

MacTCP Netswitch



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Contents

The MacTCP Netswitch 1.0.2 package contains

- A ReadMe file;
- The MacTCP Netswitch extension;
- This document (in Word and MacWrite II format);
- A template for instructions to distribute to users.

This document is intended chiefly for network administrators and computer support folks; it's assumed that these are the people who

will set up the appropriate files and then make them available to users with a simplified set of instructions (based on the instruction template mentioned above).

Description

MacTCP Netswitch is a system extension written for the users at the University of Notre Dame that we thought might be useful for the internet community at large.

Netswitch allows you to automatically and painlessly match your MacTCP network parameters to the location of your Macintosh on a network. It changes your settings by choosing the correct MacTCP prep file from a set of pre-configured prep files, based on information it gets by polling your AppleTalk configuration. You can configure a prep file for home use (for dial-up connections), one for network use, and even one for each different AppleTalk zone on your network. You store all of the prep files you need in a single folder (“MacTCP Prep Files”), which lives in the Preferences folder under System 7.0 and in the System folder under System 6. Netswitch will automatically swap in the correct one when your Macintosh starts up.

Netswitch was originally written for PowerBook users who use a SLIP connection over a dial-up link from home and a LocalTalk or Ethernet connection from the office. It can be useful, though, for anyone who uses a single machine (or even just a boot disk) at more than one location on a network. Finally, for networks where a group of users within any given zone uses the same configuration (this will be true only with server-based or dynamic addressing), Netswitch can use aliases that point to files on a central server. The group can then use one set of files which can be centrally maintained without the need to distribute copies to each user.

Here's how it works: when Netswitch runs at startup, it checks to see if you're connected to an AppleTalk network. If you are, it looks at your AppleTalk zone name. If there's a file with your zone name appended ("MacTCP Prep-yourzonehere"), it swaps in that prep file. If it can't find such a file, it uses the generic network prep file. If it can't see any AppleTalk network at all, it chooses the default prep file for dial-up connections, called "MacTCP Prep-SLIP." Since all of this happens at startup, the correct prep file is swapped in before MacTCP is even loaded. The whole process is transparent: you don't have to copy in a new file and reboot.

There are some other utilities available that are similar to Netswitch. Netswitch has two particular strengths, however, which as far as we know are not found in the others:

- Once the prep files are set up, the process of swapping them in is automatic: there is no need to select a prep file and restart. You can just rename the prep files that you already have (or configure and add new ones), and Netswitch will automatically determine which one to use.

- The ability to use alias files means that some or all of the prep files can be stored on a file server and centrally maintained. (Before you set Netswitch to use aliases like this, you should read the section on aliases in “Special Topics,” below.)

There are of course some limitations to Netswitch’s approach. First, it knows nothing about how each prep file is actually configured: it only knows their names. If your network parameters are wrong, it won’t fix them for you. Second, it assumes that there’s a one-to-one mapping between the state of your AppleTalk connection (off/unbridged, bridged) and your TCP/IP connection, which may not be true (for more discussion here, see “Determining whether a network is present” in the Special Topics section).

System requirements

In theory, Netswitch requires only System 6.0.3 or later, AppleTalk 53 or later, and a Macintosh Plus or later model. If everything that worked in theory worked in practice, however, there’d be no such thing as debugging. Due to limited resources (chiefly time), we haven’t tested it on a wide variety of machines and system versions; ironically, the machines for which this extension was originally written—the PowerBook series—have gotten very little testing (a PowerBook 170 with 7.1 is the only configuration we have available). Anyone who wants to do some systematic testing on other PowerBook/Duo models and tell us the results will receive our sincere thanks.

System 6.0 users may need to install the correct version of AppleTalk with the EtherTalk Installer or the Network Software Installer disk.

If you encounter any problems with Netswitch, please send a quick note to the author's electronic mail address above. Please include a) the model of Macintosh and the system version; b) network info—such as the type of network, the brand of network adaptor, and so on; and c) a list of the extensions and control panels that you use.

Configuration

Setting up MacTCP Netswitch involves two tasks: configuring the necessary prep files, and installing the extension and the prep files. The first step should be handled by a network administrator, or someone who is reasonably familiar with the how the network is set up.

Configuring MacTCP Prep files

If you or the users on your network have already been swapping files in and out, all you need to do is rename the files you already use (“MacTCP Prep-SLIP” for home use, “MacTCP-Network” or “MacTCP-zone name” for network configurations). If you need to configure a new set of prep files, follow these instructions. Before you start, you should

- Make sure that your copy of MacTCP is not protected, or that you have a copy of AdminTCP on hand;
- Make sure that you have the settings for all of the different parameters you need to configure, for each different network location.

Follow these steps to create a set of MacTCP configuration files.

1. Create a new folder called “MacTCP Prep Files” to store all of the different configuration files.
2. Open MacTCP.
3. Configure all of the necessary network parameters. The parameters you need to set may vary from location to location, and

from network type to network type.

4. Close MacTCP.

5. Locate the file, “MacTCP Prep.” It will be in the Preferences folder within the System Folder on machines running System 7.0 or later, and in the System Folder itself for earlier versions. Make a copy of the file.

6. Rename the copy to “MacTCP Prep-” (the last character is a minus sign) plus whichever suffix is appropriate:

- “SLIP” for dial-up connections (the AppleTalk connection is not linked to a network bridge, or AppleTalk is off).
- “Network” for the general situation where your AppleTalk connection is linked to a bridge (this file will be overridden if a prep file matching your AppleTalk zone is found).
- The AppleTalk zone you are in if you are making zone-specific versions of the prep file. (If no file matching your AppleTalk zone is found, the “Network” file acts as a default.)

7. Move the file you just renamed into the “MacTCP Prep Files” folder you created in step 1.

Repeat steps 2 through 7 for each different network location. When you’ve got all the files you need and have named them appropriately, you can then proceed with the instructions for installing Netswitch.

Installing Netswitch

1. Drag all of the prep files you need into a folder called “MacTCP Prep Files” (read the previous section to configure these files). Drag this folder into your “Preferences” folder (for users with System 7.0 or later versions) or the System Folder (for users with earlier systems).
2. Drag the MacTCP Netswitch extension onto the icon of your System Folder (not to the System Folder’s window). If you are running System 7.0 or later, your Macintosh will ask you if it should move the file into the Extensions folder; click OK.
3. Restart.

Warning: when Netswitch swaps in a prep file, it deletes whatever prep file is sitting in the Preferences folder (or the System Folder) and replaces it with a copy of the appropriate file from the prep files folder. If you change your MacTCP configuration, you must copy the changed file back into the MacTCP Prep files folder and rename it appropriately, or you will lose all of your changes when you restart your Macintosh.

Creating user documentation

As we mentioned before, this document isn’t really well-suited for an average user; we assume that a network administrator or other qualified person will set up all the necessary configuration files and make them available in a central location. A text file has been created as a template for writing instructions to users. You may of course modify the template however you wish, or discard it completely and write your own. Before you distribute Netswitch, please read the distribution restrictions and disclaimer in the “Legal stuff” section at

the end of this document.

Troubleshooting

If MacTCP Netswitch fails to load correctly, you'll see the normal startup icon (the one at the beginning of this document) with an X through it. Here are some possible explanations:

- An old version of AppleTalk is installed. System 6.0 users may need to install a recent version of AppleTalk using the EtherTalk or Network Software Installer. You can also get around this problem by turning AppleTalk off entirely, if that's an option.
- The prep files folder ("MacTCP Prep Files") could not be located. The name of the folder may be wrong, or perhaps an alias to the folder could not be resolved (server is down, target file has been deleted, etc.), or perhaps you accidentally moved the folder out of the System or Preferences Folder.
- The correct prep file could not be found. For off-network situations, check whether the file is aliased to a server volume on a network (clearly, this won't work when you disconnect the machine from the network). Otherwise, check whether an alias target for the appropriate file may have been deleted, or whether the server is down.

The most likely problem is that the prep files folder, or the correct prep file, could not be located. If you've eliminated this possibility (and your AppleTalk version is correct), please send a bug report to the electronic mail address at the beginning of this document.

Special topics

This section contains some more detailed information about how Netswitch works, for folks who need it, or for anyone who is simply curious.

Aliases

You can use aliases to files on a server if you wish. You can mix aliases and files within the prep files folder, or you can use an alias to the prep files folder itself. This feature is generally only useful if a group of people uses the same parameters; therefore it's limited chiefly to those who use server-based or dynamic addressing.

A couple of notes about using aliases to server volumes:

- If a server is used to store any of the prep files, the server administrator should allow guest access to the relevant folder, so that there is no need for a user to type in a name and password at startup (or for the administrator to distribute an AppleShare prep file with the saved login information in it). For security reasons, the guest account should have read-only access to that folder (it's generally wise to allow write access to guests only under very limited circumstances).
- By default, a server volume mounted by resolving an alias is unmounted when Netswitch exits. This means that a volume containing the target of a prep file alias will not automatically appear on the desktop after boot even if the user has clicked the auto-mount option in the AppleShare login box. You can change this behavior by editing the PREF 128 resource,

changing the “Unmount server volumes” option from true to false. (At this point, only the volume with the folder containing the actual target prep file is unmounted, that is, the folder with the prep file matching the current network type. Any other volumes mounted through resolving alias chains are not unmounted.)

- If you use an alias to either the prep files folder or the files within it, remember that the name of the target file is irrelevant, but the alias file itself must be named so as to match the conventions that Netswitch expects (these can be changed by editing Netswitch’s resources; see “Changing preferences,” below).
- Remember that when you create aliases to a server volume, you should log in with the same account that the end user will use.
- We recommend that you not distribute an alias to the prep files *folder*, because users who aren’t connected to the network—e.g., dial-up users—won’t be able to resolve the alias, defeating the purpose for which Netswitch was written. If you instead set up aliases for standard configurations on the network (perhaps one for each AppleTalk zone), and include a real (non-aliased) prep file for non-network connections, you’ll have a collection that will work for any location.

Changing preferences

At present, Netswitch is only a system extension, with no user interface for changing any preferences. If you have a resource editor like ResEdit, though, you can change the preferences directly. You may change 1) whether AppleShare servers are dismounted after

resolving aliases to them; and 2) the strings that specify the file names, prefixes, and suffixes that Netswitch uses to juggle files around. To change the AppleShare server setting, open the PREF resource, ID

128, and click the “Unmount server volumes” setting. To change the default filenames, edit the STR# resources below (but don’t change any values that aren’t listed):

STR# ID	Index	What	Default
128	1	Source folder containing prep files	“MacTCP Prep Files”
	3	Prefix for names of alternate prep files	“MacTCP Prep-”
129	1	Suffix non-network prep file	“SLIP”
	6	Suffix for default network prep file	“Network”

Determining whether a network is present

Netswitch determines whether a network is present by looking for a network bridge on your AppleTalk connection (the physical network type is irrelevant). If none is present, it assumes that the desired TCP/IP connection will be dial-up (SLIP). Netswitch will also choose the SLIP file if AppleTalk is deactivated in the Chooser.

The drawback to this approach is that it assumes that there’s a one-to-one mapping between your AppleTalk and TCP/IP connections. If you use direct Ethernet for TCP/IP but have no AppleTalk connection, for example, there’s no way Netswitch can distinguish this from your home connection, where you use a dial-up connection for TCP/IP. The AppleTalk connection in each case is identical as far as Netswitch can tell, so there’s no way for it to know that your TCP/IP connection should be different.

Note that using a dial-up AppleTalk connection will not solve this problem, because the connection won’t be established until after the computer has finished booting.

The author is currently exploring how to get around this problem, but since his MA exams are coming up soon, he may not be able to

resolve it for a while.

Revision history

Version 1.0.2

10 March 1994

- File servers are now *correctly* unmounted as per preferences item (but only the last volume pointed to is unmounted). Bug in 1.0.1 did not load preferences correctly; hence preferences setting was ignored.

Version 1.0.1

6 March 1994

- Netswitch will now resolve aliases within the prep files folder, as well as aliases to the folder itself. Alias chains are fully resolved.
- File servers mounted by resolving aliases are now automatically unmounted by default. This behavior can be changed by modifying the PREF resource ID 128.

Version 1.0b2

19 January 1994

First released version.

Bugs

These are problems which others have reported, or which we have noticed but haven't been able to resolve. Of course, if major problems are reported, they will be fixed in the next release.

Date	Status	Description
2/25/94	Confirmed	AppleShare volumes mounted by resolving aliases will not be unmounted if aliases are not fully resolved (e.g., if target file or folder is missing).
2/24/94	Fixed next release	Only the last server volume mounted will be unmounted if prefs resource specifies that AppleShare volumes be unmounted. That is, if chained aliases point to multiple server volumes, or an alias to the prep files folder and the aliases within that folder point to different server volumes, only the volume with the actual prep file target will be unmounted. This will not be fixed until the next release.
2/10/94	Unconfirmed	Problem reported from one site with Focus EtherLAN adaptor and PowerBook. Network prep file appears to be swapped in (according to MacTCP), but NCSA Telnet shows SLIP configuration info in "Show Network numbers" box. Unable to replicate on standard Ethernet adaptors (Asanté, Apple); unable to confirm due to lack of EtherLAN adaptor.
2/6/94	Unconfirmed	Aliases to either a folder or to individual files are not resolved (directory not found error) in SLIP mode on IICI with System 7.1 Pro. Solution: resolve alias once in Finder by clicking "Find original" button in Get Info window. The problem (so far) has appeared only with System 7.1 Pro on a Macintosh IICI.

Legal stuff

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Those users who have reported—or will report—bugs.