AppleShare IP 6: Using Windows File Sharing Feature

Many have asked for help with getting AppleShare IP 6 Windows File Sharing feature to work on their network, especially with getting the AppleShare IP server to show up in the "Network Neighborhood."

This document contains background and tips for understanding Windows network browsing and Windows file sharing. Microsoft Certified System Engineers (MCSE) and experienced Windows NT administrators will not need most of this information, but folks who have mostly-Macintosh shops plus a few PCs should benefit greatly.
This article has been archived and is no longer updated by Apple.

Background on Windows Network Browsing and Windows File Sharing

The technical name for the Windows file sharing protocol is "Server Message Block" (SMB). This is the protocol that Microsoft uses for file sharing in LAN Manager, Windows for Workgroups, Windows 95, and Windows NT.

SMB runs on top of a protocol called NetBIOS, which can run on top of several other protocols such as NetBEUI, Novell IPX, and TCP/IP. Please note that AppleShare IP only supports SMB via TCP/IP.

A NetBIOS protocol called "NetBIOS Name Service" is generally used to provide network browsing support (when you go into "Network Neighborhood" -> "Entire Network" -> "Microsoft Windows Network" -> and so on). AppleShare IP 6 supports NetBIOS Name Service, but only via TCP/IP.

Comparison of Windows-Style Network Browsing To Macintosh-Style Network Browsing

To understand the differences between Windows-style network browsing and Macintosh-style network browsing, it is important to know a little bit about the differences in the protocols used.

NetBIOS Name Service is very different from the AppleTalk Name Binding Protocol ("NBP", the protocol Macintosh computers use to browse AppleTalk networks in the Chooser). NetBIOS Name Service is very conservative with the amount of network traffic it generates, and the tradeoff is that it is very slow to update the list of available servers on your network. To conserve network bandwidth, NetBIOS Name Service requires one computer in each workgroup, in each IP subnet, to act as a "Browse Master" for that workgroup on that subnet. The Browse Master maintains the list of available servers and caches it for a certain period of time so that SMB servers on the network do not have to announce their presence as often.

When a Macintosh user opens the Chooser and selects AppleShare, the Macintosh sends out an NBP lookup request to the current zone asking for all AFP servers to identify themselves. This allows the user to get an immediately up-to-date list of all the available servers.

In contrast, when a Windows 95 user opens the Network Neighborhood window, Windows asks the Browse Master for its workgroup (or NT domain) to give it a list of the other machines in the workgroup. This list may be terribly out of date because most SMB servers only announce their presence every 15 minutes, and in some cases it can take almost an hour for an SMB server to appear in the Browse Master's list. This is a limitation of the protocol and its common implementations. Very little can be done about it by an administrator.

A Big Gotcha: Crossing IP Network Boudaries with NetBIOS Name Service

By default, NetBIOS network browsing via TCP/IP does not work across IP subnets (that is, across routers). If you have ten machines in the workgroup "WORKGROUP" on one side of a router, and ten machines also in the workgroup "WORKGROUP" but on the other side of the router, you will not see one WORKGROUP with 20 machines. You will not even be able to see both WORKGROUPs at the same time. On each side of the router, machines will see one workgroup named "WORKGROUP", and it will only contain those machines on the same side of the router.

In order to get around this limitation, you must set up a WINS and/or an LMHOSTS environment. WINS is a kind of dynamic, DNS-like, server-based name service that comes as part of Windows NT Server. LMHOSTS uses manually-maintained text files to let computers in each subnet know how to contact the other computers in the other subnets. Setting up WINS and LMHOSTS environments is beyond the scope of this document. The AppleShare IP setup remains the same either way.

For more information about setting up WINS and/or LMHOSTS environments, please see Microsoft's documentation.

Getting Your AppleShare IP 6.0 Server to Appear in the Network Neighborhood

This section explains one simplified, sure way to get Windows-style network browsing to work with AppleShare IP.

There are plenty of ways to make network browsing work in more complex environments, such as using LMHOSTS or WINS as mentioned above. Once again, no matter what network browsing environment you use, the AppleShare IP setup remains the same.

Please note that your PCs do not have to be able to see your AppleShare IP 6 server in the Network Neighborhood in order to connect to it and use it. For more information, see the section below entitled, "Connecting to AppleShare IP 6.0 SMB Service Without Network Browsing".

To get AppleShare IP to appear in the Network Neighborhood, follow these steps:

1) Prepare the AppleShare IP server machine by making sure that the TCP/IP control panel is properly configured, the Web & File Server is running, the Windows File Sharing service is enabled, and the server's NetBIOS name and at least one sharepoint name are valid for NetBIOS (less than or equal to 13 characters, generally avoiding punctuation and special characters).

2) Make sure all of your PC client test machines can do SMB via TCP/IP. AppleShare IP only supports SMB via TCP/IP. You must have the Microsoft SMB client and TCP/IP stack properly installed and configured on your PC clients in order for them to connect to AppleShare IP's SMB service.

Note: In Windows 95, the SMB client is known as the "Client for Microsoft Networks" . In Windows NT, it is known as the "Workstation" service.

You should also check your network bindings on your PC clients to make sure that the SMB client is bound to NetBIOS, which is bound to TCP/IP, which is bound to the correct network adapter card. The details for checking bindings differ from release to release of Windows 95 and NT.

3) Make sure all of your test machines are on the same IP subnet. As explained earlier, without WINS or LMHOSTS, your AppleShare IP server and your Windows clients must be on the same IP subnet. Explaining IP subnetting is also beyond the scope of this document, but a fairly reliable simplification is, "If your clients and server are on the same Ethernet and can ping each other via IP, they are probably on the same subnet."

4) Make sure your test machines are in the same NetBIOS workgroup. It is harder to do step 4 if you have to deal with more than one workgroup. In Windows 95 and NT, this is done in the "Identification" panel of the Network control panel. You can set AppleShare IP's NetBIOS workgroup in the "Windows File Sharing" panel of the "Web & File Server Settings" window of the Web & File Admin application.

5) Make sure exactly one of your test machines is acting as the Browse Master for your workgroup. AppleShare IP cannot act as a Browse Master, so you need to have some other machine in the same IP subnet and NetBIOS workgroup acting as a Browse Master.

On Windows 95, the Browse Master software is installed as part of the "File and printer sharing for Microsoft networks" component. By default, Windows 95's Browse Master software is set to "Automatic", which means that it will automatically figure out if it needs to be the Browse Master for its workgroup. You can check this setting by viewing the Properties of the component.

Tip: To simplify troubleshooting, do not leave the Browse Master property set to "Automatic" on all of your Windows 95 systems. If you set the Browse Master property on one system to "Enabled" and all the rest to "Disabled", you will always know exactly which machine is your Browse Master. For best results, remember to check this setting whenever you reinstall Windows 95 or add a new Windows 95 machine to your network.

Since all of the other systems will rely on the one Browse Master system for their ability to browse the network, make sure the one you set to "Enabled" is either always powered on, or is always the first machine to be turned on and the last machine to be turned off. More information on working with Browse Masters is available from Microsoft.

6) Wait.
AppleShare IP announces itself more often than other SMB servers, but due to limitations of the protocol, it can still take a while for the AppleShare IP server to show up . Selecting the "Refresh" command from the Network Neighborhood window's "View" menu does not help any, either; rather than causing the SMB servers to reannounce themselves, it just asks the Browse Master for the most recent list, which may still be out of date.

Connecting to AppleShare IP 6 SMB Service Without Network Browsing

You can connect to AppleShare IP 6 SMB service without waiting to be able to browse to it. One way is by using the Windows "Find Computer" utility.

From Windows 95 or NT

1. Make sure your Windows username and password matches your AppleShare IP username and password. Re-login to Windows if you need to.
2. Click Start -> Find -> Computer
3. Enter the name of your AppleShare IP server.
4. Your AppleShare IP server will appear in the list of "found" items. Double-click on it to connect.

From Windows NT
Windows NT can use Internet DNS names and/or IP addresses to connect to servers. For Internet-style DNS name lookups to work properly

from NT, you need to go into the Network control panel, then to the TCP/IP protocol properties window, then to the WINS tab, and check the checkbox labelled "Enable DNS Lookups for Windows Name Resolution". Once you have done that, you can follow the same steps above, but substitute the fully-qualified domain name or IP address of your AppleShare IP server.

If you still cannot connect, test your IP configurations and network functionality by pinging the server from the client.

1. On the client, click Start -> Run.
2. Type "ping <ServerIPAddress>" into the window that comes up. Leave out the quotes, and subsitute the actual IP address of your server for <ServerIPAddress>.

If you cannot ping, then there is a problem with your TCP/IP configurations or with your network. Check your network control panels and network cabling and try again.

For more information on troubleshooting Windows 95 network browsing, see Microsoft's documentation.
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