

# **User Manual**

## **LS-WTGL/R1 LinkStation Pro Duo**

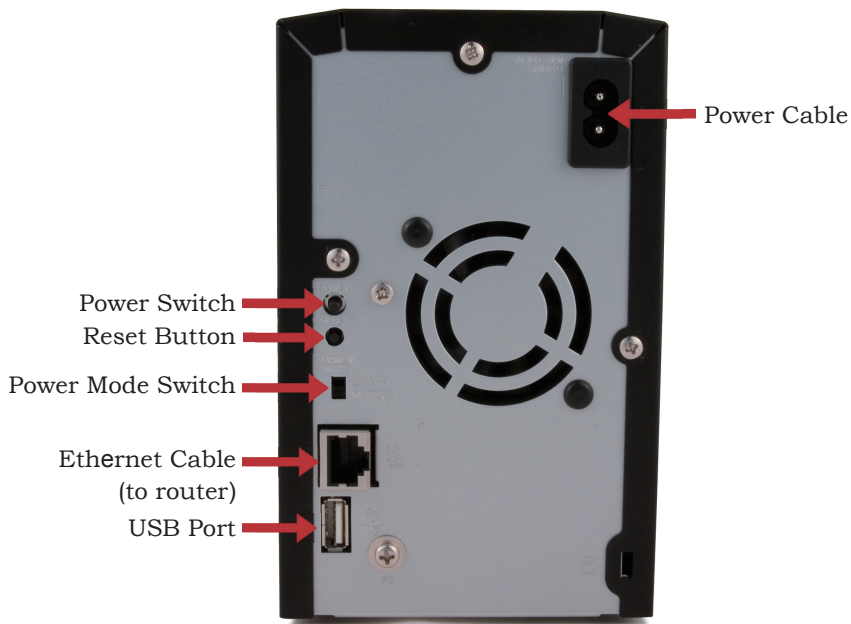


Congratulations on your new LinkStation Pro Duo. This user manual is intended to assist you in configuring it.

Because we're constantly updating our products, the images and text in this manual may vary slightly from the images and text displayed by your LinkStation. These changes are minor and should not affect the ease of setup adversely. As time passes, future user interfaces, updated software, and later versions of this manual may be freely available for download at our web site: *<http://www.buffalotech.com>*.

If you run into difficulties or need additional help, feel free to contact our technical support. Contact information for Buffalo Technology and our technical support is available on pages 60 and 61.

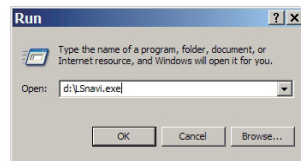
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Insert the LinkNavigator CD into your computer's CD-ROM drive.

On a PC, setup should automatically launch. If it does not, manually launch `setup.exe` by pressing *Start* and selecting the *Run...* option. When the *Run* dialog opens, type **d:\LSnavi.exe** (where d is the drive letter of your CD-ROM drive). Press *OK* to continue.



If you are installing the software on a Mac, open the CD and click *LinkNavigator* to begin installation.



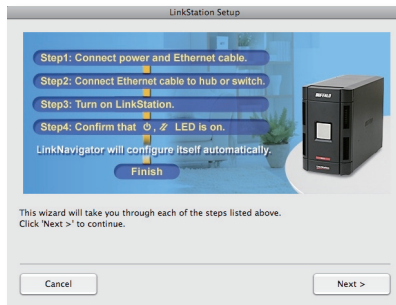


Press the *Begin Installation* button to begin.

If you're installing on a PC, click on *Easy Setup* (the pink, upper button). Mac users can skip this step.

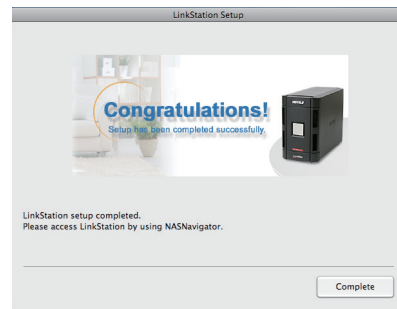
Click *Next* to step through the installation.



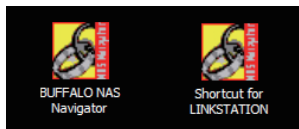


The wizard will step you through installation. Follow the directions on each screen and continue pressing *Next* to step through the installation.

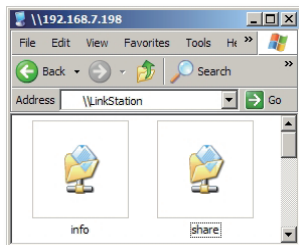
When installation is complete, you may close the installation window.



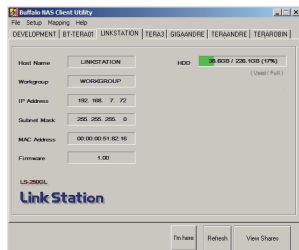
# Using your LinkStation with a Windows PC



Two new icons will be on your desktop: *Shortcut for LinkStation* and *Buffalo NAS Navigator*.



Clicking *Shortcut for LinkStation* takes you directly to the folders on your LinkStation. *Share* is the main folder that you can put files and folders in. *Info* contains a copy of your user manual.

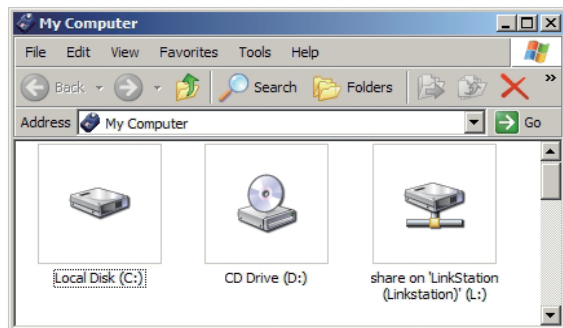
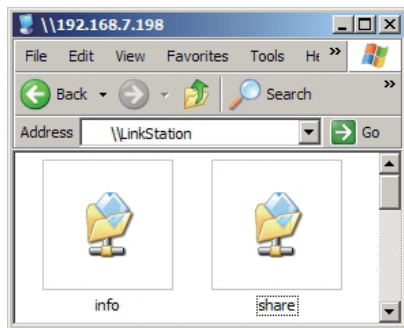


The *Buffalo NAS Navigator* icon opens the LinkStation's client utility. Turn to page 56 for more on using the NAS Navigator client utility.

# Accessing LinkStation Data from your PC

## To Access LinkStation Data from a PC:

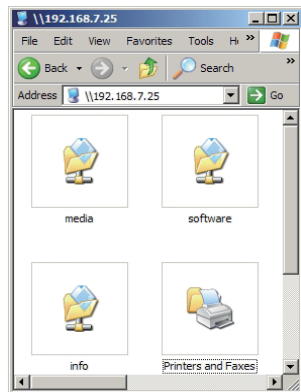
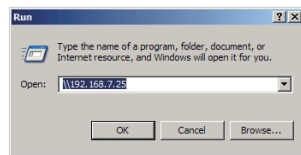
Your LinkStation uses “shares” (folders) to hold data. A share called “share” is already configured on your LinkStation, and you can create additional shares in *Shared Folders*. To start using your LinkStation, you can either click on the *Shortcut for LinkStation* on your desktop, or you may just use *drive L* in My Computer, which setup has mapped to the default share in your LinkStation.



# Accessing LinkStation Data from your PC

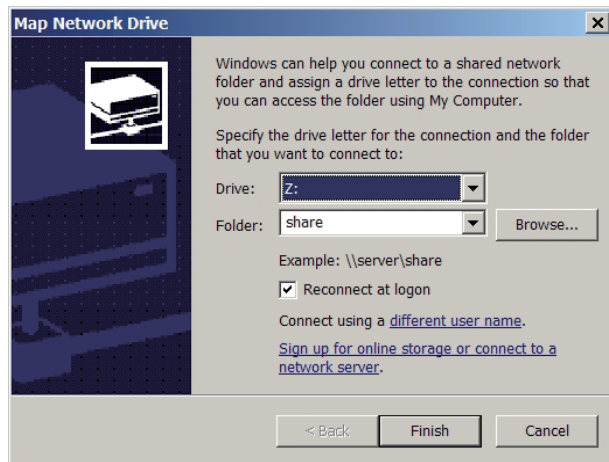
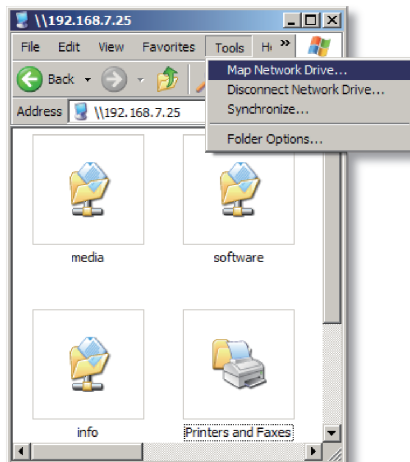
You can map additional drive letters to shares on your LinkStation. From the *Start* menu, select *Run....* Enter your LinkStation's hostname (see page 20, or you can get it from the NASnavigator utility) or IP address. Press *OK*.

Your LinkStation should open. “Share” is a data folder in your LinkStation by default. “Info” contains your user manuals. If you have created other folders, they will be visible here too. You can map drive letters to any of these folders.

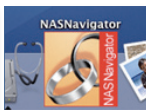


# Accessing LinkStation Data from your PC

From the *Tools* pull-down menu, select *Map Network Drive*. Choose a drive letter from the *Drive:* pull down menu. To specify the folder to map, either find it with *Browse* or enter **\\LinkStation\_Name\share\_name** in the *Folder:* field, where *LinkStation\_Name* is your LinkStation's hostname (page 20) and *share\_name* is the name of a folder on your LinkStation. Check the *Reconnect at logon* checkbox to have Windows connect to this mapped drive everytime it starts. When finished, press the *Finish* button. Your share is now mapped to a drive letter.

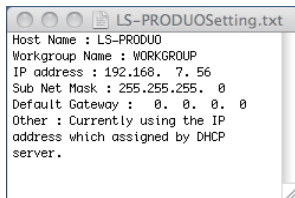


# Using your LinkStation with a Mac

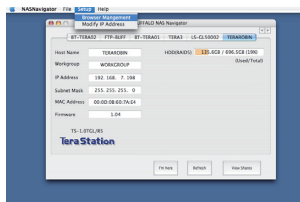


After installing the LinkNavigator software, your Mac will have two new icons on the desktop and in the Dock.

The *LS-ProDuoSettings.txt* file contains the IP address of your LinkStation. *NAS Navigator* is the LinkStation's client utility.



With the information in the *LS-ProDuoSettings.txt* file, you can easily connect to the LinkStation from any of your computers on your local network.

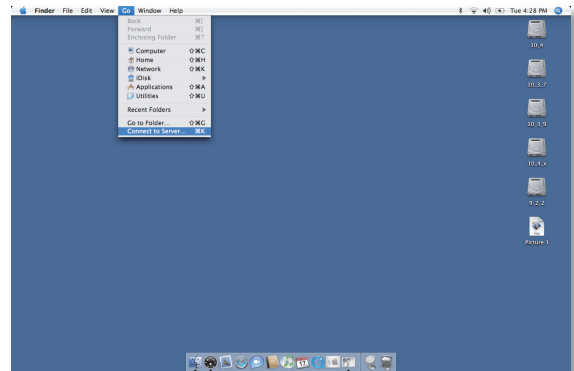
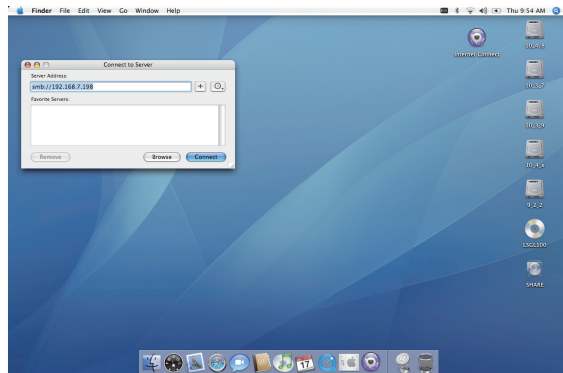


The *NAS Navigator* icon opens the LinkStation's client utility. See page 56 for more on using the NAS Navigator client utility.



# Accessing LinkStation Data from a Mac

You can add a link to your LinkStation's share folder to your desktop by adding it to the Mac's server list. Begin by clicking *Go*, and then choose *Connect to Server*.

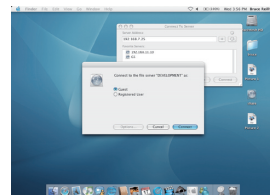


In the *Server Address* field, enter your LinkStation's IP address in the form *smb://ipaddress* (where "ipaddress" is your LinkStation's IP address), and click *Connect*.

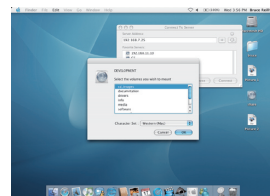
You can get your LinkStation's IP address from the *LS-ProDuoSettings.txt* file on your desktop, or see page 15.

# Accessing LinkStation Data from a Mac

Select *Guest* and click on *Connect*. Note: If you have configured share permissions on your LinkStation, select *Registered User* and enter your login credentials.



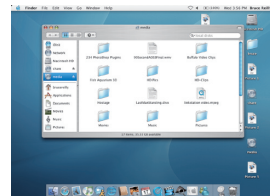
Select the volume that you want to mount, such as *share* or *share-mac*, from the list of folders on the LinkStation.



The share will open. A link to it



will appear on your desktop.



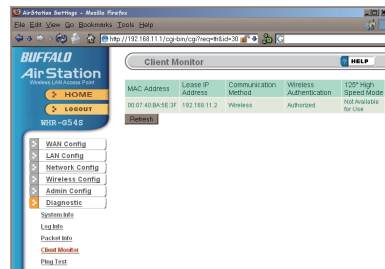
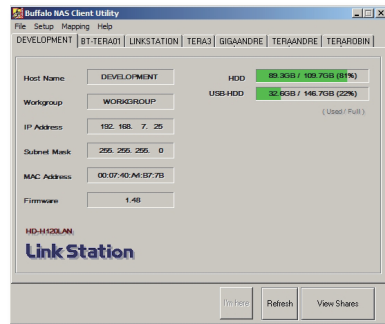
# Accessing LinkStation Data from a Mac

If you don't know your LinkStation's IP address, there are several ways to get it.

One simple method is to use the NAS Navigator client utility (included on your CD) to find your LinkStation(s). Just click on the tab for your LinkStation and you'll be able to read its IP address.

The *LS-ProDuoSettings.txt* file on your desktop contains the IP address of the linkstation at the time the setup program was run.

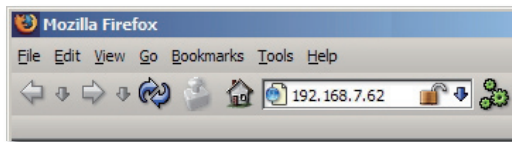
You can always get the LinkStation's IP address from your router's configuration utility. Many Buffalo routers list this information on the *Client Monitor* page, as shown to the right. Consult your router's documentation for instructions on identifying the LinkStation's IP address.



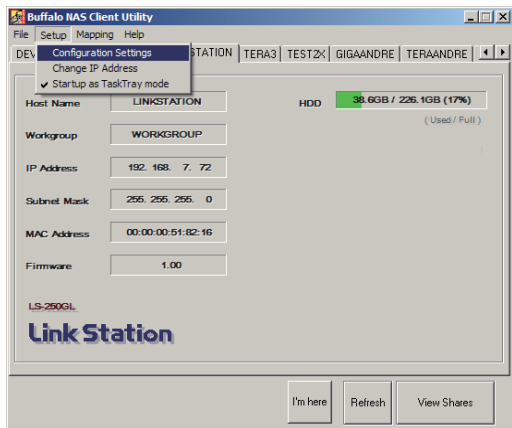
LinkStation Pro Duo has a USB 2.0 port on the rear. This port can be used for adding an external USB Hard Drive. LinkStation will share a connected USB storage device, allowing everyone on the network to use it. To connect a USB hard drive to your LinkStation, simply plug it into the USB port.

Once your USB hard drive is connected, see page 25 for configuring your LinkStation to use it. Page 27 will show you how to reformat the USB Hard Drive if necessary. Page 42 and 43 show you how to configure LinkStation to back up to a USB Hard Drive.

## The Configuration GUI

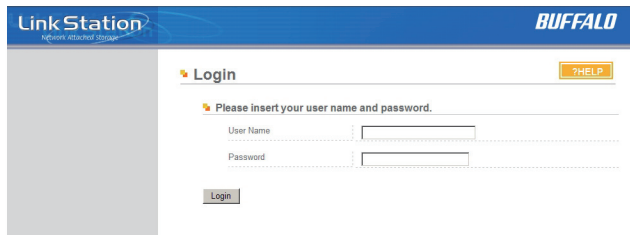


The Configuration GUI may be accessed at any time by typing the IP address of your LinkStation into the URL bar of a browser running on a computer connected to the same network as the LinkStation.



You may also open the Configuration GUI from NAS Navigator by clicking on *Setup* and choosing *Configuration Settings*.

This login prompt will appear. Enter **admin** for the user name. Until you change it, the password for the admin account will be **password**. Press the *OK* button when finished.

The image shows a web browser window displaying the LinkStation login interface. The header has the 'LinkStation' logo on the left and the 'BUFFALO' logo on the right. Below the header, there is a 'Login' section with a yellow 'HELP' button. A message says 'Please insert your user name and password.' Below this, there are two input fields: 'User Name' and 'Password'. At the bottom left of the login area is a 'Login' button.

User name: *admin*

Password: *password*

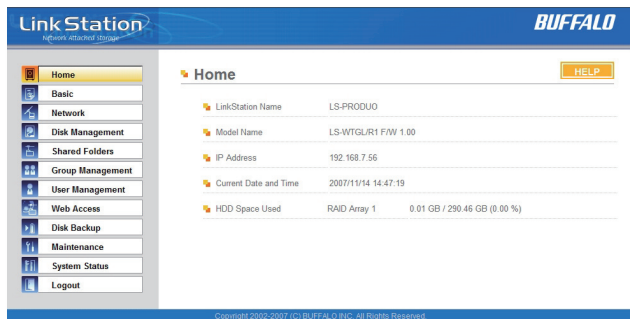
See page 35 to change your password.

If this login prompt does not appear, your DHCP server may not be functioning correctly. If DHCP is disabled, either re-enable it or verify that the LinkStation's IP Address is in the same range as that of your PC.

# Advanced Settings - Home

Welcome to *Advanced Settings*, the configuration GUI for the LinkStation! Bookmark this page in your browser so it can be easily accessed for future configuration changes. If the LinkStation's IP Address changes, you will need to recreate the link. You can also get here by typing *http://LinkStation\_Name* into a Web browser, where LinkStation\_Name is the name (hostname) of your LinkStation.

You are now at *Home*. Notice that the *Home* button is lit up yellow. You can navigate this menu by clicking on the buttons at the left of the screen. Here at "Home", you can see basic information about your LinkStation's current configuration. You may close this screen by clicking *Logout* at the bottom left, or by just closing the browser window.



## Basic

You may modify your LinkStation's hostname and description under *Hostname Setup*. A friendly, easy-to-remember name (e.g. "LinkStation") is recommended.

Make sure that the date and time are correct in *Date and Time Setup*. To synchronize time settings with those in your computer, press *Use Local Time*. To have your system time automatically set by an NTP server, enable *NTP Server* and enter an IP Address for the NTP server (e.g. 192.43.244.18) or use the supplied default NTP server.

Ensure that both the *Display Language* and the *Windows Client Language* are set to languages that you're comfortable with.

Once desired fields have been completed, press the *Apply* button.

The screenshot shows the 'Basic' settings page of a LinkStation. On the left is a navigation menu with options: Home, Basic (selected), Network, Disk Management, Shared Folders, Group Management, User Management, Web Access, Disk Backup, Maintenance, System Status, and Logout. The main content area is titled 'Basic' and includes a 'HELP' button. It contains several sections: 'Saving Settings' with a message that settings have been saved successfully and a note that the entered NTP server address can't be reached; 'Hostname Setup' with fields for 'LinkStation Hostname' (containing 'J.S-PROOUO') and 'LinkStation Description' (containing 'linkstation pro duo'); 'Date and Time Setup' with date and time pickers (set to 2007, 11, 14, 14:49:17) and a 'Use Local Time' button; 'NTP Settings' with 'NTP Server' set to 'Enable', an empty 'NTP Server Address' field, a checkbox for 'Use default NTP server (ntp.jst.nict.ac.jp)' which is unchecked, and 'NTP Synchronization Frequency' set to 'Once a day'; and 'Text Display Settings' with 'Display Language' set to 'English (English 英語)' and 'Windows Client Language' set to '(SP437 (United States, Canada))'. An 'Apply' button is at the bottom. A copyright notice at the very bottom reads: 'Copyright 2002-2007 (c) Buffalo Inc. All Rights Reserved'.



## Network (IP Address Properties)

The screenshot shows the LinkStation web interface. On the left is a sidebar menu with options: Home, Basic, Network (selected), Workgroup / Domain, Disk Management, Shared Folders, Group Management, User Management, Web Access, Disk Backup, Maintenance, System Status, and Logout. The main content area is titled 'Network' and contains two sections. The first section, 'IP Address Properties', has a sub-header 'Automatic via DHCP' with radio buttons for 'Enable' (selected) and 'Disable'. Below this are input fields for 'IP Address' (192.168.7.57), 'Subnet Mask' (255.255.255.0), 'Default Gateway Address' (192.168.7.1), 'Primary DNS Server Address' (192.168.7.3), and 'Secondary DNS Server Address' (216.201.128.10). The second section, 'Ethernet Frame Size Properties', has a dropdown menu for 'Ethernet Frame Size' set to '1518 bytes (Default)'. An 'Apply' button is at the bottom of the form. A 'HELP' button is located in the top right corner of the Network section. At the bottom of the page, a copyright notice reads: 'Copyright 2002-2007 (C) BUFFALO INC. All Rights Reserved.'

In most networks, LinkStation will get its IP Address automatically from a DHCP server. You may disable DHCP here. If DHCP is disabled and an IP Address is not set manually, it will default to *192.168.xxx.xxx* with subnet mask *255.255.0.0*. The LinkStation's *IP Address*, *Subnet Mask*, *Default Gateway Address*, and *DNS Server address* may all be entered manually under *IP Address Properties*.

*Ethernet Frame Size* may also be set manually on this page. Only use JumboFrame settings when operating in a Gigabit environment where all other clients support the same JumboFrame setting.

Click *Apply* after making any changes.

## Network (Workgroup/Domain)

The screenshot shows the 'Network' configuration page of a Buffalo LinkStation. The left sidebar contains a menu with options: Home, Basic, Network (selected), IP Address Properties, Workgroup / Domain, Disk Management, Shared Folders, Group Management, User Management, Web Access, Disk Backup, Maintenance, System Status, and Logout. The main content area is titled 'Network' and has a 'HELP' button. It is divided into two sections: 'Workgroup and Domain Properties' and 'Authentication Setup'. In the 'Workgroup and Domain Properties' section, 'Network Type' is set to 'Workgroup' (selected with a radio button), 'Workgroup Name' is 'WORKGROUP', and 'WINS Server IP Address' is empty. In the 'Authentication Setup' section, 'Authentication Type' is 'Delegate Authority to TeraStation' (selected with a radio button). Other options include 'Delegate Authority to External SMB Server', 'Use Windows Domain Controller as Authentication Server', 'Automatic User Registration', and 'Authentication Shared Folder'. Below these, there are fields for 'Authentication Server Name or IP Address' and 'Authentication Shared Folder Name'. At the bottom, the 'Local user authorization settings' section shows 'Local user authorization' set to 'Allow' (selected with a radio button) and 'Deny' (unselected). An 'Apply' button is at the bottom left of the form.

If you are unfamiliar with Domain/Active Directory networking, then please leave the *Network Type* selected as *Workgroup* and *Workgroup Name* set to *Workgroup*.

To make your LinkStation a member of a workgroup or an NT domain, enter the appropriate information into the fields on this page and click *Apply*.

If using *NT Domain* or *Active Directory*, LinkStation must be added as a member computer in the Domain Server.

Setting *NT Domain* or *Active Directory* for network type integrates the LinkStation with a server. The LinkStation Pro participates as a member device in the Domain and Active Directory networks, allowing the LinkStation to use Users and Groups that reside on the Domain or Active Directory System. If Active Directory is used, then the LinkStation will automatically receive update information

from the domain controller(s). To configure the LinkStation Pro on an Active Directory network, you must have the Domain Administrator login credentials. Enter the Domain Name and Domain Controller into the appropriate fields. In an Active Directory environment, check the Active Directory Domain checkbox and fill in the remaining fields. The Authentication Setup fields will be automatically filled out, so no input is needed there. Once you have finished, press *Apply*.

## Disk Management (Drive Properties)

This page shows the properties for the drives in your LinkStation Pro Duo. If you have a USB hard drive plugged into the linkstation, its properties will appear here as well.



**LinkStation** Network Attached Storage **BUFFALO**

**Navigation:** Home, Basic, Network, **Disk Management**, Drive Properties, RAID Setup, USB Settings, Disk Check, Disk Format, Disk Erase, Shared Folders, Group Management, User Management, Web Access, Disk Backup, Maintenance, System Status, Logout.

### Disk Management

**RAID Array Information**

|              |                |                               |
|--------------|----------------|-------------------------------|
| RAID Array 1 | Status         | Normal                        |
|              | RAID Mode      | RAID0                         |
|              | Disk Structure | Disk 1, 2                     |
|              | Total Capacity | 609,262,336 bytes (581.04 GB) |
|              | Amount Used    | 8,000 bytes (0.01 GB)         |
|              | Percent Used   | 0.00 %                        |
|              | File Format    | XFS                           |

**Disk Information**

|        |                |                               |
|--------|----------------|-------------------------------|
| Disk 1 | Status         | RAID Array 1                  |
|        | Unit Name      | ST3320620AS                   |
|        | Total Capacity | 312,571,224 bytes (298.09 GB) |
| Disk 2 | Status         | RAID Array 1                  |
|        | Unit Name      | ST3320620AS                   |
|        | Total Capacity | 312,571,224 bytes (298.09 GB) |

**USB Disk Information**

|            |        |              |
|------------|--------|--------------|
| USB Disk 1 | Status | Not Detected |
|------------|--------|--------------|

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## Disk Management (RAID Setup)

Configure your RAID settings here.

The screenshot shows the 'Disk Management' section of the Link Station web interface. The left sidebar contains navigation links: Home, Basic, Network, Disk Management (selected), Drive Properties, RAID Setup (highlighted), USB Settings, Disk Check, Disk Format, Disk Erase, Shared Folders, Group Management, User Management, Web Access, Disk Backup, Maintenance, System Status, and Logout. The main content area is titled 'Disk Management' and includes a 'HELP' button. It contains three sub-sections: 1. RAID Setup: A table with columns 'Name', 'RAID Mode', 'Disk Structure', and 'Capacity'. It lists 'RAID Array 1' in RAID0 mode using 'Disk 1, 2' with a capacity of '581.16 GB'. 2. RAID Scanning Setting: Includes 'RAID Scanning Function' (radio buttons for Enable and Disable), 'RAID Scanning Schedule' (radio buttons for Every Week, Sunday, and Every 1st day/month), a checkbox for 'Begin Immediate RAID Scan', and 'RAID Scanning Start Time' (set to 2 o'clock). 3. RAID Array Error Detection Response: Includes 'Automatic Shutdown' (radio buttons for Enable and Disable). A 'Submit' button is at the bottom.

**Link Station** BUFFALO

**Disk Management** [HELP](#)

**RAID Setup**

| Name         | RAID Mode | Disk Structure | Capacity  |
|--------------|-----------|----------------|-----------|
| RAID Array 1 | RAID0     | Disk 1, 2      | 581.16 GB |

**RAID Scanning Setting**

RAID Scanning Function: ☐ Enable ☒ Disable

RAID Scanning Schedule: ☒ Every Week ☐ Sunday ☐ Every 1st day/month

☐ Begin Immediate RAID Scan

RAID Scanning Start Time: 2 o'clock

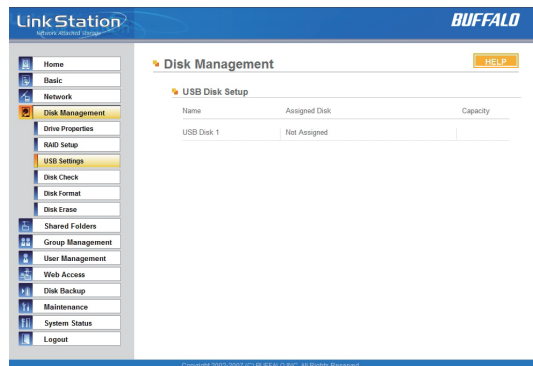
**RAID Array Error Detection Response**

Automatic Shutdown: ☒ Enable ☐ Disable

[Submit](#)

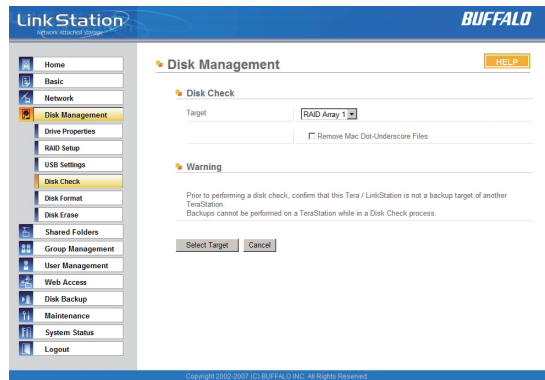
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## Disk Management (USB hard drives)



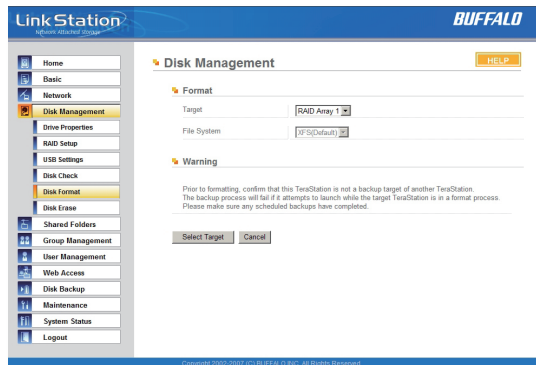
From here you can see your USB hard drive's system information. If the hard drives' information isn't displayed properly, try restarting your USB hard drives and then restarting your LinkStation. Some USB hard drives must be reformatted from within LinkStation before they can be assigned shares. Select *Disk Format* from the left-side menu to format your USB hard disk(s).

## Disk Management (Disk Check)



Disk check checks any of your hard drives for errors. To use disk check, select the disk that you want to check from the target pulldown and click *Select Target*. Then click on *Start Disk Check*.

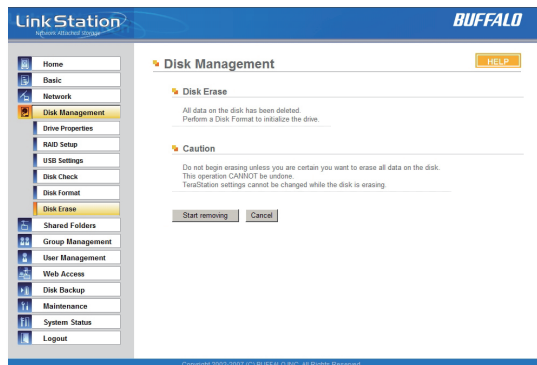
## Disk Format



To format a hard drive or array, select it from the *Target Disk* drop box. Choose the file system desired from the *File System* dropbox (internal drives can only be formatted with XFS). Note that FAT32 has a 4 gigabyte filesize limit for individual files. If you choose FAT32 for your file system, you will not be able to store single files larger than 4 gigabytes on the drive. Use of the *XFS* or *EXT3* file systems is recommended. Press *Select Target Disk* when done, and then *Start format*.

Depending on the size of the target hard disk or array, a Disk Format may take several hours to complete. Performance will be slow during the disk format.

## Disk Erase



To remove all data from a Disk, use Disk Erase. Once erased, this data cannot be restored.



## Shared Folders

The screenshot shows the Buffalo LinkStation web interface. The top navigation bar includes the 'LinkStation' logo and the 'BUFFALO' brand name. A left sidebar contains a menu with options: Home, Basic, Network, Disk Management, Shared Folders (highlighted), Shared Folders Setup, Service Setup, Group Management, User Management, Web Access, Disk Backup, Maintenance, System Status, and Logout. The main content area is titled 'Shared Folders' and includes a 'HELP' button. Below this is the 'Shared Folders Setup' section, which contains a table for managing shares. The table has columns for 'Disk or Array', 'Shared Folder Name', and 'Shared Folder Description'. Two shares are listed: 'info' (TeraStation utilities) and 'share' (TeraStation folder). Each row has a checkbox for selection. At the bottom of the table are 'Add' and 'Delete' buttons. The footer of the interface reads 'Copyright 2002-2007 (C) BUFFALO INC. All Rights Reserved'.

| <input type="checkbox"/> | Disk or Array | Shared Folder Name | Shared Folder Description |
|--------------------------|---------------|--------------------|---------------------------|
| <input type="checkbox"/> | RAID Array 1  | info               | TeraStation utilities     |
| <input type="checkbox"/> | RAID Array 1  | share              | TeraStation folder        |

To add new shares on your LinkStation, select *Shared Folders* from the left side menu, and then click the *Add* button under *Shared Folders Setup*.

To delete a share or shares, check the checkbox next to the shares you'd like to delete, and press the *Delete* button. Deleting shares will remove the share and erase all of the files and folders inside that share.

## Adding a new Shared Folder

The screenshot shows the 'LinkStation' interface by Buffalo. On the left is a sidebar menu with options: Home, Basic, Network, Disk Management, Shared Folders (selected), Shared Folders Setup, Service Setup, Group Management, User Management, Disk Backup, Maintenance, System Status, and Logout. The main window is titled 'Shared Folders' and contains a 'HELP' button. Below the title is a section 'Add New Shared Folder' with the following fields and options:

- Shared Folder Name: [Text box]
- Shared Folder Description: [Text box]
- Volume: Disk 1
- Shared Folder Support: ☒ Windows ☒ Apple ☐ FTP ☐ Disk Backup
- Shared Folder Attributes: ☐ Read Only ☒ Read / Write
- Recycle Bin: ☒ Enable ☐ Disable
- Remote Backup Password: [Text box]

Below these is the 'Access Restrictions' section:

- Access Restrictions: ☐ Enable ☒ Disable
- Read / Write: [Text box] ☒ Read Only: [Text box] All Groups / Users: [List box with 'admin', 'guest', 'nobody']
- Group: [Text box] ☒ Read Only: [Text box] All Groups / Users: [List box with 'admin', 'guest']
- User: [Text box] ☒ Read Only: [Text box] All Groups / Users: [List box with 'admin', 'guest']

At the bottom are 'Apply' and 'Cancel' buttons.

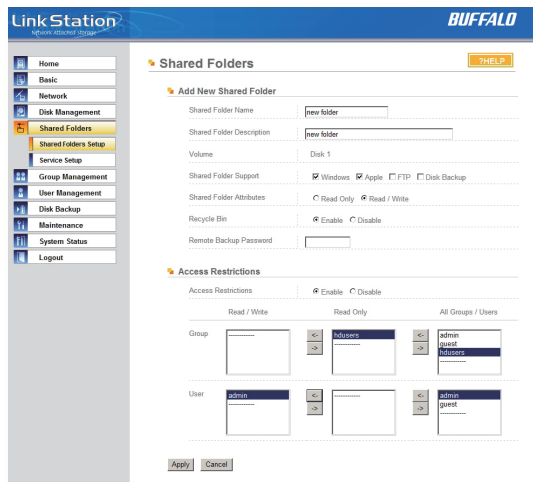
To add a new shared folder, enter a name for it in the *Shared Folder Name* box and choose which *Disk Space* it will reside in. You may also choose which operating systems and features the share will support by putting the appropriate checks next to *Shared Folder Support*, and whether the share supports the Recycle Bin by putting a selecting *Enable* or *Disable*. Enter a *Shared Folder Description* and a *Remote Backup Password* if desired. Click *Apply* to build the new shared folder.

Appletalk support is available for use with legacy Macs. Checking “Apple” by *Shared Folder Support* turns on AppleTalk, letting you use your LinkStation with older Macs. Note that Appletalk files are limited to 2GB maximum filesize and 32 characters for filenames. If a folder with AppleTalk

on is accessed from a modern OS through SMB, these limitations will not apply.

*Remote Backup Password* will set a password on this share for other LinkStations who want to use it as a remote backup target. This password will not affect users attempting to access the share; it only pertains to remote LinkStations trying to access this share for backup tasks.

## Shared Folders (Access restrictions)

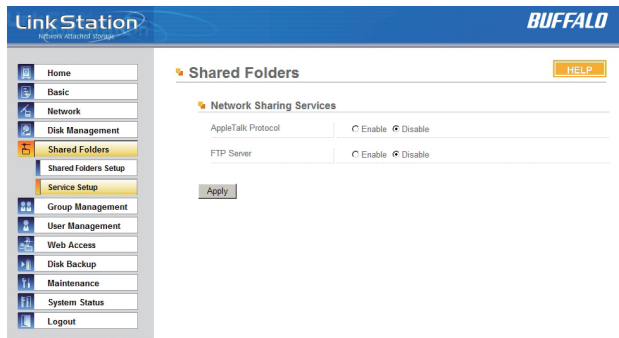


To use *Access Restrictions* for a share, select *Enable*.

Highlight groups or users in the *All Groups/ Users* column and use the left-pointing arrow buttons (located just to the left of each box) to move individual groups or users from the *All Groups/Users* column to the *Read Only* box (if you want to give them read access only) or all the way to the *Writable* box, if you want to give them full access to the share. Right-pointing arrows will move highlighted users or groups back to the right.

Click *Apply* when you have your groups and users in the appropriate boxes.

## Shared Folders (Service Setup)

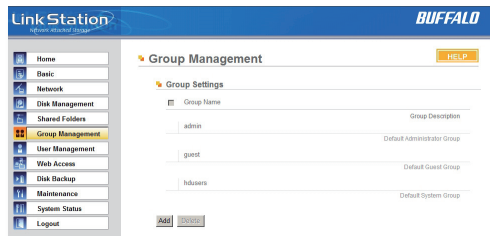


To allow FTP Access to your LinkStation, choose *Enable* for *FTP Server*. To enable legacy AppleTalk support, choose *Enable* for *AppleTalk Protocol*.

**FTP Server Info:** Enabling the FTP Server will allow users to connect to shares via FTP protocol. Their username and password is used for their login credentials, and they will only have access to shares that have read-only or writeable access to on the LinkStation. The network administrator of your network may need to enable traffic on port 21 to the LinkStation for FTP to work over the Internet.

Click the *Apply* button to set up these services.

## Group Management



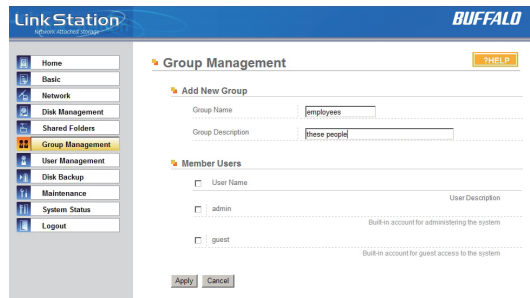
Groups allow for easier management of permissions in some networks, specifically networks with a lot of users in different departments.

To *Delete* a group, put a check next to its name and click *Delete*. To add a group to your LinkStation, click *Add*.

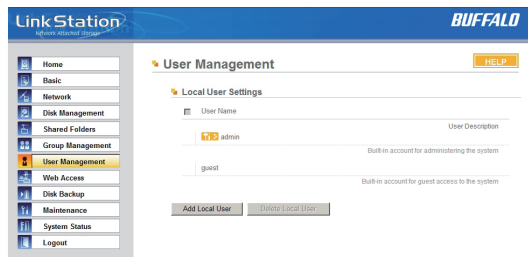
Add a name and a description to the *Add New Group* fields. Put checks next to each *Member User* that you want to be part of the group. Click *Apply* when your group is set up the way you want it.

Active Directory and Domain Groups are not shown here but are available under Share Management.

Members can be added or removed from a group at any time by editing the group. This is done by clicking on the Group name on the main Group Settings page.

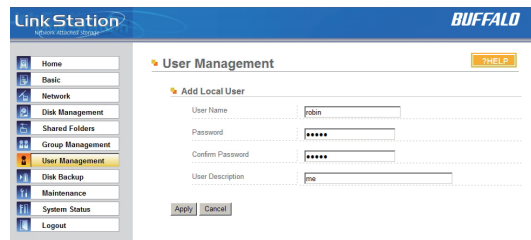


## User Management

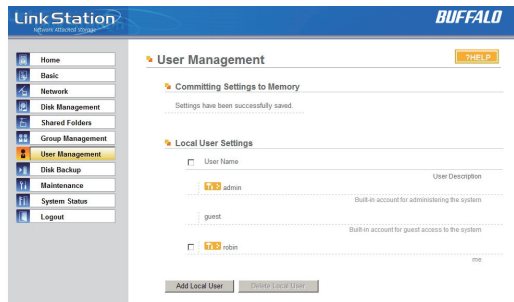


LinkStation is preconfigured with two users, *admin* and *guest*, out of the box. The *admin* and *guest* user accounts cannot be deleted. To delete any other user, put a check next to their name and click *Delete*. To add a new user, click *Add*.

The *Add New User* dialog will appear. Enter a *User Name*, *Password*, and *User Description* for the new user and click the *Apply* button. If a user will be accessing the LinkStation from a Windows 95/98 computer, their password should be 15 characters or less. Mac OS 8 and OS 9 users's passwords should be 9 characters or less. Users of other OSs may have passwords of up to 20 characters.

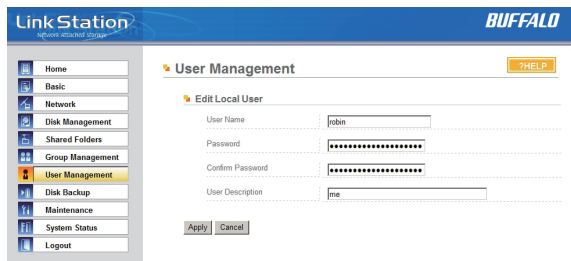


## User Management (changing passwords)

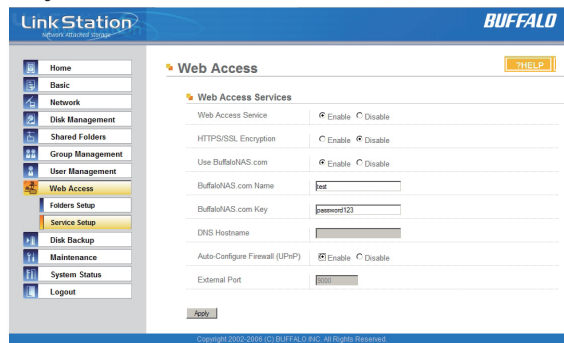


To change an account's password, click on the name of the account under *User Settings*. Note: if a user name and password are used to log into a user's windows computer or domain, the same user name and password should be used when creating the user's account on the LinkStation, or problems accessing shared folders may occur.

Enter the desired new password in both boxes and click *Apply*.



With Buffalo's WebAccess, you can access your LinkStation from anywhere in the world with an Internet connection. It's easy to access your files, or share them with other people, wherever they may be.



WebAccess is set up from within the Configuration GUI. First, select 'Web Access', and then 'Service Setup' from the menu on the left.

To use Webaccess, set 'Web Access Service' to *Enable*.

You may enable SSL Encryption if desired.

Using 'BuffaloNAS.com' is recommended. Otherwise, you'll have to manage your own DNS settings.

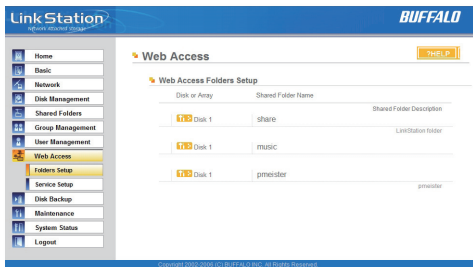
'Auto-Configure Firewall' is also recommended if your router supports UPnP (most do since 2001). If you choose not to enable this, you must manually configure your router and firewall to forward internal port 9000 to the Internet.

Choose a name for your BuffaloNAS account and a password ("key"). This name is the name that will be used to access your LinkStation and to share with your friends. The password for this protects other people from using it, so picking a strong password is recommended.

Click *Help* in the top right of the window for detailed information on each setting.



# Configuring WebAccess



Select 'Folders Setup' in the left-side menu. Any shares on your LinkStation will appear on the list to the right. Click on the  icon beside it to select a share for web access.

Choose your desired level of Web Access from the 'Web Access Settings' dropbox:

'Disable' will prevent remote access to this share through WebAccess. This is the default setting.

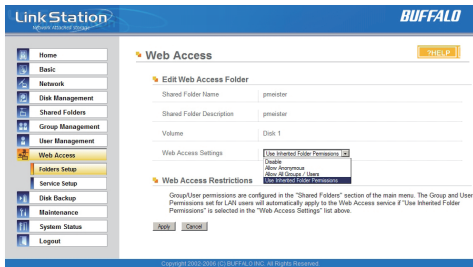
'Allow Anonymous' will allow *anyone* to access the share. Don't use this setting unless you want your LinkStation share to be available publicly to everyone in the world!

'Allow All Groups/Users' will allow only people who have an account on the LinkStation to access this share remotely.

'Use Inherited Folder Permissions' will allow people with an account on the LinkStation to access the share remotely only if they have read permissions on the specific share that they're accessing.

Consult your user manual for more information on setting up groups, users, and permissions on the LinkStation.

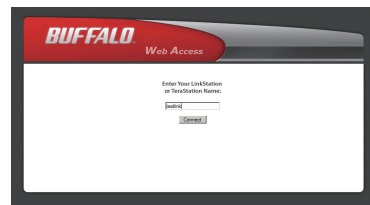
Click the *Apply* button to save your changes.



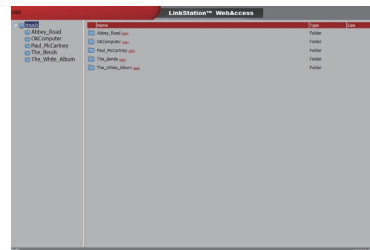
To access your LinkStation remotely, open a browser window on any computer connected to the Internet and go to *buffalonas.com*.

In the dialog box, type the BuffaloNAS name that you set on page 39.

Alternately, you can go directly to your share by typing *BuffaloNAS.com/your\_BuffaloNAS\_name* in the URL window.



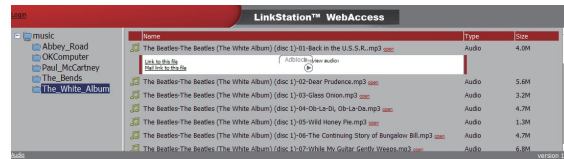
The folders from your LinkStation's share will appear. Files from anonymous shares will appear to the right. To see files from shares that are not set to anonymous, you will need to *log in*. The 'login' link is on the top left corner of the page.





To access individual folders on the right, click on their *open* links.

Clicking on individual files will give you other options, depending on the filetype. Clicking on the *Audio* link at the bottom left corner of the page will give you options for playing music files, including the opportunity to launch a Flash-based music player that will stream your audio files directly through the Web interface.



## Troubleshooting Multiple Shares

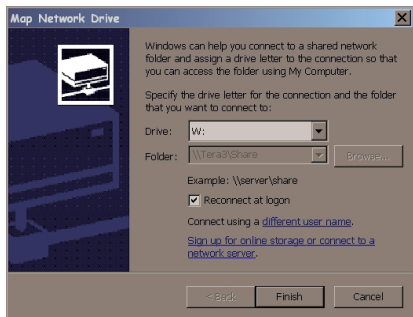


When accessing multiple shares to a Windows PC, you may see this error message.

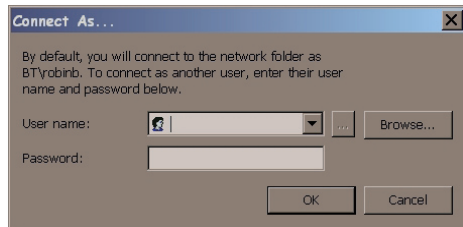
This is caused by having multiple shares to the same resource using different login credentials.

The error occurs when connecting to at least one secure, restricted share. Due to a constraint in Microsoft Windows, only one set of login credentials can access or map drive letters for a network resource such as the LinkStation. As such, only one username and password can be used while mapping drives to a PC. If unsecure, unrestricted shares are mapped and then an attempt to map a secure, restricted share is made from the same PC, this error will occur. To prevent this, you must create all mapped shares using the same login and password information. Please follow the steps on the next page to remedy this problem.

## Mapping Multiple Shares

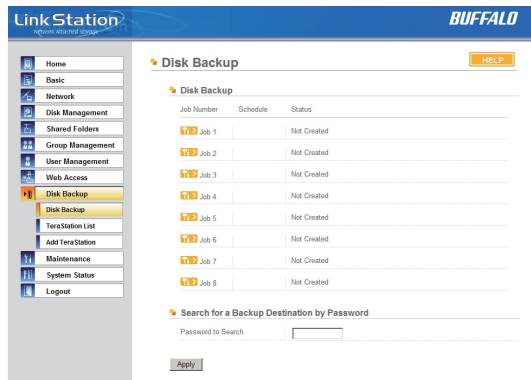


When mapping any share, select the *Connect using a different user name* option. A login and password prompt will appear. Use the username and password required by any secure, restricted shares for *all* shares. All mapped shares on a single PC must use the same username and password!



If only unrestricted shares are being mapped, then it's not necessary to set a username and password for shares. Multiple mapped drives to unrestricted shares can exist without a username or password as long as no restricted, secure shares are mapped. If an unrestricted share and a restricted share are both being mapped or accessed, use the restricted username and password for the unrestricted share login by using the *Connect using a different user name* option. This will allow a Windows PC to access both shares without any problems.

## Disk Backup



To create a backup job, click on a job number. The *Edit Backup Job* dialog will appear.

## Disk Backup (Edit Backup Job)

Edit Backup Job

Job Number

Job 1

Backup Job Schedule

☒ Not Scheduled
☐ Immediately
☐ Every day
☐ Every week

Backup Date

Sunday

Backup Time

0 Hour 00 Minute

Encrypted Transfer

☒ Enable
☐ Disable

Compressed Transfer

☒ Enable
☐ Disable

Overwrite Backup

☒ Enable
☐ Disable

☐ Differential Backups

Apply

Cancel

Clear Job

Backup Source and Destination Folders

☒ Local Backup Shared Folder
☐ Destination Backup Shared Folder

Choose a source and destination folder for backup and click Select

media

No Available Destination Backup Fold

Select

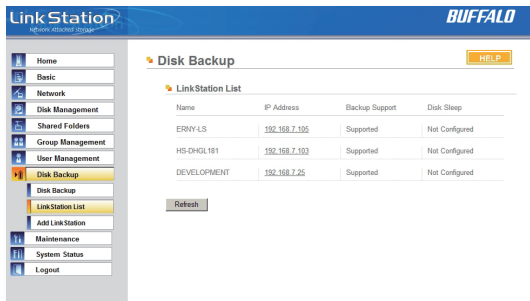
Remove

A *Backup Job* can run regularly on a daily or weekly schedule, or immediately by appropriate choices in the *Backup Job Schedule* field. *Date* and *Time* for the backup may be entered, and *Encryption* and *Compression* enabled or disabled. Enable *Overwrite Backup* to have each scheduled backup write over the previous backup, or *Differential Backups* to backup only files changed since the previous backup.

Select the folder to be backed up from the *Local Backup Shared Folder* dropdown, and the destination for the backup files from the *Destination Backup Shared Folder* dropdown. The destination folder may be on a USB drive attached to the LinkStation, or another LinkStation on the network. Click on *Select* to approve the backup targets.

Click the *Apply* button when your backup job is set up the way you want it, or *Clear Job* to stop a job from running again.

## Disk Backup (LinkStation List)



The screenshot displays the Buffalo LinkStation web interface. On the left is a navigation menu with options: Home, Basic, Network, Disk Management, Shared Folders, Group Management, User Management, Disk Backup (highlighted), Disk Backup, LinkStation List (highlighted), Add Link Station, Maintenance, System Status, and Logout. The main content area is titled 'Disk Backup' and contains a 'LinkStation List' table. The table has four columns: Name, IP Address, Backup Support, and Disk Sleep. It lists three LinkStations: ERNY-LS (IP: 192.168.7.105), HS-DHGL181 (IP: 192.168.7.103), and DEVELOPMENT (IP: 192.168.7.25). A 'Refresh' button is located below the table.

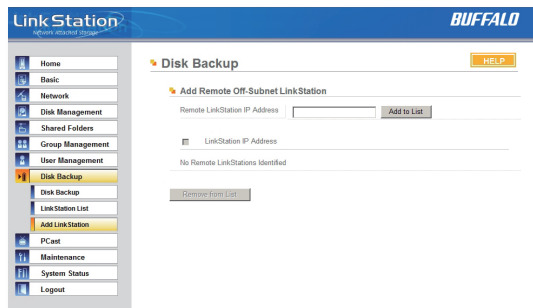
| Name        | IP Address    | Backup Support | Disk Sleep     |
|-------------|---------------|----------------|----------------|
| ERNY-LS     | 192.168.7.105 | Supported      | Not Configured |
| HS-DHGL181  | 192.168.7.103 | Supported      | Not Configured |
| DEVELOPMENT | 192.168.7.25  | Supported      | Not Configured |

The LinkStation list shows other LinkStations in your network that you can configure network backups to.

Press *Refresh* to get a list of LinkStations on your network.



## Disk Backup (Add LinkStation)



To add a remote LinkStation to your network, enter its numerical IP Address in the *Remote LinkStation IP Address* field and click the *Add to List* button. For remote LinkStation backups, make sure both firewalls are configured to allow traffic in and out of their networks.

Note: Disk Backups between two LinkStations use port 8873 for encrypted backups and port 873 for backups with no encryption.

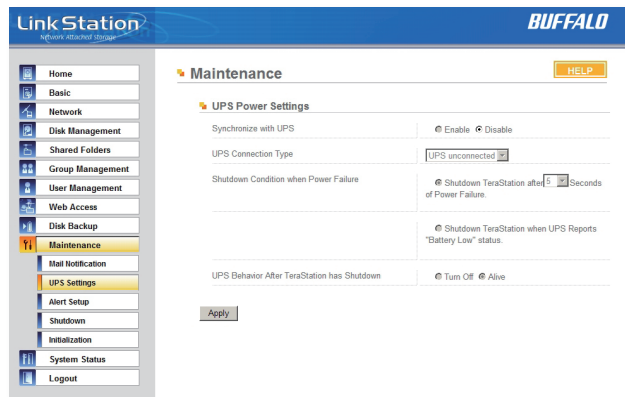
## Maintenance (Notification)

The screenshot shows the 'LinkStation' web interface by Buffalo. The left sidebar contains a menu with options: Home, Basic, Network, Disk Management, Shared Folders, Group Management, User Management, Web Access, Disk Backup, Maintenance (highlighted), Mail Notification (highlighted), UPS Settings, Alert Setup, Shutdown, Initialization, System Status, and Logout. The main content area is titled 'Maintenance' and includes a 'HELP' button. Under the 'Maintenance' heading, there is a 'Mail Notification' section. It features a toggle switch for 'Mail Notification' (currently set to 'Enable'). Below this are several input fields: 'SMTP Server Address', 'Subject' (with a 'Default' button), 'Recipient Mail Address 1' through '5', and 'Notification Trigger' (with checkboxes for 'HDD Status Report', 'Disk Failure', 'Fan Failure', and 'Completed Backups'). At the bottom, there is a 'HDD Status Sending Time' field set to '0' with a 'clock' icon. 'Apply' and 'Send Test Message' buttons are at the bottom of the form.

If your LinkStation is remotely managed, you may choose to receive nightly status reports and be notified of any disk events by email. To set this up, enable *Mail Notification* and enter the IP Address of your SMTP server\* in the *SMTP Server Address* field. Select a *Subject* line for the emails (i.e. “LinkStation Status Report”) and enter the email address of each person you want to receive notification emails into a *Recipient Mail Address* field.

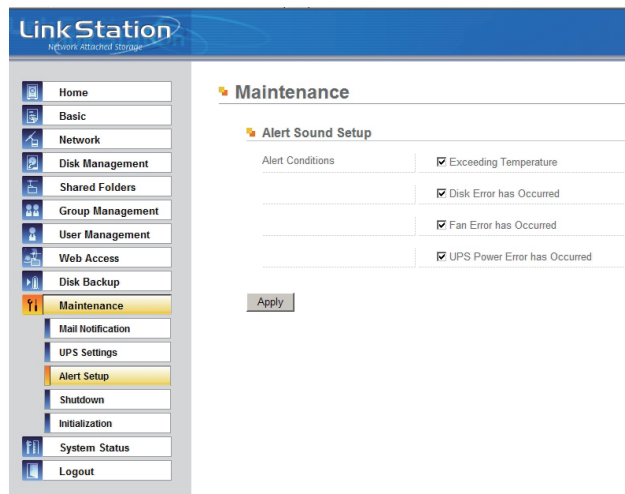
\* SMTP server must be an *open* type server. Currently, there’s no provision for entering a username or password.

## Maintenance (UPS Settings)



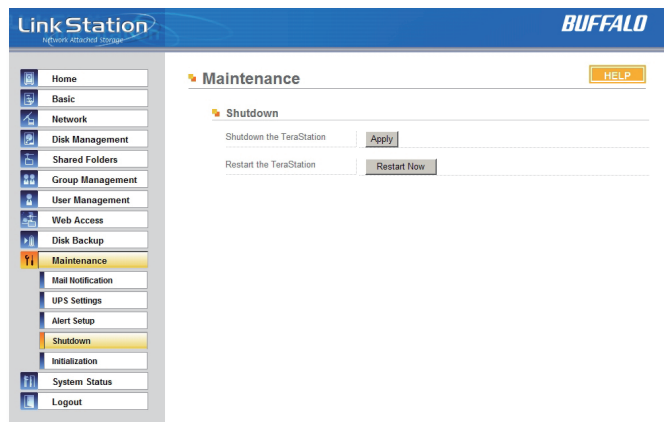
If using an Uninterruptable Power Supply, configure the LinkStation's UPS settings here.

## Maintenance (Alert Settings)



Alerts can be configured on the LinkStation to make audible noises when a problem is detected. Along with the audible noise, alert emails will be sent out if *Mail Notification* was properly configured. Please select the features you would like to receive an audible sound alert from and then press the *Apply* button.

## Maintenance (Shutdown)



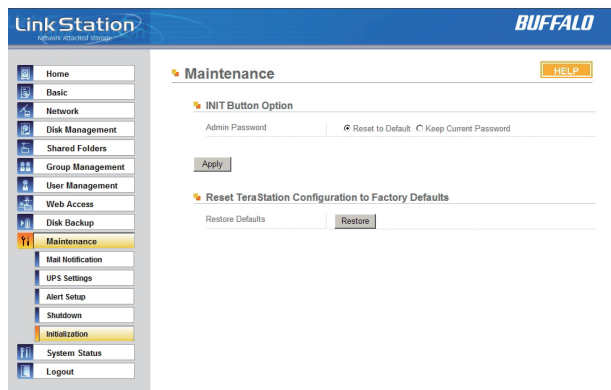
From the *Shutdown* page, press *Apply* to shutdown LinkStation. This has the same function as holding down the power button on the front of LinkStation, but may be done remotely. Turning on the LinkStation after a shutdown requires a physical button push on the front of LinkStation. The *Restart Now* button simply reboots the LinkStation, bringing it back to functionality after about 120 seconds.

## Maintenance (Initialization)

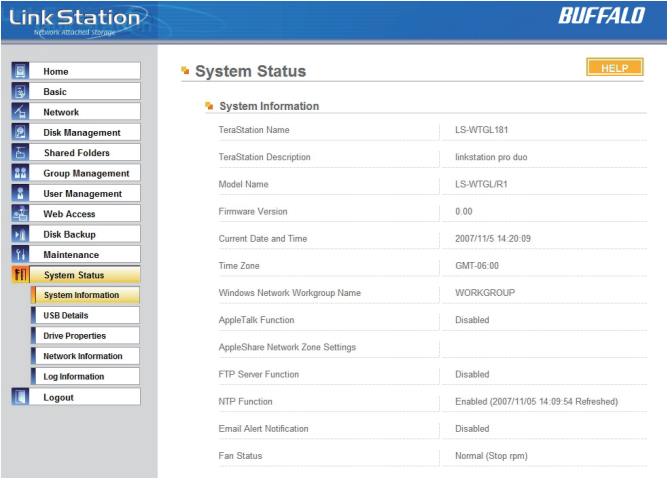
Initialization is a reset procedure that restores all settings back to the default, out of box, configuration. All configuration, users, groups, and backup jobs are lost, but actual data and shares on the hard are NOT lost. If you want all data to be erased, reformat the drive.

Specify whether the LinkStation shall keep its administrator password after a initialization or whether the password should be reset to the default password (default password is *password*). Press the *Apply* button once you make the selection.

Press the *Restore* button to begin the initialization process; this will restore all settings to factory defaults but will NOT erase the data on the hard drives.



# System Status (System Information)



**LinkStation** Network Attached Storage **BUFFALO**

**System Status** [HELP](#)

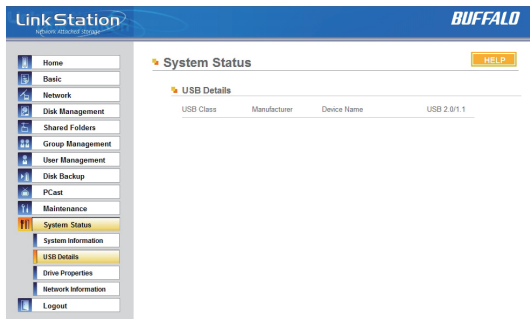
**System Information**

|                                  |                                         |
|----------------------------------|-----------------------------------------|
| TeraStation Name                 | LS-WTGL181                              |
| TeraStation Description          | linkstation pro duo                     |
| Model Name                       | LS-WTGLR1                               |
| Firmware Version                 | 0.00                                    |
| Current Date and Time            | 2007/11/5 14:20:09                      |
| Time Zone                        | GMT-06:00                               |
| Windows Network Workgroup Name   | WORKGROUP                               |
| AppleTalk Function               | Disabled                                |
| AppleShare Network Zone Settings |                                         |
| FTP Server Function              | Disabled                                |
| NTP Function                     | Enabled (2007/11/05 14:09:54 Refreshed) |
| Email Alert Notification         | Disabled                                |
| Fan Status                       | Normal (Stop rpm)                       |

This page shows you the System Information for your LinkStation.

Firmware updates are occasionally available from [www.buffalotech.com](http://www.buffalotech.com) for the LinkStation Pro Duo. These must be executed from a Windows PC on the same network. Your router, switch, or hub should pass through ports 8873 and 22939 for this to work (most do).

## System Status (USB Details)



This page shows you details on USB hard drives and UPSs plugged into your LinkStation. In this example, no USB hard drives are plugged in to the LinkStation.



## System Status (Drive Properties)

The screenshot shows the LinkStation web interface. The left sidebar contains a menu with options: Home, Basic, Network, Disk Management, Shared Folders, Group Management, User Management, Web Access, Disk Backup, Maintenance, System Status (highlighted), System Information, USB Details, Drive Properties, Network Information, Log Information, and Logout. The main content area is titled 'System Status' and includes a 'HELP' button. It displays three sections: RAID Array Information, Disk Information, and USB Disk Information.

**LinkStation** *BUFFALO*

**System Status** [HELP](#)

**RAID Array Information**

|              |                |                                |
|--------------|----------------|--------------------------------|
| RAID Array 1 | Status         | Normal                         |
|              | RAID Mode      | RAID0                          |
|              | Disk Structure | Disk 1, 2                      |
|              | Total Capacity | 609,262,336 kbytes (581.04 GB) |
|              | Amount Used    | 8,000 kbytes (0.01 GB)         |
|              | Percent Used   | 0.00 %                         |
|              | File Format    | XFS                            |

**Disk Information**

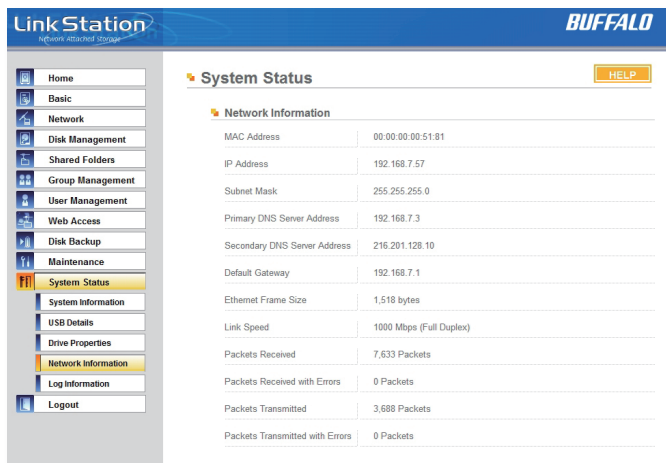
|        |                |                                |
|--------|----------------|--------------------------------|
| Disk 1 | Status         | RAID Array 1                   |
|        | Unit Name      | ST3320620AS                    |
|        | Total Capacity | 312,571,224 kbytes (298.09 GB) |
| Disk 2 | Status         | RAID Array 1                   |
|        | Unit Name      | ST3320620AS                    |
|        | Total Capacity | 312,571,224 kbytes (298.09 GB) |

**USB Disk Information**

|            |        |              |
|------------|--------|--------------|
| USB Disk 1 | Status | Not Detected |
|------------|--------|--------------|

This page shows you the properties of all hard drives in and attached to your LinkStation.

## System Status (Network Information)

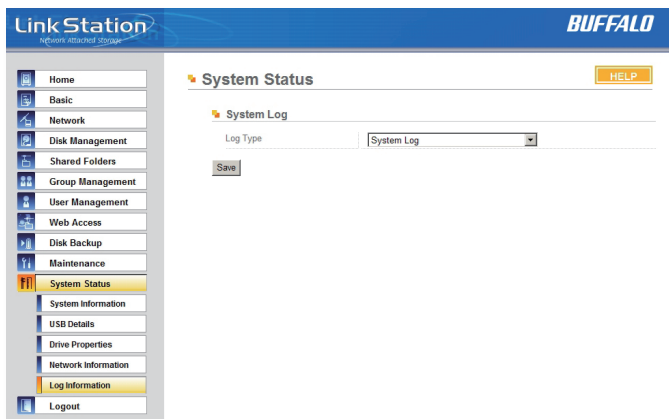


The screenshot shows the Link Station web interface. The left sidebar contains a menu with options: Home, Basic, Network, Disk Management, Shared Folders, Group Management, User Management, Web Access, Disk Backup, Maintenance, System Status (highlighted), System Information, USB Details, Drive Properties, Network Information (highlighted), Log Information, and Logout. The main content area is titled 'System Status' and includes a 'HELP' button. Under the 'Network Information' section, the following details are displayed:

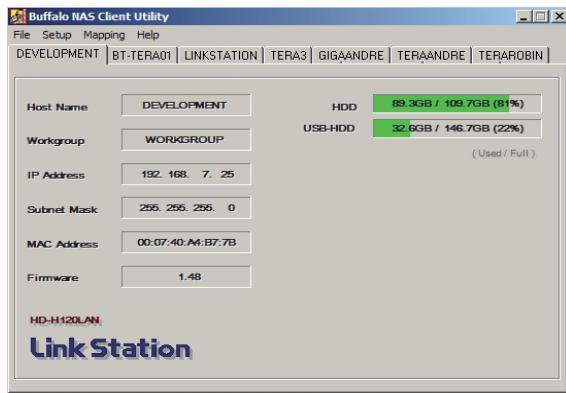
|                                 |                         |
|---------------------------------|-------------------------|
| MAC Address                     | 00:00:00:00:51:81       |
| IP Address                      | 192.168.7.57            |
| Subnet Mask                     | 255.255.255.0           |
| Primary DNS Server Address      | 192.168.7.3             |
| Secondary DNS Server Address    | 216.201.128.10          |
| Default Gateway                 | 192.168.7.1             |
| Ethernet Frame Size             | 1,518 bytes             |
| Link Speed                      | 1000 Mbps (Full Duplex) |
| Packets Received                | 7,633 Packets           |
| Packets Received with Errors    | 0 Packets               |
| Packets Transmitted             | 3,688 Packets           |
| Packets Transmitted with Errors | 0 Packets               |

This page shows you the System Information for your network connection.

## System Status (Logs)



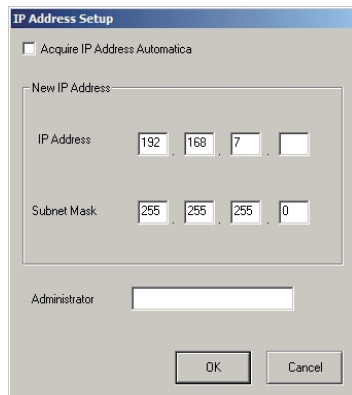
Choose a Log from the dropdown menu and click *View* to see it.



This is the *Buffalo NAS Client Utility*. Installed on your PC, it allows you to access each of the LinkStations (and LinkStations) on your network. Click *Refresh List* to get tabs for each of your LinkStations. Each tab shows the Host Name, Workgroup, IP Address, and Subnet Mask of the associated LinkStation, as well as the version of firmware it's running.

With a LinkStation's tab selected, you can click on the *View Shares* button to go directly to its root share. Clicking the *Setup* pulldown menu and selecting *Browser Management* takes you to the browser management tool that we began exploring on page 22. And clicking *Setup* and choosing *Modify IP Address* takes you to the following screen . . .

## IP Address Setup



The image shows a 'IP Address Setup' dialog box. At the top, there is a checkbox labeled 'Acquire IP Address Automatica' which is currently unchecked. Below this is a section titled 'New IP Address' which contains two rows of input fields. The first row is for the 'IP Address' and contains four boxes with the values '192', '168', '7', and an empty box. The second row is for the 'Subnet Mask' and contains four boxes with the values '255', '255', '255', and '0'. Below these fields is a label 'Administrator' followed by a single-line text input field. At the bottom right of the dialog are two buttons: 'OK' and 'Cancel'.

Here, you may enter your *IP Address* and *Subnet Mask* manually, or enable your LinkStation to acquire them automatically from a DHCP server. You'll need the administrator password to use this screen. Press *OK* when you're done.

## Disk Errors

If LinkStation encounters a disk error, it will be reported in the LinkStation status on the top of any of the Web-Based configuration screens. Run a *Disk Scan* in the event of this error. If that doesn't work, try a reformat. Reformatting the drive will delete all of the data on it so try to backup any data you can before beginning. Finally, if none of the above solutions help, then please contact Technical Support for further assistance.

## LED Flash Codes:

- 3 flashes - Partition problem with hard drive. Reformat the hard drive.
- 4 flashes - Fan problem.
- 5 flashes - ROM problem.
- 6 flashes - Hard Drive can not be recognized.
- 7 flashes - Problem with motherboard (RAM, LAN, or Hard Drive controller).

## Technical Specifications

|                        |                                                                                      |
|------------------------|--------------------------------------------------------------------------------------|
| Data Transfer Rates:   | 10/100/1000 Mbps                                                                     |
| Hard Drives:           | (2) SATA                                                                             |
| Main Connector Type:   | RJ-45 (Ethernet)                                                                     |
| USB Interface:         | USB 2.0/1.1                                                                          |
| Protocol Support:      | TCP/IP<br>SMB, FTP (File Sharing)<br>HTTP (Management)<br>NTP (Time Synchronization) |
| Power Supply:          | Internal; 100-240V 50/60Hz                                                           |
| Client OS Support:     | Windows® Vista™, XP, 2000,<br>Mac OS® 10.2.6 or later                                |
| Power Consumption:     | ~32W (with no USB devices connected)                                                 |
| Dimensions:            | 3.9" x 6.4" x 8.7" (99 x 163 x 221 mm)                                               |
| Weight:                | ~6.6 lbs. (3.0 kgs)                                                                  |
| Operating Environment: | 41°-95° F, 5°-35° C; 20-80% non-condensing                                           |

Buffalo Technology USA Inc.  
11100 Metric Blvd., Suite 750  
Austin, TX 78758

### GENERAL INQUIRIES

Monday through Friday  
8:30am-5:30pm CST

**Direct:** 512-794-8533 | **Toll-free:** 800-456-9799 | **Fax:** 512-794-8520 | **Email:** *sales@buffalotech.com*

### TECHNICAL SUPPORT

North American Technical Support by phone is available 24 hours a day, 7 days a week. (USA and Canada).

**Toll-free:** (866) 752-6210 | **Email:** *info@buffalotech.com*



Buffalo Technology UK Ltd.  
2 Bracknell Beeches, Old Bracknell Lane  
Bracknell, Berkshire, RG12 7BW  
United Kingdom

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Email: *[sales@buffalo-technology.com](mailto:sales@buffalo-technology.com)*

### TECHNICAL SUPPORT

Buffalo Technology provides technical support in English, German, French, Italian and Spanish. For opening hours and relevant telephone numbers, please go to:

*[www.buffalo-technology.com/contact](http://www.buffalo-technology.com/contact)*

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