a> section in chapter 4.
E16	Unable to find the drive.	The drive may be disconnected or may have failed. Shut down the LinkStation and reinstall the drive.
E22	Unable to mount the drive.	Format the drive. After formatting, if the error still appears after rebooting, replace the drive.

Error Code	Description	Corrective Action
E23	An error occurred, so the drive was removed from the RAID array.	Replace the drive by referring to the <a href="#">“Drive Replacement”</a> section in chapter 4.
E30	An error occurred, so the drive was removed from the RAID array.	Replace the drive by referring to the <a href="#">“Drive Replacement”</a> section in chapter 4.

## Amber (Blinking)

If there is a status message, the power LED will blink amber. The pattern of the blink gives the information code. You can also check for any status messages in NAS Navigator2.

Place	Status
10s Place	The LED flashes for 1.0 seconds every 0.3 seconds. This gives the tens place of the information code.
1s Place	The LED flashes for 0.5 seconds every 0.3 seconds. This gives the ones place of the information code.

Information Code	Description	Corrective Action
I10	A rise in the system temperature may have exceeded the allowable safety value.	Move the LinkStation to a cool location. Do not place objects in the area around the LinkStation.
I11	The drive has too many bad sectors.	Replace the drive by referring to the <a href="#">“Drive Replacement”</a> section in chapter 4.
I12	Operating in degraded mode.	Check if the E30 message is also displayed. If so, refer to the corrective action of the E30 message.
I13	Formatting the RAID array.	-
I14	Checking the RAID array.	-
I15	Examining the error status of the RAID array. <b>Note:</b> Transfer speeds are slower during the examination process.	-
I16	Creating the RAID array.	-
I17	Resynchronizing the RAID array. <b>Note:</b> Transfer speeds are slower during resynchronization.	-
I18	Rebuilding the RAID array. <b>Note:</b> Transfer speeds are slower during the rebuilding process.	-
I19	Rewriting the RAID array.	-
I20	Formatting the drive.	-
I21	Checking the drive.	-
I22	Rewriting the drive.	-
I23	Initializing all settings.	-
I25	Updating the LinkStation firmware. <b>Note:</b> Do not turn off the LinkStation’s power.	-
I26	Initializing all settings. <b>Note:</b> Do not turn off the LinkStation’s power.	-

Information Code	Description	Corrective Action
I27	Checking the USB drive.	-
I28	Formatting the USB drive. <b>Note:</b> Do not turn off the LinkStation's power.	-
I46	Data migration or conversion (RAID migration) is in progress. <b>Note:</b> Do not turn off the LinkStation's power.	-
I47	Data migration or conversion (RAID migration) is in progress. <b>Note:</b> Do not turn off the LinkStation's power.	-
I52	A new firmware version has been released.	Update the firmware by referring to the <a href="#">"Updating the Firmware"</a> section in chapter 8.
I54	The backup job failed.	Make sure that the backup job is configured correctly. Make sure that the NAS is on and not in standby mode. If the backup job still fails, check the status of the network and backup source and destination.

## Amber (Glowing)

When the power LED glows a steady amber, a new firmware version is available. Update the firmware to the newest version.

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## Default Settings

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Administrator's Name	admin
Password	password
Shared Folders	"share" and "info" for both Windows and Mac computers. *The recycle bin is enabled by default.
IP Address	The LinkStation 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: 169.254.xxx.xxx ("xxx" is assigned randomly when booting the LinkStation.) Subnet mask: 255.255.0.0
Registered Groups	"hdusers", "admin", and "guest" are default groups and cannot be edited or deleted.
Microsoft Network Group Setting	WORKGROUP
Ethernet Frame Size	1500 bytes
SMB2	Enabled
AFP	Disabled
FTP	Disabled
NTP	Enabled
Print Server	Disabled



WebAccess	Disabled
Time Machine	Disabled
iTunes Server	Enabled
Function Button Settings	Restore factory default settings
Update Notification	Enabled
RAID Mode	RAID 1

## Specifications

Check the [Buffalo website](#) for the latest product information and specifications.

LAN Interface	Standard Compliance	IEEE 802.3ab (1000BASE-T), IEEE 802.3u (100BASE-TX), IEEE 802.3 (10BASE-T)
	Data Transfer Rates	10/100/1000 Mbps (auto sensing)
	Number of Ports	1
	Connector Type	RJ-45 8-pin (auto MDI-X)
	Supported Protocols	TCP/IP
	Network File Services	SMB/CIFS, AFP, FTP/FTPS
	Jumbo Frames	1500, 4084, 7404, and 9216 bytes
USB Interface	Standards Compliance	USB 2.0
	Data Transfer Rates	Max. 480 Mbps
	Number of Ports	1
	Connector Type	Type A
Internal Drive	Number of Drive Bays	2
	Drive Interface	SATA 3 Gbps
	Supported RAID	0, 1, JBOD (individual drives)
	Replacement Drive	Buffalo OP-HDBST series drive <b>Note:</b> The replacement drive should be the same size or larger as the original drive. The drives listed above are available from the <a href="#">Buffalo website</a> .
Others	Power Supply	AC 100–240 V, 50/60 Hz
	Dimensions (W × H × D)	87 × 128 × 205 mm; 3.4 × 5.0 × 8.1 in.
	Weight	Approx. 2.5 kg; 5.5 lbs
	Power Consumption	Max. 48 W
	Operating Environment	Temperature: 5–35°C; 41–95°F Humidity: 20–80% (non-condensing)
	Compatible Devices	Windows PCs, tablets, Intel Mac computers, iOS devices, and Android devices with wired or wireless Ethernet connection.
	Supported OS	Windows 10, 8.1, 7 Windows Server 2019, 2016, 2012 R2 macOS 10.14, 10.13, 10.12 iOS 10 or later Android 4.4 or later