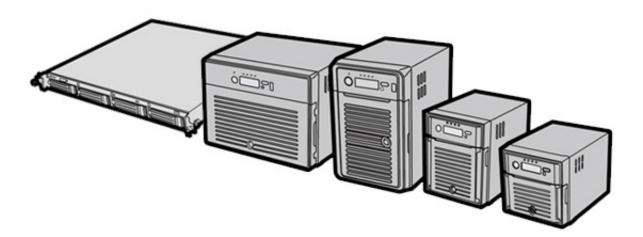


**TeraStation 5000** 

# **User Manual**



www.buffalotech.com

35020018-02

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# **Chapter 1 Installation**

# Installation

**1** Insert the TeraNavigator CD into your computer. TeraNavigator will launch.





- **3** Follow the steps on the screen to connect the TeraStation's Ethernet and power cables and turn it on. **Note:** Use LAN port 1 for initial setup. After setup, you may connect a second cable to LAN port 2. If you use LAN port 2, configure the IP address at *Network - IP Address* in Settings.
- 4 Follow the steps on the screen to install NAS Navigator2.
- **5** Click *Finish*. NAS Navigator2 will open.
- 6 Right-click on your TeraStation's icon and choose *Properties*.

Menu 🕶	III View -	Browse	G Refresh	J Im here	
5	Browse Share Settings Properties Map Share Disconnect St	s			
i5200D Seri	Create Deskto I'm here		.0 GB/899.9 G8	3 (0.0%)	Workgroup: WORKGROUP IP Address: 192.166.10.25
					Subnet Mask: 255.255.255.0 Default Gateway: 192.168.10.1 MAC Address: CC:52:AF:EA:84:E1 Firmware:

Note: For Mac OS, select the TeraStation's icon while holding down the control key, then click Configure.

7 Click the IP Address tab, enter the desired settings, and click OK.

TS5200D4E1 Properties					×
TS5200D Series	:				
Configuration IP Address					
Use DHCP Renew IP address					
IP Address	192	168	10		
Subnet Mask	255 .	255 .	255 .	0	
Default Gateway	192 .	168 .	10 .	1	
01		Canc	əl	Appl	y

If you are prompted to enter the administrator password for the TeraStation, it is "password" by default.

8 Right-click on your TeraStation's icon and choose *Settings*.

Menu 🕶	🚟 View 🔹 🏠 Browse 🥱 Refresh 🌗 I'm here	
522001	Browse Shares Settings Properties Map Share Disconnext Share Create Desition Shortcut	
	Tm here	
5200D Ser	I'm here	Workgroup: WORKGROUP
S200D Seri	I'm here	IP Address: 192.168.10.25
5200D Seri	I'm here	IP Address: 192.168.10.25 Subnet Mask: 255.255.255.0
S200D Seri	I'm here	IP Address: 192.168.10.25
5200D Seri	I'm here	IP Address: 192.168.10.25 Subnet Mask: 255.255.255.0 Default Gateway: 192.168.10.1

9

Changing the password from the default is recommended.

Changes the administrator password.
For security, please choose a new administrator password below.
Show entered password.
Password:
Enter the password again to confirm.
Confirm the Password.:
The password may include up to 20 alphanumeric characters, hyphens (-), underscores (_), periods (.), and symbols 1, #, &, $\oplus$ , \$, *, ^, %.

**10** Go to *Management - Name/Time/Language* and configure the TeraStation's time and date.

			* Required 😮
Name Time Language Mana	gement Information		
Date/Time Source: Enabled			
NTP IP Address * :	ntp.jst.mfeed.ad.jp		
	Use Default NTP Ser	ver	
NTP Synchronization Frequency:	Daily	*	
Disabled			
Time * :		: 43 C Use Local Date/Time	
Time Zone:			
(UTC-06:00) Central America			`

#### Notes:

- For best results, use an NTP server to maintain the time settings on the TeraStation and other network devices. Clocks for the network devices may run at slightly different speeds. If these devices get out of sync it may cause network problems.
- Buffalo is not responsible for any losses and damages incurred from using the ntp.jst.mfeed.ad.jp service or service outages.
- If the TeraStation cannot automatically obtain the time from an NTP server, check its DNS settings. If the NTP server is specified by a hostname instead of an IP address, make sure that a DNS server address is configured in *Network IP Address*.
- **11** In NAS Navigator2, double-click your TeraStation's icon. This will open the shared folder of the TeraStation. For Mac OS, the TeraStation is mounted as a drive icon on the desktop or it is displayed in the sidebar of the Finder. You can now use the TeraStation's shared folder to save files just like any other folder.

Menu 👻 🚟	View 🔹 💼	Browse 🧿 Refresh 🕻 I'm I	here	
5				
	HDD	0.005/42 20500.051	Workgroup: 10 Addrese	
	HDD	0.068/43.268(0.0%)	IP Address:	
6	HDD	0.0GB/43.2GB(0.0%)		
8	HDD HDD	0.0GB/43.2GB(0.0%) 0.0GB/43.2GB(0.0%)	IP Address: Subnet Maski	
	HDD	0.0GB/43.2GB(0.0%)	IP Address: Subnet Mask Default Gateway:	

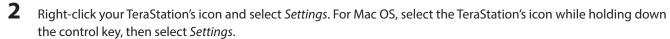
## **Turning the TeraStation On and Off**

Press the power button on the TeraStation to turn it on.

To turn off the TeraStation, press the power button twice. Don't unplug the TeraStation without turning it off first. You can also shut it down and restart it remotely from Settings.

## Shutdown or Restart from Settings:

1 Double-click the icon.



Menu 🔹 🔠 Vie	rw 👻 🎦 Browse 🥥 Refresh	♪ Im here
Setting Proper Map SI Discon	ties hare inect Share Desktop Shortcut	
S5200D Series	HDD 0.0 G8/899.9 G	Workgroup: WORKGROUP
		Subnet Mask: 255.255.255.0 Default Gateway: 192.168.10.1
		MAC Address: CC52:AFEA:84:E1
		Firmwares

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

Enter Username and Password	
	<b>?</b> •
Specify a username	
Username: admin	
Password:	
Time-out Period: (a) 10 minutes (C) Unlimited	
Secure Connection OK	Easy Admin

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

**4** Settings will open.

▶ Name : TS5200D4E1	(TS5200D) 👤 admin	🛃 Language English 🔻	Ð
File Sharing	File Sharing		
Drives	Folder Setup	1 Folder(s)	(
Services	Users	Local Users 2 User(s)	
Web Services	Groups	Local Groups 3 Group(s)	
Applications	SMB	s.	i.
Network	DFS		È.
Backup	AFP		i.
🛠 Management	FTP		1
	SFTP		]
	WebAccess		1
	I NFS	<b>P</b>	1

(l)

**5** Click at the top-right of Settings and choose either *Restart* or *Shut Down*.



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

# **Changing the Administrator Password**

After initial setup, follow this procedure to change your password.

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

2 Right-click on your TeraStation's icon and select *Settings*. On the Mac, select the TeraStation's icon while holding down the control key, then select *Settings*.

AS Naviga	nor2	
Menu 👻	🔠 View 🔹 🍅 Browse 🥱 Refresh 🌗 Tm here	
52001	Browse Shares Settings Properties Map Share Disconnet Share Create Desitop Shortcut Tm here	
5200D Seri	es HDD 0.0 68/899 9 68 (0.0%)	Workgroup: WORKGROUP IP Address: 192166.10.25 Subnet Masic 255.255.55 Default Gateway: 192166.10.1 MAC Address: CC52AFEA8-E1
		Firmware: NAS Navigator version

**3** Enter your username and password.

		9
Specify a username		
Username: admin		
Password:		
Time-out Period: 💿 10 minutes	Unlimited	

**4** Click Change Password.



#### 5 Enter the new password (twice).

Changes the administrator password.
For security, please choose a new administrator password below.
Show entered password.
Password:
Enter the password again to confirm.
Confirm the Password.:
The password may include up to 20 alphanumeric characters, hyphens (-), underscores (_), periods (.), and symbols !, #, &, $\oplus$ , \$, *, ^, %.

6 Click OK. You have changed the admin password.

## **Recovery Drive**

To initialize all of the TeraStation's settings, or just restore the admin password to its factory default value, create the recovery drives as described below.

## **For Initializing Settings**

A system initialization drive can reset all settings to their default values.

Notes:

- Normally, making and using the system initialization drive will not affect data. However, always back up your data regularly!
- This USB drive can be used to recover the system if your TeraStation doesn't boot at all. In this case, if the data partition is damaged, then all your data will be deleted by the recovery process.
- 1 Insert a 1 GB or larger USB flash drive into a USB port on the TeraStation. Note: All data on the USB flash drive will be erased!
- 2 In Settings, navigate to Management-Restore/Erase-USB Options.
- 3 Select Create a USB drive for initializing settings.
- 4 Select the USB memory device from "Target USB drive", then click Execute.
- 5 Enter the 4 digit confirmation number and click OK. The TeraStation will create the initialization drive. This will take about a minute.

**6** When the "finished" dialog opens, the USB initialization drive is ready to use. Dismount the USB drive before unplugging it. See "Dismounting Drives" in chapter 4 for the instructions on dismounting drives.

# For Password Resetting

A password initialization drive can reset the administrator password to its default value ("password"). This could be very useful if you forget your admin password.

- 1 Insert a 1 GB or larger USB memory device (not included) to a USB 2.0 port on the TeraStation. Note: All data on the USB flash drive will be erased!
- 2 In Settings, navigate to *Management Restore/Erase USB Options*.
- **3** Select Create a USB drive for resetting the admin password.
- **4** Select the USB memory device from "Target USB drive" list, then click *Execute*.
- 5 Enter the 4 digit confirmation number and click *OK*. The TeraStation will create the password reset drive. This will take about a minute.
- 6 When the "finished" dialog opens, the password reset drive is ready to use. Dismount the USB drive before unplugging it. See "Dismounting Drives" in chapter 4 for the instructions on dismounting drives.

For instructions on using system initialization or password initialization drives, see chapter 10.

# **Chapter 2 Configuration**

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

**Note:** Internet Explorer 9, Firefox 8, Google Chrome 15, Safari 5, and later are supported. If you have difficulty viewing Settings, check the following:

- If there are a large number of registered users, groups, or shared folders, use Firefox instead of Internet Explorer.
- If you have a proxy server enabled in the browser settings, disable the proxy server.
- With Internet Explorer, set security to *Local intranet*. On Windows Server 2008, higher-level security is configured by default. Set the security to a lower level temporarily.

## **Opening Settings**

- 1 Open NAS Navigator2 by double-clicking the icon.
- 2 Right-click on your TeraStation's icon in NAS Navigator and select *Settings*. For Mac OS, click your TeraStation's icon while holding down the control key, then select *Settings*.

Menu 👻 🖁	🖥 View 👻 🌰 Browse 🥱 Refresh 🎲 Em he	rre
Si P N D C	rowse Shares tettings roperties Tap Share sconnect Share reate Desktop Shortcut m here	

**3** Enter the username and password and click *OK*.

Enter Username and Pa	assword		
			<b>?</b> •
	🗌 Specify a username		
Username:	admin		
Password:			
Time-out Period	<ul> <li>I0 minutes</li> </ul>	Unlimited	
Secure Connection		ОК	Easy Admin

Username/Password Combinations:

Username	Password	Settings Available
admin	password	All
guest	blank	TeraStation name, IP address, workgroup, drive status, hardware version
your username	your password	TeraStation's name, IP address, workgroup, drive status, firmware version, and your password.

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 with an encrypted connection.
- **4** Settings will open.

<b>MUFFALD</b> TeraStation	X	? • ()	_
► Name : TS5200D4E1 (T	SS200D)	🚽 Language English 🔻	🕒 Log Out
File Sharing	File Sharing		
Drives	Folder Setup	1 Folder(s) 전	
Services	Users	Local Users 2 User(s)	1
Web Services	Groups	Local Groups 3 Group(s)	ſ
Applications	SMB		í.
🚯 Network	To DFS		
D Backup	AFP		l.
🔀 Management	FTP		
	SFTP		
	K WebAccess	<b>P</b>	1
	I NFS	<b>P</b>	

Notes:

- Click to open Easy Admin.
- Click to play a tone from the TeraStation for easy location.
- You can also use Bonjour to log in to Settings from OS X 10.4 or later. In Safari, click *View Show Bookmarks Bar*. From Bookmarks, click *Bonjour TeraStation name*.

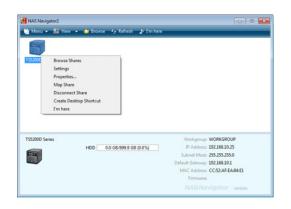
# **Opening Easy Admin**

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



Open NAS Navigator2 by double-clicking the will icon.

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



## **3** Click Easy Admin.

4

		3
Specify a username		
Username: admin		
Password:		
Time-out Period: 💿 10 minutes	O Unlimited	
ure Connection	ок	Easy Admi

#### The Easy Admin screen will open.

	Easy	y Admin	
WebAccess	Access Restrictions	RAID Settings	Active Domain
Create a free personal cloud and access and share your files anytime, mywhere over the Internet.	Create users, groups, and new folders.	Change RAID settings	Enable to sync Terastation with Active Directory domain.
Backup	TeraSearch		Change Password
rou can back up files on the rerastation to an attached USB drive or to another Terastation on the	Search all documents in Terastation.		Before using your TeraStation, change the default password.

#### Notes:

- If you click any buttons, you will need to enter a username and password.
- You can open Easy Admin anytime by clicking the 🗳 icon at the top left of Settings.

# **Chapter 3 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 folders within the shared folders.
- Configure access restrictions through Settings. Configuring access restrictions through Windows is not supported and may cause unexpected behavior.
- You can also configure users, groups, and shared folders from Easy Admin by clicking Access Restrictions.
- Shared folders with limited access can still be used as backup destinations.

## **Configuring Access Restrictions on Users and Groups**

# Adding a Shared Folder

1 In Settings, click the right of "Folder Setup".

Folder Setup 1 Folder(s)

- **2** Click Create Folder.
- **3** Configure the settings, then click *OK*.

ared Folder Settings			
		* Requ	ired 🕜
Copy settings from:	List has no content.		~
Name * :			
Shared Folder Description:			
Volume:	Disk 2	~	
Attribute:	Read Only	Read & Write	
Recycle Bin:	Enabled	Disabled	
LAN Protocol Support:	SMB (Windows/Mac)	📝 AFP (Mac)	
	FTP	Backup	
	INA DLNA	WebAccess	
	SFTP		
	V NFS		
	NFS Path		
	/mnt/disk2/		
Folder Attributes:	Hidden Share (SMB Only)		
	Windows Backup		
Remote Backup Password:			
WebAccess Public Mode:	Allow Anonymous	¥	
Offline Files:	Manual File Caching	~	
TeraSearch:	Include this folder in the s	search index	
Access Restrictions:	enabled	Disabled	
Local Users Local Groups	Domain Users Domain Grou	ps External Users	
	Filter:		>
Local Username		W <sub>R</sub> R	
guest		0 0	۲
admin		• •	0
sample-user01		• •	0
sample-user02			0
		οκ ο	ancel

#### Notes:

- Names may contain up to 27 alphanumeric characters, hyphens (-), and underscores (\_). Do not use a symbol as the first character in a name.
- The description may contain up to 75 alphanumeric characters, hyphens (-), underscores (\_), and spaces. Do not use a symbol or space as the first character.
- 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 multi-byte characters are used in shared folder names, configure the client language to match the characters in Management - Name/Time/Language.

#### **Recycle Bin**

To protect your data from accidental deletion, you may configure your TeraStation to use a recycle bin instead of deleting files immediately. The recycle bin will only work with SMB connections. To empty the recycle bin, click *File Sharing - Folder Setup - Empty the recycle bin* in Settings.

Note: You can prevent guests and other users from emptying the trash by navigating to File Sharing - SMB -

Permissions for Trashbox and selecting "Administrator only".

#### Accounts

Your TeraStation username and password should be the same as your Windows username and password. If they are different, you may not be able to access folders on the TeraStation with access restrictions configured.

#### **Read-only Shares**

By default, new shares are set with read & write access, but you may change the attribute to *Read-only* in *Shared Folder Attributes*. Read-only shares and HFS+ formatted USB hard drives will have "Read-only" added to the shared folder description.

#### **Hidden Shares**

To hide a shared SMB folder, select "Hidden Share (SMB Only)" and click *OK*. To open a hidden folder, click *Start - Search programs and files* and enter "\\TeraStation name\Shared folder name\$\" for the name. Example: If the TeraStation name is "TS-XX001" and the shared folder name is "share", then enter "\\TS-XX001\share\$\" to open it.

Note: FTP, SFTP, and Mac AFP folders cannot be hidden.

# **Adding Users**

1 In "File Sharing", select Users.

Local Users 2 User(s)

- **2** Click Create User.
- **3** Enter the desired settings, then click *OK*.

	<ul> <li>Required Q ·</li> <li>Filter: ×</li> <li>Group</li> <li>admin</li> <li>dusers</li> <li>sample-group01</li> </ul>
User ID: beer a number from 1000 to 1999. Email: Password: * Confirm the password: * Description: Quota: • Enable (Units: GB)	Group admin dusers
bter a number from 1000 to 1999. Email:  Password: *  Confirm the password: *  Description:  Quota:  Enable (Units: GB)	in admin ✓ hdusers
bter a number from 1000 to 1999. Email:  Password: *  Confirm the password: *  Description:  Quota:  Enable (Units: GB)	✓ hdusers
Email: Password: * Confirm the password: * Description: Quota: Pinable (Units: GB)	
Password: * Confirm the password: * Description: Quota: Pinable (Units: GB)	sample-group01
Confirm the password:  Description: Quota: Enable (Units: GB)	
Confirm the password:  Description: Quota: Enable (Units: GB)	
Description:	
Quota: () Enable (Units: GB)	
Quota: () Enable (Units: GB)	
Quota:	
Quota:	
Quota:	Select All Unselect All
@ Enable (Units: GB)	Primary Group:
	hdusers 🗸
Queta Alert 400	
Capacity:	
Quota Capacity: 500 🗢	
Disabled	

#### Notes:

- Usernames may contain up to 128 characters, including hyphens (-), underscores (\_), periods (.), !, #, &, @, \$, \*, ^, and %. Do not use a symbol as the first character.
- For Windows 8, use a local username instead of your Windows Live ID.
- 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.
- The description may contain up to 75 alphanumeric characters, hyphens (-), underscores (\_), and spaces. Do not use a symbol or space as the first character.
- When setting users with access privileges, a maximum of 300 users, including "admin" and "guest", can be registered in the TeraStation.
- Passwords may contain up to 20 alphanumeric characters and the following characters: \_ @ ! # \$ % &' () \* + , . /;
   <> = ? " [] ^ { } ~ . Do not use a symbol other than an underscore (\_) as the first character.
- Use the same username and password for both Windows and the TeraStation or you may not be able to access shared folders.

#### **Importing User Information**

You can import users in File Sharing - Users by clicking Import CSV File. Existing users will be overwritten.

Format for user data: Username (required), password (required), and user description (optional).

Examples:

username1, password1, comment1

username2,password2,comment2

username3, password3, comment3

Guidelines:

- Use commas (,) as separators. Do not put spaces before or after commas.
- If a line has an incorrect format, the user on that line will not be registered.
- If a username exists, the new user information will overwrite the old information.
- Do not use commas (,) in the username, password, or user description.

**Note:** Importing users may take some time. During import, other operations in Settings may be much slower than usual.

#### **Shared Folder Owners**

To confirm the owner of a shared folder from Windows XP, from the *Properties* screen of the file or folder, open a new window from the *Security* tab. Click *Advanced*, then click the *Owner* tab.

# **Adding Groups**

Groups	oups 3 Group(s)	
Click Add Group.		
Enter settings, then click OK.		
Group Settings		
Group Name: *	Filter:	
	Username	
Group ID: (* Enter a number from 1000 to 1999.)	admin	
Course Databases		
Group Privileges:		
Select a recipient for group notifications:		
User  Disabled		
© Email address		
Description:		
	Select All Unselect All	
Quota:	1	
Enable(Units: GB)		
Quota Capacity: 0		

#### Notes:

- Group names may contain up to 20 alphanumeric characters, hyphens (-), underscores (\_), and periods (.). Do not use a symbol other than an underscore (\_) as the first character.
- Group descriptions may contain up to 75 alphanumeric characters, hyphens (-), underscores (\_), and spaces. Do not use a symbol or space as the first character.
- 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 TeraStation.
- If you are logged in as a member of the general users group, you can only change your own password. If you're logged in as an administrator, you can change any settings, 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.

## **Access Restrictions**

Folder Setup		1	Fold	der(s	s)		4			
Click the shared fo	lder that	: you w	ant	to	set a	cess	restrict	ions	for.	
Shared Folder List										
						_			0-	
Oreste Folder Delete Folder Empty th						Filter:			×	
Name	Volume	Recycle Bin	SMB	AFP	FTP Ba	daup DU	NA WebAccess	SFTP	Extensions	
usbdisk1	USR disk 1	-	~	~	-	<ul> <li>-</li> </ul>		-	•	
share	Disk 2	~	~	1	~	/ /	/ /	~	•	
Select All Unselect All										
Click <i>Edit</i> .									Close	
Enable "Access Res	strictions estrictions: @					🔊 Disab	oled		Close	
Enable "Access Res	estrictions:  access fc	Enabled			group	o you	added		Close	cess pro
Enable "Access Res Access Re Select the level of	access for access access a	e Enabled for the u allowed	k o (	R:	group	o you	added		: Act	cess pro
Enable "Access Res Access Re Select the level of Access Re Select and write	access for access access a	e Enabled for the u allowed		R:	group	o you	added			cess pro
Enable "Access Res Access Re Select the level of Access Re Select and write	access for access access a	e Enabled for the u allowed	k o (	R:	group	o you	added		: Act	cess pro
Enable "Access Res Access Re Select the level of Read and write	access for access access a	e Enabled for the u allowed	k o (	R:	group	o you l acce	added	ved	: Act	cess pro
Enable "Access Res Access Re Select the level of Encel Users Local G Local Group Name	access for access access a	e Enabled for the u allowed	k o (	R:	group	o you l acce	added ess allov	ved	Z: Act	cess pro
Enable "Access Res Access Re Select the level of Enable and write Local Group Name guest admin	access for access access a	e Enabled for the u allowed	k o (	R:	group	o you l acce	added ess allov	ved	E Act	cess pro
Enable "Access Res Access Re Select the level of Access Re Local Users Local C Local Group Name guest	access for access access a	e Enabled for the u allowed	k o (	R:	group	o you l acce	added ess allov	ved	C: Act	cess pro

#### Notes:

- If both read-only and read & write permissions are given to a user, the user will have read-only access.
- An example of access restrictions by local users is shown in the screen. To apply access restrictions by group, click the *Local Groups* tab and select group permissions.



#### Notes

- Windows does not support some characters that Mac OS and the TeraStation allow. If you create a filename on a Mac with any of the following characters, it will not display correctly on a Windows computer. With OS X 10.2 or later, you may have to connect to the TeraStation via AFP in order to display or copy any of the following characters.

?[]/\=+<>;:",|\*

- Do not use any of the following words as a username or group name: root, bin, daemon, sys, adm, tty, disk, lp, sync, shutdown, halt, operator, nobody, mail, news, uucp, ftp, kmem, utmp, shadow, users, nogroup, all, none, hdusers, admin, guest, man, www, sshd, administrator, ftpuser, apache, mysql
- Do not use any of the following words as the name of a shared folder. These words are reserved for internal use by the TeraStation: info, spool, lost+found, global, printers, homes, lp, authtest, ram, msdfs\_root, mt-daapd, usbdisk# (where # is a number, for example: usbdisk1)
- Don't use the following unsupported characters in shared folder names, workgroup names, or filenames:

   のつつのののののののののののののののののののののです。



- File and folder names may contain up to 255 single-byte characters.
- Configure hidden and read-only file attributes in Settings. Configuring them from within Windows is not supported and may cause unexpected behavior.
- Folder and workgroup names whose names contain non-Roman characters may not be displayed correctly.
- If shared folders are accessed from a Macintosh, information files for the Macintosh may be generated automatically. Do not delete these files. If they are deleted using Windows, this may prevent further access from a Macintosh.
- If an SMB connection is used with OS X 10.3.9, the names of mounted volumes may appear as unreadable characters in Finder and other applications. This is not a problem with the filename or data.
- With OS X 10.5 to 10.5.6, Spotlight searches are not supported over AFP connections. Use SMB connections or upgrade to OS X 10.5.7 or later.
- The TeraStation belongs to the default zone in AppleShareServer; the zone cannot be specified.
- When files are copied to the TeraStation or to a USB drive connected to the TeraStation, file information such as date created, date modified, and other date information may be updated or changed.
- Hard drive capacity is shown in Settings in actual gigabytes. The Properties window in Windows may show GiB instead, which will be a smaller number.
- During a file transfer, if settings are changed, the file transfer operation may be aborted.
- File copying to the TeraStation is protected by a journaling file system. If the Ethernet cable is disconnected or a power outage occurs while copying data, the following may occur:
  - The preset data (TeraStation name, user, and group) may be erased.

- An incomplete file may be copied and the file can no longer be deleted. If this happens, restart the TeraStation, delete the file, and perform the copy operation again.

• 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.

## **Active Directory**

The TeraStation can join an Active Directory domain. Up to 1000 domain users and 1000 groups may be downloaded from Active Directory.

**Note:** If usernames or group names from Active Directory include multi-byte characters, you will not be able to configure access restrictions for them.

1 In Settings, select Network. Network 2 Select Workgroup/Domain. Workgroup 5 3 Click Edit. 4 Select "Active Directory", then click Next. Workgroup/Domain Settings 8. Authentication Method O Workgroup O NT Domain Active Directory Next Cancel 5 Click Yes. 6 Enter the desired settings, then click OK. Active Directory Domain Settings 8. NetBIOS Name: WORKGROUP DNS Name: Active Directory Domain Controller Name: Administrator Name: Administrator Password: WINS server IP address: ОK Cancel 7 Choose Folder Setup. Folder Setup 1 Folder(s) 2

¢		
2	×	
	<b>U</b> .	

Click a shared folder that you want to set access restrictions for.

													0
Orea	te Folder	Delete Folder	Empty the recycle bin						Filter:				
	Name		Volum	e	Recycle Bin	SMB	AFP	FTP	Backup	DLNA	WebAccess	SFTP	Extensions
	info				-	-	-	-	-	-	-	-	۲
	usbdisk	1	USB d	isk 1	-	~	~	-	<ul> <li></li> </ul>	-	-	-	۲
	share		Disk 2		×	~	~	~	~	~	1	~	۲
Se	lect All	Unselect All											

**9** Click *Edit*.

10	Enable "Access Restrictions".		
	Access Restrictions:      e Enabled	Disabled	
11	Select the level of access for the use Exact and write access allowed		Access prohibited

12 Click OK.

Notes:

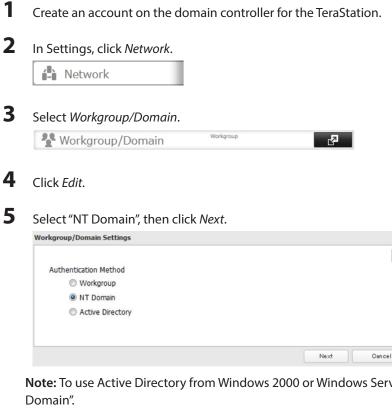
- To have the TeraStation join an Active Directory domain, configure it to use a DNS server that can resolve names for the Active Directory domain.
- After building an Active Directory domain, the administrator password for joining the domain must be changed at least once, or joining the Active Directory domain will fail.
- The DNS name and NetBIOS name of Active Directory domains should be identical.
- If both read-only and read & write permissions are given, the user will have read-only access. The most restrictive access setting will apply.
- If there are more than 5 minutes difference between the TeraStation'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.
- The TeraStation supports a domain environment with a maximum of 1000 users and 1000 groups. 10,000 users and 10,000 groups can be downloaded from the domain controller but are not supported.
- To use the TeraStation as a member server in an Active Directory domain, the TeraStation 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 TeraStation is a member server of an Active Directory domain, you cannot connect as a guest user via AFP.
- If your TeraStation 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.

## **NT Domains**

In an NT domain environment, the TeraStation uses account information from the NT domain server to set access

restrictions for files and folders on the TeraStation. There's no need to perform individual account management for the TeraStation. If multiple TeraStations 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: A maximum of 1000 domain users and 1000 groups can be downloaded from an NT domain server.



Note: To use Active Directory from Windows 2000 or Windows Server 2003, select "Active Directory" instead of "NT

8.

#### 6 Click Yes.

7

#### Enter settings and click OK.

NT Domain Name: (NETBIOS Name)	WORKGROUP
NT Domain Controller Name:	
(Computer Name) Administrator Name:	
Administrator Password:	
WINS server IP address:	
wind server in address.	
	OK Ow

9 Click a shared folder for which you want to set access restrictions.

rea	te Folder	Delete Folder	Empty the rec	cycle bin					Filter:				
	Name			Volume	Recycle Bin	SMB	AFP	FTP	Backup	DUNA	WebAccess	SFTP	Extension
	info				-	-	-	-	-	-	-	-	۲
	usbdisk	1		USB disk 1	-	~	~	-	<ul> <li></li> </ul>	-	-	-	۲
	share			Disk 2	~	~	~	~	~	~	×	~	۲

### **10** Click *Edit*.

**11** Enable "Access Restrictions".

	Access Restrictions: <ul> <li>Enabled</li> </ul>	Disabled	
2	Select the level of access for "Dom	nain Users" or "Domain Groups'	′ you added.
	🕼: Read and write access allowed	l 🛛 🕼: Read access allowed	: Access prohibited

### **13** Click OK.

1

#### Notes:

- If you change the TeraStation'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 & write permissions are given to a user, the user will have read-only access.
- If a domain username is more than 20 bytes long, the TeraStation truncates it to 20 bytes.
- The TeraStation supports a domain environment with a maximum of 1000 users and 1000 groups. 10,000 users and 10,000 groups can be downloaded from the domain controller but are not supported.
- To use the TeraStation as a member server in an NT domain, the TeraStation 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 TeraStation 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 TeraStation until it is rebooted.
- If your TeraStation is a member server in an NT domain and you change the authentication method to "Workgroup", the account on the domain controller will not be deleted automatically.
- If the TeraStation has joined a domain network, you cannot connect to it via FTP.

## **Delegating Authority to an External SMB Server**

TeraStations on your network can be linked to an authentication server for centralized management of user accounts and passwords. The authentication server should be a LinkStation or another TeraStation.

#### Notes:

• Other external SMB authentication servers are not supported. Use a TeraStation or a LinkStation for the authenti-

cation server.

- When saving changes to the external authentication server settings, clicking Yes will convert all local users to external authentication users. If external authentication is disabled, all local user passwords will need to be reconfigured.
- Disable SMB2 before using external authorization with Windows 8.
- Using external authentication may require the default security settings in Windows to be changed. An easy way to do this is to run the File Sharing Security Level Change Tool, available from www.buffalotech.com. This simple tool will let you change or restore your Windows security settings to work with external authentication.

```
1
     In Settings, click Network.
       Network
2
    Choose Workgroup/Domain.
                                    Workgroup
      Workgroup/Domain
                                                        2
3
    Click Edit.
4
    Select "Workgroup".
     To use in a domain environment, select "NT Domain" or "Active Directory".
     Workgroup/Domain Settings
```

Authentication Method		
Workgroup		
NT Domain		
Active Directory		
	Next	Cancel

5 Click Yes.

6 Enter a workgroup name. Select "Assign authorization to external SMB server" and enter the authentication server's IP address (recommended) or name. Check "Automatic user registration" and "Use shared folder for authorization testing" and enter the name of the folder to use. Click OK.

8-

Workgroup name:	WORKCROUP
workgroup name:	WORKGROUP
WINS server IP address:	
Authentication Settings:	O Authorize local TeraStation users only.
	Assign authorization to external SMB server.
	Authentication server name or IP address
	<ul> <li>Use a Windows domain controller as an authentication server.</li> <li>Automatic user registration</li> </ul>
	Vise shared folder for authorization testing Name:

7 A shared folder for authentication will be created on the TeraStation. Users registered to the specified authentication server are automatically registered as users on the TeraStation when they open the shared folder for authentication. You can also register users directly. Connect to the authentication folder via SMB, not FTP or AFP.

#### 8 Choose Folder Setup.

Folder Setup	1 Folder(s)	ඳු



#### Choose a shared folder to set access restrictions on.

													0
Drea	te Folder	Delete Folder	Empty the recycle bir	•					Filter	:			
	Name		Volu	me	Recycle Bin	SMB	AFP	FTP	Backup	DLNA	WebAccess	SFTP	Extensions
	info				-	-	-	-	-	-	-	-	۲
	usbdisk	4	USB	disk 1	-	~	~	-	<ul> <li></li> </ul>	-	-	-	۲
	share		Disk	2	1	~	~	~	~	~	~	~	۲

## **10** Click *Edit*.

11	Enable "Access Restrictions".		
	Access Restrictions:	O Disabled	
12	Select the level of access. ﷺ: Read and write access allowed	Read access allowed	C: Access prohibited



#### Notes:

- If access restrictions are set for users and groups from the authentication server, guest and anonymous connections will not be possible with AFP or FTP connections.
- Users who are automatically registered belong to the "hdusers" group. They can be added to other groups from within group settings.
- If both read-only and read & write permissions are given to a user, the user will have read-only access.
- The names of registered users are listed in "Users" "External Users". To delete a user who was registered automatically, select that user and click *Delete External User*.
- When connecting through AFP or FTP, always use an IP address. Using a server name may cause problems with authentication.
- To specify a server from another subnet, enter its IP address.
- AFP and FTP connections do not support delegating authority to an external SMB server.
- Use AFP to access access-limited shared folders from OS X 10.7 instead of SMB. Enable "AFP (Mac)" under "LAN Protocol Support" on the destination folders to use AFP.
- Use OS X 10.5 or later with external authentication. Earlier versions of OS X aren't supported.

# **Chapter 4 Managing your Storage**

## **RAID Arrays**

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

TeraStation	Default RAID Mode
TS5800D	
TS5600D	RAID 6
TS5400D	RAID 5
TS5400R	KAID S
TS5200D	RAID 1

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.
- After the RAID mode is changed (except when creating a RAID 0 array or JBOD), the TeraStation performs a RAID check that will take about 10 hours per TB. File transfers are slower during this period. While the message "RAID I17 ARRAYx Resyncing" is displayed on the LCD panel, do not turn off the TeraStation. If you do, the RAID check starts over.
- If the TeraStation is restarted or shut down while changing the RAID mode, the message displayed on the LCD panel changes from 146 or 147 to 118.

#### RAID 6\*

RAID 6 arrays are available for TeraStations with 4 or more hard drives. RAID 6 combines 4 or more drives into a single array. The usable space is equal to the sum of the capacity of all drives minus the capacity of two drives. For example, if 4 drives are combined into a RAID 6 array, the usable space is the sum of the capacity of 2 drives. If 2 drives in the array are damaged, you can recover data by replacing them. If 3 or more drives are damaged, your data is lost.

### RAID 61\*\*\*

RAID 61 arrays are available for TeraStations with 8 or more drives. In this mode, two RAID 6 arrays are mirrored in a RAID 1 array. 8 drives in a RAID 61 array have a usable capacity of 2 x the capacity of the smallest drive.

#### **RAID 60\*\*\***

RAID 60 arrays are available for TeraStations with 8 or more drives. In this mode, two RAID 6 arrays are combined in a RAID 0 array. 8 drives in a RAID 60 array will have a usable capacity of 4 x the capacity of the smallest drive.

### RAID 5\*

RAID 5 arrays are available for TeraStations with 3 or more hard drives. RAID 5 combines 3 or more drives into a single array. The usable space is equal to the sum of the capacity of the hard drives minus the capacity of one drive. For example, if 4 drives are combined into a RAID 5 array, the usable space is the sum of 3 drives. If one drive in the array is damaged, you can recover data by replacing the damaged drive. If two or more drives are damaged at the same time, your data is lost.

#### RAID 51\*\*

RAID 51 arrays are available for TeraStations with 6 or more hard drives. In this mode, two RAID 5 arrays are combined into a RAID 1 array. The total usable space for 6 drives in a RAID 51 array is 2 x the capacity of the smallest drive. For 8 drives, the total usable capacity is 3 x the capacity of the smallest drive.

## **RAID 50\*\***

RAID 50 arrays are available for TeraStations with 6 or more hard drives. In this mode, two RAID 5 arrays are combined into a RAID 0 array. The total usable space for 6 drives in a RAID 50 array is equal to 4 x the capacity of the smallest drive. For 8 drives, the total usable space is equal to 6 x the capacity of the smallest drive.

### RAID 10\*

RAID 10 arrays are available for TeraStations with 4 or more hard drives. In this mode, mirrored pairs of drives in RAID 1 arrays are combined into a RAID 0 array. The usable space is equal to the capacity of the smallest drive multiplied by the number of hard drives divided by 2.

### RAID 1

Combines 2 drives into a mirrored array. The available space in the array is the capacity of a single drive. Identical data is written to each drive. If a drive is 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 2 or more hard drives into a single array. The usable disk space is the total space of all drives used. This simple RAID mode offers faster performance than RAID modes that include parity. If a single drive in the array fails, then all data in the array is lost.

#### JBOD

This mode uses the hard drives inside the TeraStation as individual drives. The disk space you can use is the total capacity of all drives in the TeraStation. If any drive is damaged, then the data on that drive is lost.

\*Available for TS5800D, TS5600D, TS5400D, and TS5400R series.

\*\*Available for TS5800D and TS5600D series.

\*\*\*Available for TS5800D series only.

## **Working with RAID Arrays**

To change RAID settings, navigate to Drives - RAID in Settings.

# **Using JBOD**

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

2

1	
	Select RAID.

-		
	RAID	
in the second	IV UD	

**2** Select the array to delete.

								8.
Name	RAID Mode	Status	Unit Capacity	Amount Used	% Used	File System	Time Remaining	Progre
Array1								

## **3** Click *Delete RAID Array*.

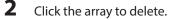
Once JBOD mode is configured, create shared folders on each drive to use them.

# **Changing RAID Mode**

To change the RAID mode, first put the drives in JBOD.

Select RAID.

**RAID** 



								0.
Name	RAID Mode	Status	Unit Capacity	Amount Used	% Used	File System	Time Remaining	Progre
Array1								

2

Note: If the "RAID Mode" field is blank, the array is already in JBOD. Proceed to step 7.

- **3** Click Delete RAID Array.
- **4** The "Confirm Operation" screen will open. Enter the displayed number, then click *OK*.
- 5 Click OK.
- **6** Choose the array to configure.

7 Select a RAID mode and the drives to be used, then click *Create RAID Array*.

RAID Mode: RAID1 🗸			<b>2</b> -
Add a disk to RAID array with RMM. Your data will be preserved.			
Colorte blan dick ha announce			
Select the disk to preserve:			
Select the drives to configure in a RAID array.			
	Model	Shared Folder	Size
Disk 1 Normal		1 🕑	899.9GB
Disk 2 Normal		-	899.9GB
Select All Unselect All			
✓ Resync after creating the RAID array			
	Orest	e RAID Array	Cancel

**Note:** Normally, after a RAID array is created, it is "resynced", which optimizes the array, making it more stable. The resyncing process takes about 1 hour per terabyte of space in the array. File transfers will be slower during this period, but the array will remain fully usable. "RAID ARRAY x Resyncing" will be shown on the LCD display during the resync. If you uncheck "Resync after creating the RAID array", the resync will be skipped. This is not recommended for RAID 5 arrays, which should always be resynced. Resyncing is not needed for RAID 0 arrays. If the TeraStation is rebooted during the resyncing process, the resync will begin again from the beginning.

8 Step through the wizard to create the array.

#### Notes:

- You can also configure RAID settings from Easy Admin.
- After changing the RAID mode, create a shared folder.

# **Configuring a Hot Spare**

If you have a hot spare configured and an array fails, the TeraStation immediately switches over to the hot spare. To use a hot spare, you need an extra drive that's not part of any array and a RAID 1, RAID 10, RAID 5, RAID 51, or RAID 6 array.

Notes:

• All data on the hot spare drive is deleted when it is configured as a hot spare and again when it changes from a spare to a drive in the array.

• A hot spare cannot be configured for TeraStation models with only two hard drives. Use RAID 1 instead.

n Se	ettings, o	click <i>Dr</i>	ives.				
	Drives						
Choo	ose RAIL	D.					
3	RAID						<b>P</b>
Choo	ose a RA	ID arra	у.				
RAID A	rray List						
	RAID Mode			Amount Used			-
Name Array1		Status	Unit Capacity	Amount Used	% Used	File System	Time Remaining
•				m			

- **4** Click Set as a hot spare.
- **5** Step through the wizard.
- **6** When the "Confirm Operation" screen opens, enter the confirmation number and click *OK*.

Notes:

- To turn the hot spare back into a normal disk, choose Set as a normal disk.
- If a drive fails in the RAID array before it is rebooted, the hot spare will not automatically replace the failed drive. In this case, follow the steps below to repair the array.
- (1) In Settings, navigate to *Drives Drives*.
- (2) Select the drive that was configured as a hot spare, then click *Dismount Disk*.
- (3) Click Rediscover Disk.
- (4) Navigate to *Drives RAID*.
- (5) Select the RAID array to repair.
- (6) Select the drive that was previously configured as a hot spare, then click "Recover RAID Array".

This will rebuild the RAID array.

# RMM (RAID Mode Manager)

With RMM, you can create or expand a RAID array without erasing the data on the drives.

## **Changing from JBOD to RAID 1**

Hard drives that aren't in a RAID array show "Normal (RMM available)". You must have at least two drives available in

JBOD (not in a RAID array) to build the RAID 1 array with RMM.

Array1					
	k to RAI	D array with RMM. Your data will be preserved.			<b>?</b> •
Select the dr	rives to	configure in a RAID array.			
[	Disk 🔺	Status	Model	Shared Fold	er Size
V (	Disk 1	Normal		1 🕞	899.9GB
V [	Disk 2	Normal		-	899.9GB
	Unselect				
Resync aft	ter crea	ting the RAID array			
			Or	reate RAID Array	Cancel

- **1** Select the drive on which you do not want to erase data.
- 2 Check "Add a disk to RAID array with RMM. Your data will be preserved.".
- **3** Select the drive to add to the RAID array.
- 4 Click Create RAID Array. The "Confirm Operation" screen will open.
- 5 Enter the confirmation number, then click OK.

## Adding a drive to an existing RAID array

You can add a drive to a RAID 1, RAID 5, or RAID 6 array. Drives that can be added to the RAID array show "Normal (RMM available)" or "JBOD."

#### Notes:

- Each drive must have the same capacity.
- RMM can be used to expand an array by one drive per operation. To expand by two or more drives, RMM must be performed multiple times.
- 1 Click Drives.



2 Click RAID.

RAID	<b>P</b>

**3** Choose a RAID array.

ing Progr

## Changing the RAID mode while adding a drive:

Select the drive you want to add to the RAID array and choose the mode for the array. Enter the "Confirm Operation" number and click OK.

# **RAID Scanning**

RAID maintenance scans your RAID array for bad sectors and if it finds any it automatically repairs them. RAID 1, RAID 10, RAID 5 and RAID 6 arrays are supported. For best results, run RAID maintenance regularly.

1	In Settings, click Drives.
	Drives
2	Click the <b>P</b> icon to the right of "RAID Scanning".
3	Click <i>Edit</i> .
4	Select the schedule for running RAID maintenance, then click OK.
	RAID Maintenance Settings
	Backup Job Schedule: 1st week Sunday RAID Scanning Start Time: 2 a.m. Immediately
	DK Cancel
	Notes:
	Check "Immediately" to run RAID maintenance immediately.

- To stop a RAID scan, click Cancel RAID Scan.
- **5** Move the RAID scanning switch to the **position** to enable RAID scanning.

RAID Scanning

# **Adding an External Hard Drive**

## **Connecting an External Drive**

Your TeraStation includes USB ports (the number of ports depends on your model), and you can connect external drives to these ports. Once connected they appear as shared folders on the TeraStation. Formatted drives are detected automatically. Unformatted drives should be formatted in Settings.

After a USB drive is recognized, Windows adds "usbdisk X" under the TeraStation in "Network", where "X" is the USB port where the hard drive is connected.

Notes:

- Hubs are not supported. Connect a single USB drive to each USB port.
- Backup data from Mac OS may include characters that cannot be written to FAT16 or FAT32 drives such as ".DS\_ Store". For best results, reformat the drive before using it as a backup target.
- If an external USB drive is configured as a target for TeraStation backup, the drive should be formatted with ext3, XFS, or FAT32. Do not use an NTFS-formatted drive as a backup target or unexpected behavior may result.

# **Dismounting Drives**

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

## **Dismounting with the Function Button**

Hold down the function button for 8 seconds. The function button will light up blue for 30 seconds as your USB drives are dismounted. When the dismount is finished, the function button's LED will turn off, then come back on. You may now unplug any USB drives safely.

**Note:** After 60 seconds, the function LED will go out and any drives that have not yet been unplugged will be remounted.

## **Dismounting from Settings**

1	In Sottings	click Drives.
	in settings,	CIICK Drives.

Drives	

2 Select *Drives* to dismount an internal drive or *USB drives* to dismount an external drive.

<b>D</b> rives	₽_
USB drives	R1

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

ALLECT	k Disk Form	nat Disk D	Dismount Disk						Refr
	Disk Name	Status	Model Name	Unit Capacity	Amount Used	% Used	File System	Manufa	octure
0	USB disk 1	Normal	USB Reader	1.8 GB	0 GB	1.86 %	EXT3		

4

When the following message is displayed, it is safe to unplug the drive.

Note	
	Job completed : Dismount disk.
	ок

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

The following devices are supported by the TeraStation:

- USB storage devices
- Card readers (except for card readers that can recognize two or more memory cards)
- Digital cameras
- USB-connected UPSs
- USB printers

Buffalo external USB drives are recommended.

These devices are not supported:

- DUB and DIU series drives
- Hubs, mice, and keyboards

Connect only one device to each USB port of the TeraStation. Some external drives with automatic power-on don't turn on automatically when connected to the TeraStation. Use their manual power 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 hard drive is mounted. Additional partitions are not recognized. Do not connect bus-powered devices to the TS5200D.

# **Checking Drives**

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

In Settings, click Drives.



1

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

Drives	<b>R</b> 2
🖫 USB drives	<b>P</b>

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

	ck Disk	Forma	t Disk	Dismount Disk	Rediscover Disk				
	Disk Na	me -	Status	Encryption	Model Name	Unit Capacity	Amount Used	% Used	File System
0	Disk 1		Normal	-		899.9 GB	0 GB	0.00 %	XFS
0	Disk 2		Normal	-		899.9 GB	0 GB	0.00 %	XFS

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

Check Disk	
	• •
Check Target: Disk 2	
Delete Mac OS specific files.	
Warning: Before running the disk check, check that the disk is no device. Do not run the disk check if the disk is set as a backup d	
Check	Cancel

# **Formatting Drives**

**Note:** 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. See "Erase Data on the TeraStation Completely".

1 In Settings, click *Drives*.

Drives
--------

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

Drives	R2
🖬 USB drives	<b>P</b>

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

	k Disk Forma	t Disk Di	smount Disk	Rediscover Disk				
	Disk Name 🔺	Status	Encryption	Model Name	Unit Capacity	Amount Used	% Used	File System
0	Disk 1	Normal	-		899.9 GB	0 GB	0.00 %	XFS
0	Disk 2	Normal	-		899.9 GB	0 GB	0.00 %	XFS



#### Select a format type, then click Format.

Format Disk	
Format : Disk 2 Format type:: XFS Y	<b>2</b> -
Encryption     GPT Partition     Media Cartridge Warning: Before formatting, check that the disk is not set as a back	up device. Do
not format if the disk is set as a backup device.	
Format	Cancel

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

Confirm Operation
1 Disk Format
A format will erase all data stored on the target drive or array. During a format, you will not be able to change the TeraStation's settings. To continue, enter the confirmation number displayed below and click [OK].
Warning: This operation cannot be canceled.
8 0 2 3
OK Cancel

6

Depending on the size of your drive, the format may take several minutes or several hours to complete. "Formatting" will be displayed on the LCD display until the format is complete.

Notes:

- Do not turn off or disconnect power to the TeraStation while formatting a hard drive.
- For drives of 2.2 TB or larger, make sure that the "GPT Partition" checkbox is selected.

# **Encrypting Drives**

Internal drives (and arrays) can be encrypted with 128-bit AES during formatting. Encrypted drives and arrays are then readable only from that specific TeraStation. To unencrypt a drive or array, uncheck "Encryption" and format it again.

Format Disk			
			• 9
Format : Disk 2			
Format type:: XFS	*		
Encryption			
GPT Partition			
🔲 Media Cartridge			
Warning: Before format not format if the disk is		disk is not set as a backup de ice.	evice. Do
Format			Cancel

# **Media Cartridges**

If configured as a media cartridge, an internal drive can be used as a removable storage device in the same way as an external drive. Media cartridges can be unplugged and connected to a different TeraStation with all data intact.

To configure a drive as a media cartridge, check "Media Cartridge" during formatting. To return it to its original state, uncheck "Media Cartridge" and reformat the drive.

Format Disk	
Format : Disk 2 Format type:: XFS ¥	<b>?</b> •
Encryption	
GPT Partition Media Cartridge	
	the disk is not set as a backup device. Do device.
Format	Cancel

Media cartridges do not support:

- RAID arrays
- LVM volumes
- Access restrictions
- Direct connection to a Windows computer

Notes:

- Don't configure the boot drives (drives 1 and 2) as media cartridges.
- Configure media cartridges from the bottom drive up. For example, if your TeraStation has 4 drives, make drive 4 a media cartridge first, then drive 3 next.
- If the TeraStation fails to boot after drive 1 or 2 is replaced, remove any media cartridges, then replace them after the TeraStation has booted.

# **Erase Data on the TeraStation Completely**

Under some circumstances, data from formatted drives can be recovered. The disk 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. All data on the drives is completely erased. The TeraStation will then be in the following state:

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

If you remove a drive and then erase all data on the TeraStation, the LCD will show the error "HDx Error E22 HDx Can't Mount" where X is the hard drive you removed. You can still use the TeraStation.

**1** In Settings, click *Management*.

🔀 Management

2 Select Restore/Erase.

3

Click Erase TeraStation.

Frase

This will erase all data and settings and return the TeraStation to its factory defaults.
Erased data cannot be restored. Several hours will be required for this process.

Erase TeraStation

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

Confirm Operation
🕂 Format Disk
This action will erase all data on the disk and restore configuration settings to factory defaults.
Warning: This operation cannot be canceled.
0 9 7 8
OK Cancel

**5** All data on the TeraStation will be permanently erased.

# Disk Quotas

#### 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 hard drives connected to the TeraStation and hard drives that are configured as media cartridges.
- 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 disk space available for a user.

1	In Settings, click	to the right of "Users".	
	Users	Local Users 2 User(s)	<b>P</b>

- 2 Select the user whose space will be limited.
- **3** Enable quotas, choose the maximum space the user will be allowed to use, and click *OK*.

Quota Alert 400  Quota Capacity: 500  Disabled	
Capacity: Quota Capacity: 500	
Quota Capacity: 500 🗘	
Disabled	
OK Cancel	

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

4 Click Close.

# **Quotas for Groups**

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



- 2 Select the group whose space will be limited.
- **3** Enable quotas, choose the maximum space the group is allowed, and click *OK*.

Enable(Units: GB)	
Quota Alert Capacity: 400 Quota Capacity: 500	<ul> <li>♦     </li> </ul>
Disabled	
	OK Cancel
Click Close.	
In Settings, click 🛛 🗗	to the right of "Users".
In Settings, click	to the right of "Users".

7 Click Close.

# **Size Limits**

If LVM is enabled, volumes can be created with maximum size limits.

- 1 In Settings, click *Drives*.
- 2 Select LVM.
  - **LVM**
- **3** Select the drive or array where the volume will be located and click *Enable LVM on Volume*.

2

						0
Enable L	VM on Volume	Disable LVM on Volume	Filter:			3
	Volume +		Volume List	Status	LVM Status	NAS Volume
0	Disk 1			Normal	Disabled	
۲	Disk 2			Normal	Disabled	

- 4 The "Confirm Operation" screen will open. Enter the displayed number, then click OK.
- 5 Click OK.
- 6 Click Edit under "NAS Volume".

					8
Enable L	VM on Volume Disable LVM on Volume		Filter:		
	Volume 🔺	Volume List	Status	LVM Status	NAS Volume
0	Disk 1		Normal	Disabled	
۲	Disk 2	Show	LVM Enabled / Normal	Enable	Edit

## Click Create Volume.

		0
Delete Volume	Fiter:	
Volume Name		Size



ľ	NAS Volume SettingsCreate			
	Volume Name * : Size: 1 GB / Remaining 899GB		* Required	•
		ок	Cancel	

- 9 Click OK.
- Click Close.
- Click Close.
- Navigate to File Sharing Folder Setup.

Folder Setup	1 Folder(s)	R
--------------	-------------	---

- Click Create Folder.
- Configure the settings.

ist has no content. isk 2 Read Only Enabled SMB (Windows/Mac) FTP DLNA SFTP NFS	<ul> <li>Read &amp; Writ</li> <li>Disabled</li> <li>AFP (Mac)</li> <li>Backup</li> <li>WebAccess</li> </ul>	* Requi	red <table-cell></table-cell>
iisk 2 ) Read Only ) Enabled ? SMB (Windows/Mac) ? FTP ? DLNA ? SFTP	<ul> <li>Disabled</li> <li>AFP (Mac)</li> <li>Backup</li> </ul>		
) Read Only ) Enabled ? SMB (Windows/Mac) ? FTP ? DLNA ? SFTP	<ul> <li>Disabled</li> <li>AFP (Mac)</li> <li>Backup</li> </ul>		]
) Read Only ) Enabled ? SMB (Windows/Mac) ? FTP ? DLNA ? SFTP	<ul> <li>Disabled</li> <li>AFP (Mac)</li> <li>Backup</li> </ul>		
) Read Only ) Enabled ? SMB (Windows/Mac) ? FTP ? DLNA ? SFTP	<ul> <li>Disabled</li> <li>AFP (Mac)</li> <li>Backup</li> </ul>		
) Enabled ] SMB (Windows/Mac) ] FTP ] DLNA ] SFTP	<ul> <li>Disabled</li> <li>AFP (Mac)</li> <li>Backup</li> </ul>	e	
? SMB (Windows/Mac) ? FTP ? DLNA ? SFTP	<ul> <li>✓ AFP (Mac)</li> <li>✓ Backup</li> </ul>		
? FTP ? DLNA ? SFTP	Backup		
DLNA SFTP			
SFTP	WebAccess		
NFS			
- NFS Path			
/mnt/disk2/			
Hidden Share (SMB Only	)		
Windows Backup			
llow Anonymous	*		
Ianual File Caching		*	
Include this folder in the	search index		
Enabled	O Disabled		
main Users Domain Gro	oups External U	sers	
Filter:			)
	W <sub>R</sub>	R	
	0	$\bigcirc$	۲
	۲	•	0
	۲	0	0
	0	0	0
	Windows Backup Now Anonymous Include this folder in the Enabled The User Comparison for	Windows Backup Now Anonymous Nanual File Caching Include this folder in the search index Enabled Disabled Disabled Filter: Filter:  K  O  O  O  O  O  O  O  O  O  O  O  O	Windows Backup

#### Notes:

- The name may contain up to 27 alphanumeric characters, hyphens (-), and underscores (\_). Do not use a symbol as the first character.
- The description may contain up to 75 alphanumeric characters, hyphens (-), underscores (\_), and spaces. Do not use a symbol or space as the first character.
- If multi-byte characters are used in a shared folder name used for both AFP and FTP, configure the client language to match the characters that are being used. Also, you may be unable to access the folder if certain characters are used in the name, so the use of letters and numbers only is recommended.
- The names of shared folders used for both AFP and FTP should not use characters from different language sets (such as mixing Japanese and Korean characters, for instance).

**15** Select the volume that you created and click *OK*.

# **Introduction**

iSCSI is a protocol for carrying SCSI commands over IP networks. Unlike traditional SAN protocols such as fibre channel, which requires special-purpose cabling, iSCSI can be run over long distances using existing network infrastructure. Normal Windows formatting such as NTFS is supported.

## **Differences Between NAS and iSCSI**

With iSCSI, the TeraStation is connected to a single computer such as a server. Other computers on the network access files on the TeraStation through the computer it's connected to. The TeraStation can be used as a local drive from Windows Server. Features of Windows Server such as Active Directory can be used normally.

As a NAS, the TeraStation is a server, and computers (including other servers) on the network can access shared folders on it directly. A separate server is not required, and features such as backup are built-in.

## **Network Configuration**

Use gigabit or faster network equipment with iSCSI. For best results, a dedicated network for iSCSI is recommended, separate from the regular network. Use fixed IP addresses for storage devices such as the TeraStation.

## Install the Microsoft iSCSI Software Initiator

#### Windows XP, Windows 2000, Windows Server 2003, Windows 2000 Server

Before using iSCSI equipment with Windows XP, Windows 2000, Windows Server 2003, or Windows 2000 Server, download and install the "Microsoft iSCSI Software Initiator".

- **1** Go to http://www.microsoft.com.
- 2 Search for "Microsoft iSCSI Software Initiator".
- **3** Download the latest version of the Microsoft iSCSI Software Initiator.
- **4** When the download is complete, double-click on the installer. Check the "Initiator Service" and "Software Initiator" checkboxes.

Step through the wizard to install.

#### Windows 8, Windows 7, Windows Vista, Windows Server 2008

If you are using Windows 8, Windows 7, Windows Vista, or Windows Server 2008, the Microsoft iSCSI Software Initiator is already installed on your computer. You don't need to download and install it.

## **iSCSI Setup**

To use the TeraStation as an iSCSI hard drive, configure it as described below.

1 Connect the TeraStation's Ethernet and power cables and configure the TeraStation's IP address and its clock.

2 In Settings, click Drive	s.
----------------------------	----



3 Choose LVM.

4

Select the drive where the volume will be created and click *Enable LVM on Volume*.

Enable	LVM on Volume Disable LVM on Volume	Filter:			
	Volume 🔺	Volume List	Status	LVM Status	NAS Volume
0	Disk 1		Normal	Disabled	
۲	Disk 2		Normal	Disabled	

Notes:

- Enabling LVM before using a drive as an iSCSI drive is optional. If LVM is not enabled, you can still create one iSCSI volume from the entire drive. However, enabling LVM is recommended for drives that will be used for iSCSI.
- If the LVM settings are changed, all data on the volume will be erased. Before changing the settings, back up any important data.
- **5** The "Confirm Operation" screen will open. Enter the displayed number, then click *OK*.

- 8 Click to the right of "iSCSI".
- **9** Click Create Volume.
- **10** Enter a volume name, volume description, volume, and size, then click *OK*.
- **11** Click Close.
- **12** Connect the new volume. The process will depend on which connection software you're using.

<sup>6</sup> Click OK.

<sup>Move the iSCSI switch to the position to enable iSCSI.
iSCSI</sup> 

#### Procedure using Buffalo's iSCSI Connection Tool

(1) Install the iSCSI Connection Tool on your computer from the CD supplied with the TeraStation, or download it from www.buffalotech.com.

(2) Click Start - All Programs - BUFFALO - iSCSI Connection Tool - iSCSI Connection Tool. For Windows 8, click the iSCSI Connection Tool.

(3) Click Register iSCSI Device, select the volume to connect, and click Connect.



#### Notes:

If you will use the TeraStation regularly, check "Connect on Start Up" before connecting. Always disconnect the volume before shutting down the TeraStation.

For the iSCSI Initiator included with Windows 8, Windows 7, Windows Vista, and Windows Server 2008:

- (1) Navigate to Control Panel Administrative Tools iSCSI Initiator.
- (2) Enter the IP address of the TeraStation in the "Target" field. Click Quick Connect.

rgets	Discove	ry	Favorite	Targets	Volumes and I	Devices	RADIUS	Configuration
Quick C	onnect							
					ng a basic connect Quick Connect		pe the IP	address or
Target	: [	192.	168.11.1	00			Q	ick Connect
Discove	ered targ	ets						Refresh
Name							Status	2
dick Co To com then cl For tar	pletely d ick Discor get prop	isco nnec ertie	nnect a ti t. s, indudi	arget, sel	elect a target a lect the target a uration of sessi	and		Cognect Disconnect
dick Co To com then cl For tar select 1 For cor	pletely d ick Discor get prop the targe	isco nnec ertie t an	nnect a t t. s, includi d click Pro devices	arget, sel ng config operties. associate	ect the target a	and ons,		Disconnect
dick Co To com then cl For tar select For cor the tar	prinect. pletely d ick Discor get prop the targe infiguratio get and t	iscon ertie t an n of then	nnect a ti t. s, includi d click Pro dick Dev click Dev	arget, sel ng config operties. associate ices.	lect the target a	and ons,		Disconnect Properties

**13** The connected volume will be recognized by the computer as an unallocated volume. Assign and format the

volume in Windows. When the format process is completed, the drive will be visible as an icon in "Computer" or "My Computer" and can be used as a normal drive on the computer.

### **Use with Multiple Computers**

If the TeraStation is divided into multiple volumes (or drives), it can be used with multiple computers.

- 1 Create multiple LVM volumes, then create multiple iSCSI volumes. You can create up to 32 volumes.
- **2** Download and install the iSCSI Connection Tool from *www.buffalotech.com*.
- **3** Launch the tool at *Start All Programs BUFFALO iSCSI Connection Tool iSCSI Connection Tool.* For Windows 8, click the *iSCSI Connection Tool*.
- 4 Click *Register iSCSI Device*, select the volume to connect, and click *Connect*.

arget	T\$5200D4E1		Register iSCSI Device
Model	TS5200D Series	Series	TS5200D
IP Address	192.168.10.25 (DHCP)	Subnet Mask	255.255.255.0
Firmware	2.20	MAC Address	CC:52:AF:EA:84:E1
iSCSI Service	Enabled		
Volume	sample 🗸	]	
Status	: Disconnected		
Jser Authentical	tion : Disabled		
Connec	ct on Start Up		Connect

#### Notes:

- Volumes that are currently in use cannot be connected.
- If the TeraStation will be used regularly, check "Connect on Startup" before connecting.
- **5** The connected volume will be recognized by the computer as an unallocated volume. Assign and format the volume in Windows.

## **Checking Whether iSCSI Volume is Connected from the Client**

To check whether an iSCSI volume is connected from the client (computer), navigate to *Drives - iSCSI - iSCSI Settings* and select *Connection*. If "Connected" is displayed, the TeraStation is currently connected from the client.

# Using the iSCSI Connection Tool

## **Registering the TeraStation and Connecting the Volumes**

If the TeraStation is divided into multiple volumes or drives, it can be used with multiple computers.

- **1** Connect the Ethernet cable of the TeraStation to the network.
- **2** Click Start All Programs BUFFALO iSCSI Connection Tool iSCSI Connection Tool. For Windows 8, click the iSCSI Connection Tool.
- **3** Select the TeraStation from the *Target product* list, then click *Register iSCSI Device*.

arget	TS5200D4E1 -		Register iSCSI Device
fodel	TS5200D Series	Series	TS5200D
P Address	192.168.10.25 (DHCP)	Subnet Mask	255.255.255.0
imware	2.20	MAC Address	CC:52:AF:EA:84:E1
SCSI Service	Enabled		
/olume			

Note: If access restrictions are configured, enter your username and password.

**4** Select the volume to be connected and click *Connect*.

Target	T\$5200D4E1		Register iSCSI Device
Model	TS5200D Series	Series	TS5200D
P Address	192.168.10.25 (DHCP)	Subnet Mask	255.255.255.0
Tirmware	2.20	MAC Address	CC:52:AF:EA:84:E1
SCSI Service	Enabled		
/olume	sample 💌	]	
tatus	: Disconnected		
ser Authentica	tion : Disabled		
Conner	at on Start Up		Connect

The connected volume is added as a local drive in Computer (or My Computer). Repeat these steps on each computer to connect multiple volumes.

Note: If using Windows XP or Windows 2000, use LVM to create volumes that are 2 TB or smaller.

## **Mutual Authentication in the TeraStation**

The TeraStation can perform mutual authentication. Dual passwords ensure that only authorized client computers can access the volume on the TeraStation. To configure mutual authentication, see "Registering the TeraStation and Connecting the Volumes".

#### Mutual Authentication Password Setup for the TeraStation (System)

In Settings, navigate to Drives - iSCSI - Security - Access Restrictions for Entire System - Edit - Access Restrictions, then click Mutual Authentication and set the password (mutual authentication).

#### **Mutual Authentication Password Setup for Individual Volumes**

In Settings, navigate to *Drives - iSCSI - Create Volume or Delete Volume - Access Restrictions*, then click *Mutual Authentication*, and set the password. The password that is set here is used when connecting to the volume. The volume is connected when this password matches the mutual authentication password that was set at the computer.

#### **Mutual Authentication Password Setup for Your Computer**

If you are using mutual authentication by the TeraStation or by each volume, enter the same password as the one that was set for the access restrictions for the TeraStation or for each volume in the mutual authentication password entry screen. If there are multiple volumes, the computer connects to the volumes whose password was entered here. The computer cannot connect to multiple volumes with different mutual authentication passwords at the same time. To change the mutual authentication password at the computer to the mutual authentication password for another volume, navigate to *Setup - Set Mutual CHAP Secret* in the iSCSI Connection Tool menu.

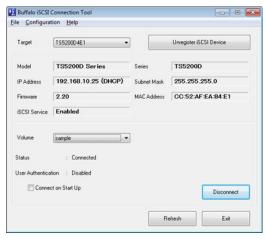
**Note:** If different passwords are set for the mutual authentication password of the TeraStation (entire system) and mutual authentication passwords for each volume, after the volume is connected, the volume name will no longer be displayed in the "Volume" field of the iSCSI Connection Tool. If this happens, navigate to *Setup - Set Mutual CHAP Secret* in the iSCSI Connection Tool, enter the TeraStation's password, and click *OK*.

## **Disconnecting and Unregistering the TeraStation**

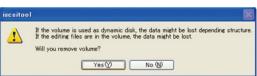
To disconnect the TeraStation, disconnect the volume and remove the registration as shown below.

1 Click Start - All Programs - BUFFALO - iSCSI Connection Tool - iSCSI Connection Tool. For Windows 8, click the iSCSI Connection Tool.

2 Select the volume to disconnect from "Volume", then click Disconnect.



3 Click Yes.



**4** Select the TeraStation to be disconnected from "Target", then click Unregister iSCSI Device.

Buffalo iSCS <u>C</u> onfigura	I Connection Tool ation <u>H</u> elp		
Target	TS5200D4E1 -		Unregister iSCSI Device
Model	TS5200D Series	Series	TS5200D
IP Address	192.168.10.25 (DHCP)	Subnet Mask	255.255.255.0

Note: When connecting to the TeraStation from multiple computers, follow the above procedure to remove the registration from each computer.



**5** Disconnect the Ethernet cable of the TeraStation. The TeraStation is now disconnected.

Note: To disconnect multiple volumes in a single operation, follow the procedure below.

- (1) Start the iSCSI Connection Tool.
- (2) Click Setup Remove the registered iSCSI Hard Disk.
- (3) Select the IP address (port number) of each TeraStation that you want to disconnect and click Remove.

# **Creating and Expanding Volumes**

## **Creating an iSCSI Volume**

Up to 32 iSCSI volumes are supported. Each individual iSCSI volume can be connected to different computers (a single iSCSI volume cannot be connected to multiple computers).

Notes:

- When an iSCSI volume is deleted, all data contained in the iSCSI volume is erased. Before changing settings, back up any important data.
- Enable LVM (previous page) to delete or create volumes.

1 In Settings, click Drives.

Drives	
--------	--

2 Click *iSCSI*.

iscsi iSCSI		R
-------------	--	---

- **3** Click Create Volume.
- 4 Choose a name, description, volume, and size, then click OK.
- 5 Click Close.

Note: Before use, connect the new volume with an iSCSI connection tool and format the volume from within your OS.

## **Expanding the Volume Size**

You can expand the size of a volume. If the iSCSI volume is on an LVM-enabled drive or array, you can also create or delete the volume.

	lick Drives.	
Drives		
Choose iSCSI.		
iscsi iSCSI		<b>P</b>
nter a new s	ize and click <i>OK</i> .	* Requi
General		
Valuma Mamar	esenala	
Volume Name: Volume Description:		
Volume Description:		
Volume Description: Volume:	sample	
Volume Description: Volume:	sample Disk 2 / 900 GB 101 GB + 120 CB / Remaining 679GB	
Volume Description: Volume: Size: Access ()	sample Disk 2 / 900 GB 101 GB + 120 CB / Remaining 679GB	
Volume Description: Volume: Size: Access ()	sample Disk 2 / 900 GB 101 GB + 120 GB / Remaining 679GB Enabled	
Volume Description: Volume: Size: Access © Restrictions:	sample Disk 2 / 900 GB 101 GB + 120 GB / Remaining 679GB Enabled Clent 1QH: Usemanne: Password:	
Volume Description: Volume: Size: Access © Restrictions:	sample Disk 2 / 900 GB 101 GB + 120 GB / Remaining 679GB Enabled Clent 10H: Username: Password: Password: Disk 2 / 900 GB Clent 10H: Username: Password: Disk 2 / 900 GB Clent 10H: Disk 2 / 900 GB Clent 10	
Volume Description: Volume: Size: Access © Restrictions:	sample Disk 2 / 900 GB 101 GB + 120 GB / Remaining 679GB Enabled Clent 1QH: Usemanne: Password:	
Volume Description: Volume: Size: Access © Restrictions:	sample Disk 2 / 900 GB 101 GB + 120 GB / Remaining 679GB Enabled Clent 1QN: Usemame: Password: P	

5 Click OK.

**6** Click Close.

# **Setting Access Restrictions**

A username and password can be set following the procedure below for the entire TeraStation iSCSI volume or for each volume. When the access restrictions are set, the system asks for entry of a username and password when the TeraStation is connected by the iSCSI Connection Tool.

# Setting Access Restrictions for an Entire iSCSI Volume

1	In Settings, click Drives.		
	Drives		
2	Click to go into iSCS	il settings.	<b>R</b> و
3	Click the <i>Security</i> tab.		

4 Click Edit.

5 Enable "Access Restrictions", enter the username and password, and click *OK*.

iSCSI Access Restrictions	
	<b>3</b> -
Access Restrictions:	O Disabled
	Enable
	Mutual Authentication
Username:	
Password:	
Mutual Authentication Password:	
	OK Cancel

Note: To use mutual authentication with access restrictions, configure the settings:

- In the screen shown above, check "Mutual Authentication" and enter the password in the "Mutual Authentication Password" field.
- In the "User Authorization" window displayed when the TeraStation is connected, select "Enable Mutual Authentication" to connect. Enter the mutual authentication password.
- If using the iSCSI Initiator from Windows 8, Windows 7, Windows Vista, or Windows Server 2008, configure the CHAP login information to allow searching for or connecting to targets.

6 Click Close.

## **Setting Access Restrictions for Individual Volumes**

1	In Settings, click Drives.	
	Drives	
2	Click 🗗 to the right of "iSCSI".	
	ISCSI	<b>R</b> 3

**3** Click the volume where you want to set the access restrictions.

**4** Enable "Access Restrictions", enter the username and password, then click *OK*.

					* Required 🤮
eneral					
Volume Nam	e: sample				
Volume Descriptio	n: sample				
Volum	e: Disk 2 / 9	00 GB			
Siz	e: 1 GB +	0	\$ G	iB / Remaining 899GB	
Restrictions:		Client IQN:			
Restrictions:		Client ION:	-		
		Username:			
		Password:			
	Mutual Aut	hentication:	<b>V</b> E	Enable Mutual Authentication	
	Mutual Au	thentication Password:			
	Disabled				

# Mutual Authentication Access Restrictions by Username and Password

To set access restrictions using mutual authentication in addition to regular access restrictions, configure the settings as shown below.

- In the screen above, check "Mutual Authentication" and enter the password in the "Mutual Authentication Password" field.
- In the "User Authorization" screen displayed when the TeraStation is connected, select "Enable Mutual Authentication".
- The entry screen for the mutual authentication password is displayed again. Enter the password that was set.
- If using the iSCSI Initiator included with Windows 8, Windows 7, Windows Vista, or Windows Server 2008, set the CHAP login information performing searches and connections for targets.

## **Mutual Authentication Access Restrictions by IP Address**

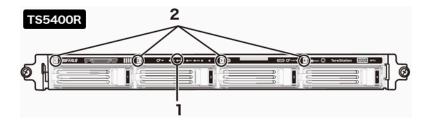
To set access restrictions by IP address, configure the settings as shown below.

Enable "IP Address Restrictions" in the screen above, enter the IP address where access is allowed in "IP Address List", and click OK.

# Hard Drive Replacement

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





# 1. Error LED

Glows red if a drive has failed.

# 2. Status LEDs

The failed drive's status LED will be glowing a steady red. A drive with a red status LED is ready to hot-swap.

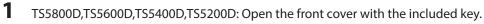
Notes:

- Do not unplug a drive whose status LED is green instead of red. Dismount it first or shut down the TeraStation before swapping a working drive. If you remove the drive without properly dismounting it, data may be lost or the TeraStation may malfunction.
- Use a Buffalo OP-HDS series drive of the same size or larger for the replacement drive. If a larger drive is used, the extra space will not be usable in a RAID array.
- To avoid damaging the TeraStation with static electricity, ground yourself by touching something made of metal before handling any sensitive electronic parts.
- After a drive is replaced, it takes 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 hard drives in the TeraStation. For example, pulling out drive 1 and replacing it with drive 2 may cause data to be corrupted or lost.
- If the LCD display does not change after a new drive is installed, click *Rediscover Disk* in Settings.
- If the message "HDx Error E22 HDx Can't Mount" remains on the LCD display after the RAID rebuild is finished, reboot your TeraStation.

# Hard Drive Replacement Examples

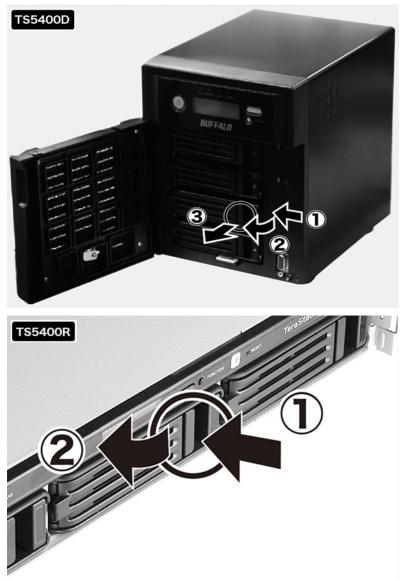
# Drive Replacement (using JBOD or a redundant RAID mode such as RAID 1, 5, or 6 with auto-shutdown disabled)

This section describes replacing a drive with the TeraStation on.



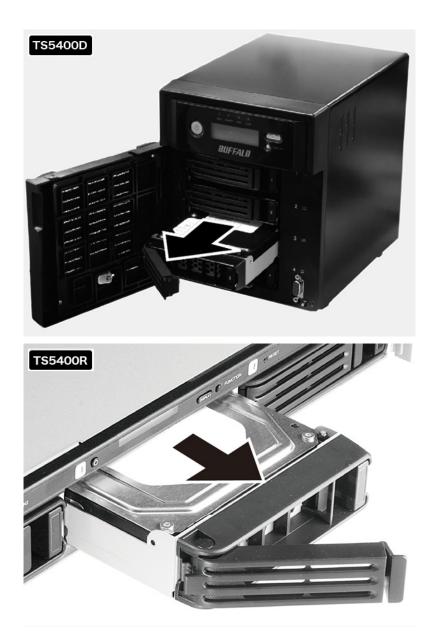


2 The failed drive's status LED will be glowing red. Push its unlock button and swing the lock mechanism out.

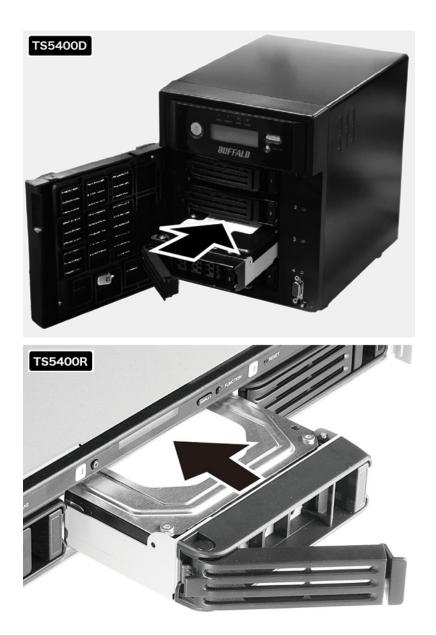


Hard drives without red status LEDs lit are still on. Do not unplug or remove them.

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



4 Insert the new drive in the empty slot. Slide the drive in with the locking mechanism open.



**5** Swing the lock back down until it clicks into place.



- 6 When the replacement hard drive is recognized, the status LED will flash red and the message "Press FuncSW I31 New Disk x ready" will be displayed on the LCD panel.
- 7 Hold down the function button on the front of the TeraStation for 3 seconds until it beeps.

#### For RAID 1, 5, or 6:

The TeraStation will start rebuilding the RAID array automatically. After a few minutes, the message "RAID I18 ARRAY x Rebuilding" will be displayed until the array is rebuilt.

#### For RAID 51 or RAID 61:

The TeraStation will start rebuilding the RAID array automatically. After a few minutes, the message "RAID I18 ARRAY x Rebuilding" will be displayed until the drives are rebuilt.

If more than 3 drives were replaced in a RAID 51 array, or if more than 4 drives were replaced in a RAID 61 array, wait 10 minutes after I18 appears and navigate to *Drives - RAID* in Settings. Select the RAID array and check if "Recover RAID Array" button is displayed. If so, select the drives that were not included in the RAID array and click *Recover RAID Array*.

#### For JBOD:

The drive will be formatted as an individual drive. Create a shared folder on the drive before use.

# Drive Replacement (using a redundant RAID mode such as RAID 1, 5, or 6 with autoshutdown enabled)

This section describes the process of replacing a drive while the TeraStation is off.

- **1** Open the front cover with the key.
- **2** Push the unlock button of the failed hard drive and swing the lock mechanism out.
- **3** Pull out the drive cartridge and remove it from the TeraStation.
- 4 Insert the new hard drive in the empty slot. Slide the drive in with the locking mechanism open. Swing the lock back down until it clicks into place.
- **5** Press the power button on the TeraStation.
- **6** When the replacement hard drive is recognized, the status LED will flash red and the message "Press FuncSW I31 New Disk x ready" will be displayed on the LCD panel.
- 7 Hold down the function button on the front of the TeraStation for 3 seconds until it beeps. The TeraStation will start rebuilding the RAID array automatically. It takes about 5 minutes before the message "RAID 118 ARRAYx Rebuilding" is displayed.

For RAID 51 or RAID 61:

The TeraStation will start rebuilding the RAID array automatically. After a few minutes, the message "RAID I18 ARRAY x Rebuilding" will be displayed until the drives are rebuilt.

If more than 3 drives were replaced in a RAID 51 array, or if more than 4 drives were replaced in a RAID 61 array, wait 10 minutes after I18 appears and navigate to *Drives - RAID* in Settings. Select the RAID array and check if "Recover RAID Array" button is displayed. If so, select the drives that were not included in the RAID array and click *Recover RAID Array*.

## **Drive Replacement (RAID 0)**

Drives in a RAID 0 array do not automatically turn off in the event of a malfunction. Before replacing the failed drive, either dismount the drive from Settings, or shut down the TeraStation.

This section describes the process of replacing a drive with the TeraStation on.

**Note:** If a hard drive malfunctions in RAID 0, all data on the RAID array will be lost. All of the settings for the shared folders (such as access restrictions) are erased after replacing a drive from a RAID 0 array.

- **1** Open the front cover with the included key.
- 2 In Settings, navigate to Drives Drives.
- **3** Select the hard drive with the flashing status LED and click *Dismount Disk*.

**Note:** Once you reboot the TeraStation after the drive failed, the status LED will be back to normal flash (green). In such case, select "Unformatted" drive from the list and click *Dismount Disk*.

- 4 Enter the number that appears on the screen, then click *OK*.
- 5 The status LED will stop flashing and glow steadily.

- **6** Unlock the failed drive by pushing the unlock button and swinging the lock mechanism out.
- 7 Pull out the hard drive cartridge and remove it from the TeraStation.
- 8 Insert the new hard drive (sold separately) into the empty slot. Slide the drive in with the locking mechanism open. Swing the lock back down until it clicks into place.
- 9 When the replacement drive is recognized, the status LED will flash red. Select the RAID array from *Drives - RAID* in Settings and click *Delete RAID Array*. In *Drives - Drives*, click *Format Disk* to format the new drive. In *Drives - RAID*, choose the type of RAID array desired. Enter the confirmation number and click *OK*. Create a shared folder before use.

# Drive Replacement (using a redundant RAID mode such as RAID 1, 5, or 6 with a hot spare configured)

If your TeraStation's drives are in a redundant RAID mode, and you have a hot spare enabled, a malfunctioning drive in the array is replaced by the spare disk and the RAID array is rebuilt automatically. The status LED will continue to glow red for the failed drive even after the RAID array is rebuilt with the hot spare. This section describes the replacement process for a hard drive while the TeraStation is still on.

- 1 Open the front cover with the included key.
- 2 The failed drive's status LED will be glowing red. Push its unlock button and swing the lock mechanism out.
- **3** Pull out the drive cartridge and remove it from the TeraStation.
- 4 Insert the new drive in the empty slot. Slide the drive in with the locking mechanism open. Swing the lock back down until it clicks into place.
- 5 When the replacement drive is recognized, the status LED will flash red and the message "Press FuncSW I31 New Disk x ready" will be displayed on the LCD panel.
- Hold down the function button on the front of the TeraStation for 3 seconds until it beeps. The replacement hard drive is automatically registered as a hot spare.
   To use the replacement disk as a normal drive rather than a hot spare, navigate to *Drives RAID* and click the RAID array, select the new drive, and click *Set as a normal disk*.

## **Replacing a Media Cartridge**

Drives configured as media cartridges may be removed and moved to a different TeraStation for use. Before unplugging the drive, dismount it in Settings or shut down the TeraStation.

# **Chapter 5 Backup**

# Back Up from the TeraStation

You can back up TeraStation folders to:

- A different folder on the TeraStation
- Another LinkStation on the network
- Another TeraStation on the network

You can also configure backup jobs from Easy Admin.

# **Preparing a Backup Destination**

First, configure a folder as a backup destination.

- In Settings, navigate to Folder Setup.
   Folder Setup 1 Folder(s)
- 2 Choose the folder to set as a backup destination.
- 3 Click Edit.
- 4 Check "Backup" from "LAN Protocol Support", then click OK.

2

				* Require	ed 🤮
Copy settings	from:	List has no content.			
Na	me*:				
Shared Folder Descr	iption:				
V	olume:	Disk 2		¥	
		Read Only	Read & Writ		
				e	
Recyc	le Bin:	Enabled	Disabled		
LAN Protocol Su	pport:	SMB (Windows/Mac)	📝 AFP (Mac)		
		FTP	Backup		
		V DLNA	VebAccess		
		SFTP			
		NFS			
		NFS Path			
		/mnt/disk2/			
Folder Attri	butes:	Hidden Share (SMB Only)			
		Windows Backup			
Remote Backup Pass	word:				
WebAccess Public	Mode:	Allow Anonymous	v		
Offline	Files:	Manual File Caching		¥	
TeraS	earch:	Include this folder in the	search index		
Access Restri	tions:	enabled	Disabled		
Local Users Local Grou	ps	Domain Users Domain Gro	ups External U	sers	
		Filter:			
Local Username			WR	R	
guest			0	0	۲
admin			۲	0	$\bigcirc$
sample-user01			0	0	$\bigcirc$
sample-user02			0	0	$\bigcirc$

**Note:** To configure a password, enter it in the "Remote Backup Password" field. Leave this field blank if you don't want a password. If the target device is configured with a backup password, you can easily find the backup target folder during configuration of the backup job by searching for the password.

# Backing up to a LinkStation or TeraStation on another network when connected by a VPN

You can back up to a LinkStation or TeraStation on another network as long as the two networks are connected by a VPN. Follow this procedure to enter the IP address or hostname of the target LinkStation or TeraStation.

1	In Settings, click Backu	ıp.	
	D Backup		
2	Click do the rig	ht of "Backup".	
	Backup	Inactive	

2

**3** Click List of LinkStations and TeraStations.

ckup Password:	Set					
st of LinkStations and Teras						
reate New Job Delete Jo		Fiter:				
Task		Scheduled	Day	Time	Operation Mode	Stat
Task		Scheduled	Day	Time	Operation Mode	Stat

4 Click Add, enter the IP address of the target LinkStation or TeraStation, and click Close.

List of LinkStations and T	eraStations	
		<b>2</b> -
Detected LinkStations ar	nd TeraStations	
Refresh	Filter:	×
Name		IP Address
LS-WVL910		192.168.10.3
TS5200D4E1		192.168.10.12
Off-subnet Devices		
Add Delete	Filter:	×
IP Address or Hostna	ame	
Select All Unselect All		
		Close

If your setup meets the requirements below, you don't have to configure these settings:

- The source and target TeraStations are on the same network.
- No backup password is set for the target TeraStation.
- No TeraStation from outside the subnet, or connected by a VPN, is used.

#### Notes:

- To back up data between LinkStations or TeraStations 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 (1518 bytes).
- You can also specify hostname by a fully qualified domain name (FQDN).

# **Configuring a Backup Job**

**1** In Settings, click *Backup*.

Backup

# 2 Click to the right of "Backup".

🚺 Backup	Inactive	<b>P</b>
-		

# **3** Click Create New Job.

ackup Passwor	d:	Set					8.
List of LinkStation	s and TeraStations	-					
Create New Job	Delete Job(s)		Filter:				3
Task			Scheduled	Day	Time	Operation Mode	Status

Note: Up to 8 backup jobs can be configured.

**4** Select backup settings such as date and time to run.

						• 🕄
Name:						
Schedule:	Not Scheduler	d	~			
Date and Time:	Sunday	× 0	Hour 0	✓ Minutes		
Operation Mode:	Normal Backup	)		v		
Versions:	10 0					
Options:	Create a fol	der that c	an be identified	by a backup source		
	Create back					
	Encrypted o	lata transf	er			
	Compress an	nd transfe	r			
	Ignore back	up errors	and continue ba	ackup job on schedu	le	
	Do not back	c up recyc	le bin.			
	Overwrite U	Inchanged	Files			
Add Delete				Filter:		
	e Folder Name			Backup Target Fol	dag Mama	

The following types of backup jobs may be selected:

Туре	Files included
Normal Backup	All files in the source will be backed up to the destination.
Overwrite Backup (Append Backup)	The first time the backup job runs like a normal backup. In subsequent backups, files added to the source as well as files deleted from the source are kept in the backup folder.
Overwrite Backup (Differential Backup)	The first backup job runs like a normal backup. As each additional backup job runs, files are added to and deleted from the backup folder. The backup destination folder is always the same size as the backup source folder.

Туре	Files included
Management Backup	Each time a backup is executed, management information is stored, and only files that have changed are copied or deleted. Data is retrieved from the previous backup file for files that were not changed. This is useful for making backups with limited space or for referencing status at a particular point in time (for use for data snapshot applications).

- 5 Click Add.
- 6 7

Click Browse under "Backup Source Folder Name".

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

Browse Folders		
Refresh		
🛨 🖬 share		
	ок	Cancel

8 Click *Browse* under "Backup Target Folder Name".



Select the backup target and click OK.

Browse Folders	
Refresh	
TS5200D4E1@usbdisk1	
TS5200D4E1@share	
ОК	Cancel

**Note:** If you will use the same folder for both Amazon S3 remote replication and as a backup target folder, create a new subfolder under "\wbfs\amazons3". Under "LAN Protocol Support", enable "Backup". Without these settings, that shared folder will not be listed in the backup target folder list.

**10** Click *OK*.

Tasks added to "Backup List" are displayed.

# **11** Click Close.

**Note:** If I54 backup errors occur during backup, try the following recommended settings and run the backup job again. In Settings, navigate to *Backup - Backup - Create New Job*.

- Schedule: Instead of "Immediately", select one of the scheduled backup options, such as "every day" or "every week".
- Operation mode: Use "Overwrite Backup (Append Backup)", "Overwrite Backup (Differential Backup)", or "Management Backup".
- Options: "Ignore backup errors and continue backup job on schedule" should be selected. Make sure that "Overwrite unchanged files" is not checked.

# Replication

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

1 In Settings, click *Backup*.

Backup

2 Click right of "Replication".

Replication	R-
Replication	

## 3 Click Edit.

Filter:		
Backup Target	Unsynced	Data

#### Notes:

- Files that only exist on the replication target are deleted when you click *Run Complete Resync*.
- Files recently added to the replication source are copied to the replication target when you click *Run Differential Resync*. Files that are only on the replication target are not deleted.
- 4 Click Add.

					(
Add	Delete		Filter:		
	Backup Source		Backup Target		

5

### Click Add under "Backup Source".

**6** Select the shared folder that will be the replication source, then click *OK*.

S	
ок	Cancel
	5

7

Click Add under "Backup Target".

8 Select the shared folder that will be the replication target, then click OK.

Browse Folders
Refresh
TS5200D4E1@usbdisk1
TS5200D4E1@share
OK Cancel



Click OK.

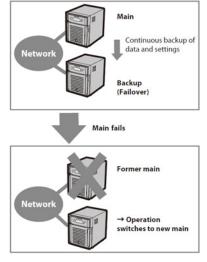
### 10 Click Yes.

#### Notes:

- A maximum of 64 shared folders can be configured for replication.
- Shared folders with a backup password set cannot be selected as replication targets.
- Replication source data is copied using a differential overwrite to the replication target folder. Note that any data that is not in the replication source will be overwritten.
- Replication can also be used to copy all data from a share to a share on an attached external drive. Format the drive with ext3 or XFS before using for replication. Drives with FAT32 partitions are not supported with replication.
- You can select subfolders as the replication source. Folders whose names contain more than 80 alphanumeric characters cannot be selected.
- If a "Replication I33 ReplicateFailure" error occurs, navigate to *Backup Replication* and click *Run Differential Resync* instead of *Run Complete Resync*. "Run Complete Resync" will overwrite all data to the replication target folder but "Run Differential Resync" will only copy data that does not exist at the replication target.
- Don't use the same TeraStation for both failover and replication, or replication and Time Machine.
- Don't configure replication from one source folder to multiple target folders.

### Failover

With failover, two TeraStations are connected to the network for redundancy. If a problem occurs in the main TeraStation so that it can no longer be accessed, operation is automatically switched to the backup TeraStation.



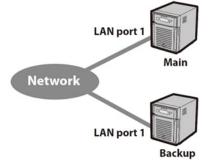
#### Notes:

- Use identical model and capacity TeraStations for the main TeraStation and backup TeraStation. If the capacity of
  the main TeraStation is larger than that of the backup TeraStation, a "Replication I33 ReplicateFailure" error will
  occur.
- All drive bays of a TeraStation should be occupied if it will be used for failover. Failover will not work if a drive is missing from any bay.

# **Ethernet Cable Connection Methods**

Two different configurations for failover are available. With the first setup, if the main TeraStation fails, the backup

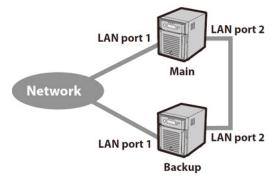
TeraStation will replace it completely, using the same name and IP address. The backup TeraStation is updated over normal network traffic.



Connecting to the network at LAN port 1 and setting failover at LAN port 1

With the second setup, the backup TeraStation and main TeraStation are connected by a second Ethernet cable connecting their LAN 2 ports. Updating is done over this dedicated network path, so updates are quicker and don't interfere with normal network traffic. With this setup, if the main TeraStation fails, the backup TeraStation will replace it by name, but will keep its original IP address.

#### Connecting to the network at LAN port 1 and setting failover at LAN port 2



The main and backup TeraStations should be the same model and capacity. Use fixed IP addresses for both TeraStations. Because the IP address of the TeraStation designated as the backup cannot be changed, set its IP address before configuring failover.

### **Using with UPS**

Once failover is configured, you cannot set up a UPS for the backup TeraStation. Configure your UPS before configuring failover. UPS recovery can be configured for both the main TeraStation and the backup TeraStation. However, the UPS settings of the main TeraStation will not be copied to the backup TeraStation.

If the backup TeraStation is configured to sync with the UPS connected to the main TeraStation, then if the main TeraStation shuts down, the backup TeraStation will no longer be able to detect if there was a power outage. In this case, move the UPS communication cable from the main TeraStation to the backup TeraStation and reconfigure the UPS link settings.

### **Configuring Failover**

#### 1 In Settings, click *Backup*.

Backup

**2** Open Failover.

Failover	Standalone	P
----------	------------	---

**3** Click Edit Failover Status.



4 Select a TeraStation to be the target backup device.

Failover Settings	
	<b>2</b> -
Status: S	Standalone
Registered Backup Device:	~
Admin password of the failover target:	
	Start Failover Close

5 Enter the administrator password of the target backup device, then click *Start Failover*.



7 To accept the settings from the main TeraStation, hold down the function button on the front of the backup TeraStation until it stops beeping.

#### Notes:

- If replication is configured for more than one folder, initialize the TeraStation before configuring failover.
- The main TeraStation cannot be used as the backup location for Time Machine.
- If email notification is enabled and failover occurs, navigate to *Management Email Notification Edit* in the main TeraStation's settings and click *OK*.
- Ethernet frame size settings for main and failover TeraStations should be 1518 bytes. To change the Ethernet frame size, navigate to *Network IP Address*, click the LAN port and *Edit*, and change the Ethernet frame size to "1518" bytes.
- Files whose filenames contain more than 80 alphanumeric characters will not be backed up.
- If a Replication I33 ReplicateFailure" error appears on the LCD display, navigate to *Backup Replication* and click *Sync*.
- Don't use the same TeraStation for both failover and replication, or failover and Time Machine.

#### **Maintenance Mode**

If failover is configured, change to maintenance mode temporarily before turning off the TeraStation or updating the firmware. Maintenance mode can be enabled and disabled at *Backup - Failover* in the main TeraStation's settings.

#### Service IP Address

The "Service IP Address" will be the new address of the backup TeraStation when it takes over operation from the main TeraStation. If no service IP address is set or a fixed IP address is set, an attempt is made to inherit the IP address set for the main TeraStation.

#### **Network Problems**

If network problems occur, the following messages may appear on the TeraStation's LCD display even though neither

TeraStation has failed. If this happens, disable and then reset failover.

- "FailOver I49 LostMainTarget" This message (I49) is displayed on the LCD panel of the backup TeraStation when operation switches from the main TeraStation to the backup TeraStation.
- "E27: LostBackupTarget" This message (E27) is displayed on the LCD panel of the main TeraStation if it is no longer able to detect the backup TeraStation on the network.

# Backing Up Your Mac with Time Machine

Time Machine is a backup program included with OS X 10.5 or later. Configure your TeraStation as shown to use Time Machine.

1	In Settings, move the AF	P switch to the 💶 💷	position to enable AFP.
	AFP		
2	Choose Folder Setup.		
	Folder Setup	1 Folder(s)	ප
_			

- **3** Choose a shared folder as your backup destination for Time Machine.
- 4 Click Edit.
- 5 Select AFP (Mac) from LAN Protocol Support and click OK.

			* Required	
	Copy settings from:	List has no content.		ī
	Name * :			
	Shared Folder Description:			
	Volume:	Disk 2	~	
		Read Only	Read & Write	
			-	
	Recycle Bin:	Enabled	Disabled	
	LAN Protocol Support:	SMB (Windows/Mac)	AFP (Mac)	
		FTP	Backup	
		DLNA	WebAccess	
		SFTP		
		NFS Dath		
		NFS Path		
		/mnt/disk2/		
	Folder Attributes:	Hidden Share (SMB Only)		
		Windows Backup		
	Remote Backup Password:			
	WebAccess Public Mode:		v	
		-	•	
		Manual File Caching		
	TeraSearch:	Include this folder in the s	earch index	
	Access Restrictions:	Enabled	Disabled	
	Local Users Local Groups	Domain Usars	nc Evtornal Licore	
		Filters		
		Filter:		
	Local Username	Filter:		/
	Local Username guest	Filter:		
	Local Username guest admin	Filter:	• • •	0
	Local Username guest admin sample-user01	Filter:		0
	Local Username guest admin	Filter:		0
	Local Username guest admin sample-user01	Filter:		0
	Local Username guest admin sample-user01	Filter:		0
	Local Username guest admin sample-user01 sample-user02	Filter:		0
C	Local Username guest admin sample-user01	Filter:		0
	Local Username guest admin sample-user01 sample-user02	Filter:		0
	Local Username guest admin sample-user01 sample-user02	Filter:		0
	Local Username guest admin sample-user01 sample-user02	Filter:		0
C	Local Username guest admin sample-user01 sample-user02	Filter:		0
C	Local Username guest admin sample-user01 sample-user02 lick OK. lick Close. lick Backup.	Filter:		0
C	Local Username guest admin sample-user01 sample-user02	Filter:		0
C	Local Username guest admin sample-user01 sample-user02 lick OK. lick Close. lick Backup.	Filter:		0
	Local Username guest admin sample-user01 sample-user02 lick OK. lick Close. lick Backup. Backup		Image: Control of the second secon	0
	Local Username guest admin sample-user01 sample-user02 lick OK. lick Close. lick Backup. D Backup lick the Conto t		Image: Control of the second secon	0
	Local Username guest admin sample-user01 sample-user02 lick OK. lick Close. lick Backup. Backup		Image: Control of the second secon	0
c	Local Username guest admin sample-user01 sample-user02 lick OK. lick Close. lick Backup. D Backup lick the Conto t		ок Оапсе	
	Local Username guest admin sample-user01 sample-user02 lick OK. lick Close. lick Backup. D Backup lick the Conto t		ок Оапсе	0

Time Machine Settings	
	<b>?</b> -
Target Folder:	Browse
	OK Cancel

Select the shared folder that you set in the previous step, then click *OK*.

Browse Folder	rs	
Refresh		
🕀 🔜 share		
	ок	Cancel

- Click *OK*.
- Click *OK*.
- Move the Time Machine switch to the **I** position to enable Time Machine.

① Time Machine		P
----------------	--	---

On the Mac, open *System Preferences*.

### Click *Time Machine*.



### Click Choose Backup Disk.



Select the TeraStation, then click *Use for Backup*.

Documents (JohnsPro-TimeMachine)	
share (LS-CHLAB1-TimeMachine)	
backtoMac (JOHNSCHL-TimeMachine)	
backups (BRIAN-QUAD-TimeMachine)	
temp (TS-XL5BEsupport-TimeMachine)	1

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

9	Enter your user name and password so Time Machine can access the file server "LS- CHLAB1".
	Connect as: O Guest
	Registered User
	Name: admin
	Password:
	Cancel Connect

**Note:** If access restrictions are not configured on the target 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.

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

Show All	Time Machine	
٢	Name: share-2 Available: Oldest Backup: Latest Backup: Next Backup: 115 seconds	0
Time Machine	Time Machine keeps • Hourly backups for the past 24 hours • Daily backups for the past month • Weekly backups until your backup disk is full	
Click the lock to prevent furthe	Show Time Machine status in the menu bar r changes.	0

### **Copying from a USB Device**

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

Note: To use Direct Copy, connect only one USB device at a time.

#### These devices are supported:

- USB mass storage devices
- · Card readers (except for card readers that can recognize two or more memory cards)
- Digital cameras and other PTP devices
- UPS devices that are specifically indicated as compatible
- USB printers

#### These devices are not supported:

- USB hubs
- Mice
- Keyboards

1 In Settings, move the Direct Copy switch to the position to enable Direct Copy.

Direct Copy		5
-------------	--	---

**2** Connect the USB device. The function button will begin to flash.

Note: Devices that don't trigger the function button to flash are not supported.

**3** You have 60 seconds to hold down the function button for 3 seconds. This will copy all files from the USB device to the Direct Copy folder of the TeraStation.

#### Notes:

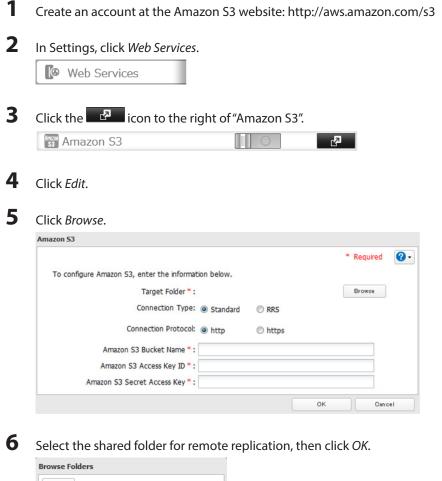
- While the function button is flashing, press and release it quickly to cancel Direct Copy. For digital cameras that are not in the USB mass storage class, all files in the digital camera are copied.
- To change the Direct Copy target folder, navigate to *Backup Direct Copy Edit*, select a new folder, and click *OK*.

Direct Copy Settings				
				• (2)
Target: s	share			Browse
			ок	Cancel

**4** When the copy operation is finished, the access LED of the USB device will stop flashing. Hold down the function button for 6 seconds to dismount the device. The blue LED will go out and the and the device may be removed safely.

### Amazon S3

Amazon S3 (Amazon Simple Storage Service) is a fee-based online storage service provided by Amazon. Follow the steps below to configure your TeraStation for use with Amazon S3:



Refresh		
🗉 🔝 share		
	OK	Cancel

**Note:** This folder is used by Amazon S3. Files are not added to the selected folder and the amount of used space does not increase.

7 Enter the bucket name, access key ID, and secret access key of the Amazon S3 bucket, then click OK.

- 8 Click Close.
- 9 Move the Amazon S3 switch to the position to enable Amazon S3.

#### Notes:

- Enter the path from the "Target Folder" field in a browser window to access the files saved to Amazon S3.
- To use after the network was temporarily disconnected, click Remount.
- If a file is added to the Amazon S3 bucket from a folder other than the TeraStation's Amazon S3 remote replication folder, it may take up to an hour for the file to appear in the TeraStation's Amazon S3 remote replication folder. However, when a file is added to the TeraStation's Amazon S3 remote replication folder, it immediately appears in the bucket.

# **Chapter 6 Remote Access**

### WebAccess

WebAccess is a software program for accessing the files in the shared folder of your TeraStation from your computer, smartphone, or tablet through the Internet.

Notes:

- 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.
- You can also configure WebAccess from Easy Admin.
- Use compatibility mode to use WebAccess with Windows 8.

# **Configuration**

**1** Navigate to File Sharing - WebAccess.

WebAccess		<u>ц</u>	
Click Edit.			
WebAccess Settings			
HTTPS/SSL Encryption:	Disabled		
BuffaloNAS.com			
Registration:	BuffaloNAS.com Name:		
	BuffaloNAS.com Key:		
	Disabled		
	Other DNS Service Hostname:		
Automatic Router Setup	Enabled		
(UPnP):	Disabled		
	External Port:		
NAS Internal Port:	9000		
Exclusive Session:	Disabled		
Session Timeout:	30 Minutes		

**3** Configure the desired settings, then click *OK*.

			' Required 🧉
HTTPS/SSL Encryption:	Enabled     Isabled		
uffaloNAS.com Registration:	Enabled		
	BuffaloNAS.com Name * : s	amplename	
	BuffaloNAS.com Key * : it	ovsHjQt-s-I7ogoiAah	1
		Random Generation	
	O Disabled		
	Other DNS Service Hostname * :		
Automatic Router Setup	Enabled		
(UPnP):	Disabled		
	External Port * :		
NAS Internal Port * :	9000		
Exclusive Session:	Enabled     Oisabled		
Session Timeout * :	30 Minutes		
	Unlimited		

- You may use the default BuffaloNAS.com registration, or disable to use a different DNS server.
- Choose a "BuffaloNAS.com name" and "BuffaloNAS.com key" for your WebAccess account. Names and keys may use 3 to 20 alphanumeric characters, underscores (\_), and hyphens (-).
- If "Exclusive Session" is enabled, users cannot log multiple computers into WebAccess. 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.
- 4 Click OK.



**6** Go to Folder Setup.

Folder Setup	1 Folder(s)	-2
G Folder Setup	i folder(5)	محن ا

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, the 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** Navigate to *File Sharing Folder Setup* and choose the folder you will use for WebAccess. Enable "WebAccess LAN protocol support".

ared Folder Settings			
		* Re	equired 🕜
Copy settings from:	List has no content.		~
Name * :			
Shared Folder Description:			
Volume:	Disk 2	~	
Attribute:	Read Only	Read & Write	
Recycle Bin:		Disabled	
		Disabled	
LAN Protocol Support:	SMB (Windows/Mac)	🗹 AFP (Mac)	
	FTP	Backup	
	DLNA	WebAccess	
	SFTP		
	NFS		
	NFS Path		
	/mnt/disk2/		
Folder Attributes:	Hidden Share (SMB Only)		
	Windows Backup		
Remote Backup Password:			
WebAccess Public Mode:	Allow Anonymous	×	
Offline Files:	Manual File Caching	¥	
TeraSearch:	Include this folder in the s	earch index	
Access Restrictions:	Enabled	O Disabled	
Local Users Local Groups	Domain Users Domain Grou	ps External Users	
	Filter:		1
Local Username		W <sub>R</sub> R	
guest		0 0	۲
admin		• •	0
sample-user01			0
sample-user02		© ©	0
		ок	Cancel

#### Notes:

• The following levels of security are available:

Allow Anonymous - Anyone can access (view) shared folders.

Allow All Groups and Users - All groups and users registered on the LinkStation or TeraStation can use WebAccess. 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.

• When a user or group can access a folder through WebAccess depends on a combination of WebAccess settings and the shared folder's settings.

Folder Seture	WebAccess Public Mode	Allow Anony	mous	Allow / Groups Users		Use Inł Folder Permis	
Folder Setup	Folder Attribute	Read & Write	Read Only	Read & Write	Read Only	Read & Write	Read Only

	Not logged in	R	R	-	-	-	-
	User with read & write access	R/W	R	R/W	R	R/W	R
WebAccess	User with read-only access	R/W	R	R/W	R	R	R
Account	Group with read & write access	R/W	R	R/W	R	R/W	R
	Group with read-only access	R/W	R	R/W	R	R	R
	Other users	R/W	R	R/W	R	-	-

R: Read only, R/W: Read and write, -: Cannot access

**10** There are many ways to access WebAccess folders depending on your device.

• From a computer, supported browsers include Internet Explorer 8 and later, Firefox 3.6 and later, Safari 4 and later.

Instructions: http://buffalonas.com/manual/en/

- Use compatibility mode to use WebAccess with Windows 8 in desktop mode.
- To access from an iOS device, install the "WebAccess i" application from the App Store. Instructions: http://buffalonas.com/manual/i/en/
- To access from an Android device, install the "WebAccess A" application from Google Play. Instructions: http://buffalonas.com/manual/a/en/
- To access from a Windows Phone, install "WebAccess" from the Windows Phone Store. Instructions: http://buffalonas.com/manual/wp/en/

### WebAccess Remote

WebAccess Remote enables you to open a shared folder on a remote TeraStation or LinkStation from Explorer, My Computer, or other file manager.

To use WebAccess Remote, the following conditions must be satisfied.

- You have TeraStations or LinkStations in two different locations, such as at home and at a remote location.
- WebAccess is enabled for both devices.
- 1 In Settings, click *Web Services*.

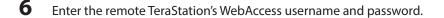
Web Services

- 2 Click to the right of "WebAccess Remote".
- **3** Click *Edit*.
- 4 From *Target Folder*, select the shared folder that will be connected.

Target Folder:			Browse	
Type of Connection:	O Use BuffaloN	AS.com name	Ose external DNS/IP address	
buffaloNAS.com Name:				
External DNS/IP address:				
Remote NAS's Username:	admin			
Remote NAS's Password:				
Proxy Server:	Enabled	Oisabled		
Server Name:				
Port Number:				
Username:				
Password:				

**Note:** The selected folder is used internally by "WebAccess Remote". Files are not added to this folder and the amount of used space does not increase.

**5** Select "Use BuffaloNAS.com Name" and enter the BuffaloNAS.com name that is set for the remote TeraStation's WebAccess.



- 7 Click OK.
- 8 Move the WebAccess Remote switch to the position to enable WebAccess Remote.
- **9** You can directly access the shared folder in the remote TeraStation by entering the path displayed in *Target Folder* into the address box in Explorer, My Computer, or other file manager.

Note: If using after the network has been temporarily disconnected, click *Remount*.

### FTP

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

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

F FTP	
Open Folder Setup.	

- **5** Choose a folder to enable remote FTP access on.
- **4** Click *Edit*.
- 5 Select read-only or read & write for the shared folder's attribute, check "FTP" under "LAN Protocol Support", then click *OK*.

			* Require	d 🔮
Copy settings from:	List has no content.			
Name * :				
Shared Folder Description:				_
Volume:			v	
	Read Only	Read & Write	•	
			e	
Recycle Bin:	Enabled	Disabled		
LAN Protocol Support:	SMB (Windows/Mac)	🔽 AFP (Mac)		
	FTP	Backup		
	✓ DLNA	WebAccess		
	SFTP			
	V NFS			
	- NFS Path			
	/mnt/disk2/			
Folder Attributer				
Folder Attributes.	Hidden Share (SMB Only)			
	Windows Backup			
Remote Backup Password:				
WebAccess Public Mode:	Allow Anonymous	*		
Offline Files:	Manual File Caching		*	
TeraSearch:	Include this folder in the s	earch index		
Access Restrictions:	Enabled	Disabled		
Local Users Local Groups	Domain Users Domain Grou	ps External U	sers	
	Filter:			
Local Username		W <sub>R</sub>	R	
guest		$\bigcirc$	$\bigcirc$	۲
admin		۲	0	$\bigcirc$
sample-user01		٩	0	$\bigcirc$
sample-user02		0	۲	$\bigcirc$

#### Accessing the TeraStation with an FTP client:

• To access the TeraStation via FTP, configure your FTP client software with the following settings: Hostname: IP address of the TeraStation

Username: The TeraStation's username

Password: The TeraStation's password

Port: 21

- Shared folders connected by FTP are available from the "/mnt" directory. The default locations are: For RAID 0, RAID 5, or RAID 1:
  - /mnt/array1/share
  - /mnt/usbdisk1
  - /mnt/usbdisk2

For RAID 1 (two arrays):

- /mnt/array1/share
- /mnt/array2/share2
- /mnt/usbdisk1

/mnt/usbdisk2 For JBOD: /mnt/disk1/share /mnt/disk2/share2 /mnt/disk3/share3 /mnt/disk4/share4 /mnt/usbdisk1 /mnt/usbdisk2

#### Accessing the TeraStation with an Anonymous user:

- To allow anonymous access to your FTP share, disable access restrictions.
- To access the TeraStation via anonymous FTP, configure your FTP client software with the following settings: Hostname: IP address of the TeraStation

Username: anonymous Password: any character string Port: 21

#### Notes:

- If the TeraStation joins a domain, anonymous users cannot access it.
- If a file was created or copied by AFP, you may not be able 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 directory path is 250 single-byte characters or less.

# **Chapter 7 BitTorrent**

BitTorrent is a protocol for distributing large amounts of data efficiently. The information in this chapter is for users who are familiar with BitTorrent.

Note: Use compatibility mode to use Download Manager with Windows 8.

### Configuration 1 In Settings, click Applications. Applications 2 Click the conto the right of "BitTorrent". BitTorrent 2 3 Click Edit. 4 Click Browse. BitTorrent Settings \* Required 🕜 -Download Folder: share Browse Port \*: 9090 Initialize Settings οк Cancel

**5** Select the shared folder where the downloaded file will be saved, then click *OK*.

Refresh	
• share	

## 6 Click OK.

7 Move the BitTorrent switch to the position to enable BitTorrent.
BitTorrent Settings

	Open Download Manage

- 8 Click the conton to the right of "BitTorrent".
- 9 Click Open Download Manager. The default username is "admin" and the default password is blank (no password).

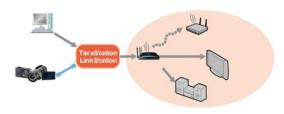
* Required 🕜
Browse

**10** The download manager will open.

# **Chapter 8 Multimedia**

## DLNA

DLNA is a set of guidelines for sharing digital media. The TeraStation includes a DLNA server compliant with the DLNA guidelines. The movies, photos, and music saved on this product can be played back on DLNA-compliant TVs, stereo equipment, game consoles, and other devices within the network.



# **Configuration**

1 Navigate to File Sharing - Folder Setup. Folder Setup 1 Folder(s)

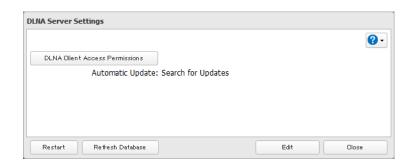
2 Select the folder that you want to share with media players and other DLNA-compatible devices.

2

- 3 Click Edit.
- 4 Enable "DLNA" under "LAN Protocol Support", then click OK.

gs from: List has no a	content		* Require
-	content		
Name * :	concene.		
scription:			
Volume: Disk 2			*
ttribute: 🔘 Read On	ly (	Read & Wr	ite
ycle Bin: 💿 Enabled	(	Disabled	
Support: 👿 SMB (Wi	ndows/Mac)	🗸 AFP (Mac)	
	l	WebAccess	5
tributes: 🥅 Hidden 9	hare (SMB Only)		
	mour	×	
			v
	-		
-	Domain Groups	Estaval	Licore
odba	Filter:		
		WR	R
		0	0
		۲	0
		۲	0
		0	۲
		ок	Car
	ycle Bin:   Emabled  Eupport:  SMB (Wi  FTP  DLNA  SFTP  DLNA  SFTP  NFS NFS NFS NFS NFS tributes: Hidden S  Windows  assword: Allow Anon ine Files: Manual File aSearch: Include t	ycle Bin:   Enabled  Support:  SMB (Windows/Mac)  FTP  DLNA  SFTP  NFS NFS Path /mnt/disk2/  tributes:  Hidden Share (SMB Only)  Windows Backup  sssword:  Allow Anonymous ine Files: Manual File Caching aSearch: Include this folder in the sea trictions:  Enabled  Compare Densis Views Dansis	ycle Bin:

8 Click Edit.



9

Select an interval for DLNA server database updates and click OK.

DLNA Server Settings			
DLNA Client Access Permissions			<b>?</b> •
Automatic Update:	Search for U	Jpdates	
	Specify Upd	ate Interval	
	Mint	utes	
Initialization of the database:	Keep Currer	nt List	
	🔘 Initialize		
		ок	Cancel

# **Playing Files**

To play back content from a DLNA-compatible device:

- 1 Connect the DLNA-compatible device to the same network as the TeraStation and turn it on.
- **2** Select the TeraStation in the software of the DLNA-compatible device.
- **3** Select the content to be played back.

### **Connected DLNA-compatible Devices**

Follow the procedure below to view the DLNA-compatible devices connected to your TeraStation.

1	In Settings, click Services.		
	Services		
2	Click the Conto the	e right of "DLNA Server".	
	DLNA Server		R

**3** Click DLNA Client Access Permissions.

NA Server Settings			0
DLNA Blient Access Permissions	1		
Automatic Update	: Search for Updates		
Restart Refresh Database		Edit	Close

4 A list of the MAC addresses, IP addresses, and device names of the DLNA-compatible devices connected to the same network as the TeraStation is displayed. If your device is not listed, click *Refresh Database*.

nable DLNA Clients			?
Refresh Database			
MAC Address	IP Address	Device Name	Allow
68:A3:C4:0C:E3:2C	192.168.10.16	Windows 7	<b>V</b>
		ок	Cancel

# **Streaming to DLNA-compatible Devices**

When new movies, photos, and music files are added to the TeraStation's DLNA folder, the database must be updated before the new file can be streamed. By default, the database is updated at startup and again every 60 minutes. You can change this interval or update the database manually.

1 In Settings, click *Services*.



2 Click the click the right of "DLNA Server", then click *Edit*.

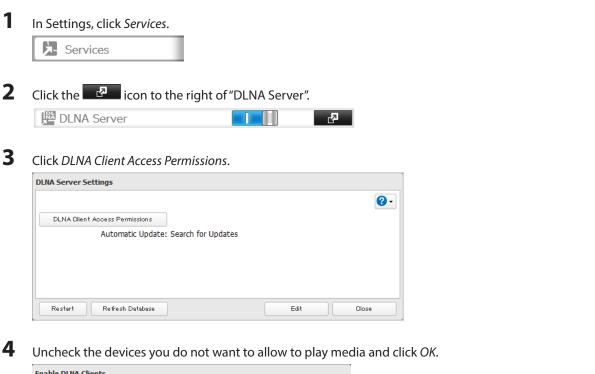


**3** You may change the update interval, or select *Refresh Database* to update the database immediately.

		8
DLNA Client Access Permissions		
Automatic Update	: Search for Updates	

# **Disabling Playback from Specific Devices**

You may block specific DLNA devices from playing back media content.



able DLNA Clients			?
Refresh Database			
MAC Address	IP Address	Device Name	Allow
68:A3:C4:0C:E3:2C	192, 168, 10, 16	Windows 7	<b>V</b>
		or 1	<u> </u>
		ок	Cancel

### **Supported File Types**

The TeraStation supports DLNA streaming of files with the extensions below.

Types	File Extensions
Video files	.avi, .divx, .asf, .mpg, .mpe, .m1v, .vob, .mts, .m2ts, .m2t, .mpeg, .mpeg2, .vdr, .spts, .tp, .ts, .3gp, .mov, .m4v, .wmv, .dvr-ms, .xvid, .mp4, .m4v
Picture files	.jpg, .jpeg, .gif, .png, .tif, .tiff, .yuv, .bmp
Music files	.mp3, .mpa, .wma, .aac, .apl, .ac3, .lpcm, .pcm, .wav, .m3u, .m4a, .mp4, .3gp, .m4b, .aif, .aiff, .flac, .ogg, .mp2, .mp1, .mp4

### **iTunes Server**

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

### Configuration

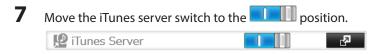


		* Required 🔮
Public Folder * :		Browse
	OK	Cancel

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

Refresh		
+ share		
	ок	Cancel

6 Click OK, then OK again.



## **Squeezebox Server**

Squeezebox is a network music player by Logitech that can play back music stored on your network using your wired or wireless LAN without a computer. Squeezebox supports mp3, flac, ogg, he-aac v2 and wma.

### Configuration

1	In Settings, click Services.
	Services
2	Move the Squeezebox server switch to the position to enable Squeezebox server.
3 4	Click <b><i>Edit.</i></b> to the right of "Squeezebox Server".
_	Squeezebox Server
	<b>@</b> •
	Public Folder: share
	Port: 9001
	Restart         Open Squeezbox         Clear Cache         Edit         Close

### **5** Click *Browse*.

Squeezebox Server Settings		* Required 🕜 -
Public Folder * : share Port * : 9001		Browse
	ок	Cancel

6

Select the shared folder that you want to make available to Squeezebox, then click OK.

Browse Folder	rs		
Refresh			
• share			
	ок	Cancel	

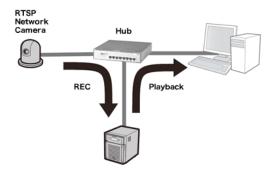
- 7 Enter port number (9001 is recommended), then click OK.
- 8 Click OK.
- **9** Click Open Squeezebox.

Squeezebox Server	
	•
Public Folder: share	
Port: 9001	
Restart Open Squeezbox Clear Cache Edit	Close

The Squeezebox's settings will open.

# **Chapter 9 Surveillance Server**

The TeraStation supports streaming video from RTSP (Real Time Streaming Protocol) network cameras.



## **Getting Started**

The following items are required:

- · TeraStation with surveillance camera support
- Supported network camera
- Ethernet cable
- Ethernet hub
- Computer

Supported Operation Systems: Windows 8 (64-bit or 32-bit), Windows 7 (64-bit or 32-bit), Windows Vista (64-bit or 32-bit), Windows XP SP 3, Windows Server 2008 SP 2 (64-bit or 32-bit), Windows Server 2003 SP 2, OS X 10.5.8 or later

CPU: Intel Dual-core 2.20 GHz or faster

Hard drive: 10 GB or more of available space

RAM: 2 GB or more

#### Live Viewer requirements:

Supported OSs: Windows 8 (64-bit or 32-bit), Windows 7 (64-bit or 32-bit), Windows Vista (64-bit or 32-bit), Windows XP SP 3

CPU: Quad-core 2.33 GHz or faster

Hard drive: 10 GB or more of available space

RAM: 2 GB or more

**Note:** Surveillance cameras cannot be used if failover is configured. Also, failover cannot be used if surveillance camera functionality is enabled. They're just not compatible.

# **Installing Client Tools**

Download the client tools below from www.buffalotech.com and install them on your computer.

Camera Policies - Registers that a network camera is connected and ready to record.

Live Viewer - Lets you view video as it is being recorded. With some network cameras, pan, tilt, zoom, focus, and other remote operations may be unavailable.

Data Service Policies - Used to move, back up, and delete recorded video data.

**Vault Admin** - Used to perform license registration, self-diagnosis, check the remaining disk space, and other operations.

Surveillance Video Manager - Used to view recorded video data, perform searches, export, and other operations.

**Network Activity** - Displays the operating status of the TeraStation.

#### Notes:

- Install after logging into your computer using an account with administrator rights.
- Install another media player to play recorded videos if the version of Client Tools is 5.7.3.2 or later.
- Install VideoLAN VLC media player 1.11~1.13, or Apple QuickTime 7 or later if the version of Client Tools is older than 5.6.19.3. VLC media player 2.0.x may not work with some network cameras. Using VLC media player is recommended if your network camera records MPEG-4 format.
- If VLC media player is installed, use the default installation location (C:\Program Files (x86)\VideoLAN\VLC in Windows 7 64-bit or the Application folder in Mac OS).
- If surveillance cameras or client tools installed under C:\Program Files (x86)\BUFFALO\SurveillanceServer\Bin) are blocked due to the OS firewall, refer to the OS help for instructions about how to disable the firewall.
- Install Client Tools on one or more computers connected to the same network as the network camera(s) and the TeraStation. Surveillance camera settings are shared for all cameras on the network.

# **Connecting Devices to the Network**

Connect the following devices to the network.

- A TeraStation that supports surveillance cameras
- A compatible network camera
- A computer with the above client tools installed

#### Notes:

- Connect all devices on the same network subnet.
- Set the TeraStation's and network camera's time settings to the correct time. By default, the TeraStation adjusts its clock automatically by using a default NTP server. This NTP Server belongs to Internet Multi Feed Inc. For more information, visit www.jst.mfeed.ad.jp. You can select a different NTP Server by clicking *Name/Time/Language* on the Management screen. The *Name/Time/Language* screen opens.
- Click Time.
- Click Edit.
- Uncheck "Use Default NTP Server" and enter a new NTP IP address.
- Click OK.

If NTP is not used, disable it and enter the time and date manually. Click *Use Local Date/Time* to import the time and date from your computer.

In certain cases, the DNS server address must be set in order to access the NTP server.

• Use the dedicated utility provided with the network camera or other program to confirm that the network camera operates properly.

# **Enabling Surveillance Cameras**

#### Enable surveillance cameras in Settings.

Note: First, complete the initial settings for the TeraStation and the network camera. For details on the procedure,

see the manual supplied with the device.

1	In Settings, click Applications.
	Applications
2	Click the conto the right of "Surveillance Cameras".
	Surveillance Cameras
3	Click <i>Edit</i> .
4	From "LAN Port", select the LAN port connected to the same network as the network camera and computer where the client tools are installed.
	Surveillance Camera Settings
	<b>@</b> •
	Folder for saving video: LAN Port: LAN Port 1 Y
	OK Cancel
5	Click Browse.

**6** Choose a folder for recorded video, then click *OK*.

Browse Folders			
Refresh			
🕣 share			
01		Cancel	
0	`l	Galleer	

Note: Use a folder with at least 100 GB of available space.

- 7 Click OK.
- 8 Click OK.

9	To enable surveillance cameras	s, change the swit	ch from 💶 🔟.
	Surveillance Cameras		R-

#### Notes:

- If the target shared folder specified as the storage location for recorded video is deleted, the surveillance camera is automatically disabled.
- Do not directly edit recorded video data in the shared storage folder. If a file is directly edited, the surveillance camera software may no longer operate properly.
- Do not duplicate or back up the shared storage folder with the built-in utilities in Settings. A separate backup license must be purchased to back up this data to another TeraStation.
- The client tools can only be used with the LAN connected to the selected LAN port.

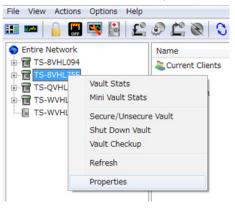
### **Users with Two or More Network Cameras**

In the default settings, only one network camera can be used. To use two or more network cameras, additional licenses (sold separately) must be purchased and registered.

# Enabling the Free License

Your TeraStation comes with a license for one surveillance camera. Follow the procedure below to enable the included license.

- 1 Connect the TeraStation to the Internet.
- **2** Click Start- BUFFALO BUFFALO Surveillance Server Vault Admin. For Windows 8, click the Vault Admin.
- **3** Select the TeraStation where you want to add the license, right-click it, and click *Properties*.



4

Open the *License* tab, then click *Activate Free License*.

Security	Logs	Notification	ns	Diagnostics
General	Device	Databa	ase	License
Summary				
Camera Ca Product T Platform T	apacity: *Unlimi ipacity: 20 cam ype: Surveillanc ype: Buffalo : 2012/01/13 1	eras ie		*
Host Id				
Installed Lice	nses			
	nses Type Capacity	Expiration	Product	t Type Pl
Serial #	Type Capacity	Expiration	Product	t Type Pl
		Expiration	Product	t Type Pł
Serial #	Type Capacity	Expiration	Product	•

To deactivate the license, click 🚨.

5 Check that the "SurveillanceCamera" and "HardDisk" were added to "Installed Licenses".

Security	Logs N	otifications	Diag	nostic
General	Device	Database	L	cense
Summary				
Camera C Product Platform	Capacity: 24 TB Gapacity: 1 camera Type: Surveillance Type: Buffalo h: *None*			*
				-
	0000000			
Installed Lic		Transier i	2001000	
Serial #		Capacity		
	HardDisk SurveilanceCamera	24 TB 1 camera	*None* *None*	Sur Sur
•				•
•	m		•	•
Activate Free			•	

The free license is now enabled.

# **Registering Recording Policies**

Register the network camera that is used.

- 1 Click Start BUFFALO BUFFALO Surveillance Server Camera Policies. For Windows 8, click the Camera Policies.
- 2 Click the 👗 icon.
- **3** Click Next.



### This wizard helps you add and schedule a new camera.

You may need to run	i this	wizard	with	administrative rights.

	About	Help
< Back	Next >	Canc

**4** Click Find Cameras.

To continue, click Next.

Camera In	formation
Find cameras on n	ny network to populate the information below. s
Select the manufa - Select Manuf What is the IP Ad	facturer - 💙 - Select Model - 💌
What credentials	are needed to access this camera?
Password:	
Test Camera	Camera Not Listed Help
	< Back Next > Cancel

**5** Select the detected network camera, then click *OK*.

IP Address	Manufacturer	Model
172.16.37.187	AXIS	209MFD
	AXIS	M1031-W
otal devices: 2 Show all devices. Refresh		OK Cancel Hel

Note: Network cameras that are already in use are indicated by an asterisk (\*) and they are gray.

	IP Address	Manufacturer	Model			
٠	192.168.1.13	AXIS	Q6032			
۰	192.168.1.55	px4	Web			
٠	192.168.1.11	hp	LaserJet			
٠	192.168.1.57	Canon	MX870			
	192.168.1.229	AXIS				
2	Show all devices.					
ſ	Refresh			ок	ancel	Help



Enter the username and password, then click Next.

Camera Information
Find cameras on my network to populate the information below. Find Cameras
Select the manufacturer and model.
What is the IP Address?
User Name:
Password:
Test Camera Not Listed Help
< Back Next > Cancel

Note: Clicking Test Camera runs an operational check of the network camera.



Enter the description, then click *Next*.



(	D
	D

9

Select the recording schedule, then click Next.



Select the TeraStation where the video will be recorded, then click Next.



**10** Check the registration information, and if it is correct, click *Next*.

Ready to Add			
Review the summary below before clicking	Nevt to add the	Comoro	
Camera name: Rear Entrance Description: Panasonic camera at back do Manufacturer: Panasonic Model: 8L-C111A IP Address: 126,34.52.88 User Name: <empty> Password: <empty> Schedule: M-Vi-F- 07:00:00 - 10:00:0 Recording Computer: Diego</empty></empty>		et.	<
C			~
			Help
	< Back	Next >	Cancel

#### **11** Click Next.

An additional network camera can be registered by selecting "Yes" when asked "Do you want to add an additional camera?"

List of Car	meras Added			
Rear Entrance	at 126.34.52.88 scher	duled on M-W-F-+ 07:0	0:00 - 10:00:00	
Remove sel	ected Camera			
Do you want to a	add an additional came	ra?	-	
🔘 Yes 💿 N	0		L	Help
		< Back	Next >	Cancel

12 Click Save.

🔜 Save	👗 Wizard	🔶 Add
Policy Name	Camera	Host

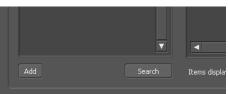
Recording will begin. You've now registered the recording policy of the network camera.

# **Checking Recording**

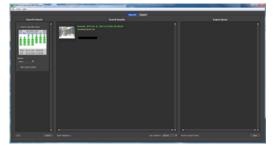
Wait at least 15 minutes after registering the recording policy before performing this procedure. To check that recording is working correctly, follow the procedure below.



#### 2 Click Search.



**3** Recorded video clips are shown in the center of the screen. Click a video clip to start playback.



This completes checking recording.

# **Email Error Notification**

You may configure the TeraStation to send you an email notification when the available space for recording is low, or when recording fails due to a camera malfunction, network disconnection, or other cause.

# Configuration

# **Viewing Saved Video**

Follow the procedure below to view recorded data saved in the TeraStation.

- 1 Click Start BUFFALO BUFFALO Surveillance Server Surveillance Video Manager. For Windows 8, click the Surveillance Video Manager.
- 2 Click Search.



**3** Video clips are shown in the search results at the center of the screen. Click the clip to start playback.

		tuet.	
Search Unitedia	Sard Roals		Expert Quene:

# **Export Recorded Data as a MOV Video File**

To export recorded data saved to the TeraStation as a MOV format video file:

- 1 Click Start BUFFALO BUFFALO Surveillance Server Surveillance Video Manager. For Windows 8, click the Surveillance Video Manager.
- 2
  - Select the search criteria on the left side of the search screen, then click *Search*.

Search Criteria	
Search using date range	
April 2010         Fri           Sun Mon Tue Wed Thu         Fri         Sat           1         2         3           4         5         3         7         8         9         10           11         12         13         14         15         16         17           18         19         20         21         22         24         25         26         27         28         29         30	
Start: 2010/04/06 00:00:00 End: 2010/04/06 23:59:59	
Camera: <any></any>	
More search options Camera Pool: <any> &lt;</any>	
Camera Description: Show video stored on: <any></any>	
Show video captured by this computer:	
Show video stored on this media:	
Show video stored in this storage pool:	
Add Search	Items displayed: Non

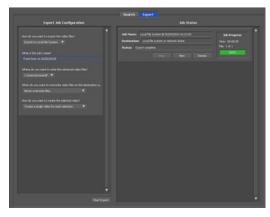
**3** The search results are displayed. Click a thumbnail to start the media viewer.

	Search Export
	Search Results
	Axis211 @ 2010/02/17 17:25:42 CameraName: Axis211 CameraDescription: In Host: Diego FrameSize: 640 x 480 BeginTimeDate: 2010/02/17 17:25:42 RunTim
	Axis211 @ 2010/02/17 17:30:42 CameraName: Axis211 CameraDescription: In Host: Diego FrameSize: 640 x 480 BeginTimeDate: 2010/02/17 17:30:42 RunTim
	Axis211 @ 2010/02/17 17:35:43 CameraName: Axis211 CameraDescription: In Host: Diego FrameSize: 640 x 480 BeginTimeDate: 2010/02/17 17:35:43 RunTim
	Axis211 @ 2010/02/17 17:40:43 CameraName: Axis211 CameraDescription: In Host: Diego FrameSize: 640 x 480 BeginTimeDate: 2010/02/17 17:40:43 RunTim
Items displayed: 573	Sort results by: Camera 🔻

4 Select the section to export and click *Export*. This will register the video to the export queue.



**5** Open the Export screen, register the export information from "Export Job Configuration", and click "Start Export". The video is exported in MOV format.



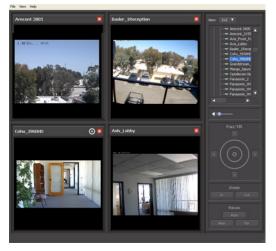
This completes exporting video in the MOV format.

# Viewing Video Real-time

Follow this procedure to view the video as it is being recorded by the network camera.

Note: Live Viewer data cannot be viewed.

- 1 Click Start BUFFALO BUFFALO Surveillance Server Live Viewer. For Windows 8, click the Live Viewer.
- **2** Registered network cameras are listed in the Camera folder on the right side of the screen. To view content of a video that is currently being recorded, double-click the camera whose video you want to view or drag to a frame of the camera viewer on the left side of the screen.



This completes viewing current video.

# **Moving Recorded Video Data to Another TeraStation**

Follow the procedure below to move (migrate) the recorded video data to another TeraStation.

Note: A separate Surveillance Server License Pack must be purchased to do this.

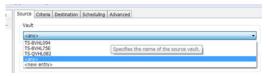
1 Click Start - BUFFALO - BUFFALO Surveillance Server - Data Service Policies.

For Windows 8, click the Data Service Policies.

2 Click , and when the Create a Policy screen is opened, enter "MigrateTest" into the "Policy Name" field, select "Migrate", and click *OK*.

Policy Name
Description
Policy Type
Tolicy Type
<ul> <li>Migrate</li> </ul>
<ul> <li>Duplicate</li> </ul>
OPurge
Active
OK Cancel Help

**3** Click the *Source* tab. Under "Vault", select the TeraStation where the recorded video data is saved. Select "Any" to migrate recorded data on all network-connected TeraStations.



4 Click the *Destination* tab to select which TeraStation you want to move the data from "Vault" off of.

Source Criteria D	estination	Scheduling	Advanced			
Vault						
TS-8VHL75E						•
Mada Nama				Specifies the name	of the destinatio	n vault.

- 5 Set the migration date and time on the "Scheduling" tab. To execute migration every hour, select "Repeatedly at a defined interval" and "Every 1 hour".
- **6** Click 🛄, and register the policy.

This completes the settings for moving recorded video to another TeraStation.

### **Backing Up Recorded Video to Another TeraStation**

Follow this procedure to back up recorded video data to another TeraStation.

Note: A separate Surveillance Camera License Pack must be purchased to do this.

- 1 Click Start BUFFALO BUFFALO Surveillance Server Data Service Policies. For Windows 8, click the Data Service Policies.
- 2 Click 📌 and when the Create a Policy screen opens, enter "DuplicateTest" into the "Policy Name" field, select "Duplicate", and click *OK*.

Policy Name
Description
Policy Type
Duplicate     Purge
✓ Active
OK Cancel Help

3

Click the "Source" tab and select the TeraStation where the recorded video data is saved under "Vault".

Source Criteria Destination	Scheduling Advanced
Vault	
<any></any>	
TS-8VHL094 TS-8VHL75E TS-QVHL082	Specifies the name of the source vault.
<any> <new entry=""></new></any>	

**Note:** If "any" is selected, recorded data for all TeraStations connected to the network will be backed up. Click the *Destination* tab, then select the TeraStation where you want to move the data from "Vault".

Source Criteria	Destination	Scheduling	Advanced		
Vault					
TS-8VHL75E					•
Madia Nama				Specifies the name of the	destination vault

4 Set the job execution date and time from the "Scheduling" tab. For example, the settings below are made to repeatedly execute the backup job every hour. Select "Repeatedly at a defined interval" and "Every hour".

5 Click 🔜, and register the policy.

This completes the settings for backing up video to another TeraStation.

### **Automatically Delete Old Data when Space is Low**

Follow the procedure below to delete (purge) recorded video starting from the oldest when available space for recording video becomes low.

**Note:** By default, old video data will be deleted automatically when 80% of available space is used. Old data will be removed at the same rate as new video is added, so there will always be enough video to fill about 80% of the total available space. To disable this setting, remove the "Remove Old Video" policy from "Data Service Policies".

1 Click Start - BUFFALO - BUFFALO Surveillance Server - Data Service Policies. For Windows 8, click the Data Service Policies.

2 Click , and when the Create a Policy screen is opened, enter "PurgeTest" into the "Policy Name" field, select "Purge", and click OK.

Policy Name	
Description	
Policy Type Migrate Duplicate Purge	
✓ Active OK Cancel Help	

Click the Source tab and select the TeraStation on which recorded video is saved under "Vault".

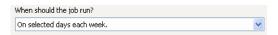
Vault	
<any></any>	
TS-8VHL094	
TS-8VHL75E TS-0VHL082	Specifies the name of the source vault.
TS-QVHL082	specific de name di die andre i dano
<any> <new entry=""></new></any>	

**3** Open the *Criteria* tab, and under "Miscellaneous Options", set "Watermark: High" and "Watermark: Low". For example, the settings below delete old data when the amount of used media space exceeds 80% until it drops to 40%.

Set Watermark: High to "80" and Watermark: Low to "40".

4 Set the job execution date and time from the "Scheduling" tab. In this example, we'll configure a job to execute at 2:00 AM on weekdays.

• Select "On selected days each week".



• Select every day between Monday and Friday.

Days	×
<ul> <li>Sunday</li> <li>Monday</li> <li>Tuesday</li> <li>Wednesday</li> <li>Thursday</li> <li>Friday</li> <li>Saturday</li> </ul>	Select All Deselect All
ОК	Cancel

• Select "2:00" and "AM", then click OK.

Time	×
Select Time	AM 🔻
ОК	Cancel

5 Click 🔜, and register the policy.

This completes the registration of the policy. The job is executed at 2:00 AM Monday to Friday.

# **Changing Where Recorded Video Is Saved**

Follow this procedure to change the TeraStation to which video is saved.

- 1 Click Start BUFFALO BUFFALO Surveillance Server Camera Policies. For Windows 8, click the Camera Policies.
- 2 Click the 😇 icon on the tool bar and open the "Camera Configuration" screen.
- **3** Double-click the camera to which video will be saved. This opens "Modify Camera".

Camera Config	/300/6						100 (B) - R
Elle Edit Jools	Help						
Save 💠 A	6d 💥 Deleti	•					
Camera Name	Manufacturer	Model	Video Capture URL	Status	Carmera Pool	Recording Computer	Description
AX05_M0013-W	AX25	M0013-W	rtsp://172.16.37.129/axis-media/media.amp	<not complete=""></not>	<none></none>	«not selected»	
AX25_M1103	AX25	M1103	rtsp://172.36.37.226/axis-media/media.amp	<not complete=""></not>	<none></none>	<not selected=""></not>	new camera
Pana_CL-C111	Panasonic	BL-C111A	rtsp://172.36.37.38/rphMpep4/g726-640x480	«not complete»	<none></none>	«not selected»	
TP-LINK	TP-Link	TL-SC3130	rtsp://172.36.37.309/video.mp4	«not complete»	<none></none>	«not selected»	808
TP-LINK4	TP-Link	TL-5C3130	rtsp://172.36.37.309/video.mp4	<not complete=""></not>	<none></none>	<not selected=""></not>	
Vivotek_JP7134	Vivotek	1P7134	rtsp://172.36.37.395/live.sdp	<not complete=""></not>	<none></none>	<not selected=""></not>	

4 Select the TeraStation you want to quit using as the "Recording Computer" and click OK.

Description: Harufacturer: AXIS • Model: M1011-W • Find Cameras Adeo Capture URL: rtsp:// 172.16.37.129 /axis-meda/meda.amp Test Jace Name: root Password: password Iacording Computer: cnot selected> •	mera Information							_
Jser Name: root Password: password		AXIS	•]	Model	M1011-V	v •	Find Cameras	
	/ideo Capture U	RL: rtsp://	172.16.37.129	/a0	kis-media/r	media.amp		Test
ecording Computer: <pre></pre> <pre></pre> <pre></pre>	lser Name: roof			P	assword:	password		
	lecording Compo	uter: <pre> <not pre="" sek<=""></not></pre>	ected> •					

5 Click 🔜 and register the policy.

This completes changing the TeraStation where recorded video is saved.

#### **Client Utilities**

### **Camera Policies**

Camera Policies is a software program that registers the network camera that will be used, and starts video recording.

Save 💫		-				
olicy Name	Camera	Host	Description	Camera	Scheduling	
ACTI Lobby	ACTIL	walle		Came	ra Informati	on
Axis_Front	Axis-F	LG1	test	ACT	Lobby - 2	(Active)
Axis_Rear	Axis-R	drake		1.000		
Basler	Basler	TS1-8		Ne	ACTIL	
COHU_Fro	COHU	LG2	Cohu_3930HE	De	escription:	
D_LINK	D-LINK	TS1-8		ſ	Target Came	era
Grandstrea	Grand	walle			Server Addr	ess: 192.168.2.39
👔 Granstrea	Grand	drake			User Name:	user
IQEye711	IQEye	drake	Miestone		Password:	narouned
IQEye_711	Mango	drake			_	
Be Mobotix_L	Moboti	{e069	Miestone		Camera: A	
once_in_a	Moboti	{e069			deo Type:	minea
Optelecom	Optele	Hatha	Sigura_BC62		neo (the-	

Click Start the wizard where registration of network cameras and the recording schedule are performed.

Click 😇 to start the camera configuration screen where network cameras are registered.

Camera Name	Manufacturer	Model	Video Capture URL
ACT-Lobby	ACTI	TCM-4301	rtsp://192.168.5.240:7070/
AVS_Receptions			rtsp://192.168.5.238/mpeg4
Axis-Front Parking	AXIS	210	rtsp://192.168.5.226/mpeg4/media
Axis-Rear Deck	AXIS	211	rtsp://192.168.1.229/mpeg4/media
Axis_Lobby	AXIS	210	rtsp://192.168.5.237/mpeg4/media
Basler	Basler	BIP-1000c	rtsp://192.168.5.224/mpeg4
Basler in Lab 2	Basler	BIP-1300c-dn	rtsp://192.168.7.103/mpeg4
Basler_1Reception	Basler	BIP-1300c	rtsp://192.168.5.100/h264
D-LINK	D-Link		rtsp://192.168.5.228/play1.sdp
Grandstream			rtsp://192.168.5.235/
Grandstream_2			rtsp://192.168.5.236/
IQEye 732N	IQin∀ision		rtsp://192.168.5.244/now.mp4
Mango IOEye711.227	Generic	Generic	rtsp://192.168.5.241/mpeg4?cam=
Manan Tanun711 224	Conoric	Conorie	++++++++++++++++++++++++++++++++++++++

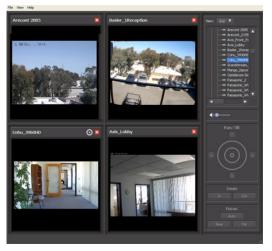
Click to start a new registration screen for an additional network camera. You can also register the camera and define the recording video policy.

Description:					
Manufacturer:	eneric	Model:	Generic 💌	Find Cameras	
Video Capture URL	rtsp://				Test
User Name:			Password:		

### **Live Viewer**

Live Viewer allows you to view video currently being recorded by a network camera.

Note: To view the current video, the network camera must be registered in Camera Policies.



• The layout of the camera view (numbers of rows and columns) and registered network cameras are displayed in the panel on the right side of the screen.

- The camera view (live video) is displayed on the left side panel. In the default setting, a 2x2 camera view is displayed. A layout view with up to 4x4 cameras can be displayed.
- Double-clicking the network camera name or dragging to the camera view frame enables viewing of the current video that is being recorded by the network camera.

The layout can be saved in View - Save Layout As.

ave As	-	
Layout Name:		
Description:		
	OK	Gincel

### Data Service Policies

Data Service Policies is a software program for creating data service policies. The policy types that can be created are shown below.

Note: To use migration and duplication, a separate Backup License must be purchased.

Policy Type	Action
Migration	Moves recorded video data to another TeraStation
Duplication	Copies recorded video data to another TeraStation and synchronizes the data.
Purge	Deletes the recorded video data.

📑 Save 💠 Add 🛛 🎇 Delete	S Refresh		
Policy Name	Type Descripti	Source Criteria Destination Scheduling Advanced	
Demo_DailyBackups2WorkingPool	Mgrate	Valk	
Demo_Inactive2LongTerm	Higrate	Office_Hd	~
Demo_PersonalFilesClean	Purge		
Demo_Virtualization2LongTerm	Mgrate	Media Naroe	
Demo_WorkingPool2Compliance	Mgrate	(aty)	~
Demo_WorkingPool2LongTerm	Replicate		
Demo_WorkingPoolClean	Purge	Storage Pool	
Main Entrance_Purge	Purge	NghtlyBackup	~
Rear Entrance	Purge		
Coffice_OffsiteReplicate	Replicate	Media Type	
Office_Purge_HW85_LW85	Purge 🚽	<ary> v <ary> v</ary></ary>	
<	>		

The right side of the screen includes tools for creating and updating data service policies. The left side of the screen shows an overview of all data service policies.

Notes:

- If  $\hat{\mathbf{A}}$  is displayed for a policy in the left-side frame, the policy is disabled.
- Surveillance server functionality must be enabled beforehand for the TeraStation where migration or duplication files will be saved.

### Vault Admin

Vault Admin is a software program for managing surveillance camera resources.

Entire Network	Vault Name	Туре	Status	Secured	# Media	Free Space
B T Dash_Shadow	Bosh_Shadow	ShadowHardDisk.	OK	Yes	2	0 Bytes
Z Information	Drake_HardDisk	HardDisk	OK	Yes	2	286.22 GB
Current Clients	drake_TapeLibrary	TapeLibrary	OK	Yes	2	54.08 GB
🖻 📸 Media	Fedora10_HardDisk1	HardDisk	OK	Yes	0	0 Bytes
D1 D2	Lady_HardDisk	HardDisk	OK	Yes	17	214.93 GE
Drives	Lady_TapeLibrary	TapeLibrary	ОК	Yes	2	198.29 GE
Wrtual@1	Coffice_Hd	HardDisk.	OK	Yes	7	55.00 GB
- Virtual@2	Gffice_Tape	SingleTape	OK	Yes	1	54.02 GB
- Virtual@3	Tron_HardDisk	HardDisk.	OK	Yes	17	621.19 GB
- Virtual@4						
- Virtual@5						
- Virtual@6						
- Virtual@7						
- Virtual@8						
- Wrtual@9						
- Virtual@10						
Trake_HardDisk						
Image: Contract International Contract Int						

Operations are performed from the tool bar located in the top section of the screen.

5 🖉 🖄 😩 🤮 🔛 📰 🛄 🔒 🚥 🎞

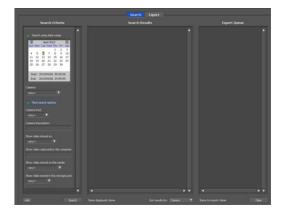
The icons and their functions are shown below.

lcon	Description
	Starts "Mini Vault Status" for enabling the display of basic monitoring information.
	Sets the security status.
OFF	Shuts down or restarts a portion (Vault) of the surveillance cameras.
	Changes the properties.
•	Performs a diagnosis of the surveillance camera.
F	Loads a media device.
9	Prepares a media device.
	Unloads a media device.
X	Erases a media device.
0	Refreshes the current screen.

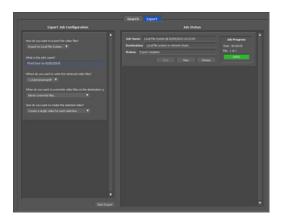
# Surveillance Video Manager

Surveillance Video Manager is a software program for performing searches and exporting of recorded video data.

#### **Search Window**

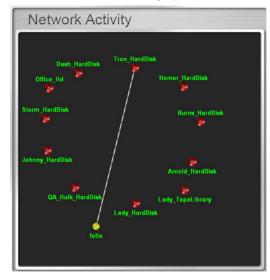


#### **Export Window**



### **Network Activity**

Network Activity is a software program that displays the TeraStations on which surveillance cameras are operating on the network, in real time and in graphical form.



All clients and TeraStations located on the network are indicated by and labels. These can be moved by dragging and dropping them. Clients are displayed only when a job is being executed and activities are indicated by a line linking the client and TeraStation.

# Mini Vault Stats

Double-clicking the icon for a TeraStation on "Network Activity" starts "Mini Vault Stats". "Mini Vault Stats" shows the network traffic in graphical form.

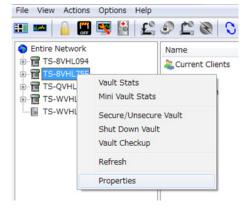
iles per Second	Vault Name
	Tron_HardDisk
	Media Technology
35 /~/	Hdisk
lbytes per Second	Security Status
	Secured
	Nominal

### **Activating Additional Licenses**

Purchasing an additional license (sold separately) enables you to connect and use two or more cameras and use the migration and duplication functions. Use this procedure to activate an additional license.

# When the TeraStation is Connected to the Internet

- 1 Click Start BUFFALO BUFFALO Surveillance Server Vault Admin. For Windows 8, click the Vault Admin.
- 2 Select the TeraStation to which you want to add the license, right-click it, and click *Properties*.



**3** Open the *License* tab, then click +.

	Logs N	otifications	Diag	nostics
General	Device	Database	L	cense
Summary				
Camera C Product Platform	Capacity: 24 TB Capacity: 1 camera Type: Surveilance Type: Buffalo n: *None*			*
				-
lost Id				
XXXXXX	XXXXXXX			
nstalled Lic		Constitu	Fueintian	Pro
Selidi #	HardDisk	Capacity 24 TB	Expiration "None"	Sur
	SurveilanceCamera			Sur
	SurveilanceCamera	2 Connero	Home	
1			Hone	•
•	m			•
٠				•

If your default free license activation is not installed, see "Enabling the Free License" to install it.

4 Enter the product key for the license pack (sold separately), then click OK.

roduct Key For Activation	



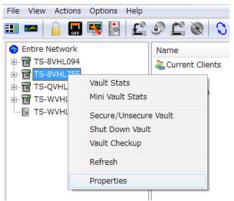
Confirm that the new license was added to "Installed License".

Security	Logs N	lotifications	Diag	nostic
General	Device	Database	Li Li	cense
Summary				
Camera C Product Platform	Capacity: 24 TB apacity: 2 cameras Type: Surveillance Type: Buffalo h: "None"			*
Host Id				
Installed Lic		l.		_
Serial #		Capacity		
	SurveillanceCamera HardDisk	1 camera 24 TB	*None* *None*	Sur
	SurveilanceCamera		*None*	Sur
•	m			F
Activate Fre	e License			

You have now activated the additional license.

# **TeraStation Not Connected to the Internet**

- 1 If the TeraStation is being used in an environment where Internet access is not available, a separate computer with access to the Internet is required to activate the additional license.
- **2** Click Start BUFFALO BUFFALO Surveillance Server Vault Admin. For Windows 8, click the Vault Admin.
- **3** Select the TeraStation where you want to add the license, right-click it, and click *Properties*.



4 Open the *License* tab, then make a note of the "Host Id".

	Logs N	lotifications	Diag	nostics
General	Device	Database	e Li	cense
Summary				
Camera C Product Platform	Capacity: 24 TB apacity: 1 camera Type: Surveilance Type: Buffalo h: "None"			*
				*
Host Id				
XXXXXX	xxxxxx			
nstalled Lic	enses			
Serial #		Capacity	Expiration	Pro
		24 TB	"None"	Pro Sur Sur
	Type HardDisk	24 TB	"None"	Sur
Serial #	Type HardDisk SurveillanceCamera	24 TB	*None* *None*	Sur
Serial #	Type HardDisk SurveillanceCamera	24 TB	*None* *None*	Sur Sur
	Type HardDisk SurveilanceCamera III	24 TB	*None* *None*	Sur Sur

- **5** Open the website below in web browser. http://buffalo.jp/support\_s/camera\_licence/
- **6** From the license pack (sold separately), enter the product key and host ID code and click "Activate Software License".

Indicates a required field
Activate Buffalo Surveillance Server Software
By filling out the product key and registration information below, you will receive a valid license file to manually activate your Buffalo Surveillance Server software. The license file will then need to be imported into the software using the Buffalo Surveillance Server Vault administrator application.
NOTICE: You should <i>anly</i> need to complete this process below if you are unable to activate your software directly from the Phoenix Vault Administrator application.
Product Key Information
Please enter your Product Key as X000X X000X X000X X000X X000X X000X
Product Key:
Your Host ID number is obtained from the License Properties tab within the Vault Administration application.
Host ID Code:
I have read and Accept the Software Application Terms and Conditions.
Activate Software License

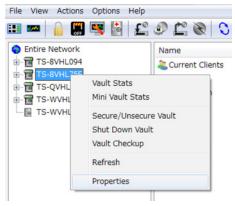
7 Downloading of the license file (\*.lic) begins. Save the license file to a USB memory device or other storage device.



- 8 Copy the license file to a computer connected to the same network as the TeraStation.
- **9** In the computer connected to the same network as the TeraStation, click *Start BUFFALO BUFFALO Surveillance Server - Vault Admin.*

For Windows 8, click the Vault Admin.

**10** Select the TeraStation to which you want to add the license, right-click, and click *Properties*.



**11** Open the *License* tab, then click +.

Security	Logs N	lotifications	Diag	nostics
General	Device	Database	L	cense
Summary				
Camera C Product Platform	Capacity: 24 TB Capacity: 1 camera Type: Surveillance Type: Buffalo n: *None*			*
				-
lost Id				
				_
	~~~~~			
XXXXXX	XXXXXX			
nstalled Lic				
	enses	Capacity	Expiration	Pro
nstalled Lic	enses	Capacity 24 TB	Expiration "None"	Pro
nstalled Lic	enses Type	24 TB	"None"	10000
nstalled Lic Serial #	enses Type HardDisk SurveilanceCamera	24 TB	"None"	Sur
nstalled Lic	enses Type HardDisk	24 TB	*None* *None*	Sur
nstalled Lic Serial #	enses Type HardDisk SurveilanceCamera	24 TB	*None* *None*	Sur Sur

Select "Import license file", then click *Browse*.

Import license file	
Select License File	
	Browse

- Select the license file that was saved before, then click OK.
- Check that the license pack was added to "Installed Licenses".

Security	Logs 1	lotifications	Diag	nostics
General	Device	Database	e U	cense
Summary				
Camera C Product Platform	Capacity: 24 TB Capacity: 2 cameras Type: Surveillance Type: Buffalo h: "None"			*
				-
_		Capacity	Expiration	Pro
Installed Lic		Capacity 1 camera		Pro
_	Туре			
_	Type SurveillanceCamera	1 camera 24 TB	*None* *None*	Sur
_	Type SurveillanceCamera HardDisk	1 camera 24 TB	*None* *None*	Sur Sur
_	Type SurveilanceCamera HardDisk SurveilanceCamera	1 camera 24 TB	*None* *None* *None*	Sur Sur
Installed Lic Serial # <	Type SurveilanceCamera HardDisk SurveilanceCamera III	1 camera 24 TB	*None* *None* *None*	Sur Sur Sur

This completes authentication of an additional license.

# Troubleshooting

Issue	Possible Cause	Possible Solution
	Surveillance Camera setting not enabled.	Enable the Surveillance Camera from Settings.
	A LAN cable between the TeraStation and network camera is disconnected, or the power is turned off.	Check that the LAN cables are inserted correctly.
	The video recording policy is not registered.	Register the video recording policy from Camera Policies.
Video recording does not start.	The device is not connected to a network on the same LAN, or the device is not connected to the LAN port that was set in Settings.	Connect the device to the network of the LAN port that was set in Settings.
	The disk is full.	Free available space on the disk by moving or deleting files.
	The time for the TeraStation and network camera is not correct.	Set the time in Settings.
	There are not enough camera licenses for the network cameras.	Purchase and register an additional license.
l cannot enable the surveillance camera.	Failover is running.	Disable failover.
Surveillance cameras no longer record video.	The target shared folder for the recorded video was deleted.	Enable surveillance camera functionality in the Admin interface.
l cannot view the network camera	The network camera is not registered in some camera policies.	Register the network camera from camera policies.
using Live Viewer.	There is an error in the network camera settings.	Verify the settings in the camera policies.
There is no recorded data, or the recorded data cannot be found.	A camera was added in camera policies while Surveillance Video Manager was running.	If this is the case, this video may not be accessible. Restart Surveillance Video Manager to enable searching for recorded video from the new camera.

#### Notes:

- QuickTime is a trademark of Apple Inc., registered in the U.S. and other countries.
- VLC media player is a trademark of Video LAN org.
- See www.buffalotech.com for supported cameras.
- Refer to the "Buffalo Surveillance Server Administrator's Guide" for information about client tools.

# **Chapter 10 Advanced Features**

### **Antivirus Software**

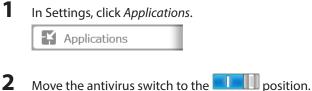
Trend Micro NAS Security<sup>™</sup> can protect your network and data from software viruses, malware, and spyware. To use Trend Micro NAS software, purchase an OP-TSVC license pack (sold separately). If your TeraStation includes activated antivirus software, no license registration is necessary.

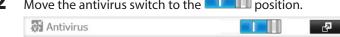
Notes:

- To use the antivirus software effectively, the TeraStation should be connected to the Internet. The connection can be routed through a proxy server if the appropriate settings are configured in *Administration Proxy Settings* from the left-side menu of the Trend Micro NAS Security settings page.
- Trend Micro is a registered trademark of Trend Micro Incorporated.

# **Activating Virus Scanning**

Follow the procedure below to activate virus scanning.





A quarantine folder named "TMNAS" is automatically created on the TeraStation. If a virus is detected, viruses are moved to this folder.

# **Configuring Security Settings**

To configure Trend Micro NAS Security, follow this procedure.



**3** Click Options.

ntivirus Settings			
Quarantine Folder:	TMNAS		
Port:	14942		
Initialize	Option s	Edit	Close



4 Enter your username and password, then click *Log On*.

#### Trend Micro NAS Security

LOGON		
Please type your user console.	name and the password to access	the web
User name:		
Password:		Log On

You can log on with the TeraStation's admin account. The default username and password are "admin" and "password".

5 Trend Micro NAS Security settings will open.

Su	mmary			🔁 He
51	stem Information			
Pro	duct version:	Trend Micro NAS Security	1.0 - build_1059	
Scan Results for Virus   O viruses/spyware detected today.				
Su	mmary		Today	Last 7 days
Vie	us uncleanable		0	
Vie	us quarantined		0	
Vie	us deleted		0	
Vie	us passed		0	
Vie	us deaned		0	
Vie	us renamed		0	
50	an Status			
Sel Ma	al-time Scan: Enabled (En veduled Scan: Disabled nual Scan: <u>Scan now</u> odate Status	icoming files)		Update nov
P	Component	Current Version	Last Upd	ated
P	Virus Pattern	7.271.00	2010-02	22 10:09:23
9	Spyware/Grayware Pattern	0.943.00	2010-02-	22 10:09:23

# **Connecting through a Proxy Server**

If you must pass through a proxy server to connect to the Internet in your network environment, follow this procedure to set the IP address of the proxy server and other settings.

1 From the left-side menu, click Administration - Proxy Settings.

	end Micro NAS
Summary	Summary
▶ Scan Options	System Information (2)
Scheduled Update	Product version:
▶ Logs	
<ul> <li>Administration</li> </ul>	Scan Results for Virus
Proxy Settings	Summary
Product License	Virus undeanable
Debug Settings	Virus quarantined

2 Check "Use a proxy server to access the Internet (License update)". Enter the IP address and port of the proxy server,

#### then click Save.

Proxy Settings		
General Component Update		
✓ Use a proxy server to access the Internet (License update)		
Server name or IP address:		
Port:		
Proxy server authentication		
User name:		
Password:		
Save Cancel		

The antivirus software is now configured to use a proxy server.

### **Licenses**

If the antivirus software on your TeraStation is not activated or has expired, please purchase an OP-TSVC license pack (sold separately). If your TeraStation includes activated antivirus software, no license registration is necessary. The total period for antivirus software updates may be extended up to 5 years.

This example shows an initial 1-year period for updates extended by an additional year.



**Note:** It's not possible to register a serial number that would extend the total license period beyond 5 years, such as a second 3-year license after 3 years.

1

From the left-side menu, click Administration - Product License.

Trend Micro NAS			
Summary	Summary		
▶ Scan Options	System Information (2)		
Scheduled Update	Product version:		
▶ Logs	Scan Results for Virus		
<ul> <li>Administration</li> </ul>	Scan Results for Virus		
Proxy Settings	Summary		
Product License	Virus uncleanable		
Debug Settings	Virus quarantined		

2 Enter the serial number from the "Trend Micro NAS Security<sup>™</sup> License Pack Guide", included in your package. Click *Activate.* 

He			
Please enter the new serial number to activate your product.			
Trend Micro NAS Security 1.0			
abed - abed - abed - abed			

The new license is now registered.

To check the status of the current license, open the Trend Micro NAS Security settings page and navigate to *Administration - Product License* on the left-side menu.

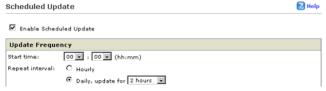
# **Updating**

For best results, configure your antivirus software to update automatically as described below.

**1** From the left-side menu, choose *Scheduled Updates*.

Trend Micro NAS			
Summary	Summary		
▶ Scan Options	System Information (2)		
Scheduled Update	Product version:		
▶ Logs			
Administration	Scan Results for Virus		
	Summary		





**3** Select a time for updates to begin, an interval for updates, and an amount of time for updates to continue. Select the components to update. Click *Save*.

Sch	Scheduled Update					
2	Enable Scheduled Update					
Up	date Frequency					
Star	rt time: 12 💌 : 0	) 🔹 (hh:mm)				
Rep	eat interval: C Hourly					
	O Daily, update for 2 hours					
	U Daily, u	pdate for Z hours				
		overy Monday 💌 update for: 4 hours 💌				
Co		every Monday				
Co	© Weekly.	every Monday	Last Updated			
	• weekly, mponents to Update	every Monday 💌 update for: 4 hours 💌	Last Updated 2010-02-22 10:09:23			
₽	Weekly     Weekly     Components to Update	every Monday v update for: 4 hours v Current Version				

The antivirus software is now configured to update automatically at the scheduled time. Updates will not be downloaded if the TeraStation is turned off, in standby mode, or disconnected from the Internet.

# **Excluding a Specific Folder from Antivirus Scanning**

By default, all folders on the TeraStation (including attached USB drives) will be scanned. Follow the procedure below to block specific shared folders from being scanned.

1	In Settings, click	to the right of "Folder Setup".
	Folder Setup	1 Folder(s) 🗗 🔽

- **2** Click the shared folder that you want to remove from the scan, then click *Edit*.
- **3** Uncheck items to exclude from the scan, then click *OK*.

Shared Folder Settings : buffalo			
Volume:	Disk 1		^
Attribute:	Read Only	Read & Write	
Recycle Bin:	enabled	Disabled	
LAN Protocol Support:	SMB (Win/Mac)	AFP (Mac)     Backup     WebAccess	
	SFTP     NFS     NFS Path		=
Folder Attributes:	<ul> <li>Hidden Share (SMB Only)</li> <li>Windows Backup</li> </ul>		
Remote Backup Password:			
WebAccess Public Mode:	Allow Anonymous	~	-
Offline Files:	Manual File Caching	~	
TeraSearch:	Include this folder in the s	earch index	
Virus Scan:	Real Time Scan		
	Real Time Scan		
	Manual Scan		-
		OK Cancel	

# **Virus Scanning**

Three types of virus scans are available:

#### **Real-time Scan**

The virus scan runs in the background, scanning every file that you read or write. This is the default type of scanning. Your TeraStation may run slower if real-time scanning is enabled.

#### Scheduled Scan

A scheduled scan is executed at specific regular intervals, such as every Tuesday at 3 am.

#### **Manual Scan**

A manual scan runs once when initiated. Initiate a manual scan as described below.

1 From the left-side menu, choose Scan Options - Manual Scan.

	rend Micro	
	Summary	
Summary	Summary	
Scan Options	System Inform	
Real-time Scan	Product version:	
Scheduled Scan		
Manual Scan	Scan Results fo	



2 Click Scan now.

		Other	Clean
L	$\odot$		
L		Туре	First Action
L		All Types	Clean
L			
	Sav	e Cancel Scan now	

This starts the virus scan.

#### If the scan finds a virus, the user can be notified in two ways:

- The message "Virus alert 134" is normally shown on the LCD panel. Once the virus is removed from the quarantine folder, the message is no longer displayed. If the antivirus software is configured to delete viruses from the quarantine folder automatically, then "Virus alert 134" will not be displayed.
- If email notification is enabled In Settings, then the antivirus software notifies the user by email if a virus is found. Setting email notification is recommended.

# Depending on how many files are on your TeraStation, a virus scan may take several hours. Estimated scanning times are shown below.

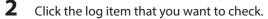
- 10,000 files: ~ 30 minutes
- 100,000 files: ~ 5 hours
- 1,000,000 files: ~ 50 hours

# **Checking the Log**

Follow the procedure below to check the virus scan log.

1 From the left-side menu, choose "Logs".





	rend Micro
Summary	Summary
Scan Options	System Inform
Scheduled Update	Product version:
▼ Logs	Scan Results fo
Virus Logs	Scan Results fo
Spyware Logs	Summary
Scan Logs	Virus uncleanable
System Logs	Virus quarantined
Manual Delete	Virus deleted
Automatic Delete	Virus passed
Administration	Virus cleaned
	Virus renamed

**3** Click *Display Log*.

34 log(s) stored fr	om 2010-07-22 10:51:57 to 2010-08-03 11:47:	:52
Data range:	Today	
Start date:	2010-08-03	
End date:	2010-08-03	
Sort by:	Date/Time 💌 Descending 💌	
Entries per page:	25 ventries	
Note: Only the previous	1000 log entries will be retrieved for the specified log ran	ge.

This completes the procedure for checking the log.

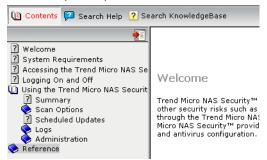
# **Online Help**

For more information on the antivirus software, refer to the online help. Follow the procedure below to access the online help.

**1** From the right-top menu, choose *Help - Contents and Index*.



2 Online help will open.



Online help is now ready to use.

#### **Email Notification**

Your TeraStation can send you email reports daily, or when settings are changed or an error occurs. Notification emails may be triggered by any of the following events:

- Backup job completed
- Change to RAID configuration
- RAID error
- Fan error
- Hard drive read error
- · Hard drive replacement
- Quota exceeded
- **1** In Settings, click *Management*.

```
X Management
```

2	Move the email	notification switch to the 🔲	p p	osition	to en	able	e email notification.
	Email Notific	cation		4			
3	Click 🗗 to t	he right of "Email Notificatior	ı″.				
4	Click <i>Edit</i> .						
5		erver settings and choose w	hat eve	nts will	trigg	er no	otification. Click OK to send a test email.
	Email Notification						
					Required	<b>?</b> •	
	SMTP Server Address * :						
	SMTP Port * :						
	Authentication Type:	LOGIN(SMTP-AUTH)					
	POP3 Server Address:						
	POP3 Port:	110					
	SSL/TLS:	Disabled ~					
	Username:						
	Password:						
	Subject * :	TeraStation Status Report					
			Add	Delete	Select fro	om List	
	Recipient(s):	Name		Recipie	nt(s)	Class	
		Select All Unselect All					
	Reports:	VHDD Status Report 00 VHour					
		Fan Error					
		Disk Error					
		Backup Complete					
		V Quota Report					
		System Alert					
			0	ж	キャンも	110	

### **Sleep Mode**

To save energy, you can specify times to put the TeraStation into sleep (standby) mode, where the hard drive and LEDs are turned off.

1	In Settings, click Management.
	🔀 Management
2	Click 7 to the right of "Sleep Timer".
3	Click <i>Edit</i> .

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

mer 1										
Timer Interval:	Every	Wee	k		~					
	Mon	day		🗸 Tu	esda	wednesday	Thursday	Friday	Saturday	Sunday
Wake up at:	07	*	Hour	00	~	Minutes				
Begin Sleep at:	22	*	Hour	00	*	Minutes				
mer 2										
Timer Interval:	Disable	ed			~					
Wake up at:										
Begin Sleep at:										
mer 3										
Timer Interval:	Disable	ed			~					
Wake up at:										
Begin Sleep at:										

#### Notes:

- Up to three timers can be set.
- The time to enter sleep mode can be set from 0:00 to 27:45.
  The time to wake from sleep mode can be set from 0:00 to 23:45.
  If the time to enter sleep mode is after 24:00, the wake-up time setting may be from 4:00 to 23:45.
  24:00 refers to 0:00 of the next day and 27:00 refers to 3:00 of the next day.
- The time to enter sleep mode should not be set at the same time as or before the start time.
- If a backup task is scheduled during a disk check, disk format, backup job or within 5 minutes of the current time, the TeraStation will not change to standby mode when the time to enter sleep mode is reached.
- If the scheduled times in the timer overlap, operation is performed using the widest time interval.
- Examples of multiple timer settings are shown below.

#### Example 1:

If running at a current time of 10:00 Wednesday

Timer 1: Every day 12:00-24:00

Timer 2: Not used

Timer 3: Not used

No operation is performed at 12:00, and operation changes to standby mode at 24:00.

#### Example 2:

When running at a current time of 10:00 Wednesday

- Timer 1: Everyday 9:00-18:00
- Timer 2: Selected day of the week Wednesday 10:00-20:00
- Timer 3: Not used

On days other than Wednesday, normal operation begins at 9:00 and the unit goes into sleep mode at 18:00. On Wednesday, the unit goes into sleep mode at 20:00.

#### Example 3:

If running at the current time of 10:00 Wednesday

Timer 1: Every day 9:00-18:00

Timer 2: Selected day of the week Wednesday 10:00-25:00

Timer 3: Not used

On days other than Wednesday, normal operation begins at 9:00 and the unit goes into sleep mode at 18:00. On Wednesday, normal operation begins at 9:00 and the unit goes into sleep mode at 1:00 the next day.

#### Example 4:

When running at a current time of 10:00 Wednesday

Timer 1: Every day 9:00-18:00

Timer 2: Selected day of the week Wednesday 7:30-22:00 Timer 3: Not used On days other than Wednesday, normal operation begins at 9:00 and the unit goes into sleep mode at 18:00. On Wednesday, normal operation begins at 7:30 and the unit goes into sleep mode at 22:00.

• To turn on the TeraStation before the wake-up time when it is in sleep mode, press the power button.

#### Wake-on-LAN

The TeraStation supports Wake-on-LAN, which allows it to be turned on remotely.

1	In Settings, click Network		
	Network		
2	Click the 🖉 icon to t	he right of "IP Address".	
	IP Address	LAN Port 1 192.168.10.5 LAN Port 2 169.254.187.60	R.
3	Click Change.		
-			
4	Enable "Wake-on-LAN", tl	nen click <i>OK</i> .	
	Network Settings		
			8-
	Wake on LAN:	Enabled	
		Disabled	
	Default Gateway	Address: 192.168.10.1	

Primary DNS Server: 192.168.10.1

οк

Secondary DNS Server:

Wake-on-LAN is now enabled. As long as it is connected to power and the network, you can turn on the TeraStation remotely.

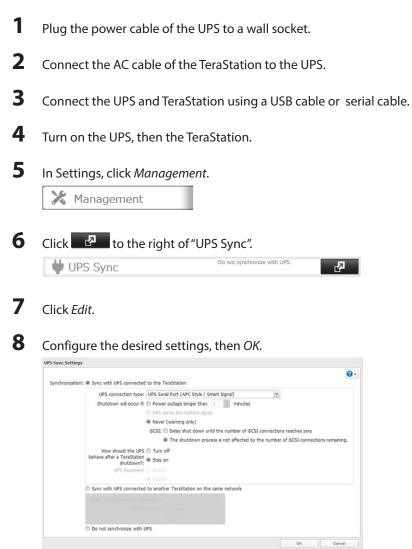
Cancel

#### Notes:

- After a power outage, wait 5 minutes after power is restored to send the Wake-on-LAN packet to the TeraStation.
- After receiving the Wake-on-LAN packet, the TeraStation may take approximately five minutes to be ready to use.
- To use Wake-on-LAN, you'll need Wake-on-LAN software such as AMD's Magic Packet utility. The TeraStation does
  not include Wake-on-LAN software.
- The TeraStation does not support using Wake-on-LAN and port trunking at the same time. You may use either feature, but not both at the same time.
- On the local network, Wake-on-LAN packets may be sent to port 2304 on either of the TeraStation's LAN ports. If the TeraStation is connected to a Buffalo wireless router configured for remote access, then it may be turned on from outside the local network (from the WAN side). To use this feature, connect the router to only LAN port 1 on the TeraStation.

### **UPS (Uninterruptible Power Supply)**

If a UPS (sold separately) is attached, the TeraStation can be automatically shut down for protecting data in the event of a power outage.



#### Notes:

- If the TeraStation is connected directly to a UPS, select "Sync with UPS connected to this TeraStation". If a different TeraStation is connected to the UPS, select "Sync with UPS connected to another TeraStation on the same network" After making this selection, enter the IP address of the TeraStation that will be the sync source in "Other TeraStation's IP Address".
- When the TeraStation is rebooted after an automatic shut down due to a power outage or other power supply problem, verify that the power supply has been restored. If the TeraStation is turned on while it is still running on the UPS and without the power supply restored, automatic shutdown is not performed, even after the specified time has elapsed.
- If the power supply from the UPS to the TeraStation is stopped and restarted when UPS recovery is enabled, the TeraStation is automatically restarted.

### **Port Trunking**

Two Ethernet cables can be used to establish two separate communication routes providing LAN port redundancy and improving communication reliability. The use of two Ethernet cables enables access to the TeraStation even if one of the cables is disconnected.

Trunking Mode	Characteristics
Disabled	Port trunking is not used.
Round-robin*	A round-robin policy is set for providing fault tolerance and load balancing.
Active-backup	An active-backup policy is set for providing fault tolerance
XOR*	An XOR (exclusive-or) policy is set for providing fault tolerance and load balancing.
Broadcast	A broadcast policy is set for providing fault tolerance.
Dynamic link aggregation**	An IEEE 802.3ad dynamic link aggregation policy is set.
TLB	An adaptive transmit load balancing (TLB) policy is set for providing fault tolerance and load balancing.

The port trunking modes that can be set in the TeraStation are shown below.

\*A separate intelligent switch that supports EtherChannel or other port trunking is required. Configure two LAN ports on the switch for port trunking first.

\*\*A separate intelligent switch that supports IEEE 802.3ad is required. Configure LACP in the switch first.

#### **Port Trunking**

If the TeraStation is being used as an iSCSI hard drive and you need to change the settings, navigate to *Drives - iSCSI* in Settings and move the iSCSI switch to the position temporarily.

**1** Use an Ethernet cable to connect the hub LAN port and TeraStation LAN port 1.

#### Notes:

- Do not connect the second Ethernet cable to the TeraStation yet.
- If using an intelligent switch, connect to a LAN port that was set for port trunking.
- **2** In Settings, click *Network*.

Network

**3** Click **C** to the right of "Port Trunking".

```
Port Trunking
```

4 Choose a port trunking link.

**5** Connect the hub's LAN port and TeraStation's LAN port using the second LAN cable. If you are using an intelligent switch, connect to the LAN port that was previously configured for port trunking.

5

**6** Select the port that will be used, select the port trunking mode, and click *Change port trunking*.

	ose port trunking mode:	Round-robin ~			Ø
	Device Name	Round-robin	IP Address	Subnet Mask	Frame size
1	LAN Port 1	Active-backup	192.168.10.5	255.255.255.0	1518 bytes
	LAN Port 2	XOR Broadcast Dynamic link aggregation TLB	169.254.187.60	255.255.0.0	1518 bytes

**7** Reboot the TeraStation before use.

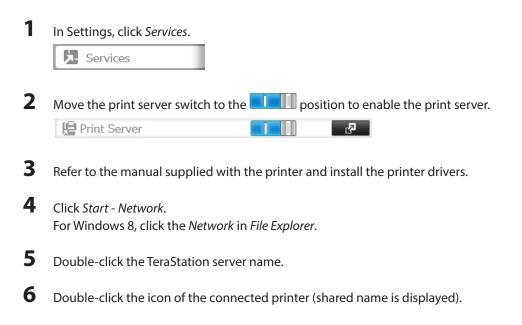
#### **Connecting a Printer**

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

Notes:

- Only one USB printer can be connected to the TeraStation.
- Bidirectional communication is not supported i.e., remaining ink quantities and other printer status information is not supported.
- If a multifunctional printer is connected, only the printer function can be used. Other functions such as scanning will not be available.
- The print server does not support Mac OS.

# Setting Up a Printer with Windows 8, Windows 7, or Windows Vista





#### 7 Select your printer, then click OK.

Manufacturer	Printers
Apollo Brother Canon Citizen Dell	Apollo P-1200

8 Register the printer.

# **Setting Up a Printer with Windows XP**

1 In Settings, click *Services*.



2 Move the print server switch to the position to enable the print server.

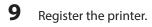
📔 Print Server

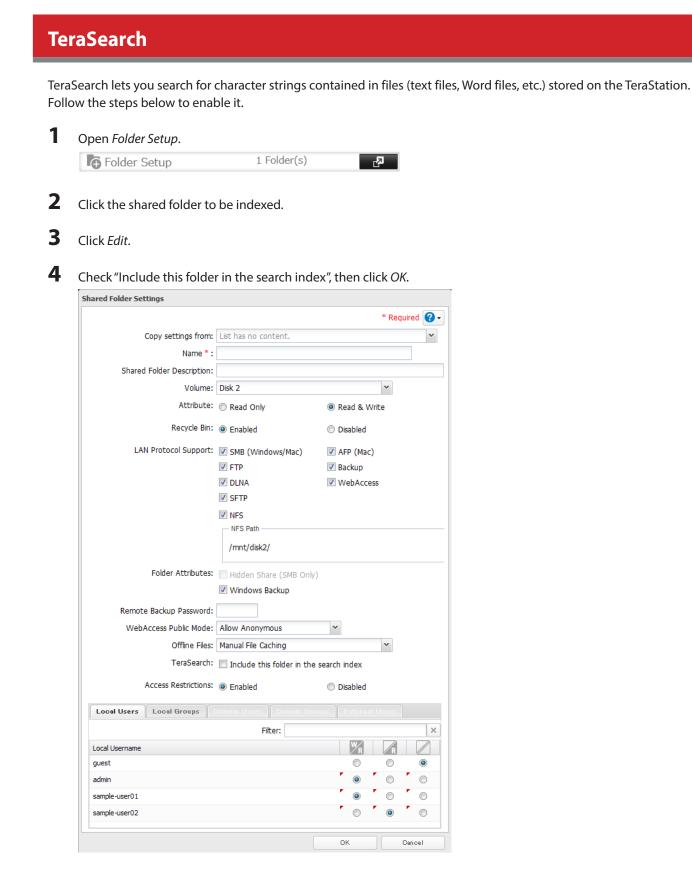
- **3** Refer to the manual supplied with the printer.
- **4** Click Start Control Panel.
- **5** Click Network and Internet Connections.
- **6** Click My Network Places- View workgroup computers (Name of the TeraStation Server).
- **7** Double-click your printer icon.



8 When "The server for the printer does not have the correct printer driver installed. If you want to search for the proper driver, Click *OK*." displays, click *OK*.

R-





5	Click <i>OK</i> .
6	Click <i>Close</i> .
7	Click Applications.
8	Move the TeraSearch switch to the position to enable TeraSearch.
9 10	Click I to the right of "TeraSearch".
	TeraSearch
	Update Index at: OHour Port: 3000
	Refresh Index     Edit     Close

#### **11** Click *Edit*.

**12** Enter the port number that you want to use and the time that the index will be updated, then click *OK*.

TeraSearch Settings		
Update Index at: 00 ¥ Hour Port * : 3000	* Required 🤇	•
	OK Osncel	

**13** Open the following URL in your browser. http://(IP address of your TeraStation):3000/

Note: You can identify your IP address from NAS Navigator2.

- **14** Enter your TeraStation's username and password, then click *Login*.
- **15** Enter a keyword in the "Search Text" field. Check "Advanced Search" to enable searches by specifying the filename, owner, date updated, and file size.
- 16 Click Search.

The search results are displayed. Click the filename in the results to open the file.

### **Offline Files**

Offline files included with many versions of Windows, can be used to access files in the TeraStation, mimicking the computer's behavior even if it is disconnected from the network. When connected to the network again, the updated files are written and synchronized. Follow the procedure below to use offline files.

1	In Settings, click 🦉	to the right of "Folder Setup".
	Folder Setup	1 Folder(s)

- 2 Click the shared folder for offline files.
- 3 Click Edit.
- 4 Choose "Manual File Caching", "Automatic File Caching", or "Automatic Program and File Caching", then click OK.

		* Required 🤇
Copy settings from:	List has no content.	
Name * :		
Shared Folder Description:		
Volume:	Disk 2	¥
Attribute:	Read Only	Read & Write
		0
Recycle Bin:	Enabled	Disabled
LAN Protocol Support:	SMB (Windows/Mac)	AFP (Mac)
	FTP	Backup
	V DLNA	WebAccess
	SFTP	
	V NFS	
	NFS Path	
	/mnt/disk2/	
Folder Attributes:	Hidden Share (SMB Only)	
	Windows Backup	
Remote Backup Password:		
WebAccess Public Mode:	Allow Anonymous	v
	Manual File Caching	~
	Include this folder in the s	earch index
Access Restrictions:	enabled	Disabled
Local Users Local Groups	Domain Users 🛛 Domain Grou	ps. External Users
	Filter:	
Local Username		
guest		0 0 0
admin		
sample-user01		• • • •
sample-user02		0 0 0
		OK Cancel

Note:

Manual File Caching - User selects files that are cached.

Automatic File Caching - Opened files can be cached locally for offline use. Previous versions of files that are not

synchronized are automatically replaced by the latest versions.

**Automatic Program and File Caching** - Opened files can be cached locally for usage offline. Previous versions of files and applications executed from the network that are not synchronized are automatically replaced by the latest version of the files and applications.

- 5 Click OK.
- **6** Click Close.
- 7 In Windows, navigate to *Folder options*. (Windows 8 and Windows 7 users should skip to step 9).
- 8 Check "Enable Offline Files", then click OK.

Folder Options
General View File Types Offline Files
Use Offline Files to work with files and programs stored on the network even when you are not connected.
Enable Offline Files
Synchronize all offline files when logging on
Synchronize all offline files before logging off
Display a reminder every:
60 🗢 minutes.
Create an Offline Files shortcut on the desktop
Encrypt offline files to secure data
Amount of disk space to use for temporary offline files:
7.68 GB (10% of drive)
Delete Files View Files Advanced
OK Cancel Apply

**Note:** Offline files cannot be enabled if "Use Fast User Switching" is enabled. To change the setting, open "User Accounts" in Control Panel and select "Change the way users log on or off".

**9** Right-click the icon of the shared folder on the TeraStation for which you have set the offline feature, then click *Make Available Offline*.



**10** When the offline file wizard opens, follow the instructions on the screen. For more information, refer to the Windows help.

**11** When the offline settings and sync settings are completed using the wizard, the files and folders set appear as shown:



12 If the network is disconnected after synchronization is completed, the offline file function can be used. Offline files can be accessed by the original Universal Naming Convention (UNC) where the data was saved.

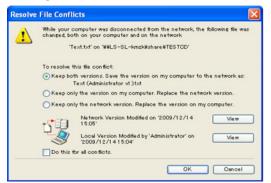
Note: If offline files can be used, an icon appears in the system tray.

Offline Files - The network is not available

**Editing Offline Files** - Offline files can be edited and deleted in the same way as normal files. Differences that arise from the original data on the network due to editing or deleting of the file are resolved by resynchronization after the network is reconnected.

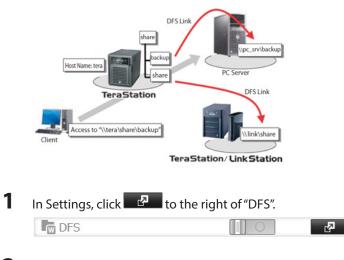
**Synchronizing Offline Files** - The offline file is automatically synchronized based on preset conditions, such as after reconnection with the network, logging on, logging off, etc.

**Version Conflicts** - A file conflict occurs if different changes were made simultaneously to the offline file and original data on the network. The screen below is displayed when a file conflict is detected. Resolve the conflict by following the instructions on the screen.



### DFS

DFS (Distributed File System) is a set of client and server services that allows Windows users to organize many distributed SMB file shares into a distributed file system. Follow the steps below to enable DFS on the TeraStation.



- 2 Click Edit.
- 3 Enable or disable "Set DFS Link to DFS Root".

Note: If enabled, a DFS link target shared folder is created under the DFS root. If disabled, up to eight DFS link target

shared folders can be created under the DFS root.

					* Required 😮
	Set DFS Link t			Disable	
OFS Link	List •				
Add Link	Remove Link			Fiter:	
	Link Name	Hostname	Name		



- **5** Click Add Link.
- 6

Enter the link name, hostname, and shared folder name, then click OK.

		* Required 🕜 🗸
Link Name * : Hostname * : Name * :		
	ОК	Cancel

Notes:

- TeraStations, LinkStations, and SMB-compatible Windows computers can be specified as DFS link targets (Mac OS and Linux are not supported).
- If "Set DFS Link to DFS Root" is disabled, you may create up to 8 hostnames and DFS links.
- 7 Click OK.

8	Move the DFS switch to the	position to	enable DFS.
	W DFS		<b>P</b>

### **Accessing from a NFS Client**

**Note:** (US purchasers only) Buffalo's customer support will help configure the NFS settings on your TeraStation, and will support VMware and Windows clients but will not provide support for configuring your Linux or other UNIX clients. There are many types of UNIX and the procedures for configuring NFS with them will vary considerably. For help configuring your NetWare, Linux, or other UNIX clients for NFS support please consult each client's own documentation and support.

1

Open Folder Setup.

Folder Setup

1 Folder(s)

- 2 Choose the shared folder that will be accessible to the NFS client.
- 3 Click Edit.
- **4** Under "LAN Protocol Support", enable "NFS". Click *OK*. Note the NFS path. It will be used later for accessing data from an NFS client.
- 5 Click Close.
- 6 Move the NFS switch to the position to enable NFS.
- 7 Click the icon to the right of "NFS".
- **8** Click Client Settings.



ervices	Client Settings		
Add Client	Delete Client	Filter:	
Host	name		IP Address

**10** Enter the IP address and hostname of the NFS client, then click *OK*.

NFS Client Settings		
		* Required 🕢 🗸
Hostname * :		
IP Address * :		
	ок	Cancel

To delete the client, check the hostname and click Delete Client.

- **11** Click Close.
- **12** Enter the mount command to access the shared folder from the NFS client.

The mount command depends on your operating system. The examples below assume that IP address of your TeraStation is 192.168.11.10, "/mnt/array1/share" is the desired NFS path, and "/mnt/nas" or drive letter "z" is the mount point.

For Linux: mount -t nfs 192.168.11.10:/mnt/array1/share /mnt/nas For Windows Service for Unix 3.5: mount 192.168.11.10:/mnt/array1/share z: For Solaris 10: mount -F nfs 192.168.11.10:/mnt/array1/share /mnt/nas

Notes:

S Settings				
				? -
Services	Client Settings			
	Public N	etwork Address: 0.0.0.	0	
	Pub	lic Subnet Mask: 0.0.0.	0	
	(	Operation Mode: User N	1ode	
	G	uest Permission: Forced	d	
			Edit	
				Close

- To configure access restrictions by IP address, click Services Edit, then enter the desired settings.
- To use shared folders set for NFS as drives on VMware ESX/ESXi, change the operation mode from "User Mode" (default setting) to "Kernel Mode" on the screen navigating to *Services Edit*.
- If you configure "Guest Permission" to "Forced" on the screen navigating to *Services Edit*, user ID and group ID should be 99 when the data is written from NFS clients; this is recommended for SMB or other protocols as well. Use "Ignored" if the TeraStation only enables NFS connection.

### **Encrypting Data Transmission**

# **Encrypting Settings Data**

All communication to Settings can use SSL encryption if you access settings through https://.

# **Encrypting FTP Transfer Data**

You can encrypt passwords and files using SSL/TLS for secure FTP communication. First, in the shared folders settings, select *FTP* under *LAN Protocol Support* in Settings. 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)

In this system, the TeraStation sends this file to the computer, and the computer uses this key to perform encryption. The TeraStation receives the encrypted data and uses server.key (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 TeraStation in the default settings was created by Buffalo Technology, and in some cases the message "There is a problem with this website's security certificate" may be displayed in your browser or other software. Disregard this message and continue.

#### server.key (SSL 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.

### **Updating SSL Key**

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

- 1 Click Management 🛃 to the right of "SSL".
- 2 Register "server.key" for "Secret Key" and "server.crt" for "Server Certificate (.crt)", then click Import.

#### Notes:

- Place the SSL key files (server.key, server.crt) directly below the C root drive. The SSL key may not be able to be updated if it is placed in folders or paths that contain multi-byte characters.
- Use the provided password for the SSL key.
- If Settings cannot be displayed after updating, initialize the TeraStation settings.
- Updating the firmware initializes an SSL key.

### Web Server

The TeraStation can be used as a web server. In addition to HTML files, images, and JavaScript, the TeraStation also allows installation of Perl script and PHP script files. The web server uses version 1.4.23 of lighttpd, version 5.8.8 of Perl, and version 5.2.10 of PHP.

1 In Settings, click Services.

>- Services

**2** Move the web server switch to the **Desition** to enable the web server.

Web Server

R,

- 3 Click \_\_\_\_\_ to the right of "Web Server".
- 4 Click Edit.

Target I	Folder: Not co	onfigured ye	t.	
	Port: 81			

Note: The settings of the PHP language interpreter can be changed from "Edit php.ini".



#### Click Browse.

Web Server		
Target Folder: share		
Port: 81		
Edit php ini	Edit	Close

6 Choose a shared folder for the web server, then click OK.

Browse Folde	rs	
Refresh		
🛨 🛄 share		
	ок	Cancel

7

Choose an external port, then click OK.

# **MySQL** Server

The TeraStation can be used as a MySQL server. A MySQL database may be installed and linked with the web server. The TeraStation uses version 5.0.70 of MySQL server and version 3.2.2 of PhpMyAdmin.

1 In Settings, click Services

	Services
2	Move the MySQL server switch to the <b>control</b> position to enable the MySQL server.
	Here MySQL Server
3	Click to the right of "MySQL Server".
4	Click <i>Edit</i> .
5	Click Browse.
	MySQL Server Settings
	* Required 🕗 -
	Database Folder * : Browse
	Port*: 3306
	OK Cancel
6	Choose a shared folder for the MySQL server, then click OK.
	Browse Folders
	Refresh
	OK Cancel
7	Choose an external port, then click <i>OK</i> .
	choose an external port, then click on.
CN	IMP

If SNMP is enabled, you can browse your TeraStation from SNMP-compatible network management software. The specific MIB (management information base) file for Buffalo is available from the Buffalo website (buffalotech.com).

1 In Settings, click *Network*.

Network

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

SNMP		<b>R</b> D
------	--	------------

- **3** Click **2** to the right of "SNMP".
- **4** Click *Edit*.

**5** Configure the desired settings, then click *OK*.

### **Saving and Applying Settings**

The TeraStation's settings can be saved to a USB memory device and restored to another TeraStation. Use this function to back up and copy settings to a new TeraStation.



Make a note of the hard drive configuration (number of hard drives, RAID, LVM, etc.) of the TeraStation where the settings were saved. Make sure that any TeraStation that you apply these settings to has exactly the same hard drive configuration before you apply the settings. If the drive configuration is different, you may get unexpected results.

The following settings are not saved or restored:

Category	Settings
File sharing	
USB drive and memory cartridge shared folder information	
	All settings in "RAID" - "Options" - "RAID Array Settings"
	All settings in "LVM"
All settings in "Drives"	All settings in "iSCSI"
	USB drive and memory cartridge information
Network	All settings in "IP Address"
Network	All settings in "Port Trunking"
Backup	All settings in "Failover"
	All settings in "Name"
Management	All settings in "UPS Sync"
Management	All settings in "SSL"
	Display language in Settings

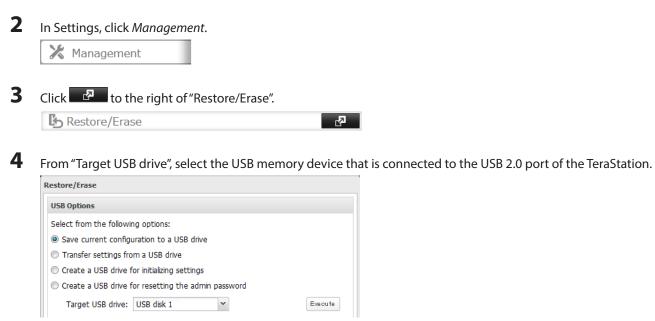
# **Saving Settings**

1 Insert a USB memory device into a USB port on the TeraStation.

#### Notes:

• Use a USB 2.0 port. If your TeraStation has both USB 3.0 and USB 2.0 ports, make sure that you use one of the USB 2.0 ports.

- The USB memory device should have a capacity of at least 1 GB.
- Any data stored on the USB memory device will be deleted.



5 Select "Save current configuration to a USB drive", then click *Execute*.

#### **Troubleshooting:**

If the settings are not saved to the USB memory device successfully, you may receive the error message "The specified operation cannot be executed.". Verify:

- The device is connected to a USB 2.0 port, not a USB 3.0 port.
- The device has a capacity of 1 GB or larger.
- The device is not write-protected.

# **Applying Settings**

The saved settings can be applied to a different TeraStation.

1 Connect the USB memory device with the saved settings to a USB 2.0 port of the TeraStation (not a USB 3.0 port).

2 In Settings, click Management.

🔀 Management

**3** Click to the right of "Restore/Erase".

Restore/Erase

**4** From "Target USB drive", select the USB memory device that is connected to the USB 2.0 port of the TeraStation.

7

F	Restore/Erase				
	US8 Options				
	Select from the following options:				
	Save current configuration to a USB drive				
	Iransfer settings from a USB drive				
	Create a USB drive for initializing settings				
	○ Create a USB drive for resetting the admin password				
	Target USB drive: USB disk 1 💌				

**5** Select "Transfer settings from a USB drive", then click *Execute*.

### **Restoring Factory Defaults**

# **Initializing from Settings**

To initialize the TeraStation to its factory defaults from Settings, follow this procedure.

2	Management
Clic	k to the right of "Restore/Erase".
B	Restore/Erase
Clic	k Initialize TeraStation.
	k Initialize TeraStation.
Res	

- **4** The "Confirm Operation" screen will open. Enter the displayed number, then click *OK*.
- 5 The TeraStation will be restored to its factory default settings.

# **Creating an Initialization Drive**

A system initialization drive will restore the settings on your TeraStation to their factory defaults. You can initialize them without logging in to Settings. Follow the steps below to create a system initialization drive.

Notes:

- Normally, making and using the system initialization drive will not affect data. However, always back up your data regularly!
- This USB drive can be used to recover the system if your TeraStation doesn't boot at all. In this case, if the data partition is damaged, then all your data will be deleted by the recovery process.
- 1 Insert a 1 GB or larger USB flash drive (not included) into a USB 2.0 port on the TeraStation.

- 2 In Settings, navigate to *Management-Restore/Erase-USB Options*.
- **3** Select *Create a USB drive for initializing settings*. **Note:** All data on the USB flash drive will be erased!
- **4** Select the USB memory device from "Target USB drive", then click *Execute*.
- 5 Enter the 4 digit confirmation number and click *OK*. The TeraStation will create the initialization drive. This will take about a minute.
- 6 When the "finished" dialog opens, the USB initialization drive is ready to use. Dismount the USB drive before unplugging it. See "Dismounting Drives" in chapter 4 for the instructions on dismounting drives.

### **Initializing with the USB Drive**

To initialize the settings on your TeraStation with the USB drive as created in above, follow the procedure below.

- **1** Create a USB "initialization drive" as described above.
- **2** Insert the USB drive into a USB 2.0 port (not a USB 3.0 port) on the TeraStation.
- **3** Set the boot mode switch to "USB".
- **4** Press the power button to turn on the TeraStation.
- 5 When the message "Recovery I41 PushFuncToStart" appears on the LCD panel, press the function button.
- **6** It will take several minutes for initializing the settings. The TeraStation will shut down when it's finished.
- 7 After shutdown, "Recovery I39 Change Boot" is displayed.
- 8 Set the boot mode switch to "HDD" position.
- **9** Press the power button to start the TeraStation.

### **Resetting the Administrator Password**

### **Creating a Password Reset Drive**

A password initialization drive can reset the administrator password to its default value ("password"). This could be very useful if you forget your admin password.

- 1 Connect a 1 GB or larger USB memory device (not included) to a USB 2.0 port on the TeraStation.
- **2** In Settings, navigate to *Management Restore/Erase USB Options*.
- **3** Select Create a USB drive for resetting the admin password.

Note: All data on the USB flash drive will be erased!

- **4** Select the USB memory device from "Target USB drive" list, then click *Execute*.
- 5 Enter the 4 digit confirmation number and click *OK*. The TeraStation will create the password reset drive. This will take about a minute.
- 6 When the "finished" dialog opens, the password reset drive is ready to use. Dismount the USB drive before unplugging it. See "Dismounting Drives" in chapter 4 for the instructions on dismounting drives.

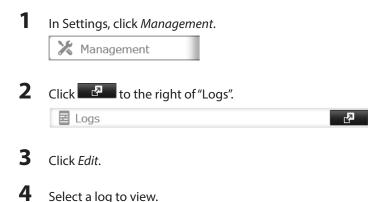
## **Resetting with the USB Drive**

To reset your admin password, follow the procedure below.

- **1** Create a USB "password initialization" drive as described above.
- 2 Insert the USB drive into a USB 2.0 port (not a USB 3.0 port) on the TeraStation.
- **3** Set the boot mode switch to "USB".
- **4** Press the power button to turn on the TeraStation.
- **5** When the message "Recovery I41 PushFuncToStart" appears on the LCD panel, press the function button.
- **6** The password will be reset to its factory default. The TeraStation will shut down when it's finished.
- 7 After shutdown, "Recovery I39 Change Boot" is displayed.
- 8 Set the boot mode switch to "HDD" position.
- **9** Press the power button to start the TeraStation.

#### Logs

Follow this procedure to check the TeraStation's logs.



i		
Transfer Logs:Disabled		
Store Files Locally:Disabled		
Log View: <u>System Log</u> <u>SMB Logs</u> FTP Logs		
<u></u>	Edit	Close

The file operation log stores file operations performed on the internal hard drives. File operations on USB drives are not logged.

#### To transfer logs

- 1 Click *Edit*.
- 2 Enable "Syslog Transfer".
- **3** Enter the IP address of the syslog server where you want to transfer the logs to.
- 4 Select the type of log that you want to transfer from "Logs To Transfer".
- 5 Click OK.

FTP logs cannot be written to a syslog server.

Logs are in UTF-8 format. Your syslog server must support UTF-8 encoding.

#### To create a link to the logs in the shared folder

- 1 Click *Edit*.
- 2 Enable "Share the link to logs".
- **3** Select the shared folder where the link will be created in "Target Shared Folder".
- **4** Click *OK*.

Under the selected shared folder, a folder named "system\_log" will now contain the logs.

# **Updating the Firmware**

If a new firmware is available, a message is displayed when the TeraStation boots. You can update the firmware by the following ways:

#### To update from Settings:

#### 1 In Settings, click *Management*.

🔀 Management

#### 2 Choose Update.

C Update

R,

This TeraStation is using the latest

#### **3** Click Install Update.

You can also download the firmware from www.buffalotech.com.

**Note:** Settings is not available while the firmware is updating. Don't try to access Settings from another computer until the update is complete.

### Name, Date, Time, and Language

Configure the TeraStation's hostname, date, time, and language as follows.

**Note:** If the TeraStation is being used as an iSCSI hard drive, to change the settings, navigate to *Drives - iSCSI* in Settings and set the icon to **Drives**.

7

1 In Sett	ings, click	Management.
-----------	-------------	-------------

X Management

**2** Open *Name/Time/Language*.

Name/Time/Language

3 Click Edit.

\_

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

					* Required 🕜
Name	Time	Language	Management Information		
	Name * :	TS5200D4E	1		
De	scription:	TeraStation			

5

Click the *Time* tab.

Click Use Local Date/Time to use your computer's time settings for the TeraStation.

By default, the TeraStation adjusts its clock automatically by using a default NTP server. This NTP server belongs to Internet Multi Feed Inc. For more information, visit *www.jst.mfeed.ad.jp*. To use a different NTP server, select *Name/Time/Language* from *Management*. Click *Time*, then *Edit*. Uncheck "Use Default NTP Server" and enter a new NTP IP address. Click *OK*.

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

#### TeraStation.

me/Time/Language			
			* Required 😮
Name Time Language Mana	gement Information		
ate/Time Source:			
Enabled			
NTP IP Address * :	ntp.jst.mfeed.ad.jp		
	Use Default NTP Se	rver	
NTP Synchronization Frequency:	Daily	*	
Disabled			
Time * :		: 43 🗘 Use Local Date/Tir	me
Time Zone:			
			~
(UTC-06:00) Central America			
		0	OK Cancel

**Note:** The internal clocks of the TeraStation 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 5 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.

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

		* Required 🕜
Name Time Langua	ge Management Information	
Client Language:	CP437 ~	
Display Language:	English Y	

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

### **Beep Alerts**

6

You can set the TeraStation to beep when certain errors occur.

1 In Settings, click *Management*.

🔀 Management

**2** Select *Notifications*.

P Notifications

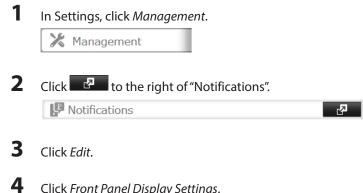
5

- 3 Click Edit.
- 4 Select the conditions to beep the alert, then click OK.

		<b>?</b>
Alert Sound Settings	Front Panel Display Settings	
Alert Sound	d Settings: ♥ Overheating ♥ Disk Error ♥ Fan Failure ♥ UPS Power Erro	ſ
		OK Cancel

# LCD and LEDs

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



- Click Front Panel Display Settings.
- 5 Configure your settings, then click OK.

otification					
					8
Alert Sound Settings F	ront Panel Dis	splay Settings			
Front Panel Display					
Display:	🗹 Host IP				
	🗹 Time				
Flip Display:	Yes	© N	0		
LCD Brightness:	Dim 🕕			Bright	
ED Display Settings					
LED Brightness (Normal):	Dim 🕕	Bright	t		
LED Synchronization:	Enabled		0	Disabled	
		ghtness (Sleep Mode):			Bright
			ок		Cancel

# **Jumbo Frames**

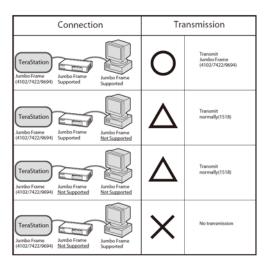
If your other network devices support it, you may be able to increase network performance with jumbo frames.

R

1	In Settings, click Network	
	Network	
2	Click 🗗 to the right of	of "IP Address".
	IP Address	LAN Port 1 192.168.10.5 LAN Port 2 169.254.187.60

- **3** Click the LAN port where the jumbo frames will be used.
- 4 Click Edit.
- **5** Select "Ethernet Frame Size", then click *OK*.

IP Address Settings:LAN Port 1	
	* Required 🚱 🗸
DHCP:	Enable
	Oisabled
	IP Address *: 192.168.10.5
	Subnet Mask * : 255.255.255.0
Ethernet Frame Size:	1518 💌 bytes
	OK Dancel



**Note:** Make sure the TeraStation's Ethernet frame size is smaller than the hub or router's. Larger frame sizes may not transfer the data to the TeraStation correctly.

## **Changing the IP Address**

Normally, the TeraStation'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 from NAS Navigator2 running on a computer connected to the same router (subnet) as the TeraStation.

Notes:

- You can also change the TeraStation's IP address from *Network IP Address* in Settings.
- If the TeraStation is being used as an iSCSI hard drive, to change the settings, navigate to *Drives iSCSI* in Settings and move the iSCSI switch to the **IDE** temporarily before changing network settings.



1 Double-click the icon on the desktop. NAS Navigator2 will start.

Note: For Mac OS, click the 🚧 icon in the Dock.

Right-click on your TeraStation's icon, then choose *Properties - IP Address*.
 Note: For Mac OS, click the TeraStation icon while holding down the control key, then click *Configure - IP Address*.

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

TS5200D4E1 Properties					×
TS5200D Serie	25				
Configuration IP Address					
Use DHCP Renew IP address					
IP Address	192 .	168	10 .		
Subnet Mask	255 .	255	255 .	0	
Default Gateway	192 .	168 .	10 .	1	
	IK	Canc	el	Appl	y

#### Notes:

- Do not set the same address for LAN port 1 and LAN port 2. This may cause unstable network communication.
- Use LAN port 1 to access different network subnets from the TeraStation. Access to a different network subnet is not possible from LAN port 2 since it doesn't have a default gateway.
- The following IP addresses are reserved and should not be used. If you configure one of them by accident, initialize all settings with the init button on the TeraStation. Local loopback address: 127.0.0.1, 255.255.255.0
   Network address: 0.0.0.0, 255.255.255.255.0
   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 11 Utilities**

### **NAS Navigator2 for Windows**

NAS Navigator2 is a utility program that makes it easy to display Settings, change the TeraStation's IP address, or check its hard drive. If you installed the TeraStation with the TeraNavigator CD, NAS Navigator2 was installed automatically.

To launch NAS Navigator2, double-click the icon.

	11CW + 1	Browse 🧿 Refre	sn gr im here	
10.00				
				Workgroup: WORKGROUP
	HDD	0.0GB/43.2GB(0.0	(%)	IP Address: 192.168.11.7
	HDD	0.0GB/43.2GB(0.0	(%)	Subnet Mask: 255.255.255.0
	HDD	0.0GB/43.2GB(0.0	(%)	Default Gateway: 192.168.11.1
		0.0GB/43.2GB(0.0		MAC Address: 4C:E6:76:1F:30:65

Click your TeraStation's icon to open a share on the TeraStation and display:

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

Name		Description
	Map Share <sup>*</sup>	Assigns the TeraStation's shared folder as a network drive.
	Disconnect Share*	Unmaps the network drive.
	Map All Remote Shares to Drive Letters	Assigns all the TeraStation's shared folders as network drives.
	Create Desktop Shortcut*	Creates a shortcut to the TeraStation's shared folder (share).
Menu	Launch NAS Navigator2 on Startup	Launches NAS Navigator2 in the system tray when Windows boots.
	Display Errors	If an error occurs, an error message will pop up from the NAS Navigator2 icon in the system tray.
	Properties*	Opens the selected TeraStation's properties page.
	Close	Closes NAS Navigator2.

Name		Description		
		Icons: Displays icon.		
	View	Details: Displays hostname, product name, workgroup, IP address, subnet mask, and default gateway.		
View		Selects the sort order from following to display when multiple TeraStations are found:		
	Sort by	Hostname, product name, workgroup, IP address, subnet mask, default gateway		
Browse*		Opens the TeraStation's shared folder.		
Refresh		Searches for NAS devices on the network again.		
I'm here*		Causes your TeraStation to beep.		
	Browse Shares	Opens the TeraStation's shared folder.		
	Settings	Opens Settings for the selected TeraStation.		
	Properties	Opens the TeraStation's properties page.		
Right-click your device's icon to	Map Share	Assigns the TeraStation's shared folder as a network drive.		
show these options.	Disconnect Share	Unmaps the network drive.		
show these options.	Create Shortcut	Creates a shortcut icon to the shared folder "share" on the desktop.		
	I'm here	Causes your TeraStation to beep.		

\*Click on the TeraStation's icon to display these options.

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

Browse Shares	TS5200D4E1 >
Settings Properties	Refresh Browse Shares
Map Share Disconnect Share	Exit
Create Shortcut I'm here	

Name		Description	
Browse Shares		Opens the TeraStation's shared folder.	
	Settings	Opens Settings for the selected TeraStation.	
TeraStationPropertiesOpens the TeraStation's properties page.NameMap ShareAssigns the TeraStation's shared folder as a network drive.		Opens the TeraStation's properties page.	
		Assigns the TeraStation's shared folder as a network drive.	
	Disconnect Share	Unmaps the network drive.	
	Create Shortcut	Creates a shortcut icon to the shared folder "share" on the desktop.	
I'm here		Causes your TeraStation to beep.	
Refresh		Refreshes list of NAS devices.	
Browse Share	S	Displays NAS Navigator2 window.	
Exit		Exits NAS Navigator2.	

The following tasks may be performed from the TeraStation's properties page.

TS5200D4E1 Properties	×
TS5200D Series	
Configuration   IP Address	
Settings is where you configure your NAS.	
OK Cancel Appl	y

Name	Description
Configuration	Click [Settings] to open the configuration interface.
	Check [Use DHCP] to assign an IP address from the DHCP server automatically. If there is no DHCP server in the network, you cannot use this function.
IP Address	Check [Renew IP address] to obtain an IP address from the DHCP server.
	You can manually enter an IP address, subnet mask, and default gateway.

# Mount as Network Drive

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

- 1 Double-click the icon on the desktop. NAS Navigator2 will start.
- 2 Right-click on the TeraStation's icon, then click [Map Share].

denu 👻	🚟 View 🔹 🧰 Browse 🥱 Refresh 🌗 I'm here	
-		
2005	Browse Shares	
	Settings	
	Properties	
	Map Share	
	Disconnect Share	
	Create Desktop Shortcut	
	Create Desktop Shortcut I'm here	
_		
200D Serie	Tm here	Workgroup: WORKGROUP
200D Serie	Tm here	Workgroup: WORKGROUP IP Address: 19216810.25
200D Serie	Tm here	
200D Serie	Tm here	IP Address: 192.168.10.25
200D Serie	Tm here	IP Address: 192.168.10.25 Subnet Mask: 255.255.255.0
200D Serie	Tm here	IP Address: 192.168.10.25 Subnet Mask: 255.255.0 Default Gateway: 192.168.10.1

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



### **NAS Navigator2 for Mac**

NAS Navigator2 is a utility program that makes it easy to display Settings, change the TeraStation's IP address, or check its hard drive.

If you installed the TeraStation with the TeraNavigator CD, NAS Navigator2 was installed automatically. To launch it, click



Click on a TeraStation's icon to display:

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

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

Name	Description
Open	Opens the default shared folder for a selected TeraStation.
Refresh	Searches for NAS devices on the network again.
l'm here	Causes your TeraStation to beep.
Settings	Opens Settings for the selected TeraStation.
Configure	Opens a window that lets you configure NAS's IP address or open Settings.
Label Color	Selects the color of the name displayed below the icon.
View Options	Lets you choose icon size, position, and view mode.
Auto Power Mode	Auto power mode can turn supported TeraStations and LinkStations on the network on and off automatically.

	Open Folder	Opens the TeraStation's shared folder.
	Settings	Opens Settings for the selected TeraStation.
To display these options, hold down the control	Configure	Opens a window that lets you change the NAS's IP address or open Settings.
key and select your	I'm here	Causes your TeraStation to beep.
TeraStation's icon.	Label Color	Selects the color of the name displayed below the icon. The menu below is displayed when you click the TeraStation icon while holding down the control key.

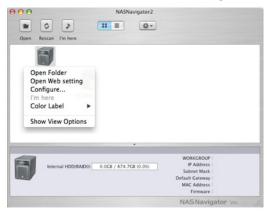
### **Mount as Network Drive**

You can map the shared folder as a network drive using NAS Navigator2 on Mac OS.





Click the TeraStation icon while holding down the control key, then select [Open Folder].



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



4 A drive icon share will appear on the desktop. The shared folder is now mounted as a network drive. Note: To dismount the share, drag and drop the share icon to the Trash.

### **iSCSI Connection Tool**

The iSCSI Connection Tool is a Windows utility that lets you use the TeraStation as an iSCSI drive.

To launch it, click [Start] - [All Programs] - [BUFFALO] - [iSCSI Connection Tool] - [iSCSI Connection Tool]. For Windows 8, click the iSCSI Connection Tool.

Target	T\$5200D4E1		Register iSCSI Device
Model	TS5200D Series	Series	TS5200D
IP Address	192.168.10.25 (DHCP)	Subnet Mask	255.255.255.0
Firmware	2.20	MAC Address	CC:52:AF:EA:84:E1
iSCSI Service	Enabled		
Volume	sample 💌	]	
Status Jser Authentica	: Disconnected tion : Disabled		
Conner	st on Start Up		Connect

Name	Description
Target	If a TeraStation is selected, clicking [Register iSCSI Device ] will register all the volumes in the TeraStation to the computer for enabling connection to individual volumes.
	If a volume is already registered, click [Unregister iSCSI Device] to unregister all volumes, disconnecting them from the TeraStation.
Model	Displays TeraStation's model name.
Series	Displays TeraStation's series name.
IP Address	Displays TeraStation's IP address.
Subnet Mask	Displays TeraStation's subnet mask.
Firmware	Displays TeraStation's firmware version.
MAC Address	TeraStation's MAC address.
iSCSI Service	Shows whether the iSCSI service of the TeraStation is running or stopped.
	Select individual volumes from a registered TeraStation.
Volume	Select a volume and click [Connect], then the selected volume will be recognized as a local drive in My Computer on your computer. If a volume is connected, click [Unregister] to disconnect it.
	Displays current status of the selected volume.
	- Disconnected: Volume is disconnected.
Current status	- Connected: Volume is connected.
	- Connected to another PC: Volume is connected to another computer. Displays the other computer's IP address.
	- Disabled: No authentication.
User authorization	- Enabled: User authentication is needed to connect to a volume.
Connect on Start Up	If selected, the computer will connect to the volume automatically at boot.
Refresh	Search for network devices on the LAN.
Exit	Exit iSCSI Connection Tool.

# <u>Menu</u>

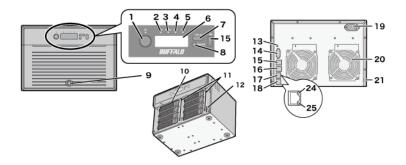
Name

File	Refresh	Search for network devices on the LAN.	
File	Exit	Closes the iSCSI Connection Tool.	
	Configuration	Opens Settings for the selected TeraStation.	
	Change IP address	You can change the IP address of the selected TeraStation.	
	Unregister iSCSI device	If you disconnect the TeraStation without unregistering it or changing its IP address, the registration information stays in your computer and searches will take longer. For better performance, unregister disconnected TeraStations with this command.	
Setup	Set mutual CHAP secret	Set the CHAP password on the computer side.	
	Persistent Volume	If checked, your computer will reconnect to the TeraStation whenever it's restarted.	
	Connect volumes	Connect multiple volume at a time.	
	Disconnect volumes	Displays the screen to disconnect multiple volume at a time.	
	Disk management	Format drives.	
Help	About	Displays version information.	

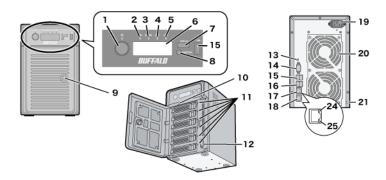
# **Chapter 12 Appendix**

# Diagrams

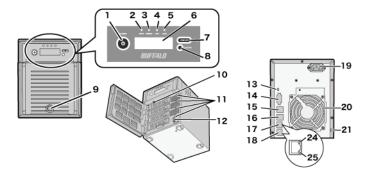
### TS5800D



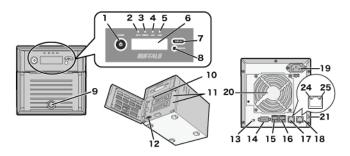
### TS5600D



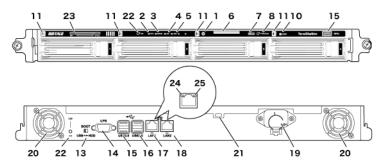
### TS5400D



#### TS5200D



#### TS5400R



#### **1** Power Button

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

#### 2 Info LED

If there is a status message, the amber info LED is lit. Check the LCD panel.

### **3** Error LED

The red error LED is lit when an error occurs. Check the LCD.

#### 4 LAN1 LED

When LAN port 1 is connected to a network, it is lit green. The LED next to LAN port 1 is also lit.

### 5 LAN2 LED

When LAN port 2 is connected to a network, it is lit green. The LED next to LAN port 2 is also lit.

#### **6** LCD Panel

Status of the TeraStation.

#### 7 Display Button

Switches between the display modes. This button stops beeping.

### 8 Function Button

Use this button for Direct Copy, dismounting USB devices, rebuilding RAID arrays, and configuring failover.

#### 9 Drive Lock

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

#### **10** Reset Button

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

#### **11** Status LEDs

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

### **12** Factory Use Only

#### **13** Boot Mode Switch

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

### 14 UPS Port

Connect to a UPS.

### 15 USB 3.0 Port

Compatible Buffalo USB 3.0 hard drives can be connected. USB hubs are not supported.

### 16 USB 2.0 Port

Compatible Buffalo USB hard drives, USB flash drives, digital cameras, and USB UPS connection can be connected. USB hubs are not supported.

### 17 LAN Port 1

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

### **18** LAN Port 2

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

#### **19** Power Connector

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

### **20** Fan

Do not block the fan.

#### **21** Anti-Theft Security Slot

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

#### 22 UID Button

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

#### **23** Serial Number

This sticker shows the TeraStation's serial number.

### 24 Link LED

Glows orange when the unit is connected to a network.

### 25 Act LED

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

# LCD Display

The LCD display can be cycled through different modes by pressing the display button on the front of the TeraStation. Also, the items displayed can be configured at *Management - Notifications - Front Panel Display Settings* in Settings.

# <u>Modes</u>

LCD Message		Description	Corrective Action
LINK SPEED No LINK		Not connected to network.	Connect an Ethernet cable to the LAN port.
LINK SPEED	LINK SPEED 10 Mbps HALF	Connected at 10 Mbps half duplex.	-
Note: When an Ethernet cable	LINK SPEED 10 Mbps FULL	Connected at 10 Mbps full duplex.	-
is connected to LAN Port 2, "I INK SPFFD 2" is	LINK SPEED 100 Mbps HALF	Connected at 100 Mbps half duplex.	-
displayed.	LINK SPEED 100 MbpsFULL	Connected at 100 Mbps full duplex.	-
	LINK SPEED 1000 Mbps	Connected at 1000 Mbps full duplex.	-
Hostname / IP Address	TS-xx xxx 192.168.11.150	Displays the hostname and IP address. At the end of the IP address, F (fixed IP address) or D (IP address automatically acquired from a DHCP server) is displayed. <b>Note:</b> When an Ethernet cable is connected to LAN port 2, "NETWORK2" is displayed in the hostname section.	-
Calendar / Clock	DATE TIME 2012/1/1 11:11	Displays the date and time set in the TeraStation.	-

### **Errors**

LCD Message	Description	Corrective Action
BOOT FAIL	Hard drive not found.	Contact Buffalo technical support for assistance.
SYSTEM Error E04 Can't Load Krnl!	The firmware is corrupted.	Contact Buffalo technical support for assistance.
UPS E10 Dependent Mode	The TeraStation is running on the UPS battery due to a power outage. The system will now be shut down safely.	Check that power is being supplied to the UPS, and if there are no problems, turn on the TeraStation.
SYSTEM I10 TOO HOT !	A rise in the system temperature may have exceeded the allowable safety value.	Move the TeraStation to a cool location. Do not place objects in the area around the TeraStation.

SYSTEM Error E11 Fan Failure	An error occurred in the fan speed.	Check that no foreign objects or dust are clogging the fan. If any foreign objects or dust are found, use a pair of tweezers, air duster, or other tool to remove them. If the error is displayed again, contact Buffalo technical support for assistance.
SYSTEM Error E12 Cooling Failure	A rise in the system temperature may have exceeded the allowable safety value.	Do not place objects in the area around the TeraStation. Also, move the TeraStation to a cool location.
RAID Arrayx E14 Can't Mount	RAID array X cannot be mounted.	Run the RAID array disk check in Settings.
HDx Error E16 HDx Not Found	Unable to find hard drive X.	Hard drive X may be disconnected or may have failed. After shutting down, reinstall the hard drive.
HDx Error E22 HDx Can't Mount	Mounting of hard drive X failed.	Format the hard drive. After formatting, if the error still appears after rebooting, replace the hard drive. If the error is displayed again, contact Buffalo technical support for assistance.
FailOver E27 LostBackupTarget	Unable to find the backup TeraStation.	In the main TeraStation's settings, navigate to <i>Backup - Failover</i> to reconfigure the backup TeraStation for failover.
HDx Broken E30 Replace the DISK	An error occurred, so hard drive X was removed from the RAID array.	Replace hard drive X.

# <u>Status</u>

After you change settings or format a hard drive, the current status is displayed on the LCD.

LCD Message	Description	Corrective Action
HDx Warning 111	The bad sectors in hard drive X may	Poplace bard drive X
Bad Sectors	have reached a dangerous level.	Replace hard drive X.
Operation I12	Operating in degraded mode	
DEGRADE MODE	Operating in degraded mode.	-
RAID I13	Formatting BAID array V	
ARRAYxFormatting	Formatting RAID array X.	-
RAID I14	Checking BAID array V	
ARRAYx Checking	Checking RAID array X.	-
	Examining the error status of RAID	
RAID I15	array X.	_
ARRAYx Scanning	Note: Transfer speeds are slower	
	during the examination process.	
RAID I16	Creating RAID array X.	_
ARRAYx Creating		
RAID I17	Resynchronizing RAID array X.	
	Note: Transfer speeds are slower	-
ARRAYx Resyncing	during resynchronization.	

RAID I18 ARRAYx Rebuilding	Rebuilding RAID array X. <b>Note:</b> Transfer speeds are slower during the rebuilding process.	-
RAID I19 ARRAYx 0 Filling	Writing 0s to RAID array X, erasing all data.	-
RAID I20 DISKx Formatting	Formatting hard drive X.	-
RAID I21 DISKx Checking	Checking hard drive X.	-
RAID I22 DISKx 0 Filling	Erasing the data for hard drive X.	-
SYSTEM I25 F/WUPDATING	Updating the TeraStation firmware. <b>Note:</b> Do not turn off the power during the updating process.	-
Web Setting I26 Initializing	Initializing all settings.	-
USB Diskx I27 Checking	Checking USB hard drive X.	-
USB Diskx I28 Formatting	Formatting USB hard drive X.	-
Press FuncSW I31 New Diskx ready	Displayed when pressing the Function button to rebuild the RAID after replacing hard drive X.	Press the Function button to rebuild the RAID array.
Set From Web I32 New Diskx ready	Displayed after replacing hard drive X when the RAID needs to be rebuilt in Settings or formatting is necessary.	In Settings, either rebuild the RAID array or format the hard drive.
Replication I33 ReplicateFailure	An error occurred in replication, or synchronization between the main TeraStation and the backup TeraStation failed during failover configuration.	In Settings, navigate to Backup - Replication and choose "Resync" to execute resynchronization. If the error is displayed again, contact Buffalo technical support for assistance.
Virus alert 134 Virus detected	A virus scan found a virus.	Once the virus is removed from the quarantine folder, the message is no longer displayed. If the antivirus software is configured to delete viruses from the quarantine folder automatically, then the message will not be displayed.
Cartridgex I35 Location error	A hard drive set as a media cartridge has been installed in the drive 1 slot.	Connect to the slot that was set as a media cartridge.
Cartridgex I36 Decryption error	Media cartridge cannot be decrypted. The media cartridge may have been encrypted by a TeraStation other than this product.	Connect to the TeraStation that performed encryption to decrypt.
Recovery I37 SystemRecovering	System recovery in progress.	-
Recovery I38 RecoveryFinished	System recovery is complete.	-
Recovery 139 Change Boot	System recovery from the USB recovery device is complete.	Change the boot mode switch on the rear to HDD.
Recovery I40 DataWillDeleted	Beginning recovery. All data on the drive in Disk 1 will be deleted.	-

Recovery I41	Pressing the Function button on the	-
PushFuncToStart	front will start the recovery process.	
Recovery I42 Preparing	Preparing to start the recovery process.	-
Recovery I43 Unsupported HW	The TeraStation was started from the USB recovery device, but the system cannot be recovered from this USB recovery device.	-
Recovery I44 Disk1 not found	Recovery from the USB recovery device was initiated, but Disk 1 was not detected.	Make sure that Disk 1 is present and fully inserted in its slot.
Recovery 145 Recovery Failed	Recovery failed.	-
RAID ARRAY 146 RMM+Processing SYSTEM 147 Don't Power Off	Data migration or conversion (RAID migration) is in progress.	Do not turn off the TeraStation power.
FailOver I48 PushFuncToStart	This TeraStation is ready to become the failover backup for the main TeraStation.	Hold down the Function button on the front of the target TeraStation until it stops beeping to accept failover backup status.
FailOver 149	The main TeraStation in the failover	Make sure that the main TeraStation is on, working,
LostMainTarget FailOver 150 Maintenance mode	configuration cannot be found. Failover maintenance is in progress.	and connected to the network. Do not turn off the TeraStation power.
FailOver I51 Initializing	Initializing the failover configuration.	Do not turn off the TeraStation power.
New Firmware I52 Available	A new firmware version has been released.	Update the firmware.
BackupTask xx I54 Backup Failure	xxth backup task has been failed.	Make sure xxth backup task is configured correctly. ("xx" is backup task number.) The LinkStation or TeraStation may be in standby mode. Start the NAS on. If the backup task still fails, check the status of NAS, network, and backup source or destinations.
Recovery I55 RecoveryAuthFail	Authentication during recovery of settings failed.	Settings can only be restored for the TeraStation whose settings were originally saved. To restore settings, insert the USB memory device, move the Boot Mode switch on the rear of the TeraStation to the USB position, and restart the TeraStation. Or, settings can be restored from Settings with the TeraStation powered on.
Surveillance 156 Lack of License	There are not enough surveillance camera server licenses.	Purchase and register an additional license.
Surveillance I57 No free space	There is not enough space to save additional surveillance video.	Delete or move some of the stored video.
Surveillance 158 Recording Failure	Video not recorded.	Check your settings. Also, use the utilities provided with your camera to check that the camera is operating correctly.

# **Default Settings**

Administrator's Name	admin
Password	password
Shared Folders	"share" (for both Windows and Mac computers). The recycle bin is enabled on "share" by default.
	Normally, the TeraStation will get its IP address automatically from a DHCP server on the network.
DHCP Client	If no DHCP server is available, then an IP address will be assigned as follows:
Dher client	IP Address: 169.254.xxx.xxx (xxx is assigned randomly when booting the TeraStation.)
	Subnet Mask: 255.255.0.0
Pagistarad Croup	"hdusers", "admin", and "guest"
Registered Group	You cannot edit or delete them.
Microsoft Network Group Setting	WORKGROUP
Ethernet Frame Size	1518 bytes (Including 14 bytes of the header and 4 bytes of FCS)
AFP	Enabled
FTP	Disabled
NTP	Enabled
Print Server	Enabled
WebAccess	Disabled
Time Machine	Disabled
TeraSearch	Disabled
	TS5800D, TS5600D: RAID 6
RAID Mode	TS5400D TS5400R: RAID 5
	TS5200D: RAID 1

# Specifications

Check www.buffalotech.com for information about the latest products and specifications.

	1	1	
		IEEE 802.3ab (1000BASE-T)	
	Interface	IEEE 802.3u (100BASE-TX)	
		IEEE 802.3 (10BASE-T)	
		1000 Mbps Full duplex (auto-negotiation)	
	Transfer Speed	100 Mbps Full duplex/Half duplex (auto-negotiation)	
		10 Mbps Full duplex/Half duplex (auto-negotiation)	
	Number of Ports	2 ports (supports Auto-MDIX)	
LAN Port	Connector Type	RJ-45 8-pin	
	Protocol	TCP/IP	
	Access Method	CSMA/CD	
	File Sharing	SMB/CIFS, AFP, FTP, SFTP, NFS	
	Management	HTTP/HTTPS	
		1518/4102/7422/9216 bytes	
	Jumbo Frame	(Including 14 bytes of the header and 4 bytes of FCS)	
	TS5800D, TS5600D, TS5400R: L	JSB 2.0 Port (Series A) x 2, USB 3.0 Port (Series A) x 3	
		rt (Series A) x 2, USB 3.0 Port (Series A) x 2	
USB Port		s: supported USB devices includes Buffalo USB hard	
	drives, USB UPS devices, and p		
	UPS Port (D-SUB 9 pin (Male)) × 1		
UPS Port	Note: Compatible UPS are manufactured by Omron or APC.		
Internal Hard Drive	If a hard drive in the TeraStation malfunctions, replace it with a Buffalo OP-HDS series		
	drive of the same capacity, ava	ailable from www.buffalotech.com.	
Power Supply	AC 100-240 V, 50/60 Hz		
	TS5800D: max ~170 W		
	TS5600D: max ~120 W		
Power Consumption	TS5400D: max ~86 W		
	TS5400R: max ~140 W		
	TS5200D: max ~47 W		
	TS5800D:		
	300 x 215 x 230 mm; 11.8" x 8.5" x 9.1" (excluding protruding parts)/ ~ 12 kg (26.5 lb.)		
	TS5600D:		
	170 x 260 x 230 mm; 6.7" x 10.2" x 9.1" (excluding protruding parts)/ ~ 10 kg (22.1 lb.)		
Dimensions (W x H x D) /	TS5400D:		
Weight	170 x 215 x 230 mm; 6.7" x 8.5" x 9.1" (excluding protruding parts)/ ~ 8 kg (17.7 lb.)		
	TS5400R:		
	430 x 45 x 430 mm; 16.9" x 1.7" x 16.9" (excluding protruding parts)/ ~ 9 kg (19.8 lb.)		
	430 x 45 x 430 mm; 16.9 x 1.7 x 16.9 (excluding protrucing parts)/ ~ 9 kg (19.8 lb.) TS5200D:		
	170 x 170 x 230 mm; 6.7" x 6.7" x 9.1" (excluding protruding parts)/ ~ 4.5 kg		
Operating Environment	Temperature: 5 - 35° C; 41 - 95° F Environment Humidity: 20 - 80% (no condensation)		
	Windows and Mac computers	with Ethernet Interface.	
Compatibility	Note:		
	The TeraStation requires an Ethernet connection with your computer for operation. It cannot be connected via USB.		

Supported OS	Windows 8 <sup>*</sup> , Windows 7 <sup>*</sup> , Windows Vista <sup>*</sup> , Windows XP, Windows XP Media Center Edition (2004 or 2005), Windows Server 2008, Windows Server 2003, Windows 2000 Server
	OS X 10.7, 10.6, 10.5, 10.4, 10.3.9
	*32-bit and 64-bit

### **Compliance Information**

The TeraStation uses GPL code. For source code, visit http://opensource.buffalo.jp

# FCC Warning

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

# **CE Mark Warning**

#### CE Mark Warning

This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

# **Environmental Information**

- The equipment that you have purchased required the extraction and use of natural resources for its production.
- The equipment may contain hazardous substances that could impact health and the environment.
- In order to avoid the dissemination of those substances in our environment and to diminish the load on natural resources, we encourage you to use the appropriate take-back systems.
- The take-back systems will reuse or recycle most of the materials of your end of life equipment appropriately.
- The crossed-out wheeled bin symbol invites you to use those systems.
   If you need more information on the collection, reuse and recycling systems, please contact your local or regional waste administration.



#### KC

기종별 사용자안내문

A급기기(업무용	이 기기는 업무용(A급) 전자파적합기기로서 판매자 또는 사용자는 이 점을
정보통신기기)	주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.

### <u>BSMI</u>

警告使用者:

這是甲類的資訊產品,在居住的環境中使用時,可能會造成射頻 干擾,在這種情況下,使用者會被要求採取某些適當的對策。

# <u>CCC</u>

声明:

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

设备的最高使用室内环境温度: 35° C

2000m

Q适用于海拔 2000M 以下地区安全使用。

断开装置为电源软线上的插头。插座应当装在设备的附近,而且应当便于触及到。

## 电池警告语

1.电池不得暴露。 2.使用型号不正确的电池可能导致爆炸。

# **Models**

TS5200D0202, TS5200D0402, TS5200D0602, TS5200D0802, TS5200D TS5400D0404, TS5400D0804, TS5400D1204, TS5400D1604, TS5400D TS5600D2406, TS5600D1806, TS5600D1206, TS5600D0606, TS5600D TS5800D3208, TS5800D2408, TS5800D1608, TS5800D0808, TS5800D TS5400R0404, TS5400R0804, TS5400R1204, TS5400R1604, TS5400R