AppleShare: DOS Multi-User Applications

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TOPIC ---

I want to install AppleShare 3.0 to service both Macintosh and DOS computers on a network. I will be purchasing PhoneNET Talk PC from Farallon for the DOS computers. Using the DOS workstations, I'd like to run multi-user DOS-based applications from the AppleShare server, including multi-user databases.

I have these questions relating to DOS Workstations and DOS multi-user applications:

Is it technically possible to run DOS-based, multi-user applications from the server, and have file- and record locking preserved?

If so, what determines what DOS applications will work, including limitations of networking protocols (NETBIOS, IPX, and so on)? What part does the DOS utility SHARE.COM play?

Do I have to do something special with privileges (to the DOS files) on the AppleShare server in order to allow multiple users access to the same application or database file?

Do you maintain a list of tested third-party DOS applications under this scenario?

DISCUSSION ---

Fundamentally the answer is simple, but in practice it really does depend on how the DOS applications are implemented.

The only network protocol involved in this case is AppleTalk and the AFP (AppleTalk Filing Protocol). PhoneNET Talk implements the AppleTalk stack on a DOS computer, and allows communication with AFP and PAP (Printer Access Protocol) servers. This means PhoneNET Talk is responsible for mapping a DOS client's request to the appropriate AFP and PAP calls. PAP services are straightforward and not a real subject of the question, so we won't go into any detail here. However, AFP, and how DOS works with it is

relevant, and that's what we'll concentrate on.

The PhoneNET Talk AFP services are responsible for translating the myriad of native DOS file system calls to AFP requests, after it has been determined that the call is referencing an AFP volume. The part we really have to worry about in the situation of multi-user database access is file security. We need to ensure that the security implemented in a PC database is faithfully obeyed in the process of translation to AFP. We'll start by explaining how AFP security works, and then move on to how DOS (with PhoneNET Talk) fits into the picture.

AFP implements security, or privileges, at several levels.

Volume/Folder Level Security

This is the kind of security most users are familiar with, where it allows or denies a user access to volumes and folders: directory access control. It's set by the server administrator or with the System 7 Finder's Sharing menu item, and enforced by the server. Your database scenario should be simple in this regard. All users who will access the database should have the necessary privileges to the folder where it exists.

File Level or File Sharing Modes

AFP doesn't provide the same user or group file restriction it supports with volumes and folders, but it does allow for file locking through various access modes. An application can open a file in one of several modes according to how exclusively it wants access to the file. It does this by using the appropriate open call with parameters set to allow or deny other users read/write access. This normally isn't adequate for a multi-user database as it only provides for all or none locking.

Byte Range Locking

This is controlled by application requests which are sent to the server. An application can lock a byte range of a file it has open to secure that range from modification or access by other users. This allows many users to open and use a file concurrently. A user needing to modify the file will first lock the required range, preventing other users from modifying that range or reading data that may soon be invalid.

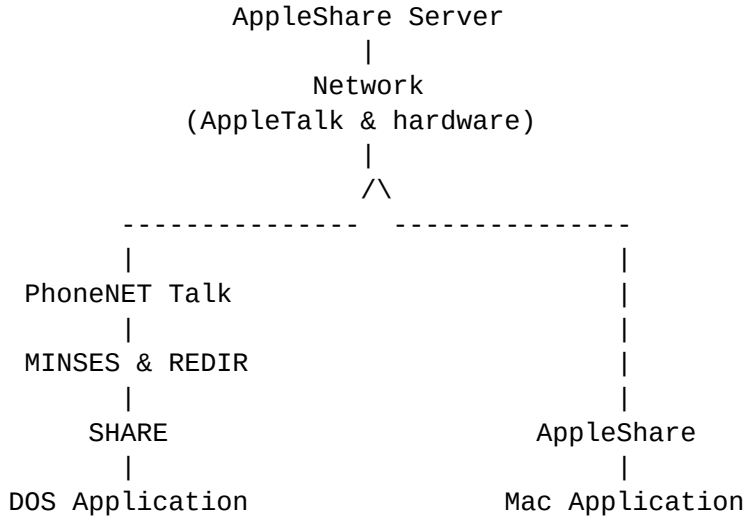
DOS with PhoneNET Talk

A DOS application will use the same strategy, but with different code. It is the responsibility of the network software (PhoneNET Talk in this case) to map those application calls to the appropriate AFP calls. If NetWare were in use, it would be responsible for mapping DOS calls to NetWare calls and sending them across IPX to the server.

The DOS SHARE command provides the DOS client with the ability to support file sharing. SHARE allocates memory for file pathnames to be locked, and loads support for the additional DOS calls such as Lock File Access for byte range locking. SHARE validates all DOS read/write requests once it's

loaded.

Here's a diagram of the different levels DOS and Macintosh clients will use to access files located on an AFP server:



Since the DOS byte range locking calls are mapped to AFP calls before arriving at the server, multi-user database applications should work fine if implemented correctly: they must use normal supported DOS calls for the locking routines, and not some proprietary locking method that relies on another network's API (such as NetWare). This will allow the byte range locking to work as expected.

Again, assuming the application doesn't bend too many rules, it should also be multi-launchable from the server. AppleShare shouldn't inject any additional limitations on this operation. If the application is multi-launchable from a NetWare server, it should be multi-launchable from an AppleShare server.

We haven't heard of any DOS/AppleShare database compatibility lists. Answering the question will require knowledge of the specific database engine and how it treats network databases. The database developer could answer this best.

Keywords: <None>

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