

Before you begin setting up your download server, you should be familiar with the GatorBox download process and the options available to you. This chapter describes some basic concepts about downloading and provides five scenarios for setting up your download server(s). The chapter concludes with instructions for how to implement the download scenario most appropriate for your site.

What is downloading?

Downloading is the process of copying the GatorBox's operating software file and configuration files from a Macintosh or UNIX computer (the download server) to the GatorBox's dynamic memory. You must identify a primary download server for each GatorBox on your internet.

The GatorBox retains information about its download server in its non-volatile random access memory (NVRAM) when it is turned off. When a GatorBox is turned on, it reads this information and establishes a connection to its download server. The GatorBox then downloads its operating software file and configuration settings into its internal memory.

The GatorBox needs three files to download successfully:

- ▶ The **GatorBox operating software file** (GatorSystem, GatorPrint, or GatorShare) is the software that runs on the GatorBox to perform TCP/IP services, AppleTalk routing, DECnet routing, UNIX-to-LocalTalk printing, and AppleShare-to-NFS file sharing. The operating software file must be downloaded from a Macintosh on the GatorBox's LocalTalk network or from a TFTP (Trivial File Transfer Protocol) server (which can be a UNIX computer or a Macintosh with the UDP TFTP INIT) on the Ethernet network. The operating software file cannot be downloaded from a Macintosh on a remote LocalTalk network or from a Macintosh on an EtherTalk network (that is, a Macintosh communicating over Ethernet via the AppleTalk protocols).
- ▶ The **GatorBoxName** file (that is, GatorBoxnnnnnn or the name you have assigned to the GatorBox) is the file containing the configuration settings for the specific GatorBox. The *GatorBoxName* file can be downloaded from a Macintosh on the GatorBox's LocalTalk network, from a TFTP server, or from a Macintosh on a remote LocalTalk or EtherTalk network.

- The **GatorDatabase** file is a list of the names and IP addresses of network file servers available from a GatorBox. The GatorDatabase file can be downloaded from a Macintosh on the GatorBox's LocalTalk network, from a TFTP server, or from a Macintosh on a remote LocalTalk or EtherTalk network.



If you modify the GatorBox's configuration settings, you must save your changes and restart the GatorBox so that the modified settings can be downloaded to the GatorBox memory.

Primary and secondary download servers

You can specify a primary and secondary download server for a GatorBox. The *primary download server* is the first place the GatorBox looks when it needs to download its software. If the primary download server is not available or if the GatorBox cannot find one of its files on the primary server, it looks for the *secondary download server* to retrieve the missing information.

You can use a Macintosh or a host that supports TFTP as a primary or secondary download server.



Specifying a secondary download server for a GatorBox provides a redundant source for its operating software file and configuration settings, which can help the GatorBox return to service quickly after a power failure.

Downloading and *atalkad*

The *atalkad* (AppleTalk administration daemon) software was developed at Stanford University to provide centralized AppleTalk administration. *atalkad* permits AppleTalk routing packets to be transmitted via UDP/IP packets. The AppleTalk routing tables are maintained on a UNIX machine and are downloaded into specified GatorBoxes.

Although using *atalkad* lets you configure many of the GatorBox configuration settings, *atalkad* does not provide support for configuring UNIX-to-LocalTalk printing or AppleShare-to-NFS file sharing. Additionally, *atalkad* use of *atalkad* still requires that you download the GatorBox operating software file and configuration files. Finally, *atalkad* will not work well in an AppleTalk Phase 2 environment. *atalkad* support will be most useful to sites using GatorSystem that prefer centralized network administration and that do not plan to make the transition to AppleTalk Phase 2.

TFTP INIT

In most situations, a Macintosh acting as a download server must be running GatorKeeper for a GatorBox to download its files. The TFTP INIT lets a Macintosh on the same LocalTalk network as your GatorBox use the AppleTalk protocols to respond to NBPLookups for device type TFTPServer and function as a download server, even when the Macintosh is not running GatorKeeper.



If you run GatorKeeper on a Macintosh on which the TFTP INIT has been installed, GatorKeeper will not advertise itself as a TFTP server.

UDP TFTP INIT

The UDP TFTP INIT lets a Macintosh on Ethernet use MacTCP and the TCP/IP protocols to act as a TFTP download server for your GatorBox. By setting up a Macintosh as a TFTP server on Ethernet, you can download operating software files and configuration files for one or more GatorBoxes from a central Macintosh. The UDP TFTP INIT requires MacTCP, which is provided on the GatorBox software disks.

Download scenarios

How you set up your download servers depends on the size and complexity of your internet. This section presents five scenarios for setting up your download servers:

- ▶ **Local Macintosh only** — You can download the operating software file (GatorSystem, GatorPrint, or GatorShare) and configuration information (GatorDatabase and *GatorBoxName*) from a Macintosh on the same LocalTalk network as the GatorBox.
- ▶ **Local and remote Macintosh** — You can download the operating software file from a Macintosh on the same LocalTalk network and download the GatorBox's configuration information from a Macintosh on a remote LocalTalk or EtherTalk network.
- ▶ **Ethernet Macintosh** — If you install the UDP TFTP INIT, you can download the operating software file and configuration information (GatorDatabase and *GatorBoxName*) from a Macintosh on your Ethernet network.

- ▶ **TFTP server only** — You can download the operating software file and configuration information from a UNIX host (or any computer that supports TFTP) by use of a TFTP (Trivial File Transfer Protocol) service.
- ▶ **TFTP server and remote Macintosh** — You can download the operating software file from a TFTP server and download the GatorBox's configuration information from a Macintosh on the same LocalTalk or EtherTalk network.



You must configure your GatorBox for the first time from a Macintosh on the same LocalTalk network. See "Local Macintosh as download server" on page 3-10 for instructions on how to download a GatorBox's operating software file and configuration settings from a local Macintosh.

Scenario 1 — Local Macintosh only

In the simplest scenario, you copy the GatorBox operating software file (GatorSystem, GatorPrint, or GatorShare) and configuration files (GatorDatabase and *GatorBoxName*) to a Macintosh on the same LocalTalk network as the GatorBox. Depending on how you define its download server settings, a restarted GatorBox searches its LocalTalk network for a specific Macintosh running GatorKeeper, any Macintosh running GatorKeeper, or a Macintosh with the GatorBox TFTP file in its System Folder. When it finds its download server, the GatorBox retrieves its operating software file and configuration information.

Figure 3-1 illustrates the scenario for downloading to a GatorBox from a local Macintosh. Note that the GatorBox TFTP INIT, GatorShare operating software file, and configuration files have been moved to the System Folder to permit downloading when GatorKeeper is not running.

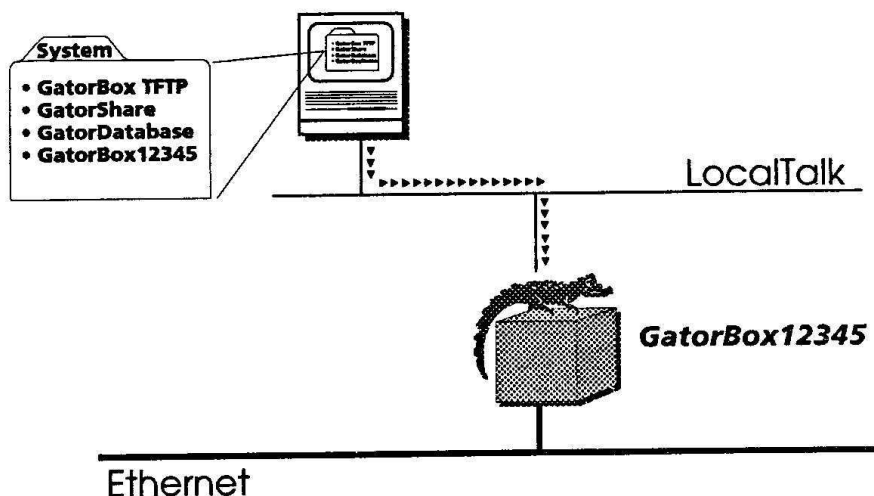


Figure 3-1. Downloading from a local Macintosh

Instructions for setting up a GatorBox to download its software from a local Macintosh are presented in "Local Macintosh as download server" on page 3-10.

Scenario 2 — Local and remote Macintoshes

One way to administer multiple GatorBoxes from a central location is to coordinate files on a local Macintosh with files on a remote Macintosh. Using a local Macintosh to download the GatorBox operating software file and a remote Macintosh to download configuration settings makes changing the configuration of GatorBoxes across a network much easier.

Figure 3-2 illustrates the scenario for downloading from a local Macintosh and a remote Macintosh. The remote Macintosh, which is connected to the EtherTalk network in Figure 3-2, could be on a remote LocalTalk network and still download the GatorBox's configuration information. Note that the GatorBox TFTP INIT and the GatorShare operating software file have been placed in the System Folder of the local Macintosh to permit downloading when GatorKeeper is not running.

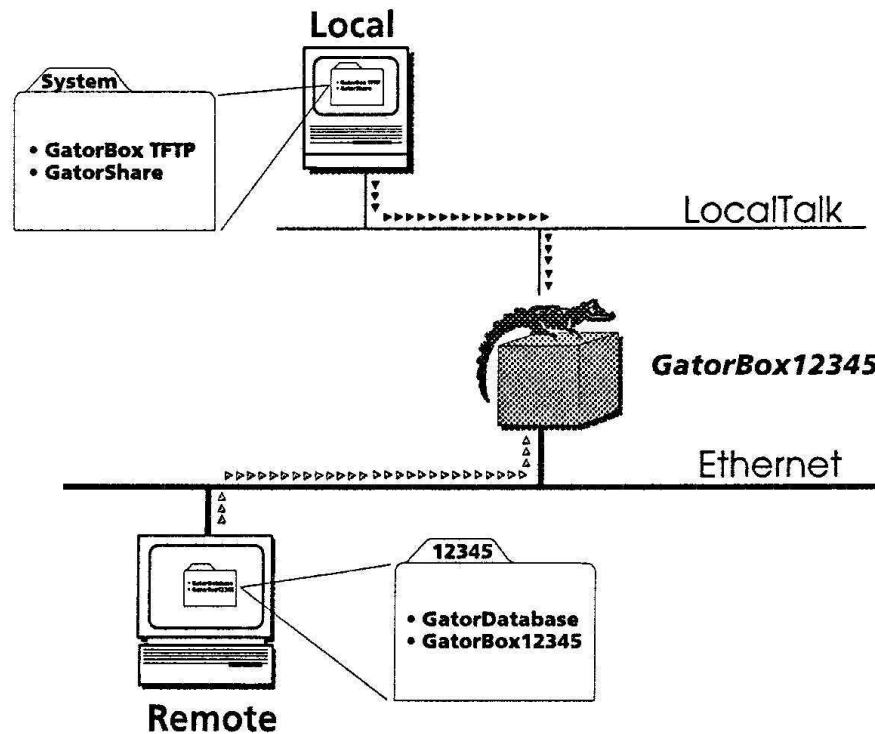


Figure 3-2. Downloading from a remote Macintosh

Instructions for setting up a GatorBox to download its software from local and remote Macintoshes are presented in "Local and remote Macintoshes as download servers" on page 3-12.

Scenario 3 — Macintosh TFTP server

As an alternative to setting up a download server on each LocalTalk network to which a GatorBox is connected, you can configure and administer several GatorBoxes from a central Macintosh on your Ethernet network. To do so, you copy the UDP TFTP INIT, the MacTCP CDEV, the GatorBox operating software file, and the GatorBox configuration files to a Macintosh on Ethernet. You then use GatorKeeper to specify that the GatorBox should download its software from the device with the Macintosh's IP address. When it restarts, the GatorBox retrieves its software and configuration information from the Macintosh via TFTP.

Figure 3-1 illustrates the scenario for downloading to a GatorBox from a Macintosh on Ethernet running the UDP TFTP INIT.

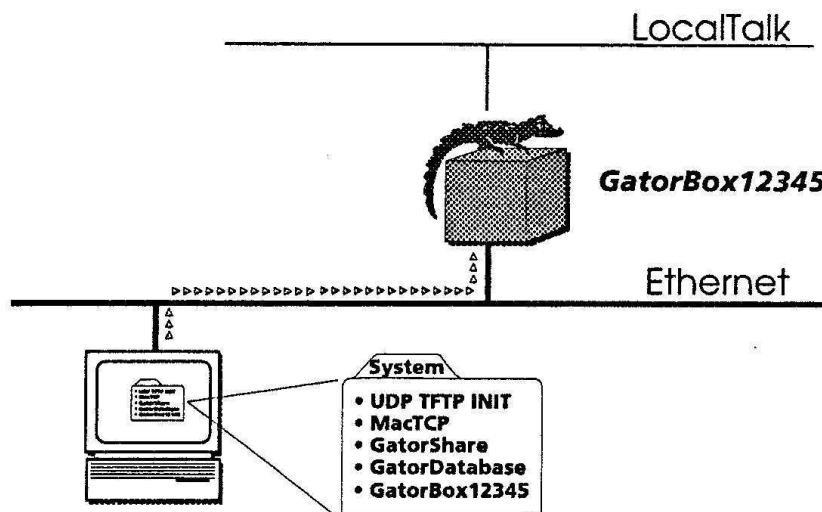


Figure 3-3. Downloading from a Macintosh TFTP server

Instructions for setting up a GatorBox to download its software from a Macintosh TFTP server are presented in "Macintosh as TFTP download server" on page 3-15.

Scenario 4 — UNIX TFTP server

As an alternative to storing your GatorBox software and configuration files on a local or remote Macintosh, you can place the files on a UNIX host (or any other host on your TCP/IP network that supports the TFTP protocol) and use it as a TFTP download server.

Figure 3-4 illustrates the scenario for downloading to a GatorBox from a TFTP server. Note that you must move the configuration files back to a Macintosh running GatorKeeper before you can modify them.

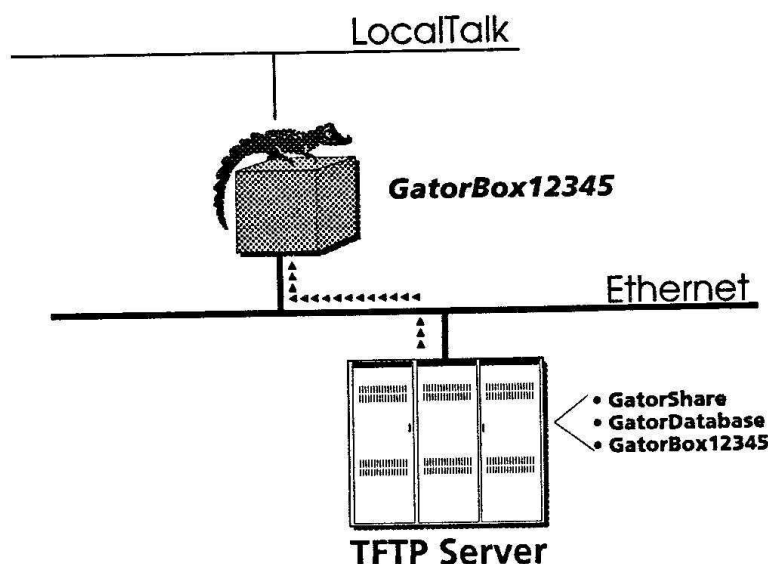


Figure 3-4. Downloading from a TFTP server

Instructions for setting up a GatorBox to download its software from a TFTP server on Ethernet are presented in “UNIX host as TFTP download server” on page 3-19.

Scenario 5 — TFTP server and remote Macintosh

If you want to configure and administer several GatorBoxes from a central Macintosh and you do not want to install the TFTP INIT on a Macintosh on each LocalTalk network connected to a GatorBox, you can combine TFTP service with remote Macintosh configuration. To do so, you store the operating software file on the TFTP server and the configuration files on the remote Macintosh.

Figure 3-5 illustrates the scenario for downloading to a GatorBox from a TFTP server and a remote Macintosh.

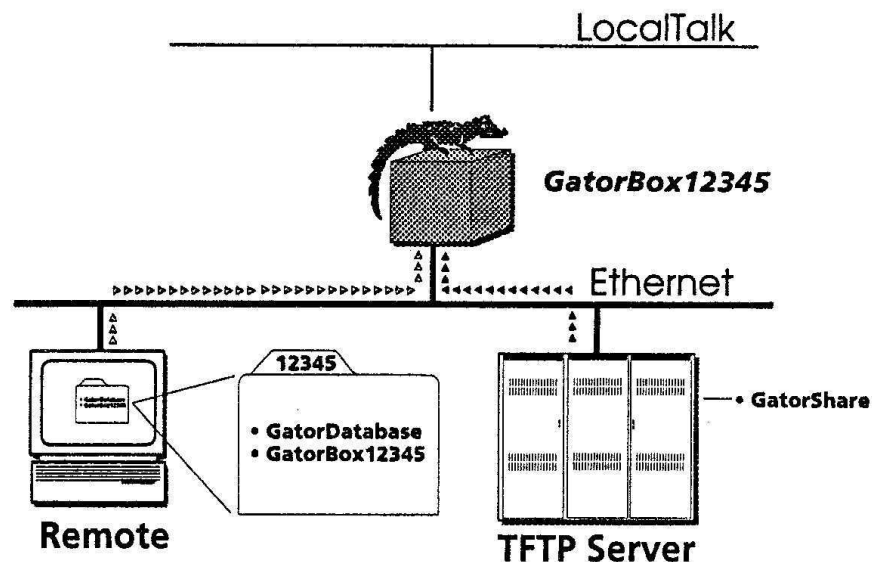


Figure 3-5. Downloading from a TFTP server and remote Macintosh

Instructions for setting up a GatorBox to download its operating software file from a TFTP server and its configuration settings from a remote Macintosh are presented in "TFTP server and remote Macintosh" on page 3-22.

Setting up the download server

You will need to run GatorKeeper to identify the download server(s) for your GatorBox. If you are running GatorKeeper for the first time, you will be asked whether you want to create the GatorDatabase and GatorDefaults files. Click the highlighted buttons or press Enter to indicate that you want to create both files.



Refer to the *GatorBox User's Guide* for more information on using GatorKeeper.

Local Macintosh as download server

To set up a Macintosh on the GatorBox's LocalTalk network as a download server:

1. **Copy the GatorBox operating software file (GatorSystem, GatorPrint, or GatorShare) and (optionally) the TFTP INIT from the Installation disk to the Macintosh you will use as a download server.**
 - ▷ If you are using the TFTP INIT, you must put the TFTP INIT, operating software file, and configuration files in the top level of the System Folder on the Macintosh.
 - ▷ If you are not using the TFTP INIT, you can put the operating software file and configuration files either in the same folder as the GatorKeeper application or in the top level of the System Folder on the Macintosh.
2. **Run GatorKeeper. Double-click the icon of the GatorBox you want to set up. When the Configuration Options window opens, double-click *Download Server*.**

GatorKeeper will display the Download Server dialog box (Figure 3-6).

Please select the type of download server for this GatorBox...

Primary download server:

Macintosh ☒ TFTP ☐

Server:

Software path & file name:

Secondary download server:

Macintosh ☐ TFTP ☐

Server:

Software path & file name:

GatorShare

OK Cancel Defaults

Figure 3-6. Setting up a local Macintosh as a download server

3. Click the *Macintosh* radio button on the left side of the Download Server dialog box to indicate that your primary download server is a Macintosh.
4. Enter either a Macintosh Chooser name or an equal sign (=) in the *Server* field.
 - ▷ If you enter a **Macintosh Chooser name**, the GatorBox will retrieve its operating software file and configuration files from the Macintosh on its LocalTalk network with that Chooser name.
 - ▷ If you enter an **equal sign**, the GatorBox will retrieve its operating software file and configuration files from any Macintosh on its LocalTalk network running GatorKeeper or the TFTP INIT.
5. Enter the file name of the GatorBox operating software file in the *Software path & file name* field.
 - ▷ If you have not renamed the operating software file, enter **GatorSystem**, **GatorPrint**, or **GatorShare**.
 - ▷ If you have renamed the operating software file, enter the file's new name in this field.

Local and remote Macintoshes as download servers

To set up a local Macintosh to download the GatorBox operating software file and a remote Macintosh to download the GatorBox configuration files:

- 1. Configure the GatorBox from a local Macintosh to establish its initial settings.**

See "Local and remote Macintoshes as download servers" on page 3-12 for information on configuring your GatorBox from LocalTalk.

- 2. Restart the GatorBox to load the new settings into its memory.**
- 3. Remove the GatorDatabase and *GatorBoxName* files from the local Macintosh and move them to the remote Macintosh.**

You can put the files in the same folder as GatorKeeper or in the System Folder of the remote Macintosh.

- 4. Run GatorKeeper on the remote Macintosh and view the zone to which the GatorBox belongs.**
- 5. Double-click the icon of the GatorBox you want to set up. When the Configuration Options window opens, double-click *Download Server*.**

GatorKeeper displays the Download Server dialog box (Figure 3-7).

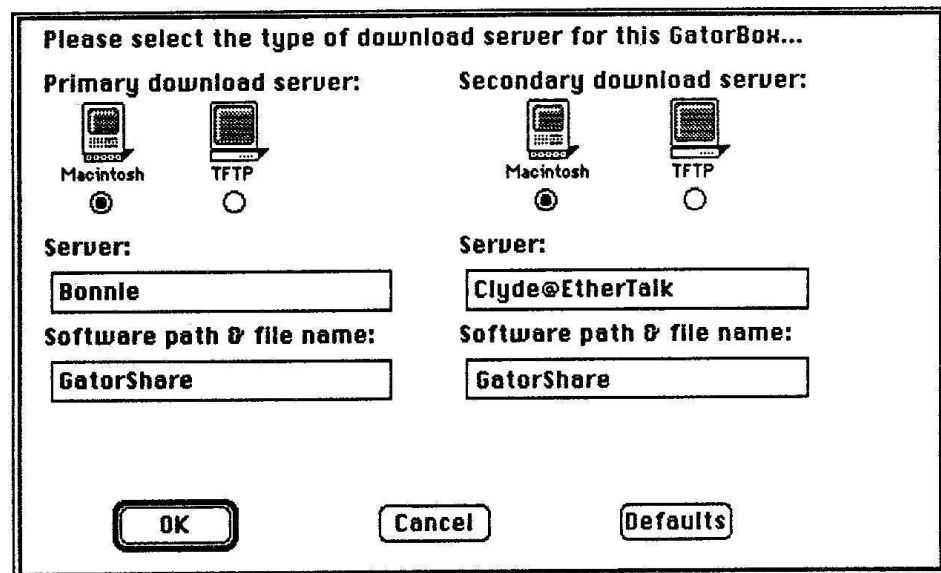


Figure 3-7. Setting up local and remote Macintoshes as download servers

6. Click the *Macintosh* radio buttons on the left and right sides of the Download Server dialog box to indicate that both your primary and secondary download servers are Macintoshes.
7. Enter a Macintosh Chooser name or an equal sign (=) in the *Server* field for the primary download server.
 - ▷ If you enter a **Macintosh Chooser name**, the GatorBox will retrieve its software and configuration files from the Macintosh on its LocalTalk network with that Chooser name. For example, Figure 3-7 indicates that the local Macintosh with Chooser name "Bonnie" will act as the primary download server.
 - ▷ If you enter an **equal sign**, the GatorBox will retrieve its software and configuration files from any Macintosh on its LocalTalk network running GatorKeeper or the GatorBox TFTP INIT.
8. Identify the Macintosh that will act as the secondary download server in the *Server* field on the right side of the dialog box.

The remote Macintosh must be identified by name and AppleTalk zone in *MacName@ZoneName* format. For example, Figure 3-7 indicates that

the Macintosh with Chooser name "Clyde" in zone "EtherTalk" will act as the secondary download server.

9. Save your changes and restart your GatorBox.

When the GatorBox restarts, it will retrieve its operating software file from its primary server by means of the GatorBox TFTP INIT. Because it cannot find its configuration files on the primary server, it will look for the secondary server (the remote Macintosh). The GatorBox will then retrieve its configuration files and finish downloading.

Macintosh as TFTP download server

Although you cannot use a Macintosh on EtherTalk (that is, a Macintosh communicating over the Ethernet network via AppleTalk protocols) to download a GatorBox operating software file, you can download the operating software file from a Macintosh on an Ethernet network (that is, a Macintosh that has its own IP address) running the UDP TFTP INIT. To set up a Macintosh on your Ethernet network as a TFTP server:

1. Install the GatorBox software and MacTCP.

Copy the UDP TFTP INIT, the MacTCP CDEV, the GatorBox operating software file (GatorSystem, GatorPrint, or GatorShare), and the GatorBox configuration files (GatorDatabase and *GatorBoxName*) to the top level of the Macintosh's System Folder.

2. Configure MacTCP to assign the Macintosh a manual (static) IP address *outside* the GatorBox MacIP range.

- a. Pull down the Apple menu and select *Control Panel*.
- b. Click the MacTCP icon.
- c. Click the *Ethernet* (not *EtherTalk*) icon in the MacTCP Control Panel to select your network connection.
- d. Click the *More* button at the bottom of the MacTCP Control Panel.
- e. Click the *Manually* button in the upper left corner of the MacTCP Administrator dialog box (Figure 3-8).

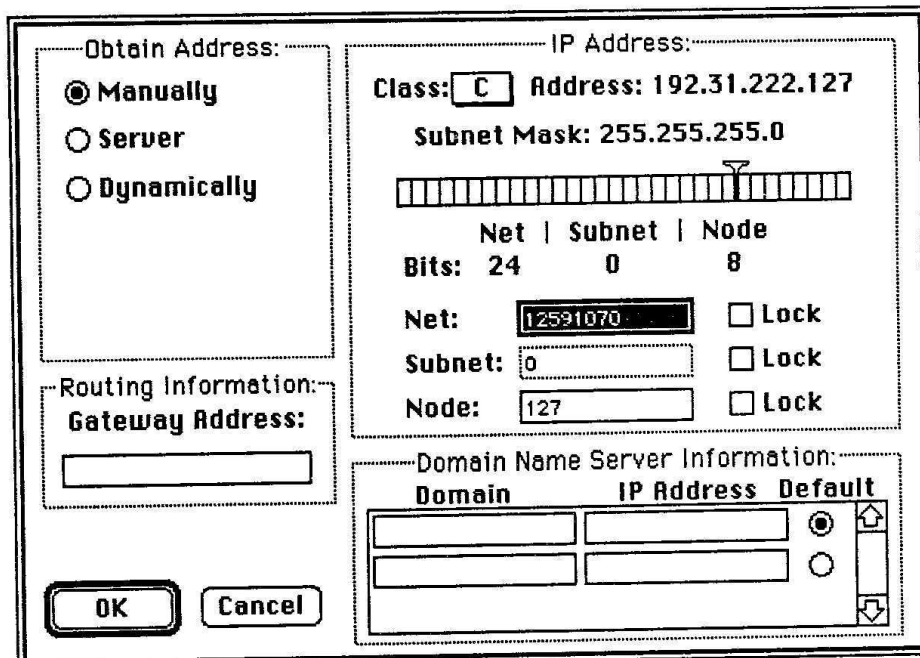


Figure 3-8. MacTCP Administrator dialog box

- f. Click the **OK** button.
- g. Enter the IP address for the Macintosh in the *IP Address* field of the MacTCP Control Panel.
- h. Close the Control Panel.
- i. Restart your Macintosh.

You can defer restarting the Macintosh until you have finished the GatorBox configuration.

3. Run GatorKeeper on the remote Macintosh and view the zone to which the GatorBox belongs.
4. Double-click the icon of the GatorBox you want to set up. When the Configuration Options window opens, double-click *Download Server*.

GatorKeeper will display the Download Server dialog box (Figure 3-9).

Figure 3-9. Setting up a Macintosh TFTP server as a download server

5. Click the **TFTP** radio button on the left side of the Download Server dialog box to indicate that your primary download server (the Macintosh) is a TFTP server.
6. Optionally, click the **Retry Forever** checkbox.

The **Retry Forever** checkbox, which appears when you click the **TFTP** radio button for the primary download server, lets you specify that the GatorBox should continue trying to download its software and configuration information from the Macintosh TFTP server until it succeeds (or until a period of about eight hours elapses).

If you leave **Retry Forever** turned off, the GatorBox makes three attempts to download its files from the primary server when it starts up. If it is unsuccessful, it either download its software from the secondary server (if one has been defined) or report a status of Can't Download (if a secondary server hasn't been defined).

7. Enter the IP address of the Macintosh TFTP server in the **Server** field.

This must be the IP address you specified when you set up MacTCP for the Macintosh TFTP server.

8. Enter the file name of the GatorBox operating software file in the *Software path & file name* field.

- ▷ If you have not renamed the operating software file, enter **GatorSystem**, **GatorPrint**, or **GatorShare**.
- ▷ If you have renamed the operating software file, enter the file's new name in this field.

9. Enter a slash (/) character in the *Path to Data Files* field.

The slash character indicates that the GatorDatabase and GatorBoxName files are in the top level of the System Folder.

10. Save your changes and restart your GatorBox.

When it restarts, the GatorBox will retrieve its operating software file and configuration files from the TFTP server automatically.

UNIX host as TFTP download server

To set up a UNIX host as a TFTP server:

1. **Create a /tftpboot directory at the top level of the TFTP host file structure.**

The /tftpboot directory must be a world-readable directory.

2. **Add the tftp daemon to the /etc/inetd.conf file (Figure 3-10) and verify that TFTP service is enabled in the /etc/services file.**

```
#  
# Tftp service is provided primarily for booting. Most sites  
# run this only on machines acting as "boot servers."  
#  
tftp dgram udp wait root /usr/etc/in.tftpd in.tftpd /tftpboot  
#
```

Figure 3-10. TFTP service entry in /etc/inetd.conf file

3. **Run GatorKeeper from a Macintosh on the GatorBox's LocalTalk network to configure its initial settings.**
4. **Restart the GatorBox to load its new settings into its memory.**
5. **Open the Download Server dialog box (Figure 3-11).**

Please select the type of download server for this GatorBox...

Primary download server:

Macintosh ☐ TFTP ☒

Server: ☐ Retry Forever

192.31.222.12

Software path & file name: /tftpboot/GatorShare

Path to Data Files: /tftpboot/

Secondary download server:

Macintosh ☐ TFTP ☐

Server:

Software path & file name:

OK Cancel Defaults

Figure 3-11. Setting up a TFTP server as a download server

6. Click the **TFTP** radio button on the left side of the Download Server dialog box to indicate that your primary download server is a TFTP server.
7. Optionally, click the **Retry Forever** checkbox.

The **Retry Forever** checkbox, which appears when you click the **TFTP** radio button for the primary download server, lets you specify that the GatorBox should continue trying to download its software and configuration information from the TFTP server until it succeeds (or until a period of about eight hours elapses).

If you leave **Retry Forever** turned off, the GatorBox makes three attempts to download its files from the primary server when it starts up. If it is unsuccessful, it either download its software from the secondary server (if one has been defined) or report a status of Can't Download (if a secondary server hasn't been defined).

8. Enter the IP address of the TFTP server in the **Server** field.

9. **Enter the pathname and file name of the operating software file in the *Software path & file name* field.**

If the operating software file is in the top level of the /tftpboot directory and you have not changed the name of the file, you can enter the name of the operating software file (GatorSystem, GatorPrint, or GatorShare) in the ***Software path & file name*** field. If the operating software file is in a subdirectory or another directory, or if you have changed the name of the file, enter its complete pathname in full "/path/to/file" format.



Some systems, such as Sun workstations, default to /tftpboot when a remote system attempts to perform a TFTP operation. Other systems, such as Macintoshes running A/UX, do not support the /tftpboot default convention, you may be required to enter a full "/path/to/file" name for the operating software file.

10. **Enter the pathname to the GatorDatabase and *GatorBoxName* files in the *Path to Data Files* field.**

The pathname to the GatorBox data files must begin and end with a slash (/) character.

11. **Copy the GatorBox operating software file and configuration files to the /tftpboot directory on the TFTP server.**

Use FTP in binary mode to transfer the files.

12. **Save your changes and restart your GatorBox.**

When the GatorBox restarts, it will retrieve its operating software file and configuration files from the TFTP server automatically.

TFTP server and remote Macintosh

To set up a TFTP server to download the operating software file and a remote Macintosh to download the GatorBox configuration files:

1. **If the TFTP server is a UNIX host, create a /tftpboot directory at the top level of the TFTP host file structure.**

The /tftpboot directory must be a world-readable directory.

2. **Add the tftp daemon to the /etc/inetd.conf file (Figure 3-10) and verify that TFTP service is enabled in the /etc/services file.**

```
#
# Tftp service is provided primarily for booting. Most sites
# run this only on machines acting as "boot servers."
#
tftp dgram udp wait root /usr/etc/in.tftpd in.tftpd /tftpboot
#
```

Figure 3-12. TFTP service entry in /etc/inetd.conf file

3. **Configure the GatorBox from a local Macintosh to establish the GatorBox's initial settings.**
4. **Restart the GatorBox from the local Macintosh to load its new settings into its memory.**
5. **Open the Download Server dialog box (Figure 3-13).**

Please select the type of download server for this GatorBox...





Primary download server:		Secondary download server:	
 Macintosh <input type="radio"/>	 TFTP <input checked="" type="radio"/>	 Macintosh <input checked="" type="radio"/>	 TFTP <input type="radio"/>
Server: <input type="checkbox"/> Retry Forever		Server:	
<input type="text" value="192.31.222.12"/>		<input type="text" value="Clyde@EtherTalk"/>	
Software path & file name:		Software path & file name:	
<input type="text" value="/tftpboot/support/GShare"/>		<input type="text"/>	
Path to Data Files:			
<input type="text" value="/tftpboot/support/"/>			
<input type="button" value="OK"/>		<input type="button" value="Cancel"/> <input type="button" value="Defaults"/>	

Figure 3-13. TFTP server and remote Macintosh as download servers

6. Enter the settings for the primary (TFTP) server in the fields on the left side of the Download Server dialog box.

See "UNIX host as TFTP download server" on page 3-19 for information on setting up the TFTP server.

Because you want the GatorBox to retrieve its configuration files from a secondary server, do not click the **Retry Forever** checkbox.

7. Enter the Macintosh Chooser name (or an equal sign (=)) in the **Server** field on the right side of the Download Server dialog box.

If the Macintosh is on a remote network, you must enter its name and zone in *MacName@ZoneName* format. For example, Figure 3-13 indicates that the Macintosh with Chooser name "Clyde" in zone "EtherTalk" will act as the download server.

It is not necessary to enter the file name of the operating software file in the **Software path & file name** field for the secondary download server.

8. **Move the GatorBox operating software file to the /tftpboot directory on the TFTP server by using FTP in binary mode.**
9. **Move the GatorDatabase and *GatorBoxName* files to the appropriate folder on the Macintosh functioning as the secondary download server.**
10. **Save your changes and restart your GatorBox.**

When the GatorBox restarts, it will retrieve its operating software file from the TFTP server. Because it cannot find its configuration files on the primary server, it should look for the secondary server (the remote Macintosh). The GatorBox should then retrieve its configuration files and finish downloading.

Scanned by Andrew Roughan, andrew@apple2.org, 14 April 2009
More information about GatorBoxes is available at <http://en.wikipedia.org/wiki/GatorBox>