PATHWORKS for Macintosh

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System Administrator's Guide

Order Number: AA–PBFFB–TE

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About This Guide

Manual Objectives

This manual explains how to set up and maintain the PATHWORKS for Macintosh product.

The main tasks include managing AppleTalk for VMS and VAXshare file and printer services.

Intended Reader

This manual is written for the VMS system manager who is technically proficient at system management. Most likely the manager is new to Macintosh computers. However, some system managers may be more comfortable with Macintosh computers and less experienced with VMS.

It is assumed that you are familiar with the following documents:

- *Introduction to the AppleTalk Network System*
- *System Administrator's Reference Manual*

Manual Organization

The following table can help you find information in this manual.

Chapter 1	Introduces you to PATHWORKS for Macintosh computers.
Chapter 2	Describes how to change AppleTalk for VMS and AppleTalk/DECnet Gateway default values, and how to set up AppleTalk for VMS routing.

Chapter 3	Describes how to manage AppleTalk for VMS.
Chapter 4	Describes starting and stopping PATHWORKS for Macintosh computers.
Chapter 5	Describes the VMS and Macintosh file structures.
Chapter 6	Describes how to set up volumes, users, and applications.
Chapter 7	Describes how to manage volumes and file servers.
Chapter 8	Describes the printing process and how to set up and manage printer services.
Appendix A	Describes how to modify MSAX$CLIENT parameters.
Appendix B	Describes how to set up the VAX Distributed Queue Service (DQS) for VAXshare Printer services.
Appendix C	Describes how Macintosh and DOS users can share files.
Appendix D	Describes how to convert PacerShare volumes to VAXshare.
Appendix E	Describes how to convert AlisaShare volumes to VAXshare.
Appendix F	Describes how to configure LAT group codes for Macintosh users.
Appendix G	Describes AppleTalk for VMS error messages.
Appendix H	Describes AppleTalk/DECnet Transport Gateway error messages.
Appendix I	Describes DECwindows ADSP error messages.
Appendix J	Describes VAXshare error messages.
Glossary	Provides a glossary of terms.

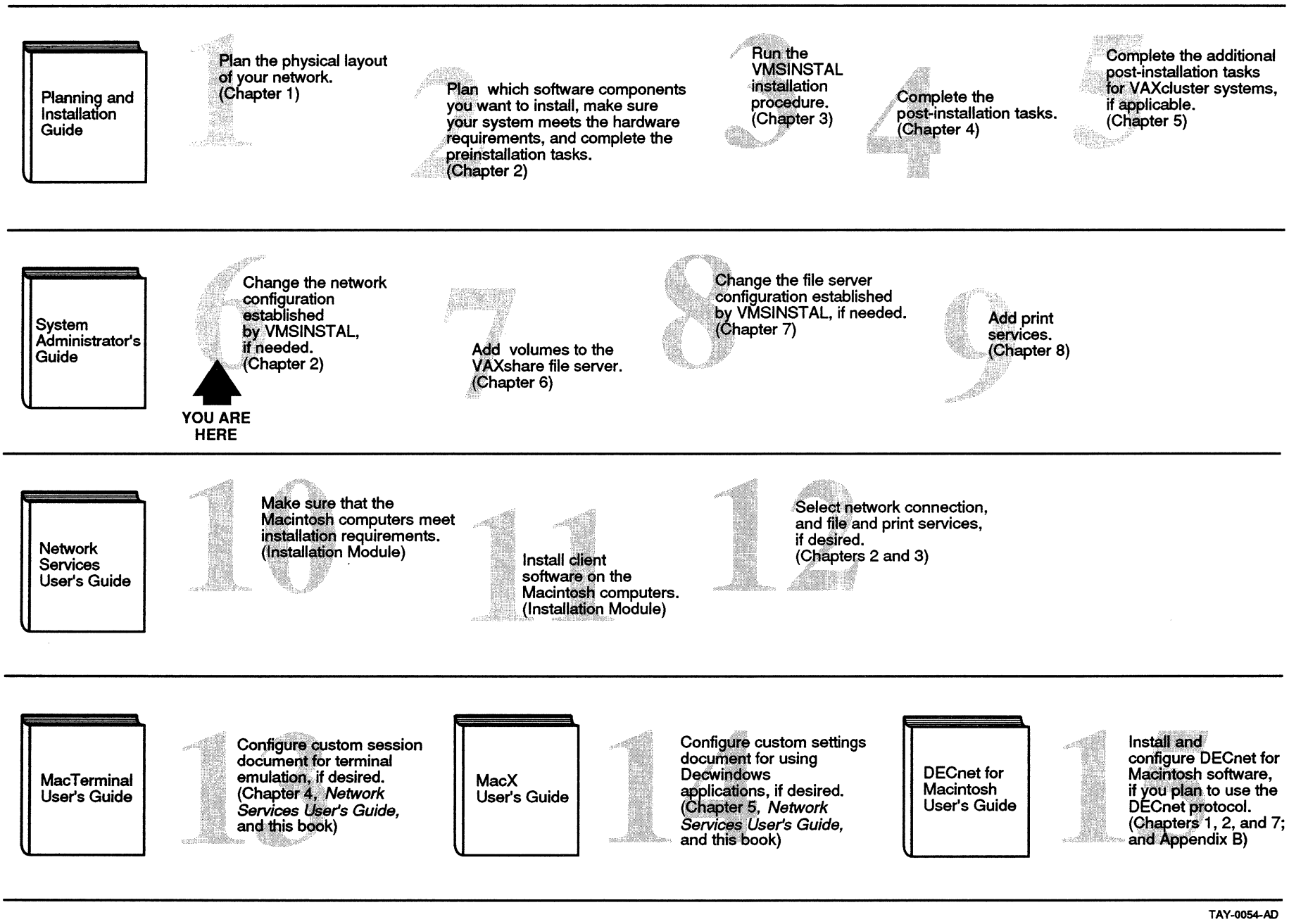
Conventions Used

Follow these conventions while using this manual:

Convention	Meaning
Ctrl/C	While you hold down the Ctrl key, press the C key.
Esc X	Press the Esc key and release it. Then press the next key indicated, and release it.
/	A forward slash (/) indicates that a command qualifier follows.
Esc X	Press the Esc key and release it. Then press the next key indicated, and release it.
enter	Enter all letters, spaces, and punctuation marks exactly as they are printed. Then press the Return or Enter key, as appropriate.
Return	Press the Return or Enter key on your keyboard.
black type	In examples of dialog between you and the computer, the display on the screen is printed in black.
teal blue type	In examples of dialog between you and computer, teal type indicates information that you must enter from the keyboard. For online versions, user input is shown in **bold**.
numbers	All numbers shown in this manual are in decimal form, unless otherwise noted.
two-line commands	Some commands are continued on a second line. In VMS, a continued command may be indicated by a hyphen (-) at the end of the first line. Enter the hyphen, and press Return. The system displays the _$ prompt. Continue entering the text that follows the _$ prompt in your manual.
NOTE	Contains information of special importance.

The following map points you to the individual book that describes how to perform specific installation and configuration tasks.

Figure 1 Map of Installation and Configuration Tasks



1

Introduction to System Administration

As the VMS system administrator, you need to know how to keep the AppleTalk for VMS network and the AppleTalk/DECnet Transport Gateway running reliably and how to manage VAXshare file and printer services.

This chapter describes:

- Components you need to manage
- Other system components
- Using AppleTalk Manager commands
- Using VAXshare Manager commands

You need two sets of commands to manage PATHWORKS software for Macintosh computers. A simple example of command use for each type is described in this chapter. Detailed descriptions of commands are included in later chapters in connection with specific tasks.

Before you can set up the network and the services, you must have successfully completed installation according to the *Planning and Installation Guide*.

Components You Need to Manage

Become familiar with the VMS components of PATHWORKS for Macintosh software.

PATHWORKS for Macintosh software includes many components that work together to provide network services. Although some of these components are installed on a Macintosh computer, the following components run under VMS and require your management:

- AppleTalk for VMS and the AppleTalk/DECnet Transport Gateway. Changing network values, setting up routing, and managing AppleTalk for VMS software are described in Chapter 2 and Chapter 3.
- VAXshare file and printer services. VAXshare file services are described in Chapter 6 and Chapter 7. VAXshare printer services are described in Chapter 8.

AppleTalk for VMS Software

AppleTalk for VMS software allows a VMS system to communicate with an AppleTalk network. This basic platform allows VMS and Macintosh users to share applications and services.

An AppleTalk network is a collection of computers, servers, and devices connected together. An AppleTalk internet is a grouping of two or more distinct networks connected with an internet router. Internet router capability is included with AppleTalk for VMS.

A VMS system configured as an **internet router** can connect separate Ethernet local area networks to form one larger network. Or with an internet router, a DECnet link can be used to route traffic between two geographically separate AppleTalk networks.

The AppleTalk/DECnet Gateway provides Macintosh users access to DECnet-based applications. Macintosh developers can design applications that use DECnet software. The gateway translates between AppleTalk and DECnet protocols.

You use AppleTalk for VMS Manager (ATK$MANAGER) commands to examine network parameters and modify the configuration. You also can control the router and its ports and the AppleTalk/DECnet gateway. The AppleTalk for VMS Manager is a VMS application.

VAXshare Software

VAXshare software makes VMS files and printers available to Macintosh users. VAXshare also provides AppleShare Version 2.0 compatible file services. This compatibility is important because it allows AppleShare and VAXshare services to be used interchangeably.

With VAXshare software installed, Macintosh users can log on to the VAXshare server and use its volumes with standard Macintosh procedures. VMS users can access directories and files from the same server with standard VMS procedures.

VAXshare file servers allow Macintosh users to store, access, and share files on a VAX computer. A VAXshare file server provides:

- Data sharing between VMS, Macintosh, DOS, and OS/2 users
- Data security
- Back up for VAXshare files

VAXshare printer services allow Macintosh and VMS users to share Digital and Apple printers. Users can send documents for printing to these printers, using VMS print spoolers and the print queue system. The following printers are supported:

- Digital LPS20
- Digital LPS40 Plus
- Digital LPS40
- Digital LN03R
- Apple LaserWriter
- Apple LaserWriter Plus
- Apple LaserWriter NT
- Apple LaserWriter NTX

You use the VAXshare Manager (MSA$MANAGER) commands to manage all VAXshare services from anywhere on the DECnet network.

Other System Components

The installation procedure installs the following components, which do not require management.

- The DECwindows AppleTalk Data Stream Protocol (ADSP) transport allows Macintosh users to access DECwindows applications. Once DEC LanWORKS for Macintosh software has been installed and started, the transport can be used.

  You can define the logical name MSAX$ADSP_MAXBUF for this transport. See Chapter 3.

- Mail
- Data Access Language is an SQL database application running under VMS and on Macintosh computers.

The Macintosh client includes several components that you should know about, but that are managed by the Macintosh user. These include:

- MacX is a Macintosh X Windows system server that speaks to any DECwindows clients, using the DECwindows ADSP transport, DECnet, and TCP/IP.
- MacTerminal Version 3.0 provides Macintosh users with VT320 terminal emulation using LAT, CTERM and other tools.
- The Macintosh Communications Toolbox provides Macintosh applications with standard communications services and a consistent user interface for selecting, configuring and using the services.

Using AppleTalk for VMS Manager Commands

You use the AppleTalk for VMS Manager to define and modify AppleTalk network parameters. You can change values to solve problems or to reconfigure AppleTalk for VMS software and the AppleTalk/DECnet gateway.

To start the manager, enter:

```
$ RUN SYS$SYSTEM:ATK$MANAGER
```

The following prompt is displayed:

```
ATK$MANAGER>
```

You can enter commands at the prompt as shown in the following example:

```
ATK$MANAGER> LIST KNOWN PORTS
```

When you exit, the VMS operating system prompt ($) is displayed.

Using VAXshare Manager Commands

You use the VAXshare Manager commands to define and modify VAXshare file and printer parameters. You can change values to solve problems or to reconfigure.

To start the manager, enter:

```
$ ADMINISTER/MSA
```

The following prompt is displayed:

```
MSA$MANAGER>
```

You can enter commands at the MSA$MANAGER prompt as shown in the following example:

```
MSA$MANAGER> SHOW SERVER
```

When you exit, the VMS operating system prompt ($) is displayed.

2

Changing the Network Configuration

This chapter explains:

- AppleTalk network concepts you need to know
- How to change AppleTalk for VMS and AppleTalk/DECnet Gateway configuration values
- How to set up AppleTalk routing on the VAX computer

The VMSINSTAL procedure for PATHWORKS for Macintosh provides a basic network configuration.

During installation, the executor, primary port, logging, and the gateway are defined with default values. These values are sufficient for most sites.

If you have a VAXcluster system, the *Planning and Installation Guide* also describes how to configure additional VAX nodes using the ATK$CONFIG procedure. ATK$CONFIG includes:

- Setting up the executor for non routing
- Setting up the primary port
- Selecting the zone for the primary port
- Assigning the start and end network ranges for the primary port
- Enabling event logging
- Setting up the gateway

Note *ATK$CONFIG provides the same values for components as VMSINSTAL.*

AppleTalk Network Concepts You Need to Know

Before you make any changes to the default network configuration, become familiar with the AppleTalk network concepts of primary port, zones, and network numbers.

Defining a Primary Port

The AppleTalk for VMS **primary port** is the port on your VAXnode where all AppleTalk services are registered. It also is the port where all node addresses are allocated.

- The primary port must be an Ethernet port.
- There is only one primary port for each VAX node.

If there is more than one Ethernet port, assign the primary port to be in the network where you want your AppleTalk services to appear.

Defining Zones

An AppleTalk zone is a conceptual way of organizing devices that makes it easier to locate available services.

AppleTalk file and print services offered by a node are presented to the user in listings organized by zone name. If all nodes in the internet were in the same zone, the list of services displayed to users can become too long to read.

As you begin to think about creating and naming zones, remember that zones are a conceptual way to group devices and services. For example, you can define zones by departmental work groups, by geographical boundaries, or by specific project requirements.

You can assign a group of engineers to the same zone. Or, you can assign all users in the same building to the same zone. Or, you can assign all users working on the same project to the same zone.

Keep in mind the following points about zones:

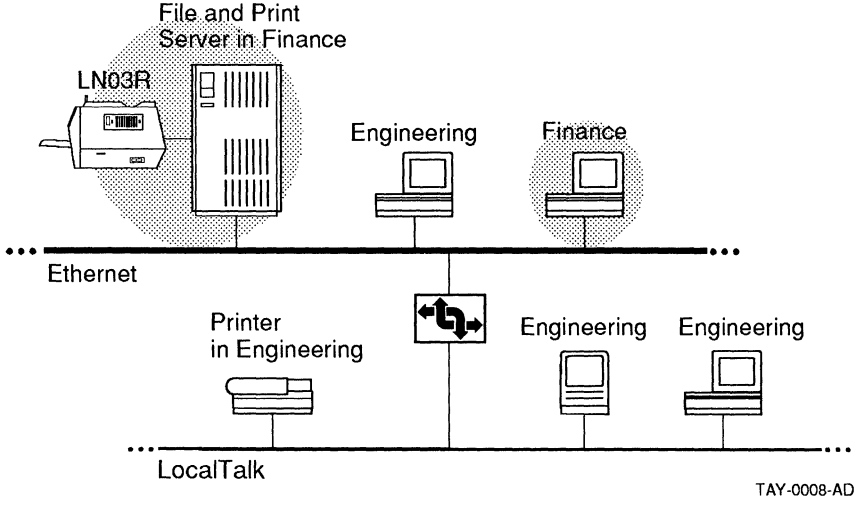
- A zone does not have a physical boundary.
- Each node in the internet belongs to a zone.
- A zone can include one node or several nodes.
- Nodes on the same LocalTalk network must belong to the same zone.
- Nodes on the same Ethernet network do not have to be in the same zone.

- A seed zone list is a list of zones that are available on the network. Devices that are on the same network can choose to be in any zone in the seed zone list.
- One zone in the seed zone list is identified as the default zone. The default zone has two purposes:
  - Some AppleTalk devices cannot be preassigned with zone names. This type of device can use the default zone.
  - If the administrator preassigns an invalid zone name to a device, then that device also changes to the default zone.

Figure 2–1 illustrates that AppleTalk zones are groupings of computers and services defined for organizational purposes.

In the two networks shown, all nodes on the LocalTalk network belong to the same Engineering zone but the nodes on the Ethernet can belong to either the Engineering or Finance zone.

Figure 2–1 An Internet Zone Example



Understanding Network Numbers and Ranges

Identify each AppleTalk network with a number or range. Consistent network numbering helps you maintain order as new networks are added.

An AppleTalk network is identified by a network number or a network range.

When you consider how to select network numbers and ranges, remember:

- A LocalTalk network is always identified by a single network number. The number can be any decimal number from 1 - 65279.
- All other networks are identified by a network range - a range of contiguous network numbers, such as 1 to 10.
- A network range for Ethernet can be in the range 1 -65279, or it can be in the startup range 65280 - 65534.

  Assign a large network range to Ethernet networks to allow for expansion.
- Each number in the range is a network address that can be associated with up to 253 nodes.

  Network numbers and ranges must be unique and cannot overlap with other networks on the same internet.
- DECnet tunnels are logical links between half routers. They are not AppleTalk networks and do not require network numbers.
- The default network range is the startup range, 65280 - 65534.
- The **startup range** is a special reserved range used to acquire preliminary node addresses.

  Nodes first acquire node addresses in the startup range so they can communicate with a router. The node queries the router to determine the real network range. Then the node changes its address to conform to the router's network range.

  If a router cannot be found, the node retains its original startup range.

  To prevent problems in the future, it is important to assign the correct network range to the node. If a node keeps its address in the startup range because a router cannot be found, it may not be able to communicate with other nodes in the internet.

  When the first router appears, it may have a conflicting network range. Nodes that are in the wrong range cannot communicate with each other.

Assign the correct network range particularly if it is possible that an AppleTalk for VMS node could start when there are no routers on the network. See Changing Network Configuration Values in this chapter for information on assigning network ranges.

Determining a Network Range

Assign a network number or network range to identify each physical network.

Each number in the network range can include up to 253 node addresses.

The size of the range determines the maximum number of devices on the physical network. For example, a network having a range of 1 to 10 could contain up to 10 x 253 nodes, or 2350 nodes.

Choose a network range that allows for at least two or three times the current number of nodes. And allow wide margins between the ranges.

For example, if a range of 100 to 110 is assigned to a network, start the next range with network number 120, instead of 111. You can save network range numbers 111 to 119 for future use.

You can define your own numbering scheme using various categories as a basis, including building site, floor location, and department.

Contrasting AppleTalk with DECnet

Although some DECnet and AppleTalk concepts may appear to be similar, there are some important differences:

- A DECnet network is a collection of interconnected computers or systems that communicate with each other.
- An AppleTalk network is a collection of computers and devices connected together that has a unique identity separate from other networks.

  An AppleTalk internet is a grouping of two or more distinct networks connected with a router. An internet is similar to a DECnet network.
- AppleTalk software dynamically assigns node addresses as nodes join and leave the network.
- DECnet node addresses are assigned by a network administrator.
- Each AppleTalk network number has up to 253 nodes.

- An Ethernet segment can have a range of network numbers.
- Each DECnet area can have up to 1023 nodes.
- A DECnet area can include several Ethernet and point to point networks.

You can use the DECnet node addressing scheme as a basis for allocating network numbers and ranges.

An Example: Using DECnet Area Numbers

If you already have a plan for assigning DECnet area numbers, you may be able to use the DECnet area assignment method as the basis for allocating AppleTalk network numbers. DECnet allows for 63 areas with 1023 nodes in each area. The following example shows one way to use currently assigned DECnet area numbers to allocate AppleTalk network numbers.

This example assumes that you are using five DECnet areas. Area 1 has two LocalTalk networks and two Ethernet networks.

1 Allocate a block of AppleTalk network numbers to each DECnet area. For convenience, the start of the range is the DECnet area number times 100 (1 x 100). The end of the range is the start range plus 99 (100 + 99). Reserve network numbers 1 to 99 for demonstration and testing purposes.

The following table illustrates the allocation of 100 network numbers to each DECnet area.

DECnet Area	AppleTalk Network Numbers
1	100 to 199
2	200 to 299
3	300 to 399
4	400 to 499
5	500 to 599

This numbering scheme provides about 25,000 AppleTalk nodes for each area including VAX computers, Macintosh computers, and printers. (Remember, each network number can have up to 253 nodes.)

2 Allocate network numbers and ranges for each physical network in each DECnet area.

Assign a single network number to each LocalTalk, and a network range to each Ethernet.

First, allocate numbers to the LocalTalk networks. Start with the highest number. Thus, in Area 1, allocate 199 and 198 to the two LocalTalk networks. In the future, you can allocate numbers 197, 196, and so on, to make a continuous, unique numbering scheme.

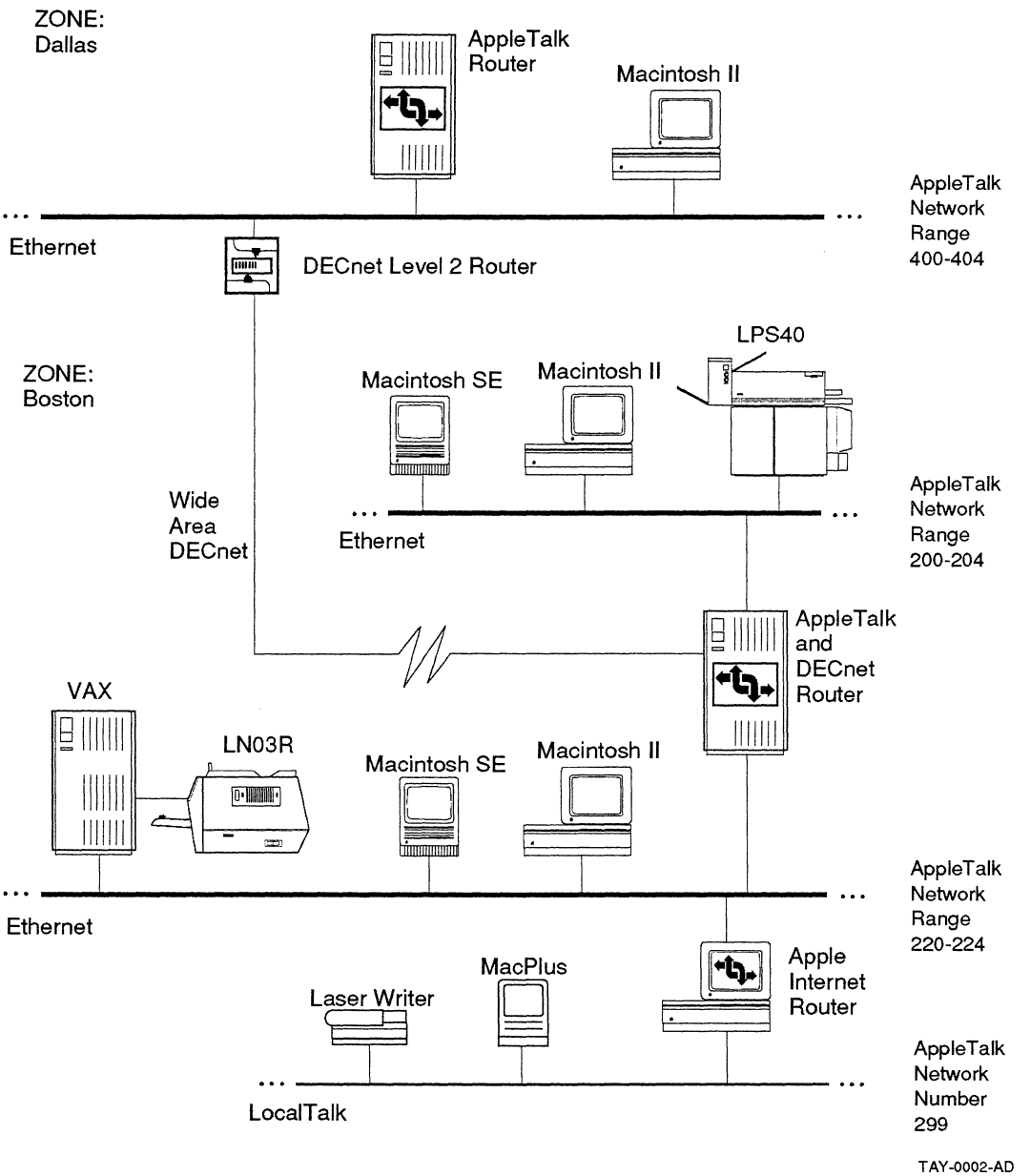
Second, allocate ranges to the Ethernets. Start with the lowest number. Thus, in Area 1, allocate a network range of 100 to 104 to the first network. Save 105 to 109 for the future. And then allocate 110 to 114 to the next network. Continue allocating numbers and ranges for each remaining area.

The size of the range depends on the number of nodes on the network. If you have a large internet, allocate more network numbers to each area. For example, you could allocate numbers 100 to 299 to Area 1.

You can modify this scheme to your network, or devise your own numbering system.

Figure 2–2 is an example of a network map that illustrates zone definitions and network ranges. In this example, there are two zones: one in Dallas, and one in Boston; a VAX computer also is located in both zones.

Figure 2–2 Network Map Example



Changing Network Configuration Values

If you are satisfied with the default network configuration provided by the installation procedure, you probably do not need to change any values. Check the default values of the primary port using the following command:

```
ATK$MANAGER> show known ports

Port Volatile Characteristics as of 11-MAY-1990 09:42:03

Port name                                  "Primary"
Device name                                "ESA0"
Port type                                  Primary port
Port state                                 On
Seeding state                              Off
Network range                              65280-65534
Zone name                                  ""
Partner                                    ""
AARP cache size                            Small
Preallocated AARP receive buffers          2
Preallocated DDP receive buffers           10
Routing buffers                            16
Routing cost                               1
Default zone                               "*"
Number of seed zones                       0

ATK$MANAGER>
```

Changing values for a non routing Ethernet port

Check the values for ZONE NAME and NETWORK RANGE. These are the two configuration parameters that you might want to change. You can assign the primary port to another zone and you can change the network range to match the router's range.

You can run the automatic ATK$CONFIG procedure to change values:

To run ATK$CONFIG:

- Logon to the SYSTEM account.
- To start:

  ```
  $ @SYS$MANAGER:ATK$CONFIG
  ```

Or you can manually reconfigure network values.

- Change the ZONE NAME. If there are multiple zones on the network, you may want to change the name.

  For example, there are three zones on the network including Marketing, Finance, and Engineering. Marketing is the DEFAULT ZONE. If you want your node to be in the Finance zone, then you can change the ZONE NAME to "Finance".

```
ATK$MANAGER> DEFINE PORT NAME "Primary"-
_ATK$MANAGER> ZONE "Finance"
```

- The default NETWORK RANGE is 65280-65534. This is the AppleTalk startup range. If you plan on forming an internet, change the network range to match the router's range for the Ethernet associated with this port.

```
ATK$MANAGER> DEFINE PORT NAME "Primary"-
_ATK$MANAGER> NETWORK RANGE 5400 5500
```

- If you have changed port parameters, shut down AppleTalk for VMS and then restart for the changes to take effect.

```
ATK$MANAGER> SET EXECUTOR STATE OFF
```

- If there are any applications using AppleTalk for VMS, you need to stop the applications before you restart. See Chapter 4.
- Or you can use the shutdown command to stop all components as follows:

```
$ @SYS$MANAGER:MSA$SHUTDOWN
```

- Restart the AppleTalk for VMS Manager.

```
$ @SYS$STARTUP:ATK$STARTUP
```

Of if you want to start all components, enter:

```
$ @SYS$STARTUP:MSA$STARTUP
```

Or enter the following commands:

```
ATK$MANAGER> SET EXECUTOR ALL
ATK$MANAGER> SET KNOWN LOGGING ALL
ATK$MANAGER> SET KNOWN PORTS ALL
```

Setting Up AppleTalk for VMS Routing

A router is a device that connects two or more networks to form an internet.

The primary purpose of routing is to connect multiple AppleTalk networks to create an internet.

AppleTalk for VMS software provides two kinds of routing:

1. A VAX computer can serve as an internet router to connect Ethernet local area networks.
2. A DECnet wide area network can be used to connect two or more geographically separate AppleTalk internets. The two AppleTalk internets become one larger AppleTalk internet.

   The connection is made through a **DECnet tunnel**. A DECnet tunnel uses a DECnet logical link to connect two routers.

You can combine Ethernet and DECnet tunnel routing to form larger internets.

This section describes:

- Understanding routing
- Defining Ethernet ports
- Defining DECnet tunnel ports
- A sample configuration

Understanding Routing

Before you decide to enable routing, it is helpful to understand the following concepts:

- While the AppleTalk for VMS router is operating, the VAX can be used concurrently for other network services.
- When you use a VAX as a router, some CPU capacity is dedicated to routing. System performance and memory usage can be affected depending upon the amount of AppleTalk traffic.
- A router has multiple ports and can route through all the ports simultaneously.
- Network information, such as the zone list, needs to be entered in at least one router, attached to each network in the internet.

  A router that stores this network information is called a **seed router**. A seed router transmits identifying information about the network to all other connected routers. All seed routers on the same network must contain identical network information.

  A **nonseed router** does not contain network identifying information. Nonseed routers must acquire network information from a seed router.

  Because a router can provide seed services to some networks and nonseed services to others, the router's ports are defined as seed ports and nonseed ports.

Once you have decided to set up routing...

Once you have decided to set up routing, determine how many ports need to be defined. You need to define one port for each Ethernet device or DECnet tunnel.

To set up the port, determine if it is an Ethernet or DECnet tunnel port and select the port name.

For an Ethernet port, you need to determine:

- The VMS device name

- If it is the primary port
- If it is a seed port. For seed ports, determine the network range, seed zones, and default zone

For a DECnet tunnel port, you need to know the name of the DECnet node at the other end of the tunnel. This node must be an AppleTalk for VMS router that has a defined DECnet tunnel port.

You can also change additional routing parameters for the port and the executor. See DEFINE EXECUTOR ROUTING and DEFINE PORT ROUTING parameters in Chapter 3 and in the *System Administrator's Reference Manual.*

Defining Ethernet Ports

Each AppleTalk for VMS router must have at least one primary Ethernet port. The primary port must have a name, network range, and zone name. If you have multiple Ethernet ports, you generally want the primary port to be the one where most of the AppleTalk traffic occurs.

Although the primary port has been defined during configuration, you can modify the primary port parameters for routing.

The following example illustrates the commands that define a routing port and set up the executor for routing. In this case, the primary port is defined to be a seed port. A seed port must have the following network information:

- Network range
- Seed zones
- Default zone

  The default zone must be one of the seed zones.

```
ATK$MANAGER> DEFINE PORT NAME "Steve's Port" DEVICE XQA0:
ATK$MANAGER> DEFINE PORT NAME "Steve's Port" PRIMARY ON
ATK$MANAGER> DEFINE PORT NAME "Steve's Port" SEED ON
ATKMANAGER> DEFINE PORT NAME "Steve's Port"-
_ATK$MANAGER> NETWORK RANGE 1 10-
_ATK$MANAGER> ZONE "Engineering"
ATK$MANAGER> DEFINE PORT NAME "Steve's Port" SEED ZONES-
_ATK$MANAGER> ("Accounting","Engineering", "Marketing")
ATK$MANAGER> DEFINE PORT NAME "Steve's port"-
_ATK$MANAGER> DEFAULT ZONE "Accounting"
ATK$MANAGER> DEFINE PORT NAME "Steve's port" STATE ON
ATK$MANAGER> DEFINE EXECUTOR ROUTING STATE ON
```

You also can string together all of the commands above as follows:

```
ATK$MANAGER> DEFINE PORT NAME "Steve's port" DEVICE XQA0: PRIMARY ON -
_ATK$MANAGER> SEED ON NETWORK RANGE 1 10 ZONE "Engineering" -
_ATK$MANAGER> SEED ZONES ("Accounting", "Engineering", "Marketing") -
_ATK$MANAGER> DEFAULT ZONE "Accounting" STATE ON
ATK$MANAGER> DEFINE EXECUTOR ROUTING STATE ON
```

Shut down AppleTalk for VMS and then restart for the changes to take effect.

```
ATK$MANAGER> SET EXECUTOR STATE OFF
```

Start up AppleTalk for VMS.

```
$ @SYS$STARTUP:ATK$STARTUP
```

Or enter the following commands:

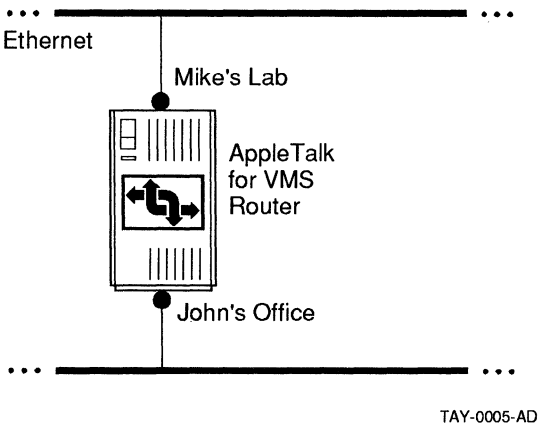
```
ATK$MANAGER> SET EXECUTOR ALL
ATK$MANAGER> SET KNOWN LOGGING ALL
ATK$MANAGER> SET KNOWN PORTS ALL
```

Example 1: Connect two Ethernets.

Set Up Two Ethernet Ports for Routing

This example defines "Mike's Lab" to be the primary port and a seed port. "John's Office" is a secondary non seed port.

Figure 2–3 Connecting two Ethernet networks



- Define "Mike's Lab" to be the primary port and a seed port.

```
ATK$MANAGER> DEFINE PORT NAME "Mike's Lab"-
_ATK$MANAGER>  DEVICE XQA0: PRIMARY ON-
_ATK$MANAGER> SEED ON NETWORK RANGE 110 114-
_ATK$MANAGER>  DEFAULT ZONE "Building 1 " SEED ZONES-
_ATK$MANAGER> ("Building 1", "Building 2") STATE ON
```

- Define "John's Office" to be a secondary non seed port

```
ATK$MANAGER> DEFINE PORT NAME "John's Office"-
_ATK$MANAGER> DEVICE XQB0:-
_ATK$MANAGER> PRIMARY OFF SEED OFF STATE ON
```

Turn routing on. Shutdown AppleTalk for VMS and restart the network.

```
ATK$MANAGER> DEFINE EXECUTOR ROUTING STATE ON
ATK$MANAGER> SET EXECUTOR STATE OFF
ATK$MANAGER> EXIT
$ @SYS$STARTUP:ATK$STARTUP.COM
```

Defining DECnet Tunnels

DECnet Tunnel Concepts

Before you decide to set up DECnet tunnel ports, it is helpful to understand these concepts.

- DECnet tunnels can be used to form an AppleTalk internet by connecting geographically separate AppleTalk internets.
- A DECnet path must exist between the two ends of the tunnel but it does not have to be a direct path.
- Many tunnels can exist on the same DECnet.
- A tunnel port cannot be the primary port.
- An AppleTalk for VMS router can participate in more than one tunnel.
- DECnet tunnels do not require the AppleTalk/DECnet gateway.
- DECnet tunnels do not have network numbers.
- You must enable routing on the AppleTalk for VMS node to use DECnet tunnels.

```
ATK$MANAGER> DEFINE EXECUTOR ROUTING STATE ON
```

Planning for DECnet Tunnels

Plan ahead to avoid conflicts that can occur when you connect internets.

- Network number conflicts. Check the internet on both sides of the tunnel to avoid conflicts.
- Merging zone lists. The list can get too long to read easily and device name conflicts can occur.

- Performance and capacity.
  - Check the traffic between the two internets. If there are a number of networks in both internets, routing table update traffic through the tunnel can consume more of the tunnel's bandwidth and leave less bandwidth for data traffic.

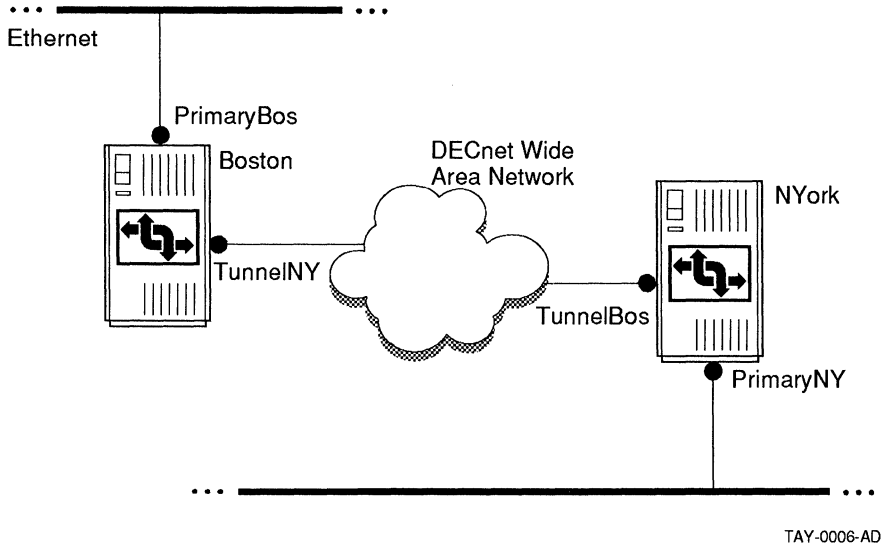
    Choose the bandwidth that can handle the load. Data link speeds below 56 Kb are not recommended, and speeds below 9.6 Kb are not supported.
  - Name lookups may not work as you planned. You may have to adjust some parameters. See Chapter 3.

Example 2: Add a tunnel to connect two routers over DECnet.

Defining DECnet tunnel ports

In this example, you need to define two ports for each VAX. Define the primary port and the DECnet tunnel port for the Boston node. And then define the primary port and the DECnet tunnel port for the New York node.

Figure 2–4 Defining DECnet tunnel ports



The following command example describes how to set up this routing configuration.

- On node BOSTON:

```
ATK$MANAGER> DEFINE PORT NAME "tunnelNY"-
_ATK$MANAGER> PRIMARY OFF-
_ATK$MANAGER> PARTNER NYork STATE ON
ATK$MANAGER> DEFINE PORT NAME "PrimaryBos"-
_ATK$MANAGER>  DEVICE XQA:-
_ATK$MAANGER> PRIMARY ON NETWORK RANGE 10 16-
_ATK$MANAGER> SEED ON DEF ZONE "Apple"-
_ATK$MANAGER> ZONE "Apple" SEED ZONES-
_ATK$MANAGER> ("Apple", "Dec") STATE ON
ATK$MANAGER> DEFINE EXECUTOR ROUTING STATE ON
```

- On node NYORK:

```
ATK$MANAGER> DEFINE PORT NAME "tunnelBos"-
_ATK$MANAGER> PRIMARY OFF
_ATK$MANAGER> PARTNER Boston STATE ON
ATK$MANAGER> DEFINE PORT NAME "PrimaryNY"-
_ATK$MANAGER> DEVICE XQA:-
_ATK$MANAGER> PRIMARY ON NETWORK RANGE 20 29-
_ATK$MANAGER>  SEED ON DEF ZONE "Marketing"-
_ATK$MANAGER> ZONE "Marketing" -
_ATK$MANAGER> SEED ZONES-
_ATK$MANAGER> ("Marketing", "Engineering")-
_ATK$MANAGER> STATE ON
ATK$MANAGER> DEFINE EXECUTOR ROUTING STATE ON
```

Figure 2–5 displays a view of the physical links and the logical links between DECnet tunnels. DECnet tunnels do not have to follow the physical links.

Figure 2–5 Sample DECnet Tunnel Configuration

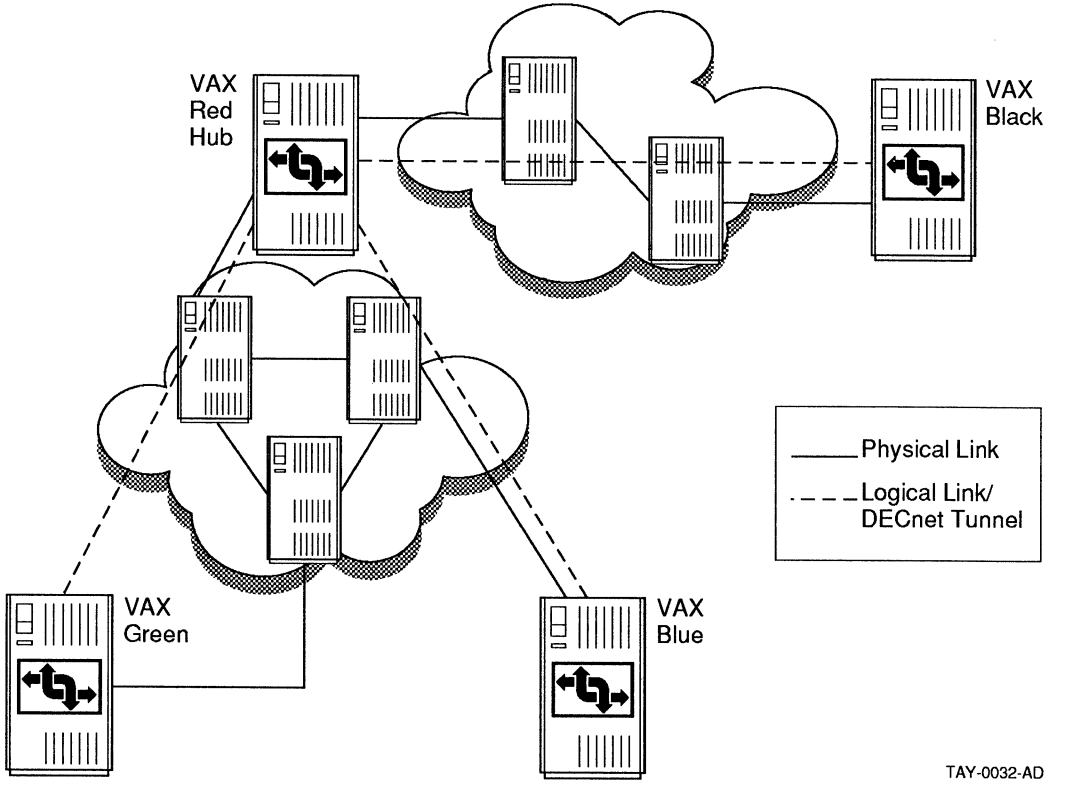
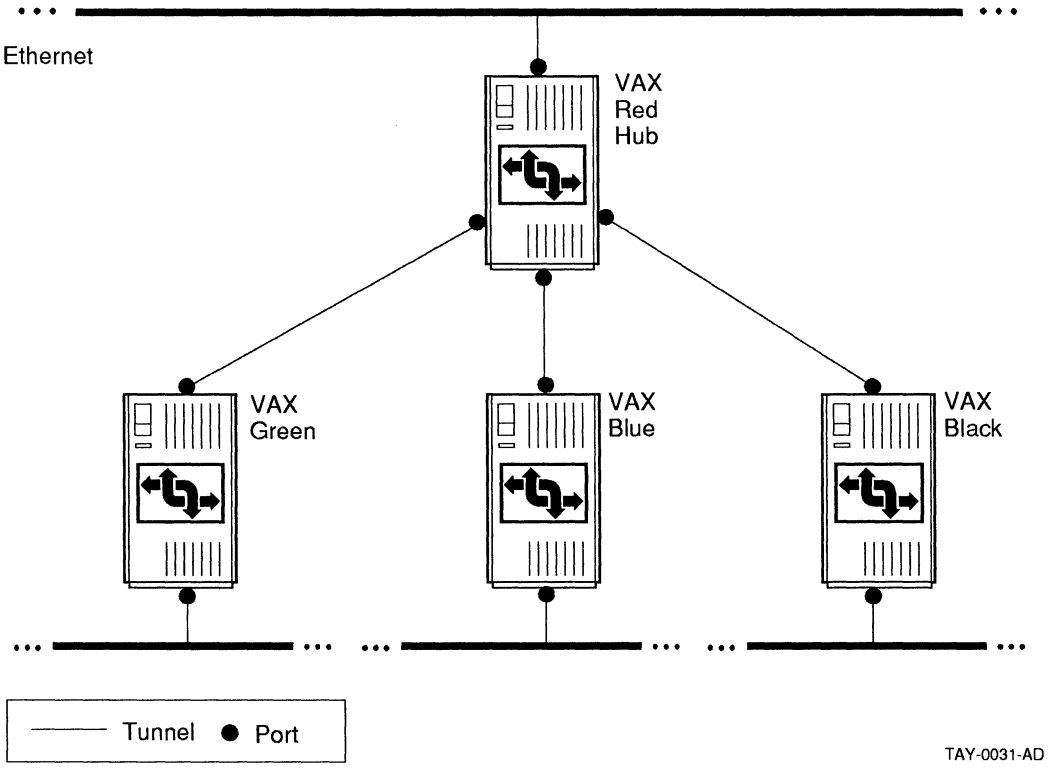


Figure 2–6 illustrates how to set up DECnet tunnels to connect several remote AppleTalk routers through a hub router. Define four tunnel ports on the hub router. And define two ports for each node.

Figure 2–6 Routing with DECnet Tunnels



3

Managing AppleTalk for VMS

This chapter describes how to manage AppleTalk for VMS software and the AppleTalk/DECnet Transport Gateway. It explains how to use the AppleTalk for VMS Manager commands (ATK$MANAGER) to adjust and modify the network parameters.

For a complete description of the AppleTalk for VMS Manager commands, see the System Administrator's Reference Manual.

In general, you can use the default settings for AppleTalk for VMS. However, if the network configuration changes or specific problems occur, then you need to redefine the appropriate parameters. Most of the parameters are provided to improve performance or to reduce memory usage.

The following sections offer guidelines to help you manage the network.

- Adjusting parameters on large internets
- Conserving memory and improving performance
- Increasing available sockets
- Improving routing performance
- Improving gateway performance

ATK$MANAGER allows you to store information in two types of databases: the permanent database and the volatile database. You use different commands depending on the database you want to affect and the task you need to accomplish.

Table 3–1 lists the ATK$MANAGER commands that you can use to configure and observe AppleTalk for VMS.

Table 3–1 When to Use ATK$MANAGER Commands

Activity	Command to Use
Change permanent database	**DEFINE**
Display information in permanent database	**LIST**
Delete information in permanent database	**PURGE**
Change the running system	**SET**
Display information about running system	**SHOW**
Reset the gateway counters	**ZERO**
Disconnect a gateway session	**DISCONNECT**

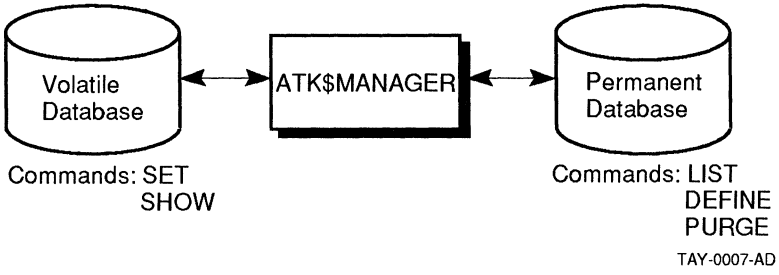
Values entered using DEFINE and PURGE affect the permanent database and do not take effect until the next time you start up AppleTalk for VMS software. Values entered using SET affect the volatile database and take effect immediately, but are not retained the next time AppleTalk for VMS is started.

You use DEFINE and SET to modify parameters but each command has a different result. For example, you generally use a DEFINE command to affect the configuration. The new value is stored in the database and when you restart, the network is reconfigured to use the new value.

You generally use the SET command to turn components, such as the executor or a port, off and on. For example, you can immediately halt operations through a specific port by using the SET PORT "port name" STATE OFF command.

Figure 3–1 illustrates the dual database concept.

Figure 3–1 ATK$MANAGER Database Commands



Adjusting Parameters on Large Internets

An AppleTalk network system can expand to connect a large number of devices across physical and geographical boundaries. Different links, including LocalTalk, Ethernet, and telephone lines, are interconnected by routers to build these large internets.

This section describes solutions to problems that occur because of network expansion, including:

- ADSP (AppleTalk Data Stream Protocol) connection failures
- Name search failures

ADSP Connection Failures

ADSP connection failures and problems can occur more frequently on a large internet. Packets move slower because they have to pass through several routers.

To ensure that connections are made, you can try changing the following CONNECTION parameters by using the DEFINE EXECUTOR command:

- INITIAL ROUND TRIP DELAY
- OPEN INTERVAL
- OPEN RETRYS

Increasing the Parameters

The INITIAL ROUND TRIP DELAY parameter specifies the time delay between two nodes that have established a connection. The default setting is 1000 milliseconds. You can increase the time to prevent excessive retransmissions over the connection. For example:

```
ATK$MANAGER> DEFINE EXEC CON INIT ROUND TRIP DELAY 2000
```

The OPEN INTERVAL parameter specifies the time delay before resending an open connection request. The default setting is 250 milliseconds. Try setting this parameter to a higher value if you have an internet with slow links, such as a DECnet tunnel.

The OPEN RETRYS parameter defines how many times to retry the connection request. In general, you can keep the default setting at 32. However, if you want to be sure that the connection opens under adverse conditions such as a router failure, or if the network links are unreliable, raise the RETRYS value.

Decreasing the Parameters

Check the effect of changing parameters by monitoring connection failures. You may need to readjust some of these values up or down, depending upon the results.

Lower the values for the OPEN INTERVAL and OPEN RETRYS parameters when the network links are reliable and fast, such as Ethernet.

In this case, the first open connection request probably is not going to fail, and the network does not need to retry the request. If the first request does fail, the second retry is quicker.

Name Search Failures

If name search failures are reported by a specific application, try changing the operating characteristics for the name service class that the application is using.

Three classes of name service are defined for the applications. The programmer decides which class of service to use for a specific application. The application and its lookup requirements generally help determine which class is required.

- NAME SERVICE UNRELIABLE
- NAME SERVICE MODERATE RELIABILITY
- NAME SERVICE HIGH RELIABILITY

The class of service that is used by the application defines the quality of service that the application requires. If the application uses the UNRELIABLE class, then it is choosing an unreliable class of service.

As the administrator, you are responsible for defining how each name service class operates on the internet. Set up the NAME SERVICE parameters to define what high reliability, moderate reliability, and unreliable mean for the internet, using the INTERVAL and RETRY qualifers.

MODERATE RELIABILITY is the default lookup class and provides a reasonable quality of name service for most applications. It ensures that the majority of names are found during one lookup call. The default interval between name lookup retries is 250 milliseconds and the number of retries is 8. For example:

```
ATK$MANAGER> DEFINE EXEC NAME SERVICE MODERATE REL-
_ATK$MANAGER> INTERVAL 250 RETRY 8
```

If the internet is a single Ethernet, you can decrease the INTERVAL and RETRY count to improve the performance of name lookups. Or for a large internet, you can increase these qualifiers to provide more reliability.

Conserving Memory and Improving Performance

This section describes ways to adjust network parameters to conserve memory or provide better performance.

Remember that adjusting network values to conserve memory may affect performance. For example, when you decrease queue lengths, memory usage is reduced but performance may be degraded.

Making modifications to improve performance also may increase memory requirements. In addition, changing parameters to improve an application's performance can slow down overall system performance.

To find the right balance for the user, the application, and the network, you may need to readjust these parameters several times.

Improving ADSP Memory Usage and Performance

If there are many AppleTalk Data Stream Protocol (ADSP) connections from the VAX computer to other AppleTalk devices, performance and memory may be affected. Some applications that use ADSP include MacX, the AppleTalk/DECnet Gateway, SQL services, and other user developed applications. Each ADSP connection uses **nonpaged pool memory** (physical memory on the VAX computer) for sending and receiving packets.

The CONNECTION RECEIVE QUEUE LENGTH parameter defines for each ADSP connection how much data to buffer in nonpaged pool on the VAX receive side before telling the remote node to wait. The amount of nonpaged pool used depends upon the value of the RECEIVE QUEUE LENGTH. The default is 4096 bytes.

If you have determined that you do not have enough system memory, you can try reducing the queue length to save nonpaged pool. If you have enough memory and want to improve performance, try increasing the queue length. The optimal size for the queue depends on the applications.

You change this parameter using the DEFINE EXECUTOR command. The following command example increases the queue length to 8192 bytes.

```
ATK$MANAGER> DEFINE EXEC CON RECEIVE QUEUE LENGTH 8192
```

After you have made modifications to the queue length, determine the results by measuring the performance of the application. If your application is running too slowly because the receive queue is too small, then readjust the value and check the performance again.

Improving ATP Memory Usage and Performance

If there are many active AppleTalk Transaction Protocol (ATP) transactions on the VAX computer, performance and memory may be affected. Some applications that use ATP include VAXshare file and print servers. Each process using ATP opens at least one transaction listener, and one queue is defined for each listener.

You can adjust the following parameters by using the DEFINE EXECUTOR command:

- TRANSACTION QUEUE LIMIT defines how many unsolicited transaction requests to store in the queue. The default setting is 3. Three transaction requests are stored and uses about 4500 bytes of nonpaged pool.

  To improve an applications's performance, consider raising the queue limit. An application may be losing transaction requests because the queue limit is set too low.

  Unsolicited transaction requests that cannot be stored are retransmitted from the originating source. Although raising the limit may improve the performance of the application, more memory is required.

  If you reduce this value, unsolicited transactions are discarded and more memory is available, but performance may be affected.

  Determine the value of the QUEUE LIMIT by checking how applications are communicating with each other. For example, if applications are synchronized with each other, a queue limit may not be needed because unsolicited transactions do not occur.

- TRANSACTION RESPONSE CLUSTER defines how many responses to send out before buffer space is free. The default setting is 2.

  Increase this value to improve performance of transaction-based applications, such as file and print servers. However, system throughput may be degraded because the CPU spends longer periods of time transmitting responses.

If this value is set too high, for example, you may see signs of system degradation. Characters on the terminal may not echo back as quickly as you expect during heavy ATP traffic.

Improving DDP Performance

Datagram Delivery Protocol (DDP) is the AppleTalk protocol used to deliver packets to all other AppleTalk protocols. All applications use DDP, including MacX, the AppleTalk/DECnet gateway, and VAXshare file and print servers. In addition, DDP can be used directly by user applications. Two parameters can be modified to improve (DDP) performance.

- DATAGRAM QUEUE LIMIT - Use the DEFINE EXECUTOR command to change the limit.

  To improve performance for user applications using DDP directly, modify the DATAGRAM QUEUE LIMIT.

  The DATAGRAM QUEUE LIMIT defines how many datagrams to store before they are rejected. The default setting is 1. Additional datagrams are discarded and must be retransmitted from their source.

  For example, if the application is losing datagrams on the network, try increasing the limit. If you do increase this queue limit, the system could use more nonpaged pool memory.

- DDP RECEIVE BUFFERS - Use the DEFINE PORT command to change the buffer space. This parameter effects all applications and impacts overall AppleTalk for VMS performance.

  To improve performance of DDP traffic on a specific port, change the DDP RECEIVE BUFFERS value. This value specifies the amount of buffer space that is preallocated and available for receiving datagrams. The default value is 10 buffers and is set on a per-port basis.

  For example, you can try raising the BUFFERS value for a busy port that must discard datagrams because it does not have enough buffer space.

Improving Memory Usage for DECwindows ADSP Transport

The DECwindows ADSP Transport allows Macintosh users to access DECwindows applications. AppleTalk for VMS software limits the size of input and output I/O buffers that a process is allowed to use based on the value of the SYSGEN parameter MAXBUF. AppleTalk for VMS is restricted by this value which typically defaults to 2048. DECwindows, however, tries to use buffers as large as 16834.

To solve the conflict between the the AppleTalk for VMS restriction and the DECwindows buffer requirements, the DECwindows ADSP Transport limits the buffer size that DECwindows uses so that it does not exceed the MAXBUF limit. This limitation may cause DECwindows to break large messages down into multiple smaller buffers.

The logical name MSAX$ADSP_MAXBUF can be used to further limit the buffer size the Transport uses with AppleTalk for VMS. The DECwindows ADSP Transport determines the buffer size by checking the following three values and by using the smallest value:

- MSAX$ADSP_MAXBUF
- MAXBUF minus 256
- DECwindows default buffer size

To improve the performance of the DECwindows ADSP tranport, you can increase the buffer size. A higher value, however, affects the amount of nonpaged pool used. For example, if you define a large buffer size to improve efficiency, and many DECwindows clients are started on an AppleTalk for VMS network, nonpaged pool can be used up quickly. Remember that nonpaged pool is physical memory.

In addition, users are charged for the amount of nonpaged pool they use through the BYTLM authorization quota. BYTLM is a UAF parameter that limits the amount of nonpaged pool that a job is allowed to use at any time.

The nonpaged pool used by the DECwindows ADSP transport is deducted from the the user's process BYTLM quota. A large buffer size can conflict with the BYTLM quota.

To define an appropriate buffer size, use the logical name MSAX$ADSP_MAXBUF. The following command example shows how to change the value:

```
$ DEFINE/SYSTEM/EXEC MSAX$ADSP_MAXBUF 572
```

Be sure to add this line to your system startup file if you want to make it permanent after system reboot.

An individual user also can define MSAX$ADSP_MAXBUF and store it in the LOGIN.COM file as follows:

```
$ DEFINE MSAX$ADSP_MAXBUF 1144
```

Increasing Available Sockets

If an application that uses AppleTalk for VMS software aborts because of a lack of adequate sockets, you probably need to modify the Socket Count parameter. Use the DEFINE EXECUTOR command.

The Socket Count parameter defines how many sockets are available for use by applications. The default setting is 127. If many applications are active, you may need to increase the number of sockets.

Determine the value for this parameter by totaling the socket requirements for each application that uses AppleTalk for VMS.

Improving Router Performance

You can improve the performance of routing by modifying executor and port parameters.

You can change the number of buffers and the cache size used for routing, by using the DEFINE EXECUTOR command with the following parameters;

- ROUTING MAXIMUM BUFFERS defines the maximum number of buffers allowed for routing datagrams between networks. The default setting is 100 buffers and each buffer requires 1500 bytes of nonpaged pool.

  To improve performance, you can increase the number of buffers. However, increasing the number of buffers decreases the amount of available nonpaged pool memory. Define the buffer size by determining the importance of routing on the node.

For example, if a specific VAX computer is a key router between two points on the network, increase the buffer value to improve routing performance. Or if routing is infrequent, lower the buffer count.

The following command raises the number of buffers allocated for routing.

```
ATK$MANAGER> DEFINE EXECUTOR ROUTING MAX BUFFERS 150
```

- ROUTING CACHE SIZE specifies the size of the cache to use for routing table entries. The default value is SMALL. Change this value based on the number of networks in the internet.

  To improve routing performance for a small internet, change the cache size to MEDIUM. Remember that a larger cache uses more memory. For example:

  ```
  ATK$MANAGER> DEFINE EXEC ROUTING CACHE medium
  ```

You also can change the number of buffers used for routing on a specific port and the routing cost by using the DEFINE PORT command with the following parameters:

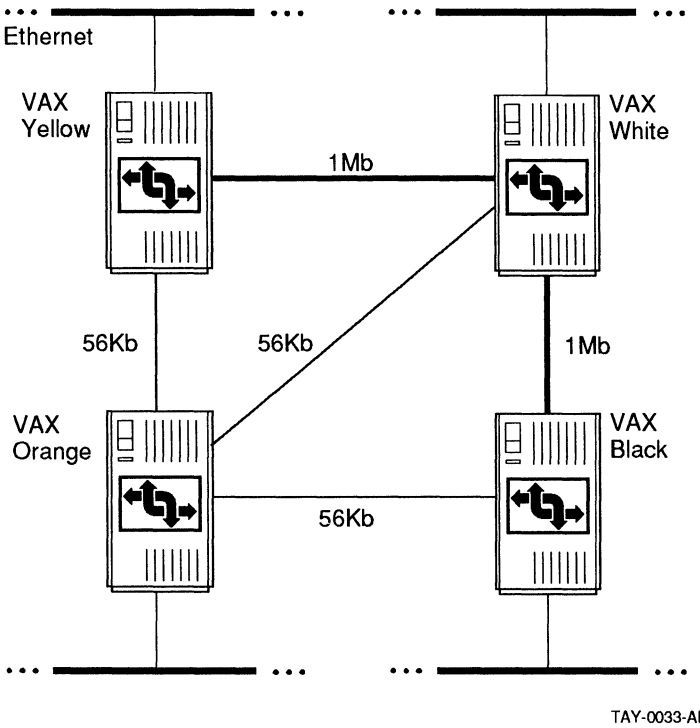
- ROUTING BUFFERS defines the minimum number of buffers available for routing through a specific port. The default value is 16 buffers. To raise or lower this value, determine the traffic load through the port.
- ROUTING COST applies only to DECnet tunnels. This parameter specifies the cost of routing a datagram through this port. The cost is defined in terms of the number of hops required to send a datagram. Because of AppleTalk routing algorithms, a datagram always is routed through the path with the fewest hops.

  By changing the routing cost (hop count), you can force traffic through the fastest path. Remember that a packet cannot reach a destination if the hop count exceeds 15. Do not set the routing cost too high or portions of the internet cannot be reached.

  For example, you can increase the cost to ensure that a datagram goes through the fastest link available, even if the route uses more links.

Figure 3–2 illustrates how the ROUTING COST parameter works.

Figure 3–2 Routing Hops



In this example, tunnels are defined to follow the physical lines. (Tunnels, however, are not required to follow physical lines.) The routing cost for the 56 Kb lines is two hops and the routing cost for the 1 MB lines is one hop.

This example forces the datagram through the faster 1 Mb lines. If the datagram is moving from the Black node to the Yellow node, it uses the 1 Mb Kb lines from the Black node to the White node and then to the Yellow node.

Datagrams take the path only through the White node because it is the lowest cost path. The path through the Orange node is only used when the path through the White node breaks down.

Improving Gateway Performance

You can improve the performance of the gateway by using DEFINE GATEWAY commands with the following parameters:

- MAXIMUM SESSIONS defines the number of sessions that can be active at one time. The default is 32.

  You can increase this parameter to allow more users, or decrease it to save memory.

- SESSION BUFFERS defines how many buffers are needed to start up active sessions. You can increase this value to improve gateway performance. However, check the number of applications using the gateway.

  For example, if MacX is the only application running on the gateway, you can reduce this parameter.

  The amount of nonpaged pool used per session depends on the size of the ADSP CONNECTION RECEIVE QUEUE LENGTH, the overhead incurred by the gateway, which is about 600 bytes per session, and the actual size and number of session buffers.

- BUFFER SIZE defines the size of the buffer used to queue data between each side of the gateway. A large buffer size provides better performance because less CPU time is needed to move one big buffer.

  Increase the size only if the applications you are using are sending large messages through the gateway. Remember that a large buffer uses more memory.

  If the messages exchanged are small, use the default buffer size of 572 bytes.

4

Starting and Stopping PATHWORKS for Macintosh Computers

This chapter describes how to start and stop PATHWORKS for Macintosh computers.

If you want PATHWORKS for Macintosh to start automatically whenever you boot the system, you need to modify the SYSTARTUP_V5.COM file. This file is in the SYS$MANAGER directory.

The *Planning and Installation Guide* describes how to modify the system startup procedure. If you did not complete this task after installation, do so now.

Be sure to edit the file so that PATHWORKS for Macintosh starts after DECnet software and the queue manager starts.

- Place the command $ @SYS$STARTUP:MSA$STARTUP after the command that starts DECnet. For example:

```
$ IF F$SEARCH("SYS$SYSTEM:NETACP.EXE") .NES. ""
$      THEN
$        @SYS$MANAGER:STARTNET
$ IF F$SEARCH("SYS$STARTUP:MSA$STARTUP.COM") .NES. ""
$      THEN
$     @SYS$STARTUP:MSA$STARTUP
```

- Or if you use a batch procedure to submit network startup, edit the line that starts the batch procedure. For example:

```
$ IF F$SEARCH("SYS$STARTUP:MSA$STARTUP.COM") .NES. ""
$ THEN
$   MSA_STARTUP = ",SYS$STARTUP:MSA$STARTUP.COM"
$ ELSE
$   MSA_STARTUP = ""
$ ENDIF
$ IF F$SEARCH("SYS$SYSTEM:NETACP.EXE") .NES. "" THEN -
    SUBMIT SYS$MANAGER:STARTNET.COM 'MSA_STARTUP'
```

Starting PATHWORKS for Macintosh Computers

The MSA$STARTUP.COM command file is located in the SYS$STARTUP directory. It sets up the logical names required to run the AppleTalk network and the VAXshare file and printer servers. It also starts all of the installed components in the appropriate order.

Table 4–1 lists the individual command files included in MSA$STARTUP.COM. AppleTalk for VMS software is started first because all the other components need the network.

Table 4–1 Startup Command Files

Component	File Name
AppleTalk for VMS	ATK$STARTUP.COM
AppleTalk/DECnet Gateway	ATKGW$STARTUP.COM
VAXshare File Server	MSAF$STARTUP.COM
VAXshare Print Server	MSAP$STARTUP.COM
DECwindows AppleTalk Transport	MSAX$STARTUP.COM
DAL Server	MSAD$STARTUP.COM

If you shut down components, you can restart them by running MSA$STARTUP.COM as follows:

```
$ @SYS$STARTUP:MSA$STARTUP
```

Or you can run the appropriate command file to start an individual component.

Stopping PATHWORKS for Macintosh Computers

The MSA$SHUTDOWN.COM file shuts down the file and print servers, DAL, the AppleTalk/DECnet gateway, and AppleTalk for VMS software. Before AppleTalk actually stops, the system is checked for other processes that are using AppleTalk for VMS. If there are other applications using AppleTalk for VMS, you are asked if you want to disconnect from them.

To stop all components, enter the following command:

```
$ @SYS$MANAGER:MSA$SHUTDOWN
```

Or stop individual components with these commands.

To stop all VAXshare file servers, enter the following:

```
MSA$MANAGER> ADMIN/MSA STOP FILE/ALL
```

To stop all VAXshare printers, enter the following:

```
MSA$MANAGER> ADMIN/MSA STOP PRINTER/ALL
```

To shut down AppleTalk for VMS software, first stop the AppleTalk/DECnet gateway and then the executor as follows:

```
ATK$MANAGER> SET GATEWAY STATE OFF
ATK$MANAGER> SET EXEC STATE OFF
```

You use the AppleTalk Manager SET EXECUTOR STATE OFF command to shut down AppleTalk for VMS software. However, before you shut down AppleTalk for VMS, you must shut down any applications using AppleTalk. If there are any applications using AppleTalk for VMS, the following messages are displayed:

```
%ATK-E-ERREXERST, Unable to execute request
_ATK-F-APPARECON, Applications are connected, the protocol
stack cannot be shutdown.
```

To identify all processes that are using AppleTalk, such as VAXshare file and print servers, the gateway, and DECwindows client applications using the DECwindows ADSP transport, enter the following:

```
$ SHOW DEVICE PS/FULL
```

The process ID and name is displayed for each user. The processes named "ATKGW$ACP" and "APPLETALK ACP" are the AppleTalk/DECnet gateway and Appletalk for VMS. Use the AppleTalk for VMS Manager to stop these components.

5

Understanding VMS and Macintosh File Structures

Understanding the differences between VMS and Macintosh file structures can help you manage the file services.

This chapter describes how VAXshare software handles file sharing. Topics include:

- How VAXshare software handles Macintosh volumes
- How VAXshare software handles Macintosh folders and files
- Assigning VAXshare file creator and type to files

How VAXshare Software Handles Macintosh Volumes

VAXshare software provides transparent file sharing between Macintosh and VMS users. Just as VMS users create directories to organize files and other directories, Macintosh users create folders to organize files and other folders. Related folders and files are stored in a Macintosh volume.

A Macintosh volume is a storage device that can be an entire disk or only part of a disk. A volume has a name and a directory that lists the files on the volume. Each volume served by a VAXshare file server maps directly to a VMS device and directory.

The Macintosh user accesses a volume on a VAXshare file server by logging on to the file server and mounting the volume. An icon representing the volume is displayed on the Macintosh desktop.

Volumes are added, modified, and removed by using the VAXshare Manager. See Chapter 7 for more information.

When a volume is added to a file server's database, it is mapped to a VMS directory, called the root directory. The **root directory** is the volume's location on the VAXshare file server, such as DUA1:[MAC_VOLUME]. All of the volume's folders and files are stored in the root directory or in a subdirectory of the root.

The list of volumes supported by a VAXshare file server is contained in a VMS data file called MSAF$VOLUME.DAT. This file is located in the directory called MSA$ROOT:[MSA.MSAF$SERVERn], *n* is the server number. It contains the root directory, volume name, password if assigned, and other volume information. MSA$MANAGER maintains this file.

A new volume always contains at least two directories:

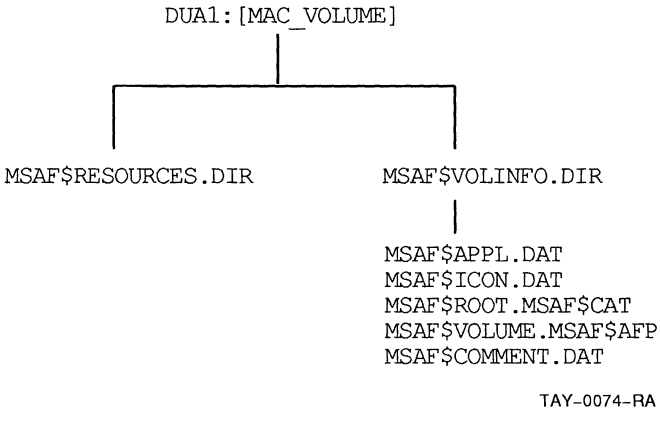
- MSAF$RESOURCES.DIR
- MSAF$VOLINFO.DIR

The MSAF$VOLINFO.DIR contains specific data files. THE MSAF$APPL.DAT, MSAF$COMMENT.DAT, and MSAF$ICON.DAT are called the volume's desktop database.

Table 5–1 MSAF$ Data files

File Name	Explanation
MSAF$VOLUME.MSAF$AFP	Contains a mapping of Macintosh file and folder IDs to corresponding VMS file IDs.
MSAF$APPL.DAT	Contains a mapping between an application's creator ID and its location in the VAXshare volume.
MSAF$COMMENT.DAT	Contains the comment text for the volume itself and all the folders and files inside the volume.
MSAF$ICON.DAT	Contains the mapping between a Macintosh type and creator and its icon.
MSAF$ROOT.MSAF$CAT	The catalog file for the volume's root directory.

The following diagram illustrates the structure of the volume_name.DIR:



For a discussion of MSAF$RESOURCES.DIR, see the next section.

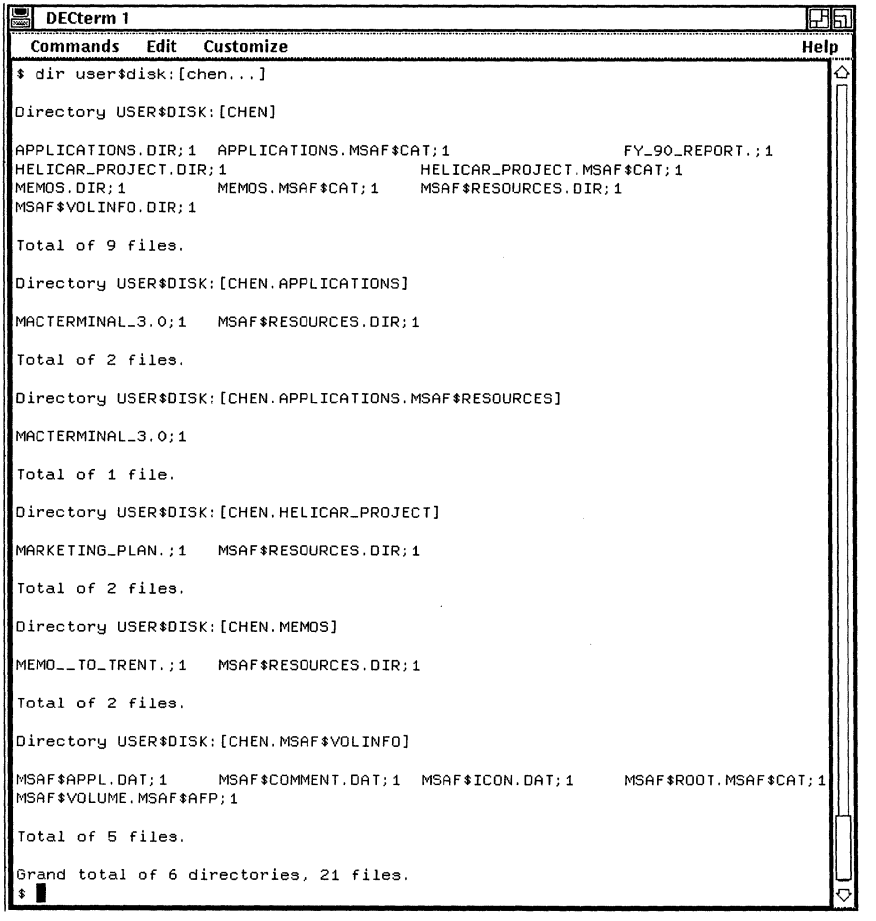
How VAXshare Software Handles Macintosh Folders and Files

VMS directories and files are equivalent to Macintosh folders and files. Folders visible through a VAXshare file server on Macintosh computers are actually VMS directories.

VAXshare software translates the Macintosh folders and files into the VMS system of directories and files. When a Macintosh user creates a folder on a VAXshare file server, the folder becomes a VMS directory.

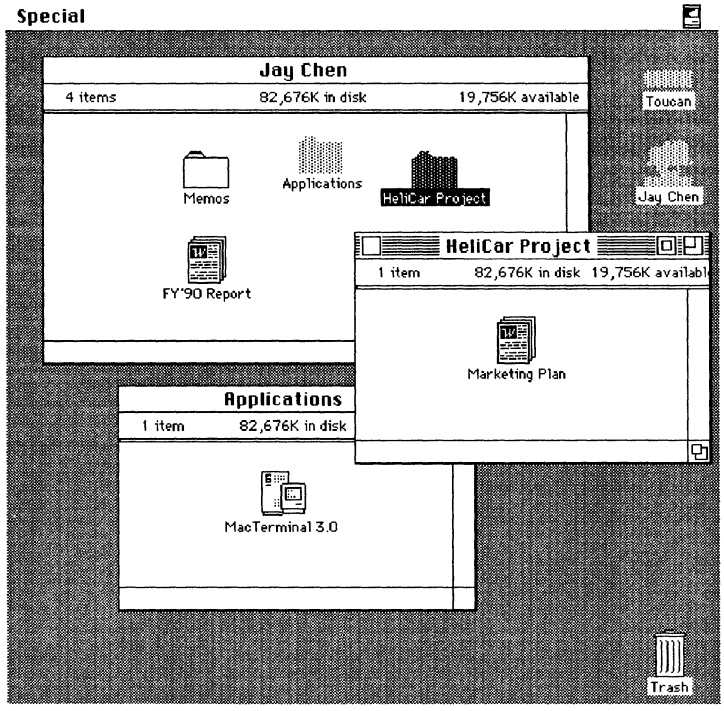
The following two screen layouts show the relationship between VMS directories and Macintosh volumes. Figure 5–1 shows the VMS root directory USER$DISK:[CHEN].

Figure 5–1 VMS Directories



And Figure 5–2 shows the Macintosh volume "Jay Chen" that corresponds to the VMS directory, CHEN.DIR.

Figure 5–2 Macintosh Screen



A Macintosh file consists of two files, the data fork and the resource fork.

Macintosh File Characteristics

Macintosh files have some attributes not present on VMS files. A Macintosh file actually consists of two files, called a data fork and resource fork.

- The **data fork** stores conventional information, such as text and binary data. This fork is similar to a VMS file.

  The data fork is most useful to VMS users and is stored as a file in the volume's root directory.

- The **resource fork** contains items that are specific to Macintosh workstations such as pictures, menus, and icons. If the document is an application, then program code also is stored in this fork.

  The resource fork is stored in a subdirectory of the root directory, called MSAF$RESOURCES.DIR.

To save desktop information for Macintosh files, VAXshare creates a catalog file.

To save Macintosh specific information, VAXshare also creates a catalog file for each folder created in a VAXshare volume. This file is identified by its .MSAF$CAT file extension. The **catalog file** stores Macintosh information that allows the Macintosh Finder to handle a document.

This information includes file type and creator, folder location, and visual position on the desktop. It is not directly useful to VMS and is maintained only for the Macintosh computer.

The combination of the VMS directory and the catalog file represents a Macintosh folder.

For example, when you create a folder called "Test" on a VAXshare volume called MAC_VOLUME, a directory called TEST.DIR and a catalog file called TEST.MSAF$CAT also are created. Both are stored in the same parent directory.

The following example illustrates how these files are stored:

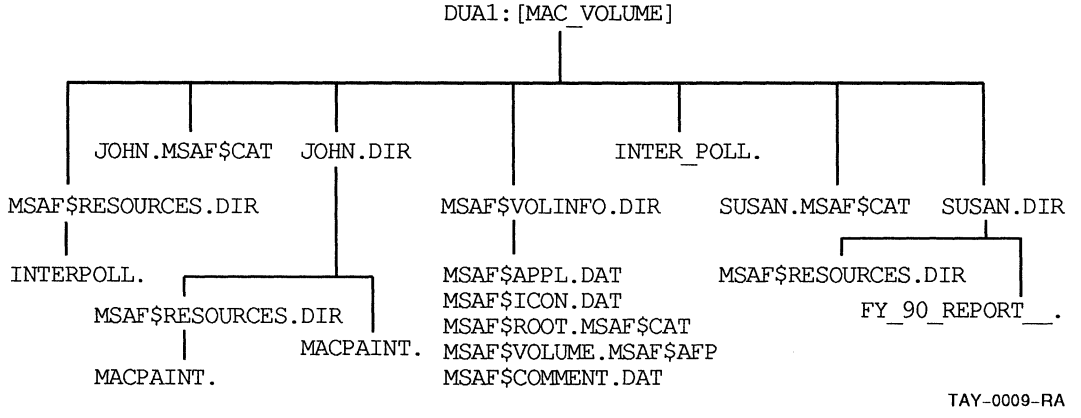
```
DUA1:[MAC_VOLUME]TEST.DIR

    and

DUA1:[MAC_VOLUME]TEST.MSAF$CAT
```

The following diagram illustrates how two folders, "Susan" and "John" and the "Inter·Poll", application are stored on a VAXshare volume called Mac Volume.

"Inter·Poll", is an Apple network monitoring application and its catalog file is stored in MSAF$ROOT.MSAF$CAT.



File Exclusion

You can prevent certain VMS files and directories from appearing on a Macintosh volume served by VAXshare by editing the MSA$ROOT:[MSA]MSAF$EXCLUDE.DAT file. This file contains a list of files that are not available through a VAXshare volume. These are VMS text files with the following VMS file types or "extensions":

- .TJL
- .JOU
- .JNL

You can edit this list and add additional files that you do not want to display on a VAXshare volume.

Directory Depth

Although the Macintosh computer does not limit the depth to which you can nest folders, VAXshare follows the Files-11 file structure that limits the depth of a directory hierarchy to eight.

Therefore VMS applications, such as BACKUP, cannot access files created below this depth.

You can limit folder depth by modifying a file server's characteristics. Use the following command format:

```
$ ADMIN/MSA
MSA$MANAGER> SET CHARACTERISTIC/FILE/FOLDER_DEPTH=7
MSA$MANAGER> EXIT
```

Refer to the *System Administrator's Reference Manual* for more information on this command.

Macintosh and VMS File Names

Macintosh file names support a different set of characters than those available to VMS file names. Therefore, VAXshare software maps Macintosh file names into similar VMS equivalents.

The rules used to determine the VMS name are as follows:

- If the Macintosh name is a legal VMS name, the name remains the same.
- Lowercase letters are converted to uppercase.
- A space is translated into an underscore.

- The first period is used as the separator between the file name and the file type. Additional periods are converted to dollar signs ($).
- Illegal VMS file name characters are changed to underscores.

Table 5–2 gives some examples of how Macintosh file names are converted to VMS equivalents.

Table 5–2 Mapping Macintosh to VMS File Names

Macintosh Long Name	VMS Equivalent Name
This is a long name	THIS_IS_A_LONG_NAME
My File.1.Facts	MY_FILE.1$FACTS
VAXshare&	VAXSHARE_

Assigning VAXshare File Creator and Type

File creator and type are used by the Macintosh Finder to locate and work with files. The file creator helps the Finder determine what application to use when you double-click a document. The file type depends upon the application and helps the creator determine what file format to use.

Files created by VMS users do not have a file creator and type assignment. VAXshare software assigns file creator and type attributes to files that were not created on the Macintosh computer.

The file creator and type determine what icon is displayed on the Macintosh desktop. For example, if you are working with an Excel document on a Macintosh computer, the creator and type could be as follows:

```
TYPE = TEXT
CREATOR = XCEL
```

The XCEL creator helps the Finder determine which application to start when you double-click on the file from the Macintosh. The TEXT type indicates an acceptable file format for the Excel application. The Excel icon is defined and then displayed on the desktop.

The MSA$ROOT:[MSA] MSAF$FILE_TYPES.DAT file controls file creator and type assignment. A file that does not have a creator and type is compared with MSAF$FILE_TYPES.DAT entries.

VAXshare software assigns the creator and type according to the first match it encounters.

VAXshare software checks for creator and type whenever:

- A volume is mounted and the verification level is specified as FULL or PARTIAL.
- A volume is enumerated (enumeration occurs, for example, whenever a VAXshare file server is required to display a directory, or the Macintosh user opens a window).

VAXshare assigns creator/type to a file created by a VMS user.

Example

A file created by a VMS or DOS user does not initially have a creator and type assignment. Suppose you created a .WKS file from DECdecision and you want to be able to double-click the file and modify it, using Excel.

VAXshare checks the MSAF$FILE_TYPE.DAT file and looks for a creator and type to match the .WKS file extension. Refer to Table 5–4 which is a sample MSAF$FILE_TYPE.DAT file. The table indicates the following information for the .WKS file:

```
TYPE = TEXT
CREATOR = XCEL
```

VAXshare assigns this creator and type to the file when it is first added to a served volume. The Macintosh user can display the file on the desktop, using the Excel icon.

Editing the MSAF$FILE_TYPES.DAT file

You need to edit the MSAF$FILE_TYPES.DAT file when you want to:

- Add a new file creator and type for an application that is not defined in the MSAF$FILE_TYPES.DAT file.

  For example, suppose you created some files in GIF (Graphics Interchange Format) on VMS. You want to double-click the files on the Macintosh computer and edit them using Giffer, a shareware program. Because Giffer is not defined, you need to add the following line to the MSAF$FILE_TYPES.DAT file.

Table 5–3 Add Creator and Type to MSAF$FILE_TYPES.DAT file

Format	Attr	Semantic	.Ext	Creator	Type	Trans
*	*	*	.GIF	Bozo	GIFf	none

- Change a creator and type. You can reassign the creator and type.

  For instance, suppose you created a .WKS file using DECdecision. You want to double-click the file and edit it using the WingZ spreadsheet application. Edit MSAF$FILE_TYPE.DAT to change the creator for .WKS files from XCEL to WNGZ as follows:

```
TYPE    = TEXT
CREATOR = WNGZ
```

After you make changes to the MSAF$FILE_TYPES.DAT file, stop the file server and restart it for the changes to take effect.

```
$ ADMIN/MSA STOP FILE_SERVER
$ ADMIN/MSA START FILE_SERVER
```

Table 5–4 is a sample MSAF$FILE_TYPES.DAT file. This file defines type and creator for files that are not created from a Macintosh computer. Lines beginning with an exclamation point and blank lines are ignored. An asterisk means that any corresponding value is a match.

A VAXshare file server compares a file that does not have a creator and type to the first four fields in the following table. When it finds the first match, it assigns the creator, type, and translation, as defined in this table.

Note *The "Semantics" column is reserved for future use. Do not make modifications to this column.*

The common file types are listed first.

Table 5–4 Example of MSAF$FILE_TYPES.DAT

Format	Attr	Semantic	.Ext	Creator	Type	Trans
*	*	*	.MACBINARY	DECM	mbin	none
*	*	*	.MBIN	MSAF	DECM	none
*	*	*	.MACWRITE	MACA	WORD	none
*	*	*	.MACPAINT	MPNT	PNTG	none
*	*	*	.PICT	MDRW	PICT	none

All spreadsheet formats can be read by Excel and WingZ. If you want to use WingZ, change the XCEL creator to WNGZ.

(continued on next page)

Table 5–4 (Cont.) Example of MSAF$FILE_TYPES.DAT

Format	Attr	Semantic	.Ext	Creator	Type	Trans
*	*	*	.WK1	XCEL	TEXT	none
*	*	*	.WKS	XCEL	TEXT	none
*	*	*	.SK	XCEL	TEXT	none
*	*	*	.SLK	XCEL	TEXT	none
*	*	*	.SYL	XCEL	TEXT	none
*	*	*	.SYLK	XCEL	TEXT	none
The following are WordPerfect files.						
*	*	*	.WPF	SSIW	WPDC	none
*	*	*	.WP	SSIW	WPDC	none
*	*	*	.TIFF	????	TIFF	none
The following are Aldus PageMaker files.						
*	*	*	.PUB	ALD2	ALB2	none
*	*	*	.PM3	ALD3	ALB3	none
*	*	*	.PM4	ALD4	ALB4	none
The following is an Adobe Illustrator file.						
*	*	*	.ADB	EPSP	ARTZ	none
Microsoft Word uses the .DOC extension. DECwrite also stores files in DDIF format with the .DOC extension.						
FIX	*	*	DOC	MSWD	WDBN	none
*	*	*	.TXT	ttxt	TEXT	CR
*	*	*	.SYS	MSAF	NOGO	none
FIX	*	*	.COM	MSAF	NOGO	none
Recognize VMS command files.						
*	*	*	.COM	VMSS	.COM	none
The following are various forms of text files.						
VAR	CR	*	*	ttxt	TEXT	CR
VFC	PRN	*	*	ttxt	TEXT	CR
STM	*	*	*	ttxt	TEXT	CR
STMCR	*	*	*	ttxt	TEXT	CR
STMLF	*	*	*	ttxt	TEXT	CR
Recognize executables and objects.						

(continued on next page)

Table 5–4 (Cont.) Example of MSAF$FILE_TYPES.DAT

Format	Attr	Semantic	.Ext	Creator	Type	Trans
*	*	*	.EXE	VMSS	.EXE	none
*	*	*	.OBJ	VMSS	.OBJ	none
*	*	*	.OLB	VMSS	.OLB	none
Recognize CDA files.						
*	*	*	.DDIF	CDAD	DDIF	none
*	*	*	.DTIF	CDAD	DTIF	none
*	*	*	.DOTS	CDAD	DOTS	none
The following is the default and should always be the last entry in the file.						
*	*	*	*	MSAF	?	none

Field Descriptions:

- **Format** - Specifies the file's RMS record format
- **Attr** - Specifies the file's RMS record attributes
- **Semantics** - Reserved for future use
- **Ext** - Specifies the RMS file type, also called file extension. Any valid RMS file type is legal.
- **Creator** - Specifies the Macintosh creator
- **Type** - Specifies the Macintosh type
- **Trans** - Specifies the type of translation to be performed.

  These fields specify the creator, type, and translation to be assigned to any files that match the criteria in the FORMAT, ATT, and EXT fields.

Valid values for the Format field are:

Table 5–5 Format Field Values

String	Meaning
FIX	Fixed length record
STM	Stream (FF, VT, LF, or CR/LF-delimited)

(continued on next page)

Table 5–5 (Cont.) Format Field Values

String	Meaning
STMCR	Stream (CR-delimited)
STMLF	Stream (LF-delimited)
VAR	Variable length
VFC	Variable length with fixed control

Valid values for the Attributes field are:

Table 5–6 Attribute Field Values

String	Meaning
BLK	Records cannot span blocks
CR	Carriage return carriage control
FTN	Fortran carriage control
PRN	Print format carriage control

Valid values for the Translation field are:

Table 5–7 Translation Field Values

Value	Meaning
none	No translation
CR	VMS text file to Apple Stream/CR conversion

Converting Text Files

The MSAF$FILES_TYPE.DAT file provides a way for VAXshare to support automatic text file conversion between most common Macintosh and VMS text file formats.

You can edit VMS text files stored on a VAXshare volume by using any Macintosh application that supports file type "TEXT". For example, you can create and edit a file using any VMS editor, such as EVE, and edit the same file with a Macintosh editor such as Microsoft Word. A VAXshare file server automatically performs the file conversion for you.

6

Setting Up Volumes, User Accounts, and Applications

To provide file sharing between VMS and Macintosh users, you need to:

- Decide how to set up volumes
- Add volumes
- Set up user accounts
- Install applications from a Macintosh computer

Setting Up Volumes

To make VMS directories and files available to Macintosh users, you need to add a volume to the VAXshare file server's volume database. A volume makes VMS directories, subdirectories, and files accesible to Macintosh users.

For example, you can add a volume to:

- Make an existing VMS directory available as a Macintosh volume
- Provide a new directory
- Store files for popular applications such as spreadsheets and word processors

Once a volume has been added and mounted, Macintosh users can connect to the volume and see its folders and files using Macintosh procedures. VMS users can set their default directory to the same disk/directory and access files using VMS methods.

Methods for Sharing Volumes

When you add a volume, either a new VMS directory is created or an existing directory becomes available to Macintosh users.

There are two methods you can use to share volumes.

1 **Add one public volume and within that volume, users can create their own folders.** This method is best if you are creating a new shared common area. (You do not have existing VMS directories that you want Macintosh users to access.)

With this method:

- Users can easily access each other's folders and files within the same group because individual volume logins and passwords are not required.
- Users can restrict access to their folders without assistance from the system administrator.
- You can store an application in a folder, and the folder can have world privileges.
- Performance can be better because memory usage is lower for folders than for volumes.

To set up this volume, try to determine how much VMS disk space the volume needs. Think about how many users are going to need space on this group volume.

The following sample commands create a new VMS directory, MACVOLUME, and make it accessible to the Macintosh user:

```
MSA$MANAGER> ADD VOL "Mac volume"-
_MSA$MANAGER> /ROOT=disk1:[MACVOLUME]
MSA$MANAGER> MOUNT "Mac volume"
```

2 **Add a volume for each user and for each application.** This method is best if you have existing VMS directories, such as a user's account, that you want to make available to Macintosh users.

With this method:

- A higher level of security is provided because each volume has its own password. Users do not have to remember to set folder security.
- Users can mount and dismount their own volumes.
- Performance can be impacted because a large number of volumes uses more memory.

The following sample command makes the VMS directory, Kelly, accessible to Macintosh users if they know the password "songtree".

```
$ ADMIN/MSA
MSA$MANAGER> ADD VOL "John Kelly"/PASSWORD="songtree"-
_MSA$MANAGER> /ROOT=disk1:[kelly]
MSA$MANAGER> MOUNT "John Kelly"
MSA$MANAGER> EXIT
```

Adding a Volume

Before you start to add volumes, read the following guidelines to help you make some decisions.

- Before you create the volume, decide where disk space is available. Use the /ROOT qualifier to specify where to store the volume.
- Do not create a volume inside a volume. You cannot define a volume's root directory to be the same as or within an existing root directory.

  The following sample command creates a volume and defines its root directory.

  ```
  MSA$MANAGER> ADD VOL "Robert"/ROOT=DUA2:[ROBERT]
  ```

  Do not add another volume with the same root directory, ROBERT, or with a subdirectory of the root.

The following steps describe how to add a volume to a VAXshare file server. A volume is displayed as a VMS directory.

1 To add a volume, log into a VMS account with the SYSPRV privilege.

2 The following sample commands create the volume Micro_Word that makes the VMS directory USERDISK:[JONES.WORD] available as a Macintosh volume. This volume is available to all users in the VMS group PAYROLL. The name and root parameters are required.

```
$ ADMIN/MSA ADD VOLUME MICRO_WORD/-
-$ ROOT=USERDISK:[JONES.WORD]-
_$ /ACCESS=WRITE/VERIFY=FULL
```

After the command is executed, MSA$MANAGER does the following:

- Creates the root directory if it does not exist.

In this example, the WORD subdirectory did not exist. MSA$MANAGER creates the subdirectory with UIC ownership and file protection equal to the parent directory.

The USERDISK:[JONES] directory has a UIC of [PAYROLL,JONES] and a file protection of (S:RWE,O:RWED). The WORD root directory is assigned the same UIC and protection values.

- Adds the volume to the file server's volume database. The volume entry is assigned the WRITE attribue and FULL verification.

3 Enter the following command to allow all users in the PAYROLL group read, write, delete, and execute access to the new volume.

```
$ SET FILE USERDISK:[JONES]WORD.DIR-
_$ /PROTECTION=(G:RWED)
```

4 Mount the volume to make it accessible to Macintosh users:

```
$ ADMIN/MSA MOUNT MICRO_WORD
```

The new volume "Micro Word" now is available to Macintosh users in the Chooser.

To change the volume's parameters, use the MODIFY VOLUME command. See Chapter 7.

Setting Up User Accounts

You must have one VMS user or guest account to access VAXshare files.

To access files on a VAXshare file server, you must have at least one VMS user account. You can create a **guest account**. A VAXshare file server allows guests to log on to Macintosh computers without a password. Guests can create and use folders but they have limited access to folders created by other Macintosh users.

If you want full file security, then you can also create an account for each user. Use the AUTHORIZE utility to create the account. Before you add the account, determine the following:

- User name and password
- Unique user identification code (UIC)
- Location (device and directory) of the account's files
- Security requirements for the account

For more information on creating VMS user accounts, see the VMS System Manager's Manual.

You can set up user accounts for file sharing with any of the following three methods:

- Create a shared public volume for all users.
- Create a personal volume for each user.
- Create a guest user account to store public documents.

Create One Volume for All Users

Creating a public shared volume involves:

- Adding the volume
- Creating a VMS account for each user if an account does not already exist
- Creating a folder to match the VMS account for each user

The following example lists the steps for setting up a group volume called MACVOLUME and for adding an individual user account and folder.

```
$!Add and mount the group volume, MACVOLUME.
$
MSA$MANAGER> ADD VOL "MACVOLUME"/PASSWORD="junesnow"-
_MSA$MANAGER>  /ROOT=DISK1:[MACVOLUME]
MSA$MANAGER> MOUNT MACVOLUME
MSA$MANAGER> EXIT
$
$! repeat the following steps for each user
$
$  SET DEFAULT SYS$SYSTEM
$
$  RUN AUTHORIZE
UAF> ADD SUSAN -                 !User Name
_/PASSWORD=WIN12                 !Password
_/UIC=[237,1]-                   !UIC
_/ACCOUNT=DOC                    !Default group name
_/OWNER="SUSAN JONES"-           !Owner
_/DEVICE=DISK1-                  !Default directory
_/DIRECTORY=[MACVOLUME.SUSAN]
UAF> EXIT
$
$
$ !Create a folder for Susan in the MACVOLUME
$! users' directory.
$  SET DEF DISK1:[MACVOLUME]
$  CREATE/DIRECTORY [.SUSAN]/OWNER=[Susan]
$  SET PROTECTION =(S:RWED,O:RWED,G,W) SUSAN.DIR
$
```

Phone Susan with the following information:

Server Name:	VAXshare@Building1
User Name:	Susan
Password:	VMS account password
Volume Name:	MACVOLUME
Volume Password:	junesnow; case sensitive

Create a Personal Volume for Each User

Create a personal volume for each user when you want to match an existing VMS user's directory.

For example, you can add a volume to match a user's personal file directory. If there are many files in the directory, you can create a new subdirectory. Then add the volume to match the new subdirectory.

The following example summarizes the steps for setting up a personal volume to match an existing subdirectory.

```
$! repeat these steps for each user that needs a
$! personal volume
$
$ !Add a volume
$ !
$ ADMIN/MSA
 MSA$MANAGER> ADD VOL "Fred Macstuff"/PASSWORD="happy"-
 _MSA$MANAGER> /ROOT=DISK1:[FRED.MACSTUFF]
 MSA$MANAGER> MOUNT "Fred Macstuff"
 MSA$MANAGER> EXIT
$
```

Create a Guest Account

You also can create a guest VMS account with read and write world privileges. Although this account does not have security protection, it provides the following advantages:

- It is easy for users to share files.
- You do not have to set up VMS accounts for each user.

You might want to set up a guest account to store public documents. On Macintosh computers, guests have access to unprotected information but they cannot protect information themselves.

The following example summarizes the steps for setting up a guest account.

```
$ SET DEFAULT SYS$SYSTEM
$
$! The guest account should only allow network access.
$! You probably do not want to allow interactive
$! logins or batch jobs.
$! Assign a password that is difficult to decode.
$
$ RUN AUTHORIZE
UAF> ADD MSAF$GUEST-              !User Name
_/PASSWORD=HEL12LO-              !Password
_/UIC=[277,1]-                   !UIC
_/ACCOUNT=ENG-                   !Accounting group name
_/OWNER="MSAF$GUEST"-  !Owner
_/DEVICE=$DISK1-                 !Default directory
_/DIRECTORY=[MSAF$GUEST]_
_/NOINTERACTIVE/NOBATCH
UAF> EXIT
$
$
$ !Create the VMS username, MSAF$GUEST, for guest login
$ !
$ ADMIN/MSA
$ MSA$MANAGER> SET CHAR/GUEST_NAME-
_MSA$MANAGER> =MSAF$GUEST/PERM
$ MSA$MANAGER> EXIT
$
```

You can now connect to the fileserver using the Macintosh Chooser to access the guest account.

Installing Applications from a Macintosh Computer

Install a popular application such as Excel on a VAXshare volume.

To make applications available to users on the network, you need to install them on a VAXshare volume. You can group commonly used applications together in one volume. Or you can create a volume for each application.

Keep in mind that although most applications can be used in a shared environment, not all of them can. Check the application's instructions before you make your decisions.

Note *On a VAXshare volume, only install software that can legally be shared in a network environment.*

1. Set the write lock tab on the application diskettes.
2. Create a backup copy of the application by copying the application diskettes as instructed by the manufacturer.

3 Determine where to store the application. Remember you can add a new volume or create a folder within an existing volume.

4 To install the application:

- Connect to the volume from the Macintosh Chooser window.
- Select the AppleShare icon, the zone, and the file server.
- Connect to the selected file server, and then select the volume you want. The icon is displayed on the desktop.
- Close the Chooser.

5 Install the application on the service. Follow the application's instructions.

6 If you need to use a printer with the application, set up printer services on the server before running the application. See Chapter 8.

7

Managing Volumes and File Servers

This chapter provides the information you need to manage VAXshare file servers and volumes. Commands are described as they relate to specific tasks. Detailed information on all commands, including usage, is in the *System Administrator's Reference Manual.*

The tasks described in this chapter include:

- Modifying file server characteristics
- Managing volumes
- Adding file servers
- Selecting file servers
- Removing file servers
- Starting and stopping file servers

Modifying File Server Characteristics

The VAXshare file server provides volume services. A volume service makes VMS directories, subdirectories, and files accessible to Macintosh users.

You can modify the operation of a VAXshare file server to:

- Change its configuration
- Control how security works
- Improve performance and reduce memory usage

To specify when changes to the file server take place, use the NOPERMANENT/PERMANENT qualifier. Changes specified with the PERMANENT qualifier do not take effect until after the file server is restarted. NOPERMANENT is the default.

Changing the Configuration

Change the number of users permitted to log in.

Change the number of users permitted to log in

You can change the number of connections permitted by the file server. The default value is 0, which means that there are no restrictions to the number of connections.

For dedicated file serving, you can temporarily change this number to a specific value. The following example sets the number of connections to 10:

```
MSA$MANAGER> SET CHAR/FILE_SERVER/MAX_CON=10
```

Change the depth limit for folders.

Change the depth limit for folders

The RMS file structure used by most VMS applications limits the depth of a directory to eight files from a logically rooted directory. Appleshare does not limit the depth of folders.

For VAXshare file servers, the default folder depth is 7. Increasing the depth can cause problems because folders created beyond the limit are not accessible using VMS utilities, such as Backup.

Increase this value only if you do not use VMS utilities for this file server. The maximum value is 16.

Controlling File Server Security

Allow or deny user ability to change password.

Allow or deny user ability to change password

If you have multiple users on one account, you can deny users the ability to change passwords. For example, if several users access the same account with the same password, specify the qualifier, NOCHANGE_PASSWORD.

The following example illustrates this procedure:

```
MSA$MANAGER> SET CHAR/FILE_SERVER/NOCHANGE_PASSWORD
```

Control file security checks.

Control file security checks

You can control the extent of security checking for files stored on a specific server. Use the default FULL_CHECK_ACCESS qualifier to ensure a high degree of file checking.

With FULL_CHECK_ACCESS, access control lists (ACLs) always are checked for each file. (ACLs can be used to grant or deny file access to individual users or groups based on UICs.)

However, if the standard file protection, available with UICs, is sufficient for your environment, you can turn off this feature and improve file access performance. The following example illustrates the procedure:

```
MSA$MANAGER>  SET CHAR/FILE_SERVER/NOFULL_CHECK_ACCESS
```

The following table describes how to change the default values for other security characteristics:

Table 7–1 Examples of Changing Security Characteristics

To change default	At the prompt, enter
VMS folder protection	SET CHAR/FILE_SERVER /DEFAULT_FOLDER_PROTECTION =(O:RWED,G:RWED,W:RWED)
File protection inheritance	SET CHAR/FILE_SERVER/NOINHERIT_PROTECTION
Console logging	SET CHAR/FILE_SERVER/NONOTIFY_OPERATOR

Improve Performance and Reduce Memory Usage

When you adjust a file server to improve performance or conserve memory, these kinds of adjustments can adversely affect each other.

For example, you can increase the size of the file cache to improve performance, but a large cache requires more virtual memory.

Change the size of the file cache.

Change the size of the file cache

The CATALOG_CACHE qualifier defines the number of catalog files that can be opened simultaneously. The default value is 64. You can raise the value to a maximum of 1024 to improve performance, however, more memory is used. Or you can decrease the value to 16.

Change the time permitted to purge files.

Change the time permitted to purge files

The PURGE_TIMER qualifier specifies how long a catalog file remains open after the specified period of inactivity. This timer works with the cache to purge the cache's contents.

The default value is 20 minutes. If you increase the time, performance improves. If you decrease it, virtual memory use is reduced. The maximum value is 59 minutes.

The following command sets the time to 59 minutes:

```
MSA$MANAGER> SET CHAR/FILE_SERVER/PURGE_TIMER=59
```

Change the size of the window block.

Change the size of the window block

The size of the window determines the number of file blocks that are read or written in one disk I/O. To improve the file server's performance during file access, you can increase the block size.

Increasing the size, however, increases virtual memory requirements.

The following command increases the number of blocks to 40.

```
MSA$MANAGER> SET CHAR/FILE_SERVER/WINDOW_SIZE=40
```

Managing Volumes

Managing volumes involves:

- Making them available or unavailable for users
- Modifying volume characteristics

Making Volumes Available and Unavailable

To allow users to share data, you need to understand how to make a volume available and unavailable to users. For a better understanding of how to add volumes, see Chapter 6.

Add and mount the volume.

Add and mount the volume

To make a VMS directory available to Macintosh users, you need to add a volume to the file server's database and then mount the volume. When you add the volume, you can also specify a password.

The following command adds the volume "Jane's Memos", and specifies the VMS directory name for the account and the password for the volume.

```
MSA$MANAGER> ADD VOL "Jane's Memos"/ROOT=disk2:[jane]-
_MSA$MANAGER> /PASS="autumn"
```

The following command mounts the volume to make it accessible to Macintosh users.

```
MSA$MANAGER>  MOUNT "Jane's Memos"
```

Dismount and remove the volume.

Dismount and remove the volume

To make the directory unavailable, you dismount the volume and then remove it from the database. When you dismount, the volume remains in the file server's database.

Users must be disconnected from the volume during dismount. Use the SHOW CONNECTIONS command for a list of active users on a specific server. Then send a message to users that they must disconnect from the volume that you are planning to dismount.

The following command illustrates the dismount procedure:

```
MSA$MANAGER>  SHOW CONNECTIONS
MSA$MANAGER>  DISMOUNT "Jane's Memos"
```

The following command illustrates the remove procedure:

```
MSA$MANAGER>  REMOVE VOLUME "Jane's Memos"
```

Modifying the Volume's Characteristics

To change the volume's characteristics, use the MODIFY VOLUME command.

Change the volume's password.

Change the volume's password

For example, to change the password for the volume "Jane's Memos," enter the following:

```
MSA$MANAGER>  MOD VOL "Jane's Memos"/PASSWORD="summer"
```

Change the volume's type of verification.

Change the volume's type of verification

Volume verification means checking each file in the volume for consistency of Macintosh desktop information. Verification ensures that all VMS files have matching catalog files. The default value is PARTIAL. If you want full checking for new volumes, for example, change the level to FULL.

To change the verification level to full, enter the following command:

```
MSA$MANAGER>  MOD VOL "Jane's Memos"/VERIFY=full
```

Change the volume's access rights.

Change the volume's access rights

The following sample command describes how to change access rights:

```
MSA$MANAGER>  MOD VOL "Jane's Memos"/ACCESS=read_only
```

Adding File Servers

You can add additional VAXshare file servers to the same VAX node. Consider operating multiple file servers to improve performance and to resolve the 512 character limit imposed by the Macintosh Chooser.

The Macintosh Chooser limits the number of characters in the file server's list of volumes to 512. To work within this restriction, you can:

- Keep the volume names short
- Limit the number of volumes created on a specific file server
- Add multiple file servers to the node

  Adding file servers allows you to distribute volumes and users between servers and improves system throughput time for accessing volumes and files.

To add an additional VAXshare file server, enter the following sample command:

```
MSA$MANAGER>  ADD FILE_SERVER "SRVR2"
```

A file server database keeps track of all VAXshare file servers on a specific VAX node. Each server is identified by a server number in the form, MSAF$SERVER<server_number>. The primary file server is the first server added and is assigned number zero (0).

When you start MSA$MANAGER, the default file server always is the primary file server. In a single server environment, the default file server is MSAF$SERVER0.

In a multiple file server environment, the default file server also is the primary server. However if the original server has been removed, the primary server becomes the server with the lowest server number.

For example during VMSINSTAL, you named the file server, SRVR1. SRVR1 also is assigned the identification of MSAF$SERVER0.

Later you added two more file servers, SRVR2 and SRVR3. They are assigned MSAF$SERVER1 and MSAF$SERVER2. If you remove SRVR1, SRVR2 now becomes the primary file server because it has the lowest server number.

You can enter a SHOW FILE_SERVER/ALL command to list all file servers with their identification numbers.

To move between multiple file servers , use the SET FILE_ SERVER command. You can, for example, enter the following sequence of commands:

```
MSA$MANAGER>  SET FILE_SERVER SRVR2
MSA$MANAGER>  SHOW CONNECTIONS
MSA$MANAGER>  SET FILE_SERVER SRVR1
```

See Selecting File Servers to learn more about selecting specific servers for management.

Selecting File Servers

You can select a specific file server to manage when multiple file servers are operating on the same VAX node. And you also can select a file server to manage on a remote VAX node.

Selecting Multiple File Servers

If only one file server is installed on a VAX computer, then you do not need to select it because it is the default. However, when two or more servers are installed on the same VAX, you can select a specific server to manage.

For example:

```
MSA$MANAGER>  SET FILE_SERVER SRVR2
MSA$MANAGER>  SHOW CONNECTIONS
MSA$MANAGER>  SET FILE_SERVER SRVR1
```

Selecting Remote Servers

You can select a file or print server on a remote VAX. The remote node's default file server is automatically the selected server. In a multiple server environment, first select the remote node and then select a specific server to manage.

For example, first select the remote node where the file server you want to manage is located. Enter the following command to select the node, BIGVAX:

```
MSA$MANAGER>  SET REMOTE BIGVAX/USERNAME=JANE/PASS=wheel
```

The primary file server, SRVR1 is selected. To manage another server named SRVR2, enter the following command:

```
MSA$MANAGER> SET FILE_SERVER SRVR2
```

Use SET LOCAL to return to the local node. Enter the following command:

```
MSA$MANAGER> SET LOCAL
```

Removing File Servers

You can remove a file server when it is not needed. For example, if a set of volumes that is not used anymore is stored on a file server, you can remove the file server.

You can enter the following sample commands to remove an online file server:

```
MSA$MANAGER> STOP FILE_SERVER SRVR2
MSA$MANAGER> SHOW FILE_SERVER
MSA$MANAGER> REMOVE FILE_SERVER SRVR2
```

After command execution, the SRVR2 file entry in the database is removed. The server's data files such as the volume data or characteristic settings are not deleted. These files remain in the MSA$SPECIFIC:[MSA.MSAF$SERVERn] directory, n is the file server's identification number.

You can delete the contents of the removed server's data directory, by entering the following DCL commands:

```
$ DELETE MSA$SPECIFIC:[MSA.MSAF$SERVERn]*.*;*
$ DELETE MSA$SPECIFIC:[MSA]MSAF$SERVERn.DIR
```

Or if you removed the file server temporarily, you can leave these files in the database, and make the file server available later with these commands.

```
MSA$MANAGER> ADD FILE_SERVER SRVR2/NUMBER=n
MSA$MANAGER> START FILE_SERVER SRVR2
```

When you temporarily remove a file server, do not add any new file servers with the same identification number as the temporarily removed server.

If you do assign the same I.D. number, the new file server inherits the volume list and characteristic settings of the removed file server.

Starting and Stopping File Servers

Stopping File Servers

You may need to stop file servers:

- In an emergency
- To perform maintenance functions

You can stop an individual file server or all file servers.

The following command illustrates how to stop all file servers:

```
MSA$MANAGER>  STOP FILE/ALL
```

The following command illustrates how to stop an individual file server:

```
MSA$MANAGER>  STOP FILE BSERVER
```

If you do not specify a file server name, the currently selected file server is the default.

Starting File Servers

After maintenance functions are completed, you need to start the file servers. Enter the following command to start all file servers:

```
MSA$MANAGER>  START FILE/ALL
```

Use the following command to start an individual file server:

```
MSA$MANAGER>  START FILE XSERVER
```

You also can use the START FILE command to stop a shutdown.

8

Managing Printer Services

This chapter explains:

- How printing components work together
- Adding printer services
- Modifying printer services
- Setting up a LaserWriter printer service with a serial connection
- Removing printer services
- Starting and stopping printer services
- Adding a VAXshare form

How Printing Components Work Together

This section explains how the following printing components work together to provide printer services for Macintosh and VMS users:

- VAXshare receiver
- VAXshare and PostScript printer symbionts
- Job controller
- VAXshare forms
- ASCII translator for text forms

The Macintosh user needs the VAXshare receiver, the VAXshare and PostScript printer symbionts, and the job controller to process print requests.

The VMS user needs the VAXshare and PostScript printer symbionts, VAXshare forms and the ASCII translator to process print requests.

The VAXshare Receiver

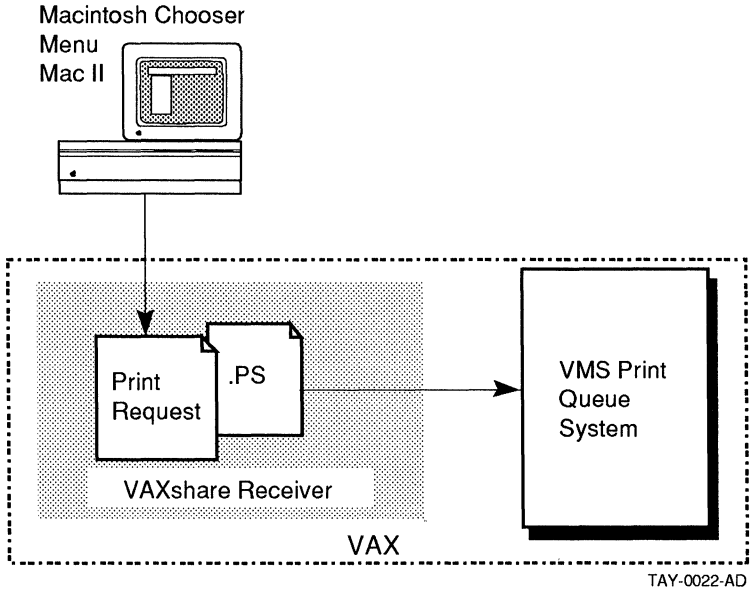
The VAXshare receiver handles Macintosh print requests.

The **VAXshare receiver** is a process that accepts Macintosh print requests and queues them to the VMS print job controller. The receiver looks like a LaserWriter and serves only one queue. For each printer service that is created, a receiver process also is created.

Print requests sent by Macintosh users are the only print requests that go through the receiver. The Macintosh user selects a printer from the list offered by Chooser, using standard Macintosh procedures.

Figure 8–1 shows how a print request from a Macintosh user is sent to the VMS print queue system.

Figure 8–1 Print Request from Macintosh User to the VAX Computer



The VAXshare and PostScript Printer Symbionts

The **VAXshare symbiont** and the PostScript printer symbiont are processes that transfer data from the VMS print queueing system to the printers. The VAXshare symbiont transfers data to an Apple LaserWriter printer, and the PostScript printer symbiont transfers data to a Digital PostScript printer. The PostScript print symbiont is packaged with the Digital printer software.

The VAXshare symbiont converts VMS files into PostScript.

The VAXshare symbiont has one additional important function. When a VMS user submits a text file to a LaserWriter printer, the VAXshare symbiont uses the ASCII translator to convert VMS text into PostScript data. Then the symbiont transfers the data to the printer.

Figure 8–2 shows how a print request is transferred by the appropriate symbiont to the appropriate printer.

Figure 8–2 How Symbionts Process Print Requests

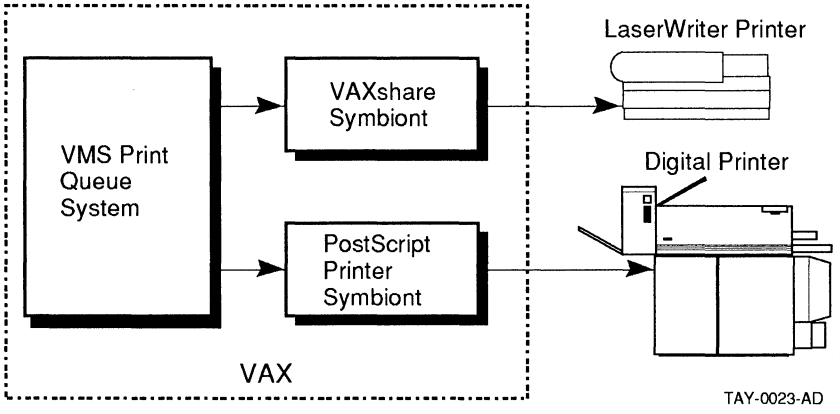
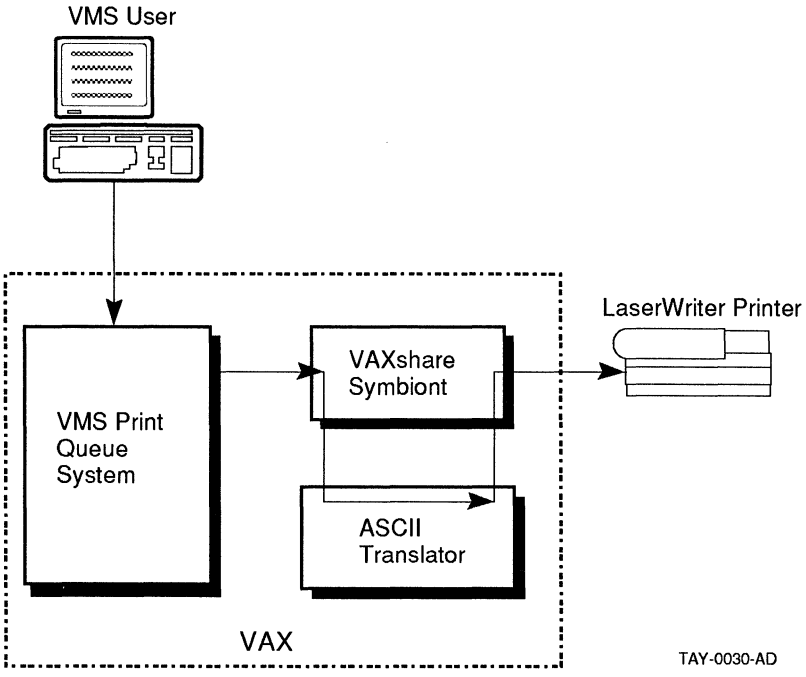


Figure 8–3 describes how the VAXshare symbiont and ASCII translator work together to convert VMS text files into PostScript data.

Figure 8–3 ASCII Translator



The Job Controller

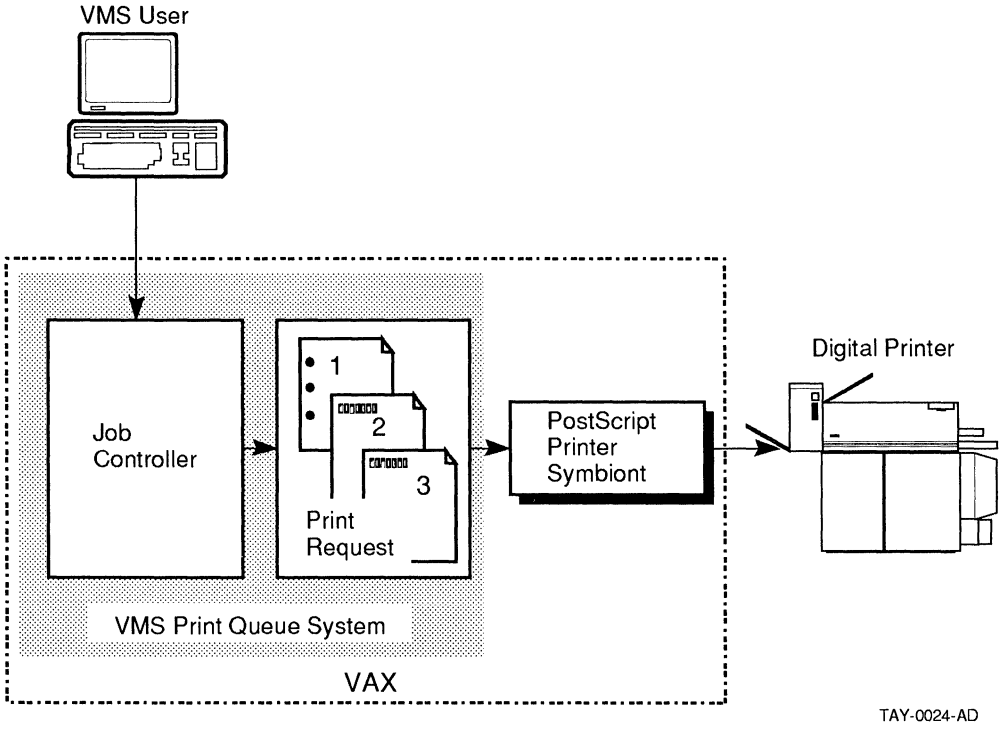
The job controller acts as a traffic officer in the VMS print queue system.

The **job controller** process is part of the VMS print queue system. When Macintosh and VMS users submit print requests, the job controller acts as a traffic officer to control the sequence of printing jobs. The job controller puts the requests into a waiting line, or **queue**.

A **generic queue** holds a print request until the request is assigned to a specific queue that meets that print job's requirements. For example, the generic queue holds a letterhead print request until a device queue designated for the letterhead form is available. Then the job controller sends the print request to that device queue. The job controller keeps the queues in a pending status if the specified device queue does not contain the required forms.

Figure 8–4 shows how the VMS print queue system works.

Figure 8–4 VMS Print Queue System



VAXshare Forms

VAXshare forms allow a VMS user to send a print request to a LaserWriter.

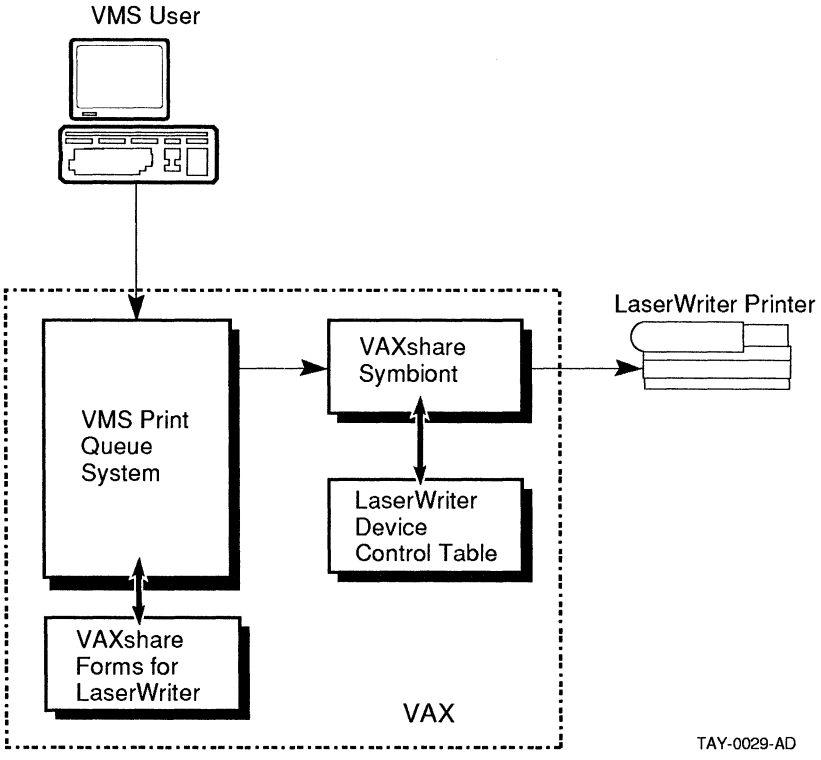
VMS users also use VAXshare forms to process their print requests to a LaserWriter. A **VAXshare form** determines the page layout produced by a LaserWriter. See Adding a VAXshare Form.

When the VMS print queue system receives the print job, it checks for the required VAXshare form. Then the queue system sends the job to the VAXshare symbiont. The symbiont checks the device control library for the Postscript module that pertains to the specified form.

The device control library (MSAP$DEVCTL.TLB) is a set of modules that specify different printing forms. The modules include forms, flag pages, trailer pages, and setup dictionaries.

Figure 8–5 shows how the VAXshare symbiont and VAXshare forms work together to process LaserWriter print requests from VMS users.

Figure 8–5 VAXshare Forms for LaserWriters



All Components Together

Figure 8–6 shows how all the components work together to provide printer services for VMS users.

Figure 8–6 How Printing Services Are Provided for VMS Users

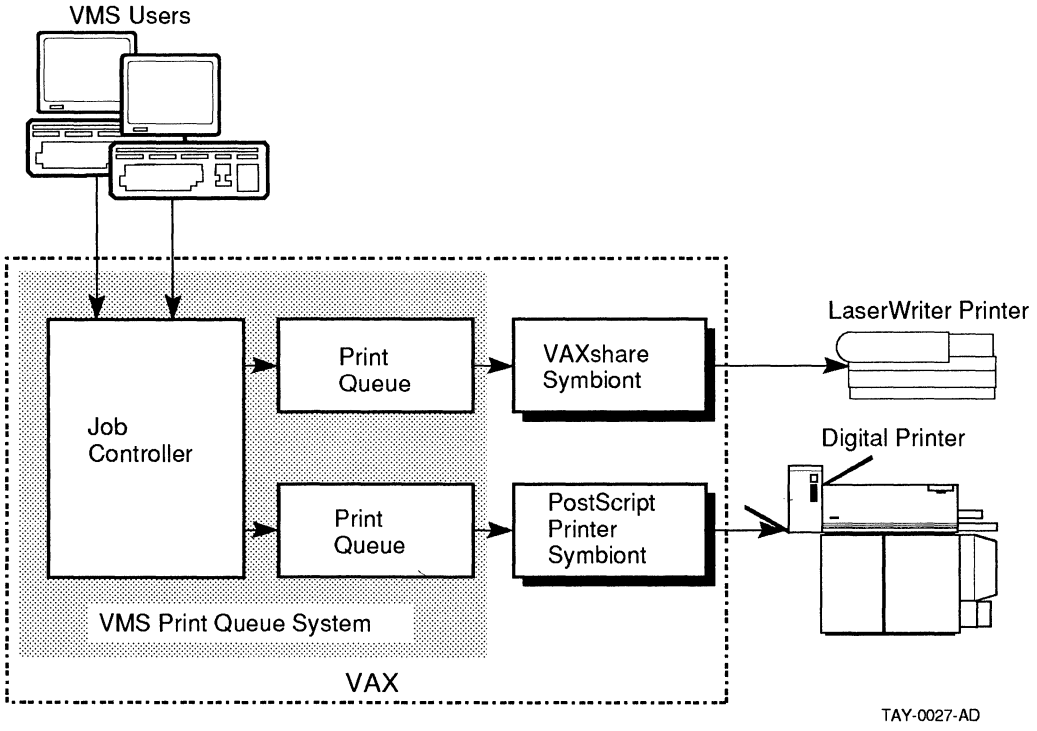
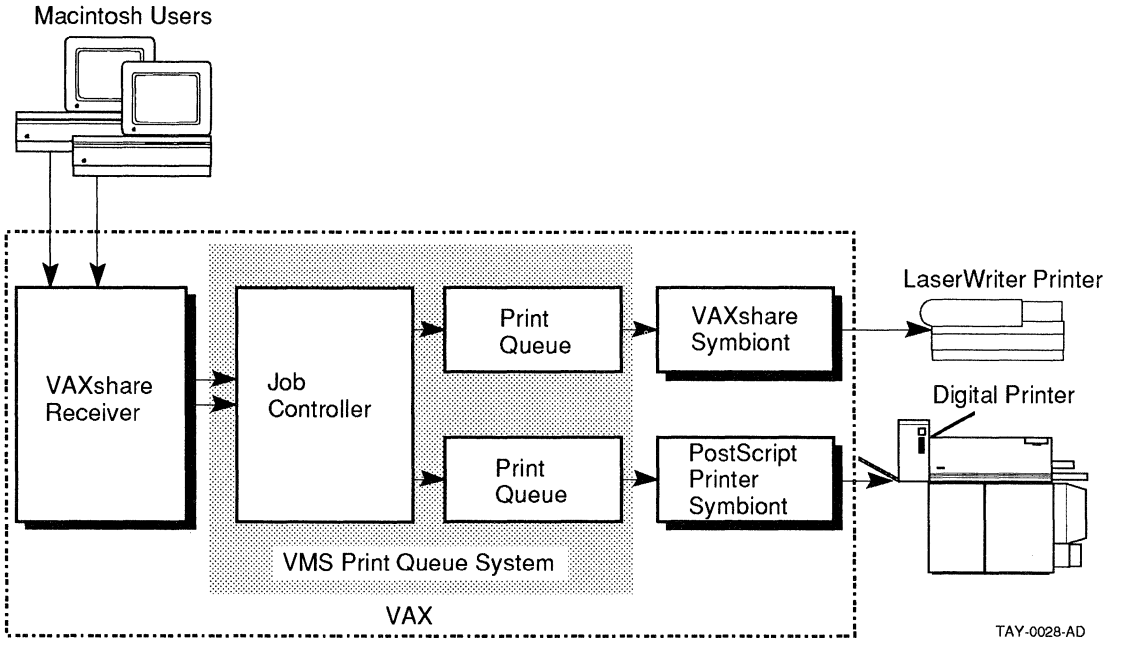


Figure 8–7 shows how all the components work together to provide printer services for Macintosh users.

Figure 8–7 How Printing Services Are Provided for Macintosh Users



Adding Printer Services

VMS users are accustomed to sending print jobs to Digital printers and Macintosh users are accustomed to sending print jobs to LaserWriter printers. With PATHWORKS for Macintosh, however, VMS users can print to LaserWriter printers and Macintosh users can print to Digital PostScript printers.

With VAXshare printer services, Macintosh and VMS users can share printers. This section describes how to make LaserWriter printers available to VMS users and how to make Digital PostScript printers available to Macintosh users.

You need to add a VAXshare printer service for each Apple or Digital printer that you want to make available to Macintosh users. Macintosh users then can send print jobs to these printers by using the Macintosh Chooser. When you create a LaserWriter printer service, a VMS queue automatically is created. Therefore,

VMS users can send print jobs to this queue by using VMS print commands.

Table 8–1 lists the supported Apple and Digital printers.

Table 8–1 Supported Printers

Printer	Connected to the VAX Computer through
Digital LPS20	Ethernet
Digital LPS40	Ethernet
Digital LPS40 Plus	Ethernet
Digital LN03R	Serial connection
Apple printers: ■ LaserWriter ■ LaserWriter Plus ■ LaserWriter NT ■ LaserWriter NTX	LocalTalk/Ethernet bridge or an RS232 serial connection

Adding a Digital PostScript Printer Service

To make Digital PostScript printers available to Macintosh users, add a VAXshare printer service for the Digital printer. You must specify the:

- Printer service name
- VMS queue name

You need to know the name of the existing VMS printer queue for which you want to set up printer services. If you do not have an existing queue, create one by using the standard VMS commands described with the printer's documentation.

Note *VAXshare only creates queues for LaserWriter printers. See the* Guide to Maintaining a VMS System *for more information on setting up queues.*

For example, to set up the Digital print service "Print Room LPS20", enter:

```
$ ADMIN/MSA
MSA$MANAGER> ADD PRINTER "Print Room LPS20"-
_MSA$MANAGER> /QUE=LPS20_POST-
_MSA$MANAGER> /PARAM=(DATA_TYPE=POSTSCRIPT)-
MSA$MANAGER> EXIT
```

You also can add a VAXshare printer service to make a Digital PostScript printer available on a DQS server node. See Appendix B for procedures on updating device control libraries at the remote node.

Adding an Apple LaserWriter Printer Service

To make Apple LaserWriter printers available to VMS users, add a VAXshare printer service for the Apple LaserWriter. You must specify the:

- Printer service name
- VMS queue name
- Destination

  The DESTINATION qualifier is the AppleTalk zone name for the printer. It is used to distinguish between Digital PostScript and Apple LaserWriter printers.

You do not need an existing queue because after you add the printer and issue the START PRINTER command, VAXshare creates and starts the queue.

For example, to set up the LaserWriter "Appleprinter" on the LW_PRINT queue, enter:

```
$ ADMIN/MSA
MSA$MANAGER> ADD PRINTER "Appleprinter"/QUEUE=LW_PRINT-
_MSA$MANAGER> /DESTINATION="Finance LaserWriter@Bldg1"-
_MSA$MANAGER> /DEFAULT=(FLAG, TRAILER, FORM=LTR_12)-
_MSA$MANAGER> /FONTS=MSAP$FONTLIST_APPLE35.TXT
MSA$MANAGER> EXIT
```

The optional DEFAULT qualifiers are available only for LaserWriter printer services used for VMS print jobs. The above example includes the following:

Qualifier	Description
FLAG	Flag page contains the name of the user submitting the job
FORM	Specifies the form type allowed for the print queue
TRAILER	Trailer page is printed at the end of the file and specifies information about the user submitting the job

If you do not specify these qualifers, default values are assigned and include FORM=LTR_12, NOFLAG, NOTRAILER.

After you add the service, you need to start it.

After you set up a printer service, you need to start it. To start a printer service, enter:

```
$  ADMIN/MSA START PRINTER "Appleprinter"
```

Using Printer Service Qualifiers

Different qualifiers are available to modify printer services depending upon the type of printer, Apple LaserWriter or Digital PostScript printer. Use the following tables as a guide to applicable qualifiers when setting up printer services:

Table 8–2 Setting Up Apple LaserWriter Printers for VMS users

Qualifiers	Options
/DEFAULT	[NO]FLAG=ALL [NO]FLAG=ONE FORM=LPT_GRAY FORM=LPT_PLAIN FORM=LTR_10 FORM=LTR_12 FORM=PS_PLAIN [NO]TRAILER=ALL [NO]TRAILER=ONE

(continued on next page)

Table 8–2 (Cont.) Setting Up Apple LaserWriter Printers for VMS users

Qualifiers	Options
/FLAGS[1]	
	[NO]BORDER [NO]CONTROL_CHARACTERS [NO]LINE_NUMBERS
/FONTS	
	MSAP$FONTLIST_APPLE13.TXT MSAP$FONTLIST_APPLE35.TXT
/SETUP	
	MSAP$APPLEDICT65 MSAP$APPLEDICT67 MSAP$APPLEDICT68 (default) MSAP$APPLEDICT70
/WATER_MARK	

[1]only valid when printing text files

Table 8–3 Setting Up Digital Postscript Printers for Macintosh Users

Qualifiers	Options
/FONTS	
	MSAP$FONTLIST_DEC29.TXT

(continued on next page)

Table 8–3 (Cont.) Setting Up Digital Postscript Printers for Macintosh Users

Qualifiers	Options
/PARAMETERS	
	DATA_TYPE=POSTSCRIPT INPUT_TRAY[1] MESSAGES NUMBER_UP OUTPUT_TRAY[1] PAGE_LIMIT SHEET_COUNT SHEET_SIZE SIDES[2]
/SETUP	(use setup modules ??Jay)

[1]not applicable when printing to a ScriptPrinter

[2]only applicable to PrintServer20

Modifying Printer Services

When you add a printer service, you do not have to specify optional qualifiers. However, you can use these qualifiers to modify Apple and Digital printer services to match your own requirements.

Table 8–4 lists the parameters that you can specify for Digital and Apple printer services.

Table 8–4 Printer Parameters

Parameter	Digital Printers	Apple LaserWriters
/DEFAULT		x
/DESTINATION		x
/FLAGS		x
/FONTS	x	x
/PARAMETER	x	
/QUEUE	x	x
/SETUP	x	x[1]
/WATERMARK		x

[1]SETUP is used in different ways by Digital and Apple printers.

/FONTS, /QUEUE, and /SETUP can be specified for both types of printer services.

This section discusses:

- Using the fonts and setup qualifiers
- Modifying printer service attributes

Use the FONTS qualifier to define a specific font list.

Using FONTS and SETUP Qualifiers

Choosing a FONT File

You use the FONTS qualifier to define a specific font list. The VAXshare receiver uses the font list to determine the fonts supported by the printer. *System Administrator's Reference Manual* lists the available font files.

Font lists are stored in the SYS$SYSROOT:[MSA.MSAP$UTILITY] directory. The default font list for Apple LaserWriters is MSAP$DEFAULT_APPLE_FONTS.TXT. This file is equivalent to the MSAP$FONTLIST_APPLE13.TXT file.

The default font list for Digital printers is MSAP$DEFAULT_DIGITAL_FONTS.TXT. This file is equivalent to the MSAP$FONTLIS DEC29.TXT. file.

If you do not specify a font file, the default font file is assigned to the printer. Although the default font list is appropriate for most printers, check that the default is used on your site. For example, if your site has LaserWriter II printers, you can use the MSAP$FONTLIST_APPLE35.TXT file.

Using the SETUP qualifier

For Apple LaserWriters, use the SETUP qualifier to determine a specific LaserPrep setup module. The LaserPrep module is the PostScript code that prepares the LaserWriter printer for print jobs.

If the required module is not loaded, it is extracted from the print symbiont's device control table (MSAP$DEVCTL.TBL) and copied to the LaserWriter before a print job is printed. Version 5.2 is the default and is appropriate for most cases.

For Digital printers, the SETUP qualifier can be used to specify user supplied setup modules. These modules are extracted from the print symbiont's device control table and copied to the printer before a print job is started. To use these modules, read the documentation supplied with the printer. The SETUP qualifier is not used to specify a LaserPrep setup module because the receiver loads the appropriate file.

System Administrator's Reference Manual lists the available LaserPrep files.

Modifying Printer Service Attributes

You can change a printer service's parameters to match the users' requirements. For example, you can add a border to a printed page.

To change a printer's attributes, first stop the printer by using the STOP PRINTER command. If possible, wait until all jobs are out of the print queue. However, if any jobs remain in the queue, those jobs become active again when you restart the printer.

The following sections describe two different methods for changing printer attributes.

Modify a Printer in One Step

Modify a printer in one step.

You can easily change the following printer attributes with the command, MODIFY PRINTER.

Table 8–5 lists these attributes.

Table 8–5 Printer Service Attributes

Printer Type	Attribute	Description
LaserWriter only	/FLAGS= (option[,option...])	Customizes the output with an option such as adding a border to a page.
LaserWriter only	/DEFAULT=(option[...])	Customizes the output by defining the user who submitted the job, etc.
LaserWriter and Digital	/FONTS	Specifies the font list
LaserWriter only	/WATER_MARK=string	Prints the specified string at the top and bottom of the page.
Digital only	/PARAMETERS=	Specifies the number of pages and type of data.
LaserWriter	/SETUP=	Specifies the Apple LaserPrep version.
Digital	/SETUP=	Specifies the user supplied or Digital supplied setup module.

The following command example prints a border on each page for the printer service MACPRINTER. These characteristics apply only to a printer service for a LaserWriter printer.

```
$ ADMIN/MSA
MSA$MANAGER> MODIFY PRINTER MACPRINTER-
_MSA$MANAGER> /FLAGS=(BORDER)
MSA$MANAGER> EXIT
```

The following command example changes the font file for the printer MACPRINTER. This characteristic applies to printer services for Digital PostScript and Apple LaserWriter printers.

```
$ ADMIN/MSA
MSA$MANAGER> MODIFY PRINTER MACPRINTER-
_MSA$MANAGER> /FONTS=MSAP$FONTLIST_APPLE35.TXT
MSA$MANAGER> EXIT
```

Change Printer Queue or Destination

Change printer queue or destination.

To modify the printer queue or destination, you must stop the printer, remove the printer service and then add it with the new queue and/or destination. You cannot change these qualifiers using the MODIFY PRINTER command.

The REMOVE PRINTER command deletes the LaserWriter printer queue. Check that no jobs remain in the queue.

The following example shows this procedure:

```
$ ADMIN/MSA
MSA$MANAGER> STOP PRINTER MACPRINTER
MSA$MANAGER> REMOVE PRINTER MACPRINTER
MSA$MANAGER> ADD PRINTER MACPRINTER/QUEUE=PS_MACPRINT-
_MSA$MANAGER> /DESTINATION="device_name@zone_name"
MSA$MANAGER> START PRINTER MACPRINTER
MSA$MANAGER> EXIT
```

Setting Up a LaserWriter Using a Serial Connection

You can connect a LaserWriter directly to the VAX computer as a serial device. The following section describes the steps necessary for setting up a serial LaserWriter.

Setting up

1. Connect a straight through RS232 cable from the 25 pin connector on the back of the LaserWriter to the serial output connector on the VAX computer.
2. Set the printer switches as shown in Table 8–6.

Table 8–6 LaserWriter Switches for Serial Printer

Printer	Settings
LaserWriter	4 position mode switch to 9600
LaserWriter Plus	4 position mode switch to 9600
LaserWriter NT	
	1 Up
	2 Down

(continued on next page)

Table 8–6 (Cont.) LaserWriter Switches for Serial Printer

Printer	Settings	
LaserWriter NTX		
	1	Up or down
	2	Down
	3	Up
	4	Up
	5	Down
	6	Down

3 Set the VMS terminal line to which the printer is connected by entering the following command:

```
$   SET TERMINAL device_name:
_$  /NOAUTOBAUD/NOBRDCSTMBX/NOBROADCAST-
_$  /DEVICE_TYPE=UNKNOWN-
_$  /NODISCONNECT/NOECHO/EIGHT_BIT/NOESCAPE-
_$  /FORM/FULLDUP-
_$  /HARDCOPY/HOSTSYNC/LOWERCASE/PASTHRU/PERMANENT-
_$  /SPEED=9600/TAB/TTSYNC/TYPE_AHEAD/NOWRAP
```

Note *For subsequent reboots of the VAX, add the above line to the SYS$STARTUP:SYSTARTUP_V5.COM file. Be sure you enter this line before the SYS$STARTUP:MSA$STARTUP.COM line.*

4 Add the VAXshare LaserWriter printer service. Set the destination to the serial device name. The following example creates a LaserWriter printer service called "Serially Yours" with a queue name, "LW_SERIAL".

```
$ADMIN/MSA
MSA$MANAGER> ADD PRINTER "Serially Yours"-
_MSA$MANAGER> /QUEUE=LW_SERIAL/DEST=device_name:
MSA$MANAGER> EXIT
```

5 To create the queue and start the service, enter the following command:

```
$ ADMIN/MSA START PRINTER "Serially Yours"
```

Note *Be sure to include the colon in the device name.*

Troubleshooting

If you are unable to print correctly, see if the LaserWriter is configured correctly.

- Enter the following command to check the software settings:

  ```
  $ COPY MSA$ROOT:[MSA.MSAP$UTILITY]MSAP$SHOW_PARAM.PS-
  _$ device_name
  ```

  MSAP$SHOW_PARAM.PS causes the LaserWriter to print its current configuration. Check the serial configuration of the printer by comparing the printout with the following correct values:

BAUD	9600
PARITY	none-space
HANDSHAKE	XON/XOFF
DATA BITS	standard
STOP BITS	1

- If you did not get a printout, check the physical connection to the device and the terminal settings. Use the SHOW TERMINAL command to check that the settings match the settings defined in step 3.

  If any values are different, enter the following command to reset the values:

  ```
  $ COPY MSA$ROOT:[MSA.MSAP$UTILITY]MSAP$SET_PARAM.PS-
  _$ device_name
  ```

- Copy the MSAP$SHOW_PARAM.PS file again to reconfirm the settings.

Removing Printer Services

When you need to remove a printer service, inform the users and check that no jobs are in the print queue.

For example, if you want to upgrade to a faster or more flexible printer, first notify the users. Then check for jobs in the print queue for the printer you are removing, with the SHOW QUEUE command.

When you remove a LaserWriter printer service, the queue is deleted. You can delete print jobs from the queue before you remove a printer service. However, you can remove a service even if there are jobs in the queue. When you remove a Digital printer, only the service is removed. The queue is not deleted.

The following command deletes print jobs:

```
$ DELETE/ENTRY=job_#
```

Stop the printer before you remove it. To remove a printer service, enter the following commands:

```
$  ADMIN/MSA
MSA$MANAGER>  STOP PRINTER MACPRINTER
MSA$MANAGER>  REMOVE PRINTER MACPRINTER
MSA$MANAGER>  EXIT
```

Starting and Stopping Printer Services

When you add a printer service to your system, you must start it to make it available. After you modify a printer service, you need to stop and restart it to make the modifications become effective.

You can start one specific printer or, if you forget which printer you stopped, you can start all printers with one command. The command to start all printers at once has no effect on printers that are already running.

Starting One Printer

Start only one printer.

For example, to start the printer MACPRINTER, enter the following command:

```
$  ADMIN/MSA START PRINTER MACPRINTER
```

Starting All Printers

To start all printer services at once, enter:

```
$  ADMIN/MSA START PRINTER/ALL
```

Stopping One Printer

You need to stop a printer for maintenance procedures or to change its attributes. You can stop one specific printer, or you can stop all printers with one command.

For example, to stop a printer, enter:

```
$  ADMIN/MSA STOP PRINTER MACPRINTER
```

Stopping All Printers

To stop all printers at once, enter:

```
$  ADMIN/MSA STOP PRINTER/ALL
```

Adding a VAXshare Form

An electronic **form** determines the page layout produced by a printer and specifies the appropriate paper stock. For example, you can have a letterhead form on one printer and plain paper on another printer.

Table 8–7 lists the VAXshare forms available when your system is installed and the paper stock required for each form. You can add forms to this list.

Table 8–7 VAXshare Forms for LaserWriter Printers

Form Name	Description	Paper Stock
LPT_GRAY	Line printer with gray bars	Plain
LPT_PLAIN	Plain line printer format	Plain
LTR_10	10-Pitch, no margins	Plain
LTR_12	12-Pitch, no margins	Plain
PS_PLAIN	PostScript (Macintosh)	Plain

Perhaps you need an additional form, such as a checkstub. You can add a form to the list of available VAXshare forms if you have a PostScript program to produce the specific page layout you need.

Adding a form requires the following two tasks:

1 Add a **form setup module**

A form setup module is a PostScript program that produces a specific page layout.

Add a Form Setup Module.

To add a Form Setup Module, insert the form's PostScript file into the device control library:

```
$ LIBRARY/INSERT/TEXT-
_$ SYS$LIBRARY:MSAP$DEVCTL.TLB form.ps
```

form.ps Name of the PostScript file you are inserting into the library.

2 Define the print form for the VMS operating system. Defining the print form makes that form permanently available to your users.

Define a print form.

To define a print form, enter the following DCL command:

```
$ DEFINE/FORM form-name form-number-
_$ /SETUP=module /STOCK=string
```

form-name	Name of the form you are adding.
form-number	Number of the form you are adding.
module	Module that you set up in the device control library.
string	Type of paper stock required for the form.

Example

For example, to add a form using the PostScript file LETTER16.PS for the form LTR_16_LTRHD, which you are defining as 16-Pitch, no margins, with Letterhead stock, enter:

```
$ LIBRARY/INSERT/TEXT-
_$ SYS$LIBRARY:MSAP$DEVCTL.TLB LETTER16.PS

$ DEFINE/FORM LETTER_16_LTRHD 116 /SETUP=LETTER16.PS-
_$ /STOCK=LETTERHEAD
```

The form is now ready to use.

A

Modifying MSAX$CLIENT Parameters

This appendix describes how to modify MSAX$CLIENT parameters to improve memory and performance. MSAX$CLIENT is the component the MacX server uses to start up remote X window applications.

You can modify the following logical names to change the way MSAX$CLIENT works. These include:

- MSAX$CLIENT_CACHE

  You can define this logical name to be TRUE in your LOGIN.COM if you expect to be starting and stopping DECwindows client applications in rapid succession. Setting this logical to TRUE allows the system to use the process again instead of creating a new process for each DECwindows client.

  Remember that in DECwindows, you cannot invoke DECW$SESSION from a process that has already executed another DECwindows application.

- MSAX$CLIENT_KEEP_LINK

  You need a link from MacX to AppleTalk for VMS to start applications. After the application is running, you can keep the link open for error reporting. However, each link uses about 8.5K of non paged pool.

  If you are having problems starting up applications and want to receive error messages, set this logical to TRUE in your LOGIN.COM. However, this information also is available in the NETSERVER.LOG file in your home directory.

- MSAX$CLIENT_SILENT

  Set this logical to TRUE to suppress informational messages.

- MSAX$CLIENT_VERIFY_XLINK

  The default for this logical is TRUE. Use it to verify that a connection can be made to the client application. However, verification slows down performance.

  You can set it to FALSE to disable the verify feature when you need a fast connection.

- SYS$SCRATCH

  This is the VMS logical name that controls where temporary and error files are created. By default, SYS$SCRATCH is the same as your login directory.

  If you do not want temporary files created in your login directory, you can change the logical name in your LOGIN.COM file. For example, you can create a new directory called [.TEMP] and point SYS$SCRATCH to this new directory. Then all temporary files are stored in the new TEMP directory.

B

Setting Up VAX Distributed Queuing Service (DQS) for VAXshare Printer Services

This appendix describes how to set up the Distributed Queuing Service (DQS) to support Digital PostScript printer services. DQS allows users to submit print jobs to queues located on remote DECnet-VAX systems.

The VAXshare print server allows Macintosh users to submit print jobs to supported DQS Digital PostScript printers. The procedures outlined below update the device control libraries for the PostScript printer software at the remote DQS server node.

At the DQS server node:

1. Copy the files MSAP$DECPREP*.PS from MSA$ROOT:[MSA.MSAP$UTILITY] at the node where the VAXshare print server is installed.
2. Then copy MSAP$INSERT_DECPREP.COM from MSA$ROOT:[MSA.MSAP$UTILITY].
3. Define the logical MSAP$DECPREP_DIR to point to the location of the MSAP$DECPREP*.PS files.
4. Execute the command procedure MSAP$INSERT_DECPREP, to update the following device control libraries:
   - SYS$LIBRARY:LPS$DEVCTL.TLB
   - SYS$LIBRARY:CPS$DEVCTL.TLB
   - SYS$LIBRARY:LPS$LN03R$DEVCTL.TLB

5 If the library for the target PostScript printer is not one of the above, enter the library's file specification on the command line when you run MSAP$INSERT_DECPREP.COM.

```
$ @MSAP$INSERT_DECPREP SYS$LIBRARY:MY_DEVCTL.TLB
```

The following example executes the commands and updates the device control libraries on the DQS server node SRVR5. The VAXshare print server has been installed on node SRVR8.

```
$ CREATE/DIR SYS$SYSDEVICE:[DECPREP]
$ SET DEFAULT SYS$SYSDEVICE:[DECPREP]
$ COPY SRVR8::MSA$ROOT:[MSA.MSAP$UTILITY]-
_$ MSAP$DECPREP*.PS*
$ COPY SRVR8::MSA$ROOT:[MSA.MSAP$UTILITY]-
_$ MSAP$INSERT_DECPREP*.PS*
$ DEFINE MSAP$DECPREP_DIR SYS$DEVICE:[DECPREP]
$ @MSAP$INSERT_DECPREP
```

In this example, the DQS server node SRVR5 allows FAL access from SRVR8. If your site requires explicit access control for copying remote files, specify the access information for the COPY command as follows:

```
"username password" in addition to SRVR8.
```

Once the DQS server system has been updated, add a VAXshare printer service just as you would for any Digital PostScript printer. See Chapter 8 for procedures.

Note *If you install a new version of the PostScript printer software on the DQS server, you need to run these procedures after the installation is complete. Or you can add the following commands to SYS$MANAGER:SYSTARTUP_V5.COM:*

```
$ DEFINE MSAP$DECPREP_DIR SYS$SYSDEVICE:[DECPREP]
$ @SYS$SYSDEVICE:[DECPREP]MSAP$INSERT_DECPREP
```

C

Sharing Resources with DOS Users

With Digital's family of PATHWORKS products, you can use a VAX computer as a server to connect four environments: DOS, OS/2, Macintosh and VMS.

If PATHWORKS for VMS is installed and running on the same server as VAXshare software, VMS, Macintosh, DOS, and OS/2 users can share the same directories, files, and printers. For system managers, this means that the same server system integrates Macintosh, DOS, and OS/2 users into the VMS network.

In addition, clients can use the applications and procedures they are familiar with and receive the responses they expect.

For example, a common area on the same server can be set up for file sharing. Macintosh clients can use the Finder to access files generated by Lotus 1-2-3 on a personal computer. And DOS clients can use the DOS command line to access files generated by Excel on a Macintosh computer.

If Macintosh and DOS clients want to share files, you need to do the following:

- Set up a PCSA common file service and a VAXshare volume in the same location
- Check VAXshare type and creator assignments for files that are not created by a Macintosh user
- Consider DOS file name restrictions
- Consider UICs and VMS groups
- Use the common area

See Guide to VMS System Security for a complete description of creating and using ACLs and identifiers.

Set Up the Common Area on the Server

Before you create the PCSA service, you need to determine what type of Access Control List (ACL) identifiers you want to assign to the service. ACLs allow you to define a precise type of access to specific objects, such as files or devices.

Identifiers in an ACL specify the users who are allowed or denied access to the service. Define the types of identifiers based on your own requirements. You can define two types:

- UIC identifiers depend on a user's unique UIC and are useful for assigning groups access to a service.
- General identifiers are useful for assigning individuals access to a service.

Procedures

The following example creates a new shared PCSA/VAXshare file service, named Finance. This example also defines two general identifiers for access to the service. These include:

- SHARE_UPDATE - Allows read, write, execute, and delete access
- SHARE_READONLY - Allows only read and execute

1 Use the PCSA Manager to add a common file service. For example, add a service called, FINANCE.

```
PCSA_MANAGER> ADD SERVICE/DIRECTORY FINANCE/TYPE=COMMON-
_PCSA_MANAGER>  /ROOT=SYS$SYSDEVICE:[FINANCE]
```

2 Add a VAXshare volume. Map the volume's root directory to correspond exactly with the root directory of the PCSA file service.

```
MSA$MANAGER> ADD VOLUME "Finance"
_MSA$MANAGER> /ROOT=SYS$SYSDEVICE:[FINANCE]
```

3 Mount the volume

```
MSA$MANAGER> MOUNT "Finance"
```

4 Use the AUTHORIZE utility to create the rights identifiers:

```
$ SET DEF SYS$SYSTEM
$ R AUTHORIZE
UAF> ADD/IDENTIFER SHARE_UPDATE
UAF> ADD/IDENTIFER SHARE_READONLY
```

5 First, apply these identifiers to declare access to the root directory. Second, apply the identifiers to declare the default ACL access to directories and files within the service.

```
$! set the access rights to the directory
$ SET ACL/OBJECT_TYPE=FILE SYS$SYSDEVICE:[000000]-
_$ FINANCE.DIR-
_$  /ACL=((IDENTIFIER=SHARE_UPDATE, OPTIONS=PROTECTED,-
_$   ACCESS=READ+WRITE+EXECUTE+DELETE),-
_$   (IDENTIFIER=SHARE_READONLY, OPTIONS=PROTECTED,-
_$   ACCESS=READ+EXECUTE))
$! set the default access rights to the files
$! within the service
$ SET ACL/OBJECT_TYPE=FILE SYS$SYSDEVICE:[000000]
_$ FINANCE.DIR-
_$  /ACL=((IDENTIFIER=SHARE_UPDATE,-
_$   OPTIONS=PROTECTED+DEFAULT,-
-$   ACCESS=READ+WRITE+EXECUTE+DELETE),-
_$   (IDENTIFIER=SHARE_READONLY,-
-$   OPTIONS=PROTECTED+DEFAULT, ACCESS=READ+EXECUTE))
```

6 Grant the rights identifier SHARE_READONLY to USER1 and grant SHARE_UPDATE to USER2. USER1 can read and USER2 can read, write, and delete.

```
$ SET DEF SYS$SYSTEM
$ R AUTHORIZE
UAF> GRANT/IDENTIFIER SHARE_READONLY USER1
UAF> GRANT/IDENTIFIER SHARE_UPDATE USER2
UAF> EXIT
$
```

You also can define UIC identifiers to assign rights on a group basis. To set up read, write, execute, and delete access to the "Finance" service for all members of UIC group "ACCOUNTING", enter the following command:

```
$ SET ACL/OBJECT_TYPE=FILE SYS$SYSDEVICE:[000000]
_$ FINANCE.DIR-
_$  /ACL=((IDENTIFIER=[ACCOUNTING,*], OPTIONS=PROTECTED,-
_$  ACCESS=READ+WRITE+EXECUTE+DELETE),-
_$    (IDENTIFIER=[ACCOUNTING,*], OPTIONS=PROTECTED+DEFAULT,-
_$  ACCESS=READ+EXECUTE))
$
```

Note *If you are defining a VAXshare volume for an existing PCFS directory, be sure to assign access rights to all included files and directories. And add default identifiers to the directories.*

The common area "Finance" now is ready for file sharing.

Check File Type and Creator Assignments

Files created by DOS users do not have the Macintosh type and creator assignment. Check that the file extension is included in the MSAF$FILE_TYPES.DAT file. If the extension is not included, you need to add it to the MSAF$FILE_TYPES.DAT file.

Chapter 5 explains Macintosh type and creator assignment and describes the MSAF$FILE_TYPES.DAT file. VAXshare assigns creator and type attributes to files that are not created on a Macintosh computer. The Macintosh Finder uses type and creator to locate and work with files.

You can add and edit creator/types for files that are not created by a Macintosh user.

DOS File Name Restrictions

DOS file names that are longer than eight characters do not appear on the Macintosh desktop.

Using the Common Area

The following example describes how a DOS user creates a file with Lotus 1-2-3 and shares it with a Macintosh user with Excel. Be sure that Excel is installed on the Macintosh volume.

- From DOS, connect to the new service FINANCE with the USE command.

  For example, enter the following command to connect to FINANCE, on the server node, SRVR1.

  ```
  USE ?: \\SRVR1\FINANCE
  ```

  The client displays:

  ```
  DEVICE J: connected to \\SRVR1\FINANCE
  ```

- Execute the Lotus 1-2-3 application and create a file.
- Save the file with the .WK1 extension to drive J.

  The Lotus file extension .WK1 is included in the MSAF$FILE_TYPES.DAT file.

- From the Macintosh computer, open the Chooser.
- Select the file server SRVR1.
- Logon with your VMS name and password.
- Select the volume "Finance"

- Find the file with the .WK1 extension. You can double click on this file and start the Excel application.

D

Converting PacerShare Volumes to VAXshare Volumes

This appendix describes how to manually convert a PacerShare volume to a VAXshare volume.

Before you can proceed with the conversion, determine whether the PacerShare file server is running AppleTalk Phase 1 or Phase 2.

- If the PacerShare file server is running AppleTalk Phase 1, then the manual conversion process consists of copying folders and files from the old volume to the Macintosh's hard disk and then copying the same folders and files to the new VAXshare volume.

  You cannot copy directly from the old PacerShare volume to the new VAXshare volume because the PacerShare file server is running AppleTalk Phase 1 and the VAXshare file server is running AppleTalk Phase 2. The Macintosh computer does not support a PacerShare file server running AppleTalk Phase 1 and Phase 2 at the same time.

- If the PacerShare file server is running AppleTalk Phase 2, then the conversion process consists of copying folders and files from the old PacerShare volume directly to the new VAXshare volume.

The following sections describe how to convert volumes from a PacerShare file server:

- Running AppleTalk Phase 1
- Running AppleTalk Phase 2

Converting Volumes Stored on Pacershare Running AppleTalk Phase 1

The following steps summarize the manual conversion:

- Requirements for the Macintosh computer include:
  - Free space on the hard disk
  - AppleTalk Phase 1 and Phase 2 software installed
  - AppleShare installed
  - Finder set up with additional application memory specified.
- Set up Macintosh computer to use AppleTalk phase 1 protocol.
- Mount PacerShare volume to be converted.
- Copy folders and files from PacerShare volume to Macintosh hard disk.
- Set up Macintosh computer to use AppleTalk phase 2 protocol.
- Add a new VAXshare volume.
- Mount new VAXshare volume.
- Copy folders and files from Macintosh hard disk to VAXshare volume.
- Delete the temporary files on the Macintosh hard disk.
- Repeat for each PacerShare volume to be converted.

Setting Up the Macintosh Computer for Conversion

1 Free disk space.

Check that the Macintosh computer is connected to the network, (EtherTalk connection recommended), and that it has free hard disk space to hold folders and files copied temporarily from the PacerShare volume.

The amount of free hard disk space required depends upon the size of the PacerShare volume that you want to convert. If the volume is small, then you do not need much free disk space. If the volume is large, then you need more local free storage.

If you do not have enough space for the largest volume, then you can copy the volume in smaller sections until all the files and folders are transferred.

2 AppleTalk Phase I and Phase II

You need AppleTalk Phase 1 and Phase 2 software installed on your Macintosh. If you have an Apple EtherTalk NB card, then you should have received the Macintosh EtherTalk Installer, Version 2.0.1 or later floppy disks. If you have a different vendor's Ethernet card, then you should have received a similar set of floppy disks for installation.

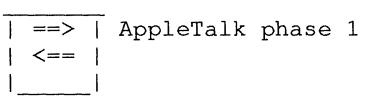
If you do not have AppleTalk Phase 2 software, request a copy from your dealer.

If you have not already installed the network software, then do so now, following the instructions supplied with the Ethernet card.

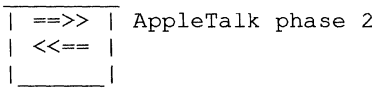
When the installation is complete, you should have AppleTalk phase 2 network support installed on your Macintosh. You also need to have AppleTalk Phase 1 installed.

The network software supplied with the Ethernet card should have included a copy of the previous version of the AppleTalk Phase 1 software. For example, the Macintosh EtherTalk Installer Version 2.0.1 floppy has a folder called "Previous Version". This folder contains a copy of the AppleTalk Phase 1 protocol driver.

The icon for AppleTalk Phase 1 has 2 arrows pointing in opposite directions. It looks like the following:



The icon for AppleTalk Phase 2 has the same arrows pointing in the opposite direction except each arrow has a double arrow head. It looks like the following:



Drag the "EtherTalk" file from the "Previous Version" folder to the System Folder.

Now you have access to AppleTalk Phase 1.

If you have a different vendor's Ethernet hardware, check the floppy disks supplied for a copy of AppleTalk Phase 1.

3 AppleShare software

You need AppleShare workstation software installed on your Macintosh. The AppleShare workstation software is supplied with the 6.0.4 (or 6.0.5) Macintosh operating system floppy disks . This software is installed using the "System Tools" and "Utilities Disk 1" floppies.

To install AppleShare:

- Boot your system from the "System Tools" floppy.
- Launch the "Installer" on the "System Tools" floppy.
- Click the "OK" button on the "Welcome" screen.
- You should now have the "Easy Install" dialog box on the screen.
- Click the "Customize" button.
- Select the "AppleShare (Workstation Software)" entry.
- Click on the "Install" button.
- AppleShare should now be installed.

Do not reboot now. Do it after the next section.

4 Giving the Finder additional memory:

You may not have to give the Finder more memory. However, if you are copying a large number of files under Multifinder, the Finder tends to run out of memory.

You can choose from the following solutions:

- Copy less files at the same time. This solution takes more time.
- Boot your system to run without Multifinder. And then all available memory is given to the Finder.
- Increase the amount of memory Finder uses under Multifinder.

To increase memory for the Finder:

- Use the mouse to select the Finder which is stored in the "System Folder".
- In the "File" menu, select "Get Info" (Command-I).
- Look for an "Info" window open for the Finder. At the bottom of the window is a memory size box labeled "Application memory size (K):" and the size displayed should be 160.

Increase the size to approximately 512, which should be large enough for the conversion process). After you have finished the conversion process, you can set this back to the default value of 160.

- Reboot to restart the Finder using this new larger memory size.

The Macintosh computer now is set up to perform manual conversions of PacerShare volumes to VAXshare volumes. You do not have to repeat these steps unless you want to set up additional Macintosh systems to help perform conversions.

The Conversion Process

This section describes how to convert PacerShare volumes if the file server is running AppleTalk Phase 1.

Make sure you have a backup of the volume using the VMS BACKUP utility. Safeguard the data in case any problems occur.

Set Up the Macintosh to use AppleTalk Phase 1

Set up the Macintosh to run Phase 1.

- From the Apple menu, select the "Control Panel".
- From the list of control panel device icons, click on the "Network" control panel device Icon.
- With AppleTalk Phase 1 and Phase 2 installed, three icons are displayed across the top of the window. One is labeled "Built-in", and the other two are labeled "EtherTalk".

  Click on the Phase 1 Icon (the one with the single arrow heads).
- The message displayed is "Access to the current network services will have to be re-established, Are you sure you want to change the AppleTalk connection?

  Click on the "OK" button.

The Macintosh computer now is running the AppleTalk Phase 1 protocol.

Mount PacerShare Volume

To mount the PacerShare volume that you want to convert, follow these steps:

- Using the Apple menu, select the "Chooser".
- Click on the AppleShare Icon. If you have multiple AppleTalk zones on your network, select the zone where the PacerShare volume is located.

  In the "Select a file server:" box, select the PacerShare file server. Click on the "OK" button.
- You are prompted to select a log on method.

  Select the "Apple Standard UAMs", or if you have a preferred PacerShare access method, then choose it instead. If you do not have any alternate User Access Methods on your Macintosh computer, then this box does not display.
- Now you are prompted for your name and password. Change the name field to a valid registered name for accessing the PacerShare server. Enter the correct password for this name. Click on the "OK" button.
- Select the PacerShare volume you want to convert and then click "OK". If prompted for a volume password, then enter the correct password for the volume.

The PacerShare volume to be converted is now mounted. You can close the Chooser.

Copy Pacershare Volume to Macintosh Hard Disk

- Copy the PacerShare folders and files to the Macintosh hard disk.
- Create a folder on the hard disk to store the files.

  Using the "File" menu, select "New Folder" (Command-N). For this procedure, call the folder "Transfer Area".
- Open the PacerShare volume by double clicking on it.
- With the top level folder open, go to the "Edit" menu and choose the "Select All" entry (Command-A).
- Drag the selected files to the newly created folder on your Macintosh hard disk.
- You may get a message saying there is not enough room on the disk to duplicate or copy the selected files. Then you need to copy a smaller subset of the entire volume.

Deselect the files by clicking on an empty area of the folder window. Use the mouse and hold down the "shift" key, to select a subset of the files to be copied.

Now try to drag the select subset of files to the newly created folder on your Macintosh hard disk. If this fails for the same reason, then try smaller subsets until you succeed.

Set Up the Macintosh Computer to Use AppleTalk Phase 2

To complete the conversion, switch your Macintosh computer to AppleTalk Phase 2 so that it can connect to VAXshare . VAXshare only uses the AppleTalk phase 2 protocol.

- From the Apple menu, select the "Control Panel".
- Click on the "Network" control panel device icon.
- Three icons are displayed. One is labeled "Built-in", and the other two are labeled "EtherTalk". AppleTalk Phase 2 Icon has 2 arrow heads on each arrow and AppleTalk Phase 1 has single arrow heads.

  Click on the Phase 2 icon (the one with the double arrow heads).
- The message displayed is "Access to the current network services will have to be re-established. Are you sure you want to change the AppleTalk connection?

  Click on the "OK" button.
- Click on the Phase 2 icon again. A dialog box appears asking you to select your AppleTalk zone, assuming you have multiple zones on your AppleTalk network.

  Select the zone you want your Macintosh comuter to be in.

Your Macintosh computer is now running AppleTalk Phase 2.

Add a New VAXshare Volume

Using a terminal or terminal emulator, log on to the VMS system where the VAXshare file server is running. Make sure that you use the SYSTEM account with SYSPRV so that you can create a new VAXshare volume.

Choose a location for the new VAXshare volume that has sufficient disk space to hold all the folders and files currently contained in the existing PacerShare volume.

The following example summarizes the steps required to create a new volume.

```
$ ADMINISTER/MSA
MSA$MANAGER> ADD VOLUME "my new volume name" -
_MSA$MANAGER> /PASSWORD="8 char password" -
_MSA$MANAGER>/ROOT_DIRECTORY=disk:[directory]
MSA$MANAGER> MOUNT /PERMANENT "my new volume name"
MSA$MANAGER> EXIT
$
```

See the Chapter 6 for specific information on adding VAXshare volumes.

Mount the New VAXshare Volume

- Using the "Apple" menu, select the "Chooser".
- Click on the AppleShare icon. If you have multiple AppleTalk zones on your network, then select the zone where the new VAXshare volume is located. In the "Select a file server:" box, select the VAXshare file server and then click on the "OK" button.
- You are prompted to select a log on method. Select the "Apple Standard UAMs", or the "VMS password UAM" if the VMS account password is longer then 8 characters. If you do not have any alternate User Access Methods on your Macintosh computer, then this dialog does not display.
- You are now prompted for your name and password. Change the name field to a valid VMS account for accessing the VAXshare server. Enter the correct password for this name. Click on the "OK" button.
- Select the new VAXshare volume. If prompted for a volume password, then enter the correct password for the volume.

  The new volume is mounted on the Macintosh desk top. You can close the Chooser.

Copy Folders from Macintosh Hard Disk to VAXshare volume

Copy all the folders and files to the new VAXshare volume.

- Open the Macintosh hard disk folder "Transfer Area" where you copied all the PacerShare files.
- Using the "Edit" menu, choose the "Select All" entry (Command-A).

- Drag the selected files from the "Transfer Area" on your Macintosh hard disk to the new VAXshare volume. The icon for the VAXshare volume should be on the right side of your Macintosh desk top).

  This could take a while if the number of folders and files is fairly large.

Finishing the Conversion

If you copied a subset of folders and files from the PacerShare volume, then repeat the steps above until you have copied all the folders and files from the PacerShare volume to the VAXshare volume.

After the files have been copied to the VAXshare volume, you can delete the files in the "Transfer Area" folder on the Macintosh local hard disk. If you need to do additional conversions, you will need this space.

If this new VAXshare volume is going to be a READ ONLY volume, then again login into the VMS system and using MSA$MANAGER, change the volume to READ_ONLY.

```
$ ADMINISTER/MSA
MSA$MANAGER> MODIFY VOLUME "my new volume name" -
_MSA$MANAGER>/ACCESS=READ_ONLY -
_MSA$MANAGER>/PERMANENT
MSA$MANAGER> MODIFY VOLUME "my new volume name" -
_MSA$MANAGER> /ACCESS=READ_ONLY
MSA$MANAGER> EXIT
$
```

Any users who already have this volume mounted need to drag the volume to the trash and then remount it before the READ ONLY access takes effect.

When you have finished all the conversions, you can reset the Finder memory setting back to 160.

Converting Volumes Stored on Pacershare Running AppleTalk Phase 2

The following steps summarize the conversion:

- Requirements for the Macintosh computer include:
  - AppleTalk Phase 2 installed
  - AppleShare installed
  - Finder set up with additional application memory specified.

- Mount PacerShare volume to be converted.
- Add a new VAXshare volume.
- Mount new VAXshare volume.
- Copy folders and files from PacerShare volume to VAXshare volume.
- Repeat for each PacerShare volume to be converted.

Setting Up the Macintosh Computer for Conversion

1 Check that the Macintosh computer is connected to the network. An EtherTalk connection is recommended.

2 AppleTalk Phase 2

You need AppleTalk Phase 2 installed on your Macintosh. If you have an Apple EtherTalk NB card, then you should have received the Macintosh EtherTalk Installer Version 2.0.1 or later floppy disks. If you have a different vendor's Ethernet card, then you should have received a similar set of floppy disks for installation.

If you do not have AppleTalk Phase 2 software, request a copy from your dealer.

If you have not already installed your network software, then do so now, following the instructions supplied with the Ethernet card.

When the installation is complete, you should have AppleTalk Phase 2 network support installed on your Macintosh computer.

3 AppleShare software

You need AppleShare workstation software installed on your Macintosh computer. The AppleShare workstation software is supplied with the 6.0.4 (or 6.0.5) Macintosh operating system floppy disks. This software is installed using the "System Tools" and "Utilities Disk 1" floppies.

To install AppleShare:

- Boot your system from the "System Tools" floppy.
- Launch the "Installer" on the "System Tools" floppy.
- Click the "OK" button on the "Welcome" screen.
- You should now have the "Easy Install" dialog box on the screen.
- Click the "Customize" button.

- Select the "AppleShare (Workstation Software)" entry.
- Click on the "Install" button.
- AppleShare should now be installed.

  Do not reboot now. Do it after the next section.

4 Giving the Finder additional memory

You may not have to give the Finder more memory. However, if you are copying a large number of files under Multifinder, the Finder tends to run out of memory.

You can choose from the following solutions:

- Copy less files at the same time. This solution takes longer to complete.
- Boot your system to run without Multifinder. And then all available memory is given to the Finder.

To increase the amount memory Finder uses under Multifinder:

- Use the mouse to select the Finder which is stored in your "System Folder".
- In the "File" menu, select "Get Info" (Command-I).
- Look for an "Info" window open for the Finder. At the very bottom of the window is a memory size box labeled "Application memory size (K):" and the size displayed should be 160.

  Increase the size to approximately 512 which should be large enough for the conversion process. After you have finished the conversion process, you can set this back to the default value of 160.
- Reboot to restart the Finder using this new larger memory size. The Macintosh computer now is set up to perform manual conversions of PacerShare volumes to VAXshare volumes. You do not have to repeat these steps unless you wish to set up additional Macintosh systems to help perform conversions.

The Conversion Process

This section describes how to convert PacerShare volumes if the PacerShare file server is running AppleTalk Phase 2.

Make sure you have a backup of the volume using the VMS BACKUP utility. Safeguard the data in case any problems occur.

Set Up the Macintosh Computer to Use AppleTalk Phase 2

Set up the Macintosh computer to run Phase 2.

- From the Apple menu, select the "Control Panel".
- From the list of control panel device icons, click on the "Network" control panel device icon.
- Two or three icons are displayed across the top of the window. One is labeled "Built-in", and the others are labeled "EtherTalk".

  If the Phase 2 icon is already selected, then you can move to the next section.
- If the Phase 2 icon is not selected, then click on the Phase 2 icon (the one with the double arrow heads).
- The message displayed is "Access to the current network services will have to be re-established. Are you sure you want to change the AppleTalk connection? Click on the "OK" button.
- Click on the Phase 2 icon again. A dialog box displays asking you to select your AppleTalk Zone, if you have multiple zones on your AppleTalk network.

  Select the zone you want your Macintosh computer to be in.

  The Macintosh computer is now running AppleTalk Phase 2.

Mount PacerShare Volume

To mount the PacerShare volume that you want to convert, follow these steps:

- Using the Apple menu, select the "Chooser".
- Click on the AppleShare icon. If you have multiple AppleTalk zones on your network, select the zone where the PacerShare volume is located.

  In the "Select a file server:" box, select the PacerShare file server. Click on the "OK" button.
- You are prompted to select a log on method.

Select the "Apple Standard UAMs", or if you have a preferred PacerShare access method, then choose it instead. If you do not have any alternate User Access Methods on your Macintosh computer, then this box does not display.

- Now you are prompted for your name and password. Change the name field to a valid registered name for accessing the PacerShare server. Enter the correct password for this name. Click on the "OK" button.
- Select the PacerShare volume you want to convert and then click "OK". If prompted for a volume password, then enter the correct password for the volume.

The PacerShare volume to be converted is now mounted. You can close the Chooser.

Add a New VAXshare Volume

Using a terminal or terminal emulator, log on to the VMS system where the VAXshare file server is running. Make sure that you use the SYSTEM account with SYSPRV so that you can create a new VAXshare volume.

Choose a location for the new VAXshare volume that has sufficient disk space to hold all the folders and files currently contained in the existing PacerShare volume.

The following example summarizes the steps required to create a new volume.

```
$ ADMINISTER/MSA
MSA$MANAGER> ADD VOLUME "my new volume name" -
_MSA$MANAGER> /PASSWORD="8 char password" -
_MSA$MANAGER> /ROOT_DIRECTORY=disk:[directory]
MSA$MANAGER> MOUNT /PERMANENT "my new volume name"
MSA$MANAGER> EXIT
```

See the Chapter 6 for specific information on adding VAXshare volumes.

Mount the New VAXshare Volume

- Using the "Apple" menu, select the "Chooser".
- Click on the AppleShare icon. If you have multiple AppleTalk zones on your network, then select the zone where the new VAXshare volume is located. In the "Select a file server:" box, select the VAXshare file server and then click on the "OK" button.

- You are prompted to select a log on method. Select the "Apple Standard UAMs", or the "VMS password UAM" if the VMS account password is longer then 8 characters. If you do not have any alternate User Access Methods on your Macintosh, then this dialog does not display.
- You are now prompted for your name and password. Change the name field to a valid VMS account for accessing the VAXshare server. Enter the correct password for this name. Click on the "OK" button.
- Select the new VAXshare volume. If prompted for a volume password, then enter the correct password for the volume.

  The new volume is mounted on the Macintosh desk top. You can close the Chooser.

Copy Folders from PacerShare Volume to VAXshare Volume

Copy all the PacerShare folders and files to the new VAXshare volume.

- Open the PacerShare volume by double clicking on it.
- Go to the "Edit" menu and choose the "Select All" entry (Command-A).
- Drag the selected files to the new VAXshare volume which is visible on your desk top.

Finishing the Conversion

If this new VAXshare volume is to be a READ ONLY volume, then use MSA$MANAGER to change the volume to READ_ONLY.

```
$ ADMINISTER/MSA
MSA$MANAGER> MODIFY VOLUME "my new volume name"-
_MSA$MANAGER> /ACCESS=READ_ONLY -
_MSA$MANAGER> /PERMANENT
MSA$MANAGER> MODIFY VOLUME "my new volume name"-
_MSA$MANAGER> /ACCESS=READ_ONLY
MSA$MANAGER> EXIT
$
```

Drag the volume to the trash and then remount it before the READ ONLY access takes effect.

When you have finished all the conversions, you can reset the Finder memory setting back to 160.

E

Converting AlisaShare Volumes to VAXshare Volumes

PATHWORKS software for Macintosh computers includes a utility that automatically converts AlisaShare volumes to VAXshare volumes.

When you use this utility, a list of all known AlisaShare volumes is displayed. You can select the volumes you want to convert. Any volumes that you choose not to convert can be converted at a later time.

Enter the following command to start the AlisaShare conversion utility:

```
$ @MSA$ROOT:[MSA]MSAF$CONVERT_ALISASHARE
```

It is strongly recommended that you make a backup of the data before using this conversion procedure.

The conversion utility logs all information displayed on the screen in the file MSAF$CONVERT_ALISASHARE.LOG. If you have any problems with the conversion, check to see if you incorrectly responded to one of the prompts.

Sample Conversion Process

The following is a sample of the AlisaShare conversion script.

- Did you BACKUP your data? Answer Yes to continue: y

```
1  Common Area                    JUPITOR:[MSA$COMMON]
2  FinShare                       NEPTUN:[FINSHARE]
3  Tools Area                     PLUTO:[TOOLS_AREA]
```

- Specify the volume(s) to convert (1,2,3,..., ALL or Ctrl/Z): 3

```
3  Tools Area
```

WARNING DO NOT hit Control/Y or Control/C after this point. Doing so, may result in the corruption of the volume currently being converted.

- Is this the volume? ([Yes] or No): y

  The following messages are displayed as the conversion process takes place.

```
MSAF-I-VFYVOL, Verifying volume "Tools Area"
MSAF-I-VFYVOLNAM, Verified volume name
MSAF-I-VFYVOLPSW, Verified volume password
MSAF-I-VFYVOLLOG, Verified volume location is
not a search list logical
MSAF-I-VFY_ASVOL, Verified AlisaShare volume
information directory exists
DKA100:[APPLETALK.ALISASHARE]ASVOL$TOOLS_AREA.DIR;1
MSAF-I-VFY_ASINFO, Verified AlisaShare volume
information files exist
DKA100:[APPLETALK.ALISASHARE.ASVOL$TOOLS_AREA]ASAPPL.DAT;1
DKA100:[APPLETALK.ALISASHARE.ASVOL$TOOLS_AREA]ASCOMMENT.DAT;1
DKA100:[APPLETALK.ALISASHARE.ASVOL$TOOLS_AREA]ASICON.DAT;1
DKA100:[APPLETALK.ALISASHARE.ASVOL$TOOLS_AREA]ASROOT.CAT;1
DKA100:[APPLETALK.ALISASHARE.ASVOL$TOOLS_AREA]ASVOLUME.AFP;1
MSAF-I-VFY_NO_MSAF, Verified VAXshare volume info doesn't exist
DKA100:[TOOLS_AREA]MSAF$VOLINFO.DIR

%CREATE-I-CREATED, DKA100:[TOOLS_AREA.MSAF$VOLINFO] created
MSAF-I-CPY_RENAME, Copied and renamed the
DKA100:[APPLETALK.ALISASHARE.ASVOL$TOOLS_AREA]*.* files to
DKA100:[TOOLS_AREA.MSAF$VOLINFO]

MSAF-I-RENAME, Renaming *.CAT  files to *.MSAF$CAT  and
               Renaming ASRESOURCES.DIR  files to MSAF$RESOURCES.DIR
MSAF-I-PROCESSING, Processing (1) DKA100:[TOOLS_AREA]
MSAF-I-PROCESSING, Processing (2) DKA100:[TOOLS_AREA.FASTBACK]
MSAF-I-PROCESSING, Processing (2) DKA100:[TOOLS_AREA.MSAF$VOLINFO]
MSAF-I-PROCESSING, Processing (2) DKA100:[TOOLS_AREA.MULTIPLE]
MSAF-I-PROCESSING, Processing (2) DKA100:[TOOLS_AREA.RELEASE_NOTES]
MSAF-I-PROCESSING, Processing (2) DKA100:[TOOLS_AREA.TMP]

MSAF-I-ADDVOL, Adding VAXshare volume "Tools Area"
MSAF-I-VOLADDED, VAXshare volume "Tools Area" added

MSAF-I-DISMOUNT_AS, Dismounting AlisaShare volume "Tools Area"
MSAF-I-DISMOUNTED_AS, AlisaShare volume "Tools Area" has been
dismounted
```

```
  1  Common Area                JUPITOR:[MSA$COMMON]
  2  FinShare                   NEPTUN:[FINSHARE]
```

- Specify the volume(s) to convert (1,2,3,..., ALL or Ctrl/Z):

  ```
  Tools Area
  ```

  The volumes listed have just been added to the VAXshare database. You need to mount them to make them available to the users.

  If you choose to mount the volumes now, allow a reasonable time period because VAXshare tries to verify each volume as it is mounted.

  If you choose not to mount them right now, you can mount them later time the ADMIN/MSA MOUNT/PERM command. Or these volumes will be mounted the next time the VAXshare file server is restarted.

- Mount the VAXshare volumes listed? ([YES] or NO): y

F

Configuring LAT Group Codes

This appendix describes how to configure LAT group codes for Macintosh users. LAT group codes define VMS terminal services that can be accessed from a terminal or from a Macintosh computer that is emulating a terminal.

The LAT tool lets Macintosh based terminal emulators connect to VAX nodes that provide LAT services. If your VAX computer uses LAT group codes to define LAT services, you need to configure these codes for Macintosh users.

The default LAT configuration allows access only to terminal services with group code 0. All users can connect to services in group 0.

From the Macintosh desktop, use AdminLAT to give Macintosh users access to terminal services with non zero group codes.

Note *AdminLAT is stored in the Administrator's Folder and shipped on the Applications Volume. You can protect the folder by deleting it from the volume or by setting privileges on the folder.*

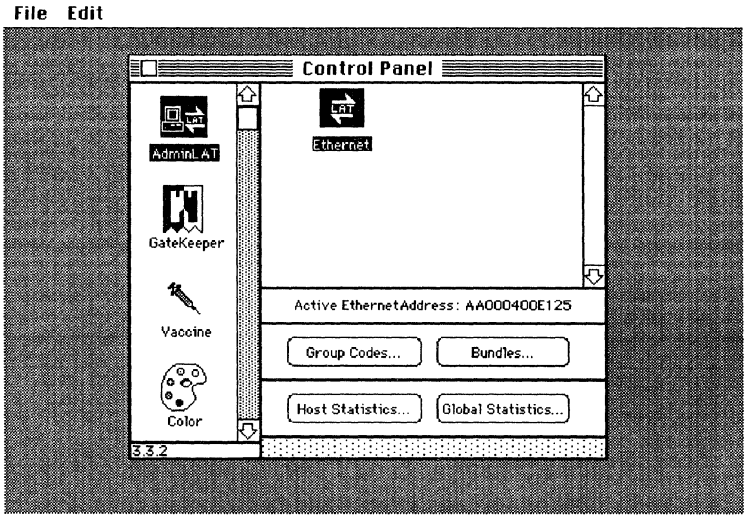
You also can set a password to the volume or to AdminLAT.

Selecting AdminLAT

1. Choose the Control Panel from the Apple menu.
   The Control Panel dialog box is displayed.
2. Select the AdminLAT icon from the group of icons on the left side of the dialog box.

Use the scroll bar if necessary to bring the AdminLAT icon into view.

Figure F–1 Control Panel



3 After clicking, the window displays an Admin Password screen. AdminLAT is shipped with a null password. Set the password to AdminLAT at this time. Or click on OK.

The Control Panel is redisplayed.

Defining Group Codes

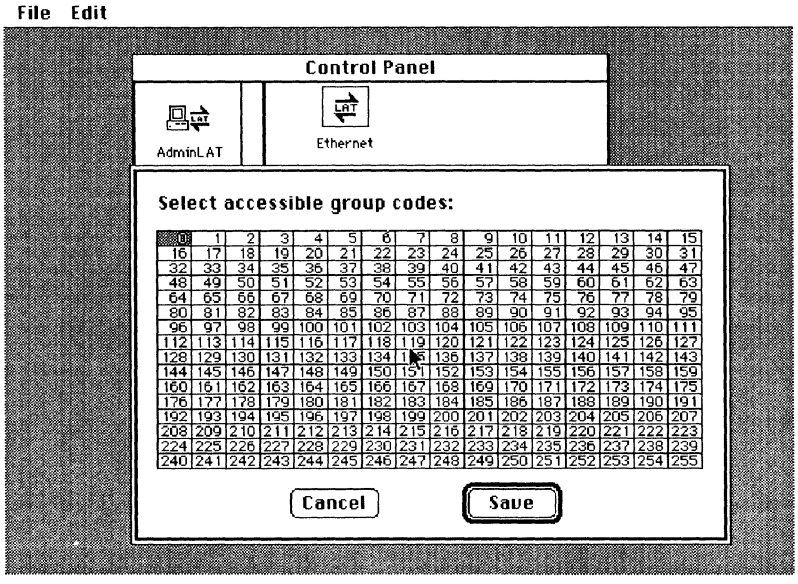
1 From Figure F–1, click on Group Codes. Figure F–2 is displayed.

2 To select services that are not in Group 0, you can choose:

- Rows of groups with mouse clicks
- Individual groups by holding down the Command key and clicking on each group simultaneously.

3 Click on SAVE to close the Group Codes box. The Control Panel is redisplayed.

Figure F–2 Group Codes



Defining Bundles

A **bundle** is a logical collection of groups. You can define a bundle of services that you need to use based on projects or deparments.

1 From Figure F–1, click on Bundles.

2 From Figure F–3, click on NEW to define new bundles.

3 From Figure F–4, enter the new bundle name. Click on OK.

Figure F–3 Define NEW Bundle

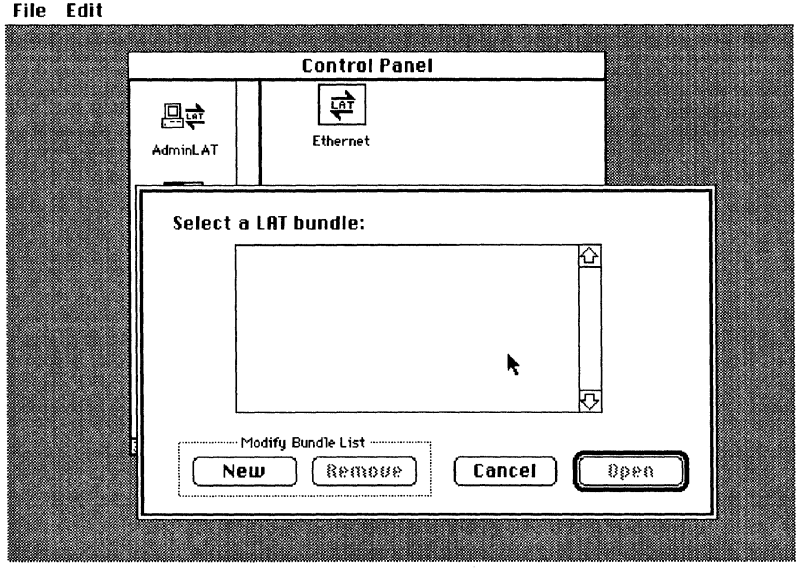
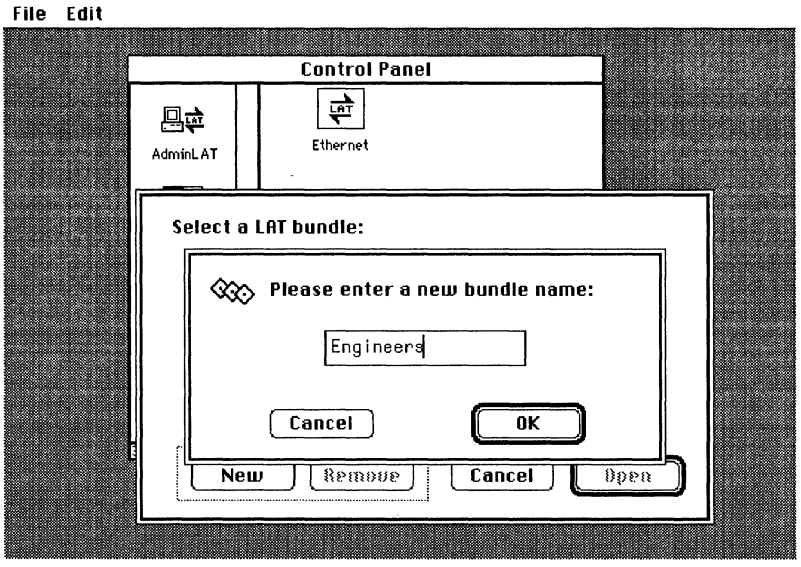


Figure F–4 Enter a New Bundle Name



4 Figure F–5 is displayed.

To select group codes for bundles, you can choose:

- Rows of groups with mouse clicks
- Individual groups by holding down the Command key and clicking on each group simultaneously.

5 Click on SAVE to close the box. The Control Panel is redisplayed.

Figure F–5 Select Group Codes for Bundle

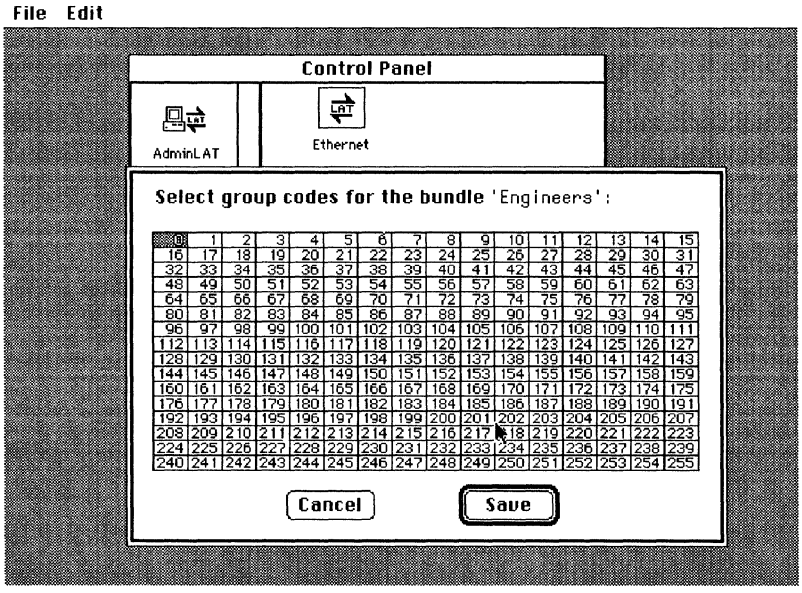
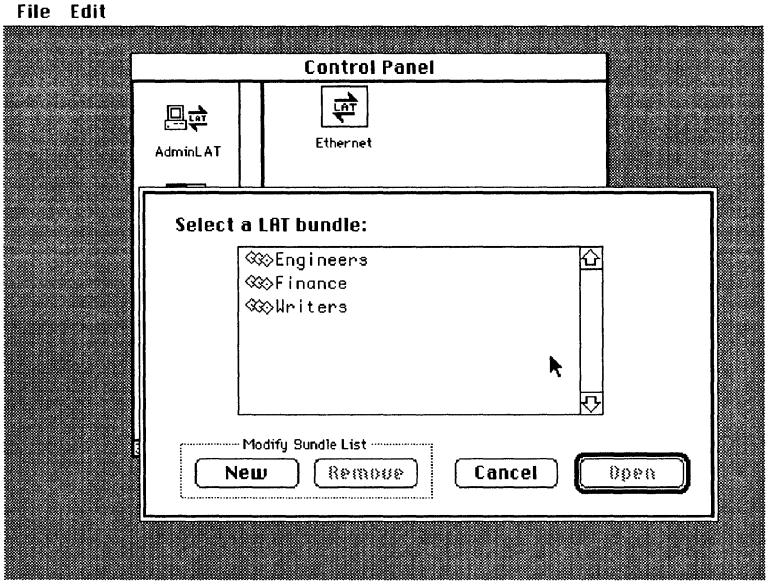


Figure F–6 displays a list of bundles.

Click Cancel to return to the Control Panel.

Figure F–6 Select a LAT Bundle



Using LAT Group Codes

From a Macintosh computer, you use MacTerminal to connect to another computer. While you are using MacTerminal, you work within a session document. Using this document, you can establish a LAT connection to a VAX computer, with your Macintosh emulating a VT320 terminal.

1 Start MacTerminal.

The Connection Settings dialog box is displayed. Select the LAT tool.

2 Select a LAT terminal service from the list of available services. Or you can select a bundle of services.

3 Save the document for future use.

Figure F–7 displays ALL GROUPS and a selection of services. You can click on ALL GROUPS to display a menu of other bundles.

Figure F–7 Using the LAT Tool

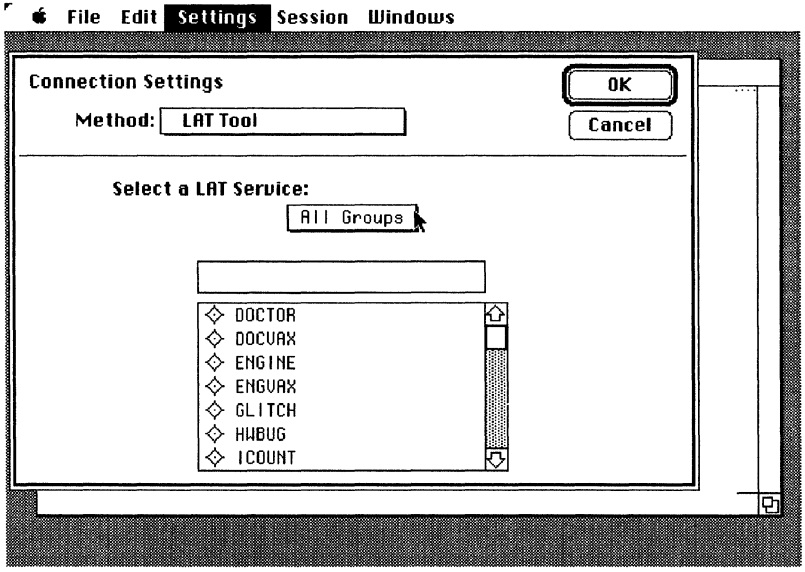
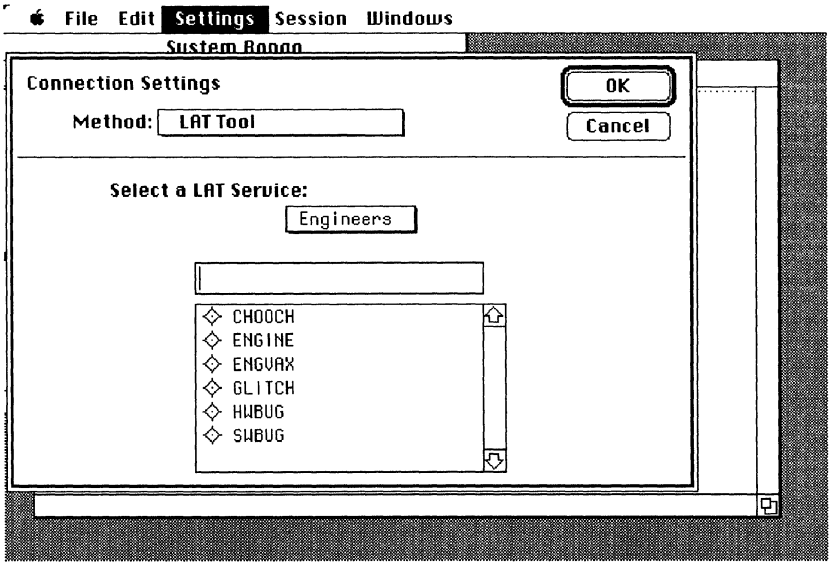


Figure F–8 displays the services that belong to the bundle, Engineers.

Figure F–8 Select a LAT service



G

AppleTalk for VMS Manager Error Messages

This appendix describes the AppleTalk for VMS Manager error messages.

ACPNOTMNT, The ACP has not mounted.

Facility: ATK, AppleTalk Manager

Explanation: Either the AppleTalk ACP or the AppleTalk/DECnet Gateway ACP failed to mount properly during the processing of a SET EXECUTOR or SET GATEWAY command.

User Action: Contact your local Digital representative.

ADDDUPSEE, Error adding duplicate seed zone.

Facility: ATK, AppleTalk Manager

Explanation: A zone name that already exists has been added to the port's seed zone list.

User Action: Check the spelling of the conflicting zone name. Check for a matching zone name in the seed zone list with the command LIST PORT. Keep in mind that zone names are compared using case insensitive comparisons in the AppleTalk Character Set. Correct the spelling of the zone name, or choose a different zone name.

AMBCOMMAN, Ambiguous command, supply more characters

Facility: ATK, AppleTalk Manager

Explanation: The command could not be understood.

User Action: Re-enter the command and supply more characters for the specified keyword.

APPARECON, Applications are connected, and the protocol stack cannot be shutdown

Facility: ATK, AppleTalk Manager

Explanation: An attempt was made to shut down the AppleTalk protocol stack while applications were still using it. All applications must be stopped before the protocol stack can be shutdown.

User Action: Determine which processes are using the protocol stack, with the DCL command SHOW DEVICE/FULL PS. For each PS device, note the process ID of the owner process (the device PS0: does not have an owner).

Disconnect each process from the protocol stack, and then issue the SET EXECUTOR STATE OFF command.

ATKVMSFAI, AppleTalk for VMS could not startup

Facility: ATK, AppleTalk Manager

Explanation: AppleTalk for VMS encountered an error which prevented it from successfully starting up.

User Action: Check the messages immediately following this message for further information.

ATKVMSSTA, AppleTalk for VMS startup completed at "time"

Facility: ATK, AppleTalk Manager

Explanation: AppleTalk for VMS successfully completed its startup at the specified time.

User Action: This message is informational.

BADFILVER, Incompatible configuration file, existing file format major ID 'value', minor ID 'value'.

Facility: ATK, AppleTalk Manager

Explanation: The configuration file (SYS$SYSTEM:ATK$CONFIGURATION.DAT) is either corrupted or is an outdated file from a previous release of AppleTalk for VMS.

User Action: Contact your local Digital representative.

BADINPSTR, The input string has bad format.

Facility: ATK, AppleTalk Manager

Explanation: The character string contains one or more escape sequences which either does not specify a valid AppleTalk character, or is truncated by the end of the string.

User Action: Re-enter the command after correcting the character string.

CHARANZON, Network range and/or zone name has changed

Facility: ATK, AppleTalk Manager

Explanation: A change in the AppleTalk network has caused the network range or zone name currently in use for the port to change. This is always the result of a state change in an AppleTalk internet router attached to the same network. The router is either the first router to appear on the network, or the last router to disappear from the network.

If it is the first router to appear, then AppleTalk for VMS changes the network information currently in use by the port to the match the network information provided by the router. If it is the last router to disappear, then AppleTalk for VMS has aged out the network information provided by the router and reverted to a network range of 0 - 65534 and a zone name of "*".

User Action: This message is informational.

COMNOTLOA, The component has not been loaded.

Facility: ATK, AppleTalk Manager

Explanation: The specified component has not been loaded into the system. If the command was targeted to the EXECUTOR, then the device PS0: has not been loaded. If the command was

targeted to the GATEWAY, then the device GW0: has not been loaded.

User Action: Use the command procedure SYS$STARTUP: ATK$STARTUP.COM to load the EXECUTOR component. Use the command procedure SYS$STARTUP:ATKGW$STARTUP.COM to load the GATEWAY component.

CORNETRAN, Correct network range is "begin"-"end"

Facility: ATK, AppleTalk Manager

Explanation: The network range for the port conflicts with the network range in use by an AppleTalk internet router also on the same network. The message displays the valid network range dictated by the router.

User Action: This message is informational.

CURNETRAN, Current network range is "begin"-"end"

Facility: ATK, AppleTalk Manager

Explanation: The current network range in use by the port is specified.

User Action: This message is informational.

CURZONNAM, Current zone name is "zone name"

Facility: ATK, AppleTalk Manager

Explanation: The current zone name in use by the port is specified. All registerred Name Service names are now visible in this zone.

User Action: This message is informational.

DEFZONCON,, Default zone name conflict detected

Facility: ATK, AppleTalk Manager

Explanation: The default zone name specified for the port conflicts with the same information in use by another AppleTalk internet router on the same network. All routers attached to the same network must agree on the network information for the network (seed zone list, default zone name, and network range).

AppleTalk for VMS detected that the default zone name does match with the other routers, and could not startup the port.

User Action: Determine the valid default zone name for the network. Change the default zone name for the port in the permanent database, using the DEFINE PORT command.

If the invalid default zone name is the desired name, then the default zone name must be changed in all routers attached to the same network as the port in question.

DUPSEEZON, Duplicate seed zone

Facility: ATK, AppleTalk Manager

Explanation: An internal inconsistency has been detected.

User Action: Contact your local Digital representative.

ERRCOMCPN, Unable to communicate with component.

Facility: ATK, AppleTalk Manager

Explanation: ATK$MANAGER was unable to complete the command since it could not communicate with the component which was the target of the command.

User Action: Check the messages immediately following this message for further information.

ERRCREACP, Error creating the AppleTalk ACP.

Facility: ATK, AppleTalk Manager

Explanation: ATK$MANAGER was unable to create the AppleTalk ACP while processing a SET EXECUTOR command.

User Action: Check the messages immediately following this message for further information.

ERRCREGAT, Error creating the Gateway ACP.

Facility: ATK, AppleTalk Manager

Explanation: ATK$MANAGER was unable to create the AppleTalk/DECnet Gateway while processing a SET GATEWAY command.

User Action: Check the messages immediately following this message for further information.

ERRDECPLE, Error decoding a ple structure

Facility: ATK, AppleTalk Manager

Explanation: An internal inconsistency has been detected.

User Action: Contact your local Digital representative.

ERRDELREC, Error deleting a record.

Facility: ATK, AppleTalk Manager

Explanation: ATK$MANAGER was unable to delete a record from the permanent database.

User Action: Contact your local Digital representative.

ERRDSPHLP, Error displaying help messages.

Facility: ATK, AppleTalk Manager

Explanation: ATK$MANAGER was unable to invoke the HELP utility in response to a HELP command.

User Action: Contact your local Digital representative.

ERRDSPLIN, Error displaying a line.

Facility: ATK, AppleTalk Manager

Explanation: ATK$MANAGER was unable to output a line of text to the display.

User Action: Check the messages immediately following this message for further information.

ERRDECPLE, Error encoding a ple structure

Facility: ATK, AppleTalk Manager

Explanation: An internal inconsistency has been detected.

User Action: Contact your local Digital representative.

ERREXERST, Unable to execute request.

Facility: ATK, AppleTalk Manager

Explanation: For the reasons described in the succeeding messages, ATK$MANAGER was unable to request the component to perform the particular function specified in the command.

User Action: Check the messages immediately following this message for further information.

ERRGETCMD, Error processing the command line

Facility: ATK, AppleTalk Manager

Explanation: An internal inconsistency has been detected.

User Action: Contact your local Digital representative.

ERRLOAPRO, Error loading protocol stack image.

Facility: ATK, AppleTalk Manager

Explanation: For the reasons described in the succeeding messages, ATK$MANAGER was unable to load the AppleTalk protocol stack image into non paged pool.

User Action: Check the error messages immediately following this message for further information. If the AppleTalk protocol stack device (PS0:) has not been loaded, then use the command procedure SYS$STARTUP:ATK$STARTUP.COM to load the protocol stack device and the protocol stack image.

ERRLOCREC, Error locating a record.

Facility: ATK, AppleTalk Manager

Explanation: For the reasons described in the succeeding messages, ATK$MANAGER was unable to locate the record for the specified component in the permanent database.

User Action: Check the messages immediately following this message for further information.

ERROCCPOR, Error occurred on port "port name" (device name "device name")

Facility: ATK, AppleTalk Manager

Explanation: AppleTalk for VMS detected an error on the specified port.

User Action: Check the messages immediately following this message for further information.

ERRSTAPOR, Error while starting port "port name" (device name "device name")

Facility: ATK, AppleTalk Manager

Explanation: AppleTalk for VMS detected an error while starting the specified port. The port name and device name indicate which port incurred the error.

User Action: Check the messages immediately following this message for further information.

ERRTRMRST, Error terminating request

Facility: ATK, AppleTalk Manager

Explanation: An internal inconsistency has been detected.

User Action: Contact your local Digital representative.

ERRUNLREC, Error unlocking a record

Facility: ATK, AppleTalk Manager

Explanation: An internal inconsistency has been detected.

User Action: Contact your local Digital representative.

ERRUPDREC, Error updating a record.

Facility: ATK, AppleTalk Manager

Explanation: For the reasons described in the succeeding messages, ATK$MANAGER was unable to update the record for the specified component in the permanent database.

User Action: Check the messages immediately following this message for further information.

ERRWATACP, Error waiting for the AppleTalk ACP.

Facility: ATK, AppleTalk Manager

Explanation: For the reasons described in the succeeding messages, the AppleTalk ACP did not finish its initialization in time. ATK$MANAGER decided not to wait any longer and aborted the processing of the SET EXECUTOR command.

User Action: Contact your local Digital representative.

ERRWATGAT, Error waiting for the Gateway ACP.

Facility: ATK, AppleTalk Manager

Explanation: For the reasons described in the succeeding messages, the AppleTalk /DECnet Gateway ACP did not finish its initialization in time. ATK$MANAGER decided not to wait any longer and aborted the processing of the SET GATEWAY command.

User Action: Contact your local Digital representative.

ERRWRTREC, Error writing a record.

Facility: ATK, AppleTalk Manager

Explanation: For the reasons described in the succeeding messages, ATK$MANAGER was unable to write a record for the specified component into the permanent database.

User Action: Check the messages immediately following this message for further information.

ERRXLTSTR, Error translating a string.

Facility: ATK, AppleTalk Manager

Explanation: For the reasons described in the succeeding messages, ATK$MANAGER was unable to convert a character string from the DEC Multinational Character Set into the AppleTalk Character Set.

User Action: Check the messages immediately following this message for further information.

EXEWROSTA, Executor in wrong state to perform requested function

Facility: ATK, AppleTalk Manager

Explanation: The EXECUTOR must be in the ON state for most SET commands to execute properly. However, the command SET EXECUTOR STATE ON cannot be completed while the EXECUTOR is already in the ON state.

User Action: Use SHOW EXECUTOR to check the state of the EXECUTOR. If it is OFF, use LIST EXEUTOR to check the permanent entry for the EXECUTOR. If the permanent entry is also OFF, use DEFINE EXECUTOR to change it to the ON state. Start the EXECUTOR with the SET EXECUTOR ALL command. Now retry the original command which generated the error.

GATWROSTA, Gateway in wrong state to perform requested function

Facility: ATK, AppleTalk Manager

Explanation: The GATEWAY must be in the ON state for most SET commands (targeted to the GATEWAY) to execute properly.

User Action: Use SHOW GATEWAY to check the state of the GATEWAY. If it is OFF, use LIST GATEWAY to check the permanent entry. If the permanent entry is also OFF, use DEFINE GATEWAY to change it to the ON state. Start the GATEWAY with the SET GATEWAY ALL command. Now retry the original command which generated the error.

GATNOSESS, No such gateway session exists

Facility: ATK, AppleTalk Manager

Explanation: The Gateway session specified in the command does not exist.

User Action: Determine the correct identifier for the session using the command SHOW GATEWAY KNOWN SESSIONS. Retry the command with the correct session identifier.

INCCOMLIN, Incomplete command line

Facility: ATK, AppleTalk Manager

Explanation: More information is needed for ATK$MANAGER to process the command.

User Action: Check the command input, add in the missing information, and retry the command. See the *System Administrator's Reference Manual* to determine the missing information.

INVNETRAN, Invalid network range

Facility: ATK, AppleTalk Manager

Explanation: The network range specified for the port is invalid. The following rules apply to network ranges in general:

- The start of the network range must be greater than zero, and the end must be less than 65535.
- The start of a network range must be less than or equal to the end of the network range.
- The network range cannot cross the boundary of the startup range (65280).

- Network ranges for seed ports on a router cannot be in the startup range (65280 - 65534)

User Action: Correct the network range to conform to the above rules. Retry the command.

INVPARCOD, Invalid parameter value, code = 'value'.

Facility: ATK, AppleTalk Manager

Explanation: The specified parameter value for a component is invalid, however, which parameter that is invalid could not be identified.

User Action: Restore the parameters for the component in the permanent database to their original state before the error occurred, then retry the command. A component's parameters may be reset to their defaults by purging the component from the permanent database and then redefining the component.

INVPARVAL, Invalid parameter value.

Facility: ATK, AppleTalk Manager

Explanation: The specified parameter value for a component is invalid. The invalid parameter is identified by the succeeding message.

User Action: Check the value of the parameter in the permanent database. Make sure it is in the valid range of values for the parameter and change the parameter to be within the valid range. See the *System Administrator's Reference Manual* to determine the valid range for the parameter. Retry the command once the parameter has been corrected.

INVSEEZON, Invalid seed zone name

Facility: ATK, AppleTalk Manager

Explanation: The seed zone name was the incorrect length or it was the local zone name "*". Seed zone names must be at least one character long, and cannot be any longer that 32 characters. The local zone name "*" cannot be used as a seed zone name.

User Action: Correct the seed zone name to conform to the above rules, and retry the command.

LOGWROSTA, Event logging in wrong state to perform requested function

Facility: ATK, AppleTalk Manager

Explanation: Event logging file was in the wrong state. In general, event logging to a file must be in the OFF state to change logging parameters.

User Action: Either set the event logging file to the OFF state, or set the EXECUTOR to the OFF state. Retry the command.

MUSBESEE, Zone and default zone names must be seed zone names

Facility: ATK, AppleTalk Manager

Explanation: The zone name or the default zone name specified for a port is not in the list of seed zones for the port. Both the zone name and default zone name must be in the list of seed zones for the port.

User Action: Use LIST PORT to determine if the zone name and default zone name are in the seed zone list. Keep in mind that zone name comparisons are case insensitive in the AppleTalk Character Set. Change the zone name and default zone name so that they both are members of the seed zone list.

NETRANCON, Network range conflict detected

Facility: ATK, AppleTalk Manager

Explanation: AppleTalk for VMS detected a network range conflict on a port. The network range specified does not match the network range currently in use by an AppleTalk internet router. If AppleTalk for VMS is configured as a router, then this message occurs when starting a seed port. If it is not a router, then this message occurs when the first (conflicting) router appears on the same network.

User Action: If this node is configured as a router:

- Determine the correct network range for the network.
- Use DEFINE PORT to change the permanent entry for the port to match the correct network range.
- Restart AppleTalk for VMS.

If this node is configured as a non-router:

AppleTalk operations will continue for the local network. However, communication with AppleTalk nodes on other networks will not be possible. If full internet communication is desirable, AppleTalk for VMS must be shutdown and then restarted while the conflicting router is still operating.

- Shutdown AppleTalk for VMS.
- Restart AppleTalk for VMS with the command procedure SYS$STARTUP:ATK$STARTUP.COM.
- Use DEFINE PORT to change the network range setting to match the correct network range.

NETRANSEE, Network range conflicts with existing seed port

Facility: ATK, AppleTalk Manager

Explanation: The network range for a port conflicts with the network range of another seed port. A Network range cannot overlap with any other network range in the AppleTalk internet. And ports cannot have overlapping network ranges.

User Action: Use LIST KNOWN PORTS to determine which ports are in conflict. Correct the ranges for the ports using the command DEFINE PORT. Retry the original command.

NMRVERMIS, Network Management Request/Response protocol version mismatch with Appletalk network software.

Facility: ATK, AppleTalk Manager

Explanation: An internal inconsistency has been detected.

User Action: Contact your local Digital representative.

NONAPPACP, Nonexistant AppleTalk ACP

Facility: ATK, AppleTalk Manager

Explanation: An internal inconsistency has been detected.

User Action: Contact your local Digital representative.

NONEXICOM, The specified component does not exist.

Facility: ATK, AppleTalk Manager

Explanation: The command attempted to manipulate a component that does not exist in the permanent database.

User Action: Create the component in the permanent database using the DEFINE command. Re-enter the failed command, if necessary.

NOPRIPOR, Primary port does not exist.

Facility: ATK, AppleTalk Manager

Explanation: One port must be defined as the primary port in the permanent database.

User Action: Choose one port to be the primary port. Keep in mind the primary port must be associated with an Ethernet device. See the Chapter 2 for more information on defining a primary port.

NOSEEZON, Seed port must have seed zones

Facility: ATK, AppleTalk Manager

Explanation: A seed port must have at least one zone name in the seed zone list. A seed port must also have the network range and default zone name defined.

User Action: Determine the seed zone list for the port. If the port is attached to a network with other AppleTalk internet routers, then use the seed zone list dictated by one of the routers. The network range and default zone name for the port can also be determined from the same router.

Add the seed zone list to the port, using the DEFINE PORT command. Also add any other missing seed information at the same time. Shudown AppleTalk for VMS and then restart.

PARAMNAME, Parameter name = 'string'.

Facility: ATK, AppleTalk Manager

Explanation: Identifies the parameter which was in error.

User Action: This message is informational only.

PARTLOCAL, Partner field cannot specify local node.

Facility: ATK, AppleTalk Manager

Explanation: A port contains the node name of the local node as the name of the DECnet tunnel partner. DECnet tunnel partner names must be the node name of the remote end of the tunnel.

User Action: Correct the partner name for the port. Retry the command.

PARTXLERR, Error translating partner name.

Facility: ATK, AppleTalk Manager

Explanation: An internal inconsistency has been detected.

User Action: Contact the local Digital representative.

PLE_INVITECOD, Invalid item code.

Facility: ATK, AppleTalk Manager

Explanation: An internal inconsistency has been detected.

User Action: Contact your local Digital representative.

PLE_NOTSTREND, Not a structure being ended.

Facility: ATK, AppleTalk Manager

Explanation: An internal inconsistency has been detected.

User Action: Contact your local Digital representative.

PLE_VALTOOLAR, Value size is too large.

Facility: ATK, AppleTalk Manager

Explanation: An internal inconsistency has been detected.

User Action: Contact the local Digital representative.

PORNAMDEV, Port name is "port name"; port device is "device name"

Facility: ATK, AppleTalk Manager

Explanation: This message identifies the port and its associated device.

User Action: This message is informational.

PORNAMNET, Port name is "port name"; port device is "device name"

Facility: ATK, AppleTalk Manager

Explanation: This message identifies the port and its associated DECnet network device.

User Action: This message is informational.

PORNAMNUL, Null port name not allowed.

Facility: ATK, AppleTalk Manager

Explanation: An attempt was made to define a port which did not have a port name.

User Action: Re-enter the DEFINE PORT command with a valid port name.

PORNOTFOU, Port not found

Facility: ATK, AppleTalk Manager

Explanation: A port with the specified DECnet partner name could not be found in the volatile database. A request to establish a DECnet tunnel was received from a remote DECnet node but a port with that name does not exist . One port in the volatile database must exist for each remote partner.

User Action: To establish a tunnel with the remote node, create a port in the permanent database with the DECnet node name of the remote node in the PARTNER field. Shutdown AppleTalk for VMS and then restart.

PORSHUCOM, Shutdown of port "port name" (device name "device name") has completed

Facility: ATK, AppleTalk Manager

Explanation: The specified port has been shutdown. AppleTalk operations through the port have ceased and the channel to the device has been deassigned.

User Action: This message is informational.

PORSTACOM, Startup of port "port name" (device name "device name") has completed

Facility: ATK, AppleTalk Manager

Explanation: The specified port has completed its startup. The port is now fully operational.

User Action: This message is informational.

PORWAIROU, Port name "port name" (device name "device name") is waiting for a router

Facility: ATK, AppleTalk Manager

Explanation: The specified port cannot complete its startup until another AppleTalk internet router appears on the same network. Non-seed ports must communicate with another router attached to the same network to startup properly.

User Action: Either change the port to a seed port or determine why the other routers have disappeared from the network.

See the *System Administrator's Reference Manual* to determine how to create a seed port.

PORWROSTA, Port in wrong state to perform requested function

Facility: ATK, AppleTalk Manager

Explanation: ATK$MANAGER could not complete the command since the port was in the wrong state.A port cannot be changed to the ON state if it is already in the ON state. The primary port cannot be changed to the OFF state. To turn off the primary port, shutdown AppleTalk for VMS.

User Action: If the port is the primary port, then shutdown AppleTalk for VMS. Make any needed changes to the database and then restart AppleTalk for VMS.

PRIPOREXI, Primary port already exists

Facility: ATK, AppleTalk Manager

Explanation: An attempt was made to startup two or more primary ports. There can be only one primary port in the volatile database. All other ports must be secondary ports.

User Action: Determine which port should be the primary port. Change all other ports in the permanent database to be secondary ports. Shutdown AppleTalk for VMS and restart.

PRIPORWRO, Primary port in wrong state to perform requested function

Facility: ATK, AppleTalk Manager

Explanation: The primary port is not in the ON state. Secondary ports cannot be started until the primary port is in the ON state.

User Action: Change the primary port in the permanent

database to the ON state, using the DEFINE PORT command. Shutdown AppleTalk for VMS . and restart.

REMUNKSEE, Error removing unknown seed zone "zone name string".

Facility: ATK, AppleTalk Manager

Explanation: The specified zone name does not exist in the port's seed zone list.

User Action: Check the spelling of the zone name. Check the port's seed zone list for the zone name, using the LIST PORT command. Keep in mind that zone name comparisons are case insensitive in the AppleTalk Character Set. Correct the spelling of the zone name and retry the command.

REQNETRAN, Requested network range is "begin"-"end"

Facility: ATK, AppleTalk Manager

Explanation: The network range specified in the volatile database for the port has been displayed.

User Action: This message is informational.

REQZONNAM, Requested zone name is "zone name"

Facility: ATK, AppleTalk Manager

Explanation: The zone name specified in the volatile database for the port has been displayed.

User Action: This message is informational.

RMA_ABORT, Router Management Agent Session listener failure

Explanation: ATK, An internal inconsistency has been detected.

User Action: Contact the local Digital representative.

RMA_PASSWORD, Router Management Agent password changed remotely

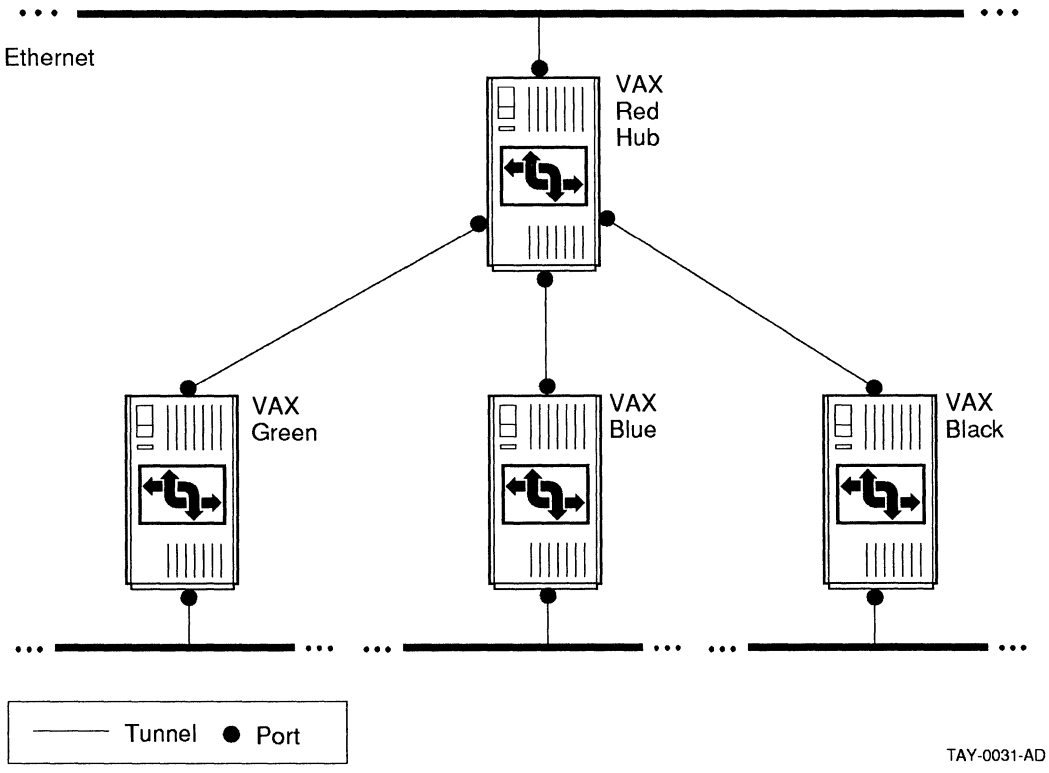
Facility: ATK, AppleTalk Manager

Explanation: The password for the Router Management Agent has been changed remotely.

User Action: This message is informational.

Figure 2–6 illustrates how to set up DECnet tunnels to connect several remote AppleTalk routers through a hub router. Define four tunnel ports on the hub router. And define two ports for each node.

Figure 2–6 Routing with DECnet Tunnels



3

Managing AppleTalk for VMS

This chapter describes how to manage AppleTalk for VMS software and the AppleTalk/DECnet Transport Gateway. It explains how to use the AppleTalk for VMS Manager commands (ATK$MANAGER) to adjust and modify the network parameters.

For a complete description of the AppleTalk for VMS Manager commands, see the System Administrator's Reference Manual.

In general, you can use the default settings for AppleTalk for VMS. However, if the network configuration changes or specific problems occur, then you need to redefine the appropriate parameters. Most of the parameters are provided to improve performance or to reduce memory usage.

The following sections offer guidelines to help you manage the network.

- Adjusting parameters on large internets
- Conserving memory and improving performance
- Increasing available sockets
- Improving routing performance
- Improving gateway performance

ATK$MANAGER allows you to store information in two types of databases: the permanent database and the volatile database. You use different commands depending on the database you want to affect and the task you need to accomplish.

Table 3–1 lists the ATK$MANAGER commands that you can use to configure and observe AppleTalk for VMS.

Table 3–1 When to Use ATK$MANAGER Commands

Activity	Command to Use
Change permanent database	**DEFINE**
Display information in permanent database	**LIST**
Delete information in permanent database	**PURGE**
Change the running system	**SET**
Display information about running system	**SHOW**
Reset the gateway counters	**ZERO**
Disconnect a gateway session	**DISCONNECT**

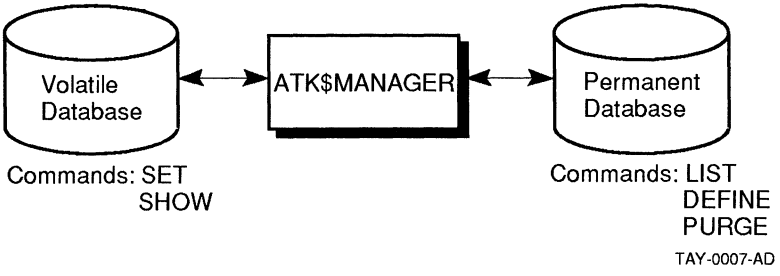
Values entered using DEFINE and PURGE affect the permanent database and do not take effect until the next time you start up AppleTalk for VMS software. Values entered using SET affect the volatile database and take effect immediately, but are not retained the next time AppleTalk for VMS is started.

You use DEFINE and SET to modify parameters but each command has a different result. For example, you generally use a DEFINE command to affect the configuration. The new value is stored in the database and when you restart, the network is reconfigured to use the new value.

You generally use the SET command to turn components, such as the executor or a port, off and on. For example, you can immediately halt operations through a specific port by using the SET PORT "port name" STATE OFF command.

Figure 3–1 illustrates the dual database concept.

Figure 3–1 ATK$MANAGER Database Commands



Adjusting Parameters on Large Internets

An AppleTalk network system can expand to connect a large number of devices across physical and geographical boundaries. Different links, including LocalTalk, Ethernet, and telephone lines, are interconnected by routers to build these large internets.

This section describes solutions to problems that occur because of network expansion, including:

- ADSP (AppleTalk Data Stream Protocol) connection failures
- Name search failures

ADSP Connection Failures

ADSP connection failures and problems can occur more frequently on a large internet. Packets move slower because they have to pass through several routers.

To ensure that connections are made, you can try changing the following CONNECTION parameters by using the DEFINE EXECUTOR command:

- INITIAL ROUND TRIP DELAY
- OPEN INTERVAL
- OPEN RETRYS

Increasing the Parameters

The INITIAL ROUND TRIP DELAY parameter specifies the time delay between two nodes that have established a connection. The default setting is 1000 milliseconds. You can increase the time to prevent excessive retransmissions over the connection. For example:

```
ATK$MANAGER> DEFINE EXEC CON INIT ROUND TRIP DELAY 2000
```

The OPEN INTERVAL parameter specifies the time delay before resending an open connection request. The default setting is 250 milliseconds. Try setting this parameter to a higher value if you have an internet with slow links, such as a DECnet tunnel.

The OPEN RETRYS parameter defines how many times to retry the connection request. In general, you can keep the default setting at 32. However, if you want to be sure that the connection opens under adverse conditions such as a router failure, or if the network links are unreliable, raise the RETRYS value.

Decreasing the Parameters

Check the effect of changing parameters by monitoring connection failures. You may need to readjust some of these values up or down, depending upon the results.

Lower the values for the OPEN INTERVAL and OPEN RETRYS parameters when the network links are reliable and fast, such as Ethernet.

In this case, the first open connection request probably is not going to fail, and the network does not need to retry the request. If the first request does fail, the second retry is quicker.

Name Search Failures

If name search failures are reported by a specific application, try changing the operating characteristics for the name service class that the application is using.

Three classes of name service are defined for the applications. The programmer decides which class of service to use for a specific application. The application and its lookup requirements generally help determine which class is required.

- NAME SERVICE UNRELIABLE
- NAME SERVICE MODERATE RELIABILITY
- NAME SERVICE HIGH RELIABILITY

The class of service that is used by the application defines the quality of service that the application requires. If the application uses the UNRELIABLE class, then it is choosing an unreliable class of service.

As the administrator, you are responsible for defining how each name service class operates on the internet. Set up the NAME SERVICE parameters to define what high reliability, moderate reliability, and unreliable mean for the internet, using the INTERVAL and RETRY qualifers.

MODERATE RELIABILITY is the default lookup class and provides a reasonable quality of name service for most applications. It ensures that the majority of names are found during one lookup call. The default interval between name lookup retries is 250 milliseconds and the number of retries is 8. For example:

```
ATK$MANAGER> DEFINE EXEC NAME SERVICE MODERATE REL-
_ATK$MANAGER> INTERVAL 250 RETRY 8
```

If the internet is a single Ethernet, you can decrease the INTERVAL and RETRY count to improve the performance of name lookups. Or for a large internet, you can increase these qualifiers to provide more reliability.

Conserving Memory and Improving Performance

This section describes ways to adjust network parameters to conserve memory or provide better performance.

Remember that adjusting network values to conserve memory may affect performance. For example, when you decrease queue lengths, memory usage is reduced but performance may be degraded.

Making modifications to improve performance also may increase memory requirements. In addition, changing parameters to improve an application's performance can slow down overall system performance.

To find the right balance for the user, the application, and the network, you may need to readjust these parameters several times.

Improving ADSP Memory Usage and Performance

If there are many AppleTalk Data Stream Protocol (ADSP) connections from the VAX computer to other AppleTalk devices, performance and memory may be affected. Some applications that use ADSP include MacX, the AppleTalk/DECnet Gateway, SQL services, and other user developed applications. Each ADSP connection uses **nonpaged pool memory** (physical memory on the VAX computer) for sending and receiving packets.

The CONNECTION RECEIVE QUEUE LENGTH parameter defines for each ADSP connection how much data to buffer in nonpaged pool on the VAX receive side before telling the remote node to wait. The amount of nonpaged pool used depends upon the value of the RECEIVE QUEUE LENGTH. The default is 4096 bytes.

If you have determined that you do not have enough system memory, you can try reducing the queue length to save nonpaged pool. If you have enough memory and want to improve performance, try increasing the queue length. The optimal size for the queue depends on the applications.

You change this parameter using the DEFINE EXECUTOR command. The following command example increases the queue length to 8192 bytes.

```
ATK$MANAGER> DEFINE EXEC CON RECEIVE QUEUE LENGTH 8192
```

After you have made modifications to the queue length, determine the results by measuring the performance of the application. If your application is running too slowly because the receive queue is too small, then readjust the value and check the performance again.

Improving ATP Memory Usage and Performance

If there are many active AppleTalk Transaction Protocol (ATP) transactions on the VAX computer, performance and memory may be affected. Some applications that use ATP include VAXshare file and print servers. Each process using ATP opens at least one transaction listener, and one queue is defined for each listener.

You can adjust the following parameters by using the DEFINE EXECUTOR command:

- TRANSACTION QUEUE LIMIT defines how many unsolicited transaction requests to store in the queue. The default setting is 3. Three transaction requests are stored and uses about 4500 bytes of nonpaged pool.

  To improve an applications's performance, consider raising the queue limit. An application may be losing transaction requests because the queue limit is set too low.

  Unsolicited transaction requests that cannot be stored are retransmitted from the originating source. Although raising the limit may improve the performance of the application, more memory is required.

  If you reduce this value, unsolicited transactions are discarded and more memory is available, but performance may be affected.

  Determine the value of the QUEUE LIMIT by checking how applications are communicating with each other. For example, if applications are synchronized with each other, a queue limit may not be needed because unsolicited transactions do not occur.

- TRANSACTION RESPONSE CLUSTER defines how many responses to send out before buffer space is free. The default setting is 2.

  Increase this value to improve performance of transaction-based applications, such as file and print servers. However, system throughput may be degraded because the CPU spends longer periods of time transmitting responses.

If this value is set too high, for example, you may see signs of system degradation. Characters on the terminal may not echo back as quickly as you expect during heavy ATP traffic.

Improving DDP Performance

Datagram Delivery Protocol (DDP) is the AppleTalk protocol used to deliver packets to all other AppleTalk protocols. All applications use DDP, including MacX, the AppleTalk/DECnet gateway, and VAXshare file and print servers. In addition, DDP can be used directly by user applications. Two parameters can be modified to improve (DDP) performance.

- DATAGRAM QUEUE LIMIT - Use the DEFINE EXECUTOR command to change the limit.

  To improve performance for user applications using DDP directly, modify the DATAGRAM QUEUE LIMIT.

  The DATAGRAM QUEUE LIMIT defines how many datagrams to store before they are rejected. The default setting is 1. Additional datagrams are discarded and must be retransmitted from their source.

  For example, if the application is losing datagrams on the network, try increasing the limit. If you do increase this queue limit, the system could use more nonpaged pool memory.

- DDP RECEIVE BUFFERS - Use the DEFINE PORT command to change the buffer space. This parameter effects all applications and impacts overall AppleTalk for VMS performance.

  To improve performance of DDP traffic on a specific port, change the DDP RECEIVE BUFFERS value. This value specifies the amount of buffer space that is preallocated and available for receiving datagrams. The default value is 10 buffers and is set on a per-port basis.

  For example, you can try raising the BUFFERS value for a busy port that must discard datagrams because it does not have enough buffer space.

Improving Memory Usage for DECwindows ADSP Transport

The DECwindows ADSP Transport allows Macintosh users to access DECwindows applications. AppleTalk for VMS software limits the size of input and output I/O buffers that a process is allowed to use based on the value of the SYSGEN parameter MAXBUF. AppleTalk for VMS is restricted by this value which typically defaults to 2048. DECwindows, however, tries to use buffers as large as 16834.

To solve the conflict between the the AppleTalk for VMS restriction and the DECwindows buffer requirements, the DECwindows ADSP Transport limits the buffer size that DECwindows uses so that it does not exceed the MAXBUF limit. This limitation may cause DECwindows to break large messages down into multiple smaller buffers.

The logical name MSAX$ADSP_MAXBUF can be used to further limit the buffer size the Transport uses with AppleTalk for VMS. The DECwindows ADSP Transport determines the buffer size by checking the following three values and by using the smallest value:

- MSAX$ADSP_MAXBUF
- MAXBUF minus 256
- DECwindows default buffer size

To improve the performance of the DECwindows ADSP tranport, you can increase the buffer size. A higher value, however, affects the amount of nonpaged pool used. For example, if you define a large buffer size to improve efficiency, and many DECwindows clients are started on an AppleTalk for VMS network, nonpaged pool can be used up quickly. Remember that nonpaged pool is physical memory.

In addition, users are charged for the amount of nonpaged pool they use through the BYTLM authorization quota. BYTLM is a UAF parameter that limits the amount of nonpaged pool that a job is allowed to use at any time.

The nonpaged pool used by the DECwindows ADSP transport is deducted from the the user's process BYTLM quota. A large buffer size can conflict with the BYTLM quota.

To define an appropriate buffer size, use the logical name MSAX$ADSP_MAXBUF. The following command example shows how to change the value:

```
$ DEFINE/SYSTEM/EXEC MSAX$ADSP_MAXBUF 572
```

Be sure to add this line to your system startup file if you want to make it permanent after system reboot.

An individual user also can define MSAX$ADSP_MAXBUF and store it in the LOGIN.COM file as follows:

```
$ DEFINE MSAX$ADSP_MAXBUF 1144
```

Increasing Available Sockets

If an application that uses AppleTalk for VMS software aborts because of a lack of adequate sockets, you probably need to modify the Socket Count parameter. Use the DEFINE EXECUTOR command.

The Socket Count parameter defines how many sockets are available for use by applications. The default setting is 127. If many applications are active, you may need to increase the number of sockets.

Determine the value for this parameter by totaling the socket requirements for each application that uses AppleTalk for VMS.

Improving Router Performance

You can improve the performance of routing by modifying executor and port parameters.

You can change the number of buffers and the cache size used for routing, by using the DEFINE EXECUTOR command with the following parameters;

- ROUTING MAXIMUM BUFFERS defines the maximum number of buffers allowed for routing datagrams between networks. The default setting is 100 buffers and each buffer requires 1500 bytes of nonpaged pool.

  To improve performance, you can increase the number of buffers. However, increasing the number of buffers decreases the amount of available nonpaged pool memory. Define the buffer size by determining the importance of routing on the node.

For example, if a specific VAX computer is a key router between two points on the network, increase the buffer value to improve routing performance. Or if routing is infrequent, lower the buffer count.

The following command raises the number of buffers allocated for routing.

```
ATK$MANAGER> DEFINE EXECUTOR ROUTING MAX BUFFERS 150
```

- ROUTING CACHE SIZE specifies the size of the cache to use for routing table entries. The default value is SMALL. Change this value based on the number of networks in the internet.

  To improve routing performance for a small internet, change the cache size to MEDIUM. Remember that a larger cache uses more memory. For example:

  ```
  ATK$MANAGER> DEFINE EXEC ROUTING CACHE medium
  ```

You also can change the number of buffers used for routing on a specific port and the routing cost by using the DEFINE PORT command with the following parameters:

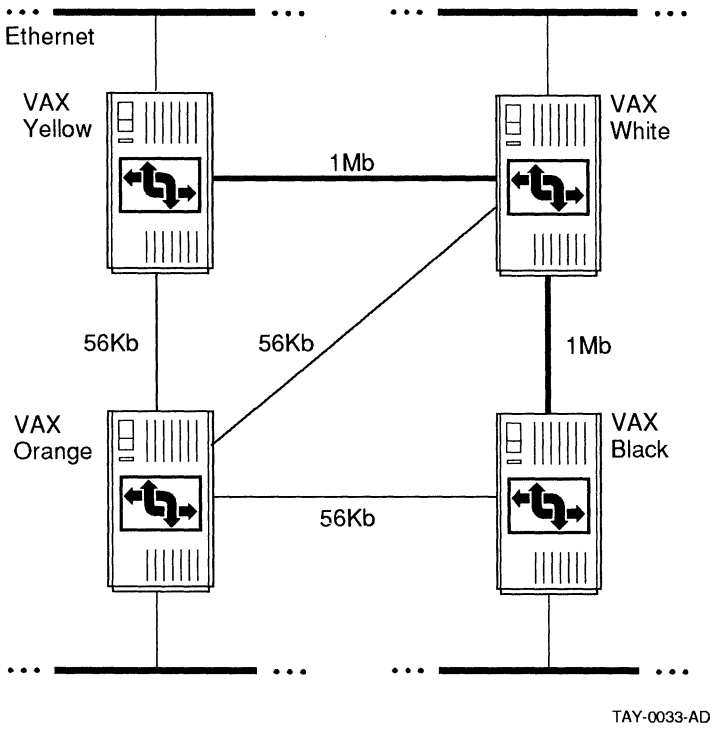
- ROUTING BUFFERS defines the minimum number of buffers available for routing through a specific port. The default value is 16 buffers. To raise or lower this value, determine the traffic load through the port.
- ROUTING COST applies only to DECnet tunnels. This parameter specifies the cost of routing a datagram through this port. The cost is defined in terms of the number of hops required to send a datagram. Because of AppleTalk routing algorithms, a datagram always is routed through the path with the fewest hops.

  By changing the routing cost (hop count), you can force traffic through the fastest path. Remember that a packet cannot reach a destination if the hop count exceeds 15. Do not set the routing cost too high or portions of the internet cannot be reached.

  For example, you can increase the cost to ensure that a datagram goes through the fastest link available, even if the route uses more links.

Figure 3–2 illustrates how the ROUTING COST parameter works.

Figure 3–2 Routing Hops



In this example, tunnels are defined to follow the physical lines. (Tunnels, however, are not required to follow physical lines.) The routing cost for the 56 Kb lines is two hops and the routing cost for the 1 MB lines is one hop.

This example forces the datagram through the faster 1 Mb lines. If the datagram is moving from the Black node to the Yellow node, it uses the 1 Mb Kb lines from the Black node to the White node and then to the Yellow node.

Datagrams take the path only through the White node because it is the lowest cost path. The path through the Orange node is only used when the path through the White node breaks down.

Improving Gateway Performance

You can improve the performance of the gateway by using DEFINE GATEWAY commands with the following parameters:

- MAXIMUM SESSIONS defines the number of sessions that can be active at one time. The default is 32.

  You can increase this parameter to allow more users, or decrease it to save memory.

- SESSION BUFFERS defines how many buffers are needed to start up active sessions. You can increase this value to improve gateway performance. However, check the number of applications using the gateway.

  For example, if MacX is the only application running on the gateway, you can reduce this parameter.

  The amount of nonpaged pool used per session depends on the size of the ADSP CONNECTION RECEIVE QUEUE LENGTH, the overhead incurred by the gateway, which is about 600 bytes per session, and the actual size and number of session buffers.

- BUFFER SIZE defines the size of the buffer used to queue data between each side of the gateway. A large buffer size provides better performance because less CPU time is needed to move one big buffer.

  Increase the size only if the applications you are using are sending large messages through the gateway. Remember that a large buffer uses more memory.

  If the messages exchanged are small, use the default buffer size of 572 bytes.

4

Starting and Stopping PATHWORKS for Macintosh Computers

This chapter describes how to start and stop PATHWORKS for Macintosh computers.

If you want PATHWORKS for Macintosh to start automatically whenever you boot the system, you need to modify the SYSTARTUP_V5.COM file. This file is in the SYS$MANAGER directory.

The *Planning and Installation Guide* describes how to modify the system startup procedure. If you did not complete this task after installation, do so now.

Be sure to edit the file so that PATHWORKS for Macintosh starts after DECnet software and the queue manager starts.

- Place the command $ @SYS$STARTUP:MSA$STARTUP after the command that starts DECnet. For example:

```
$ IF F$SEARCH("SYS$SYSTEM:NETACP.EXE") .NES. ""
$      THEN
$        @SYS$MANAGER:STARTNET
$ IF F$SEARCH("SYS$STARTUP:MSA$STARTUP.COM") .NES. ""
$      THEN
$     @SYS$STARTUP:MSA$STARTUP
```

- Or if you use a batch procedure to submit network startup, edit the line that starts the batch procedure. For example:

```
$ IF F$SEARCH("SYS$STARTUP:MSA$STARTUP.COM") .NES. ""
$ THEN
$   MSA_STARTUP = ",SYS$STARTUP:MSA$STARTUP.COM"
$ ELSE
$   MSA_STARTUP = ""
$ ENDIF
$ IF F$SEARCH("SYS$SYSTEM:NETACP.EXE") .NES. "" THEN -
    SUBMIT SYS$MANAGER:STARTNET.COM 'MSA_STARTUP'
```

Starting PATHWORKS for Macintosh Computers

The MSA$STARTUP.COM command file is located in the SYS$STARTUP directory. It sets up the logical names required to run the AppleTalk network and the VAXshare file and printer servers. It also starts all of the installed components in the appropriate order.

Table 4–1 lists the individual command files included in MSA$STARTUP.COM. AppleTalk for VMS software is started first because all the other components need the network.

Table 4–1 Startup Command Files

Component	File Name
AppleTalk for VMS	ATK$STARTUP.COM
AppleTalk/DECnet Gateway	ATKGW$STARTUP.COM
VAXshare File Server	MSAF$STARTUP.COM
VAXshare Print Server	MSAP$STARTUP.COM
DECwindows AppleTalk Transport	MSAX$STARTUP.COM
DAL Server	MSAD$STARTUP.COM

If you shut down components, you can restart them by running MSA$STARTUP.COM as follows:

```
$ @SYS$STARTUP:MSA$STARTUP
```

Or you can run the appropriate command file to start an individual component.

Stopping PATHWORKS for Macintosh Computers

The MSA$SHUTDOWN.COM file shuts down the file and print servers, DAL, the AppleTalk/DECnet gateway, and AppleTalk for VMS software. Before AppleTalk actually stops, the system is checked for other processes that are using AppleTalk for VMS. If there are other applications using AppleTalk for VMS, you are asked if you want to disconnect from them.

To stop all components, enter the following command:

```
$ @SYS$MANAGER:MSA$SHUTDOWN
```

Or stop individual components with these commands.

To stop all VAXshare file servers, enter the following:

```
MSA$MANAGER> ADMIN/MSA STOP FILE/ALL
```

To stop all VAXshare printers, enter the following:

```
MSA$MANAGER> ADMIN/MSA STOP PRINTER/ALL
```

To shut down AppleTalk for VMS software, first stop the AppleTalk/DECnet gateway and then the executor as follows:

```
ATK$MANAGER> SET GATEWAY STATE OFF
ATK$MANAGER> SET EXEC STATE OFF
```

You use the AppleTalk Manager SET EXECUTOR STATE OFF command to shut down AppleTalk for VMS software. However, before you shut down AppleTalk for VMS, you must shut down any applications using AppleTalk. If there are any applications using AppleTalk for VMS, the following messages are displayed:

```
%ATK-E-ERREXERST, Unable to execute request
_ATK-F-APPARECON, Applications are connected, the protocol
stack cannot be shutdown.
```

To identify all processes that are using AppleTalk, such as VAXshare file and print servers, the gateway, and DECwindows client applications using the DECwindows ADSP transport, enter the following:

```
$ SHOW DEVICE PS/FULL
```

The process ID and name is displayed for each user. The processes named "ATKGW$ACP" and "APPLETALK ACP" are the AppleTalk/DECnet gateway and Appletalk for VMS. Use the AppleTalk for VMS Manager to stop these components.

5

Understanding VMS and Macintosh File Structures

Understanding the differences between VMS and Macintosh file structures can help you manage the file services.

This chapter describes how VAXshare software handles file sharing. Topics include:

- How VAXshare software handles Macintosh volumes
- How VAXshare software handles Macintosh folders and files
- Assigning VAXshare file creator and type to files

How VAXshare Software Handles Macintosh Volumes

VAXshare software provides transparent file sharing between Macintosh and VMS users. Just as VMS users create directories to organize files and other directories, Macintosh users create folders to organize files and other folders. Related folders and files are stored in a Macintosh volume.

A Macintosh volume is a storage device that can be an entire disk or only part of a disk. A volume has a name and a directory that lists the files on the volume. Each volume served by a VAXshare file server maps directly to a VMS device and directory.

The Macintosh user accesses a volume on a VAXshare file server by logging on to the file server and mounting the volume. An icon representing the volume is displayed on the Macintosh desktop.

Volumes are added, modified, and removed by using the VAXshare Manager. See Chapter 7 for more information.

When a volume is added to a file server's database, it is mapped to a VMS directory, called the root directory. The **root directory** is the volume's location on the VAXshare file server, such as DUA1:[MAC_VOLUME]. All of the volume's folders and files are stored in the root directory or in a subdirectory of the root.

The list of volumes supported by a VAXshare file server is contained in a VMS data file called MSAF$VOLUME.DAT. This file is located in the directory called MSA$ROOT:[MSA.MSAF$SERVERn], *n* is the server number. It contains the root directory, volume name, password if assigned, and other volume information. MSA$MANAGER maintains this file.

A new volume always contains at least two directories:

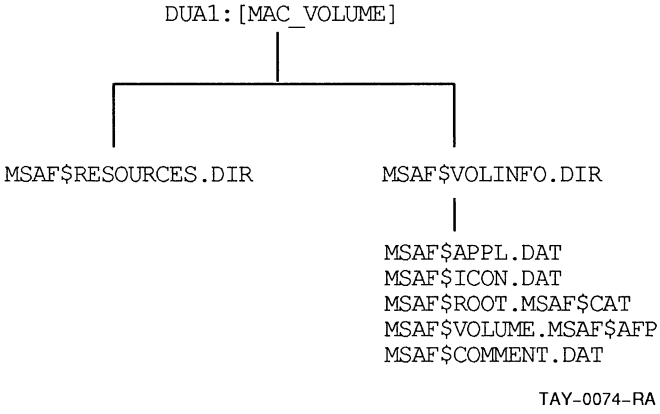
- MSAF$RESOURCES.DIR
- MSAF$VOLINFO.DIR

The MSAF$VOLINFO.DIR contains specific data files. THE MSAF$APPL.DAT, MSAF$COMMENT.DAT, and MSAF$ICON.DAT are called the volume's desktop database.

Table 5–1 MSAF$ Data files

File Name	Explanation
MSAF$VOLUME.MSAF$AFP	Contains a mapping of Macintosh file and folder IDs to corresponding VMS file IDs.
MSAF$APPL.DAT	Contains a mapping between an application's creator ID and its location in the VAXshare volume.
MSAF$COMMENT.DAT	Contains the comment text for the volume itself and all the folders and files inside the volume.
MSAF$ICON.DAT	Contains the mapping between a Macintosh type and creator and its icon.
MSAF$ROOT.MSAF$CAT	The catalog file for the volume's root directory.

The following diagram illustrates the structure of the volume_name.DIR:



For a discussion of MSAF$RESOURCES.DIR, see the next section.

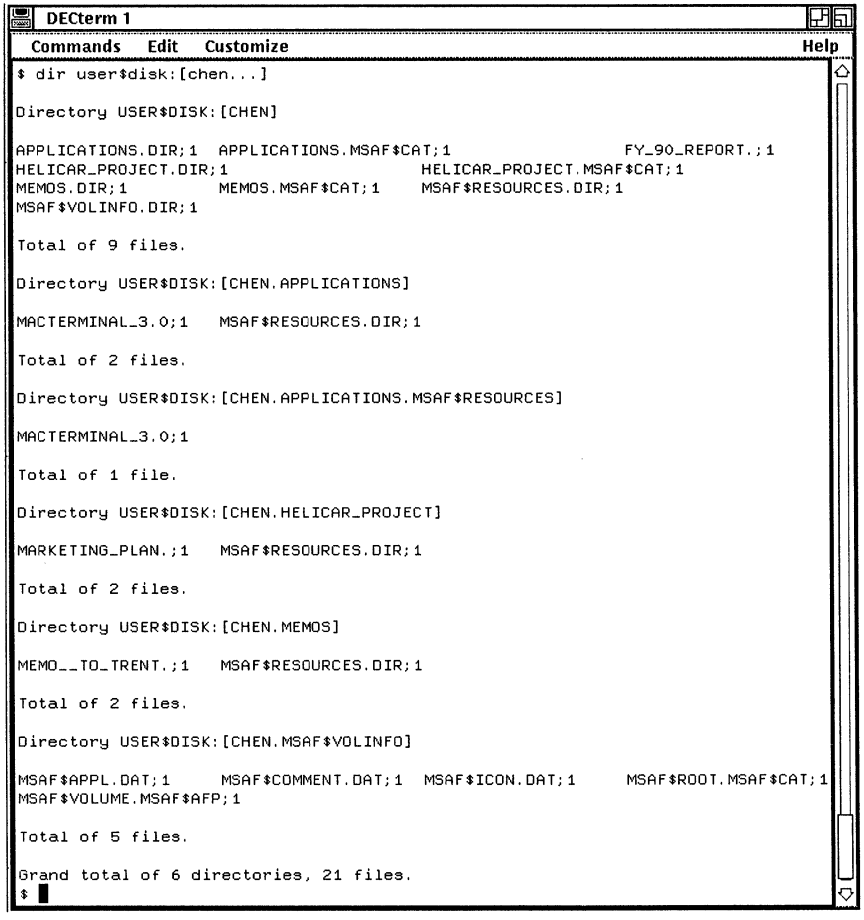
How VAXshare Software Handles Macintosh Folders and Files

VMS directories and files are equivalent to Macintosh folders and files. Folders visible through a VAXshare file server on Macintosh computers are actually VMS directories.

VAXshare software translates the Macintosh folders and files into the VMS system of directories and files. When a Macintosh user creates a folder on a VAXshare file server, the folder becomes a VMS directory.

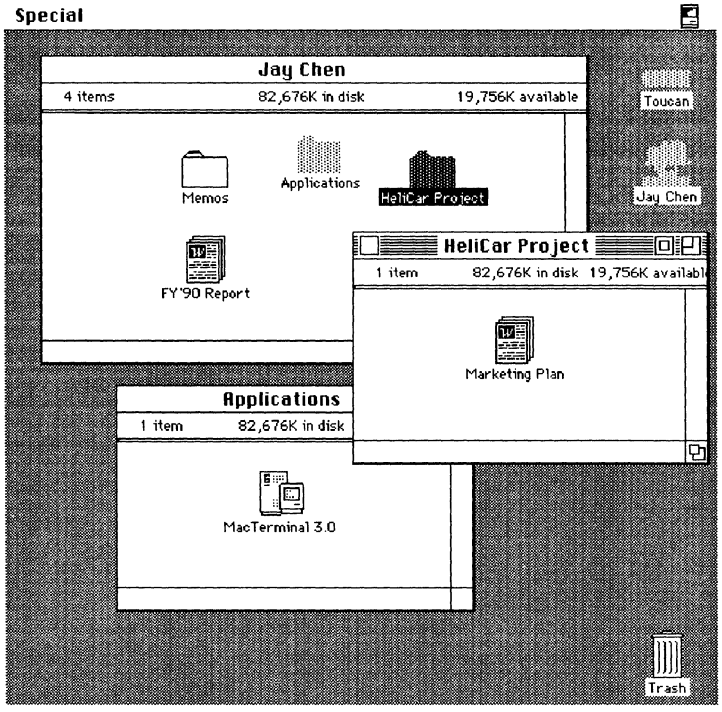
The following two screen layouts show the relationship between VMS directories and Macintosh volumes. Figure 5–1 shows the VMS root directory USER$DISK:[CHEN].

Figure 5–1 VMS Directories



And Figure 5–2 shows the Macintosh volume "Jay Chen" that corresponds to the VMS directory, CHEN.DIR.

Figure 5–2 Macintosh Screen



A Macintosh file consists of two files, the data fork and the resource fork.

Macintosh File Characteristics

Macintosh files have some attributes not present on VMS files. A Macintosh file actually consists of two files, called a data fork and resource fork.

- The **data fork** stores conventional information, such as text and binary data. This fork is similar to a VMS file.

  The data fork is most useful to VMS users and is stored as a file in the volume's root directory.

- The **resource fork** contains items that are specific to Macintosh workstations such as pictures, menus, and icons. If the document is an application, then program code also is stored in this fork.

  The resource fork is stored in a subdirectory of the root directory, called MSAF$RESOURCES.DIR.

To save desktop information for Macintosh files, VAXshare creates a catalog file.

To save Macintosh specific information, VAXshare also creates a catalog file for each folder created in a VAXshare volume. This file is identified by its .MSAF$CAT file extension. The **catalog file** stores Macintosh information that allows the Macintosh Finder to handle a document.

This information includes file type and creator, folder location, and visual position on the desktop. It is not directly useful to VMS and is maintained only for the Macintosh computer.

The combination of the VMS directory and the catalog file represents a Macintosh folder.

For example, when you create a folder called "Test" on a VAXshare volume called MAC_VOLUME, a directory called TEST.DIR and a catalog file called TEST.MSAF$CAT also are created. Both are stored in the same parent directory.

The following example illustrates how these files are stored:

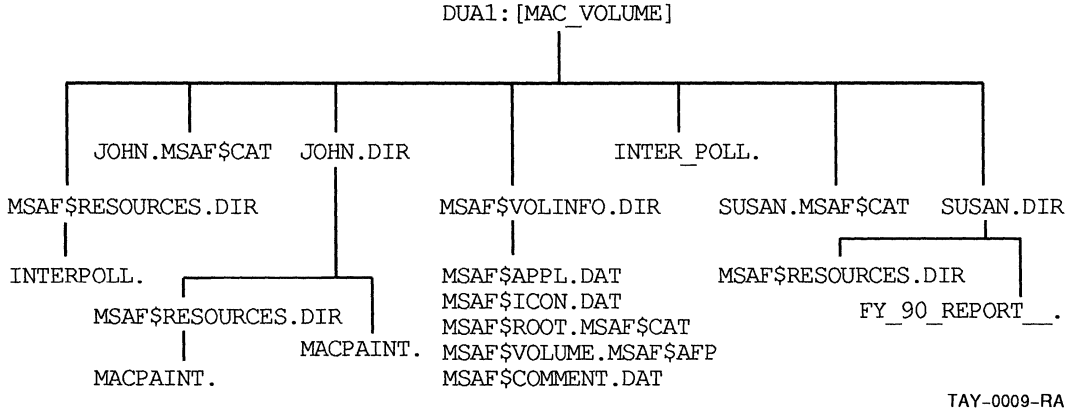
```
DUA1:[MAC_VOLUME]TEST.DIR

    and

DUA1:[MAC_VOLUME]TEST.MSAF$CAT
```

The following diagram illustrates how two folders, "Susan" and "John" and the "Inter·Poll", application are stored on a VAXshare volume called Mac Volume.

"Inter·Poll", is an Apple network monitoring application and its catalog file is stored in MSAF$ROOT.MSAF$CAT.



File Exclusion

You can prevent certain VMS files and directories from appearing on a Macintosh volume served by VAXshare by editing the MSA$ROOT:[MSA]MSAF$EXCLUDE.DAT file. This file contains a list of files that are not available through a VAXshare volume. These are VMS text files with the following VMS file types or "extensions":

- .TJL
- .JOU
- .JNL

You can edit this list and add additional files that you do not want to display on a VAXshare volume.

Directory Depth

Although the Macintosh computer does not limit the depth to which you can nest folders, VAXshare follows the Files-11 file structure that limits the depth of a directory hierarchy to eight.

Therefore VMS applications, such as BACKUP, cannot access files created below this depth.

You can limit folder depth by modifying a file server's characteristics. Use the following command format:

```
$ ADMIN/MSA
MSA$MANAGER> SET CHARACTERISTIC/FILE/FOLDER_DEPTH=7
MSA$MANAGER> EXIT
```

Refer to the *System Administrator's Reference Manual* for more information on this command.

Macintosh and VMS File Names

Macintosh file names support a different set of characters than those available to VMS file names. Therefore, VAXshare software maps Macintosh file names into similar VMS equivalents.

The rules used to determine the VMS name are as follows:

- If the Macintosh name is a legal VMS name, the name remains the same.
- Lowercase letters are converted to uppercase.
- A space is translated into an underscore.

- The first period is used as the separator between the file name and the file type. Additional periods are converted to dollar signs ($).
- Illegal VMS file name characters are changed to underscores.

Table 5–2 gives some examples of how Macintosh file names are converted to VMS equivalents.

Table 5–2 Mapping Macintosh to VMS File Names

Macintosh Long Name	VMS Equivalent Name
This is a long name	THIS_IS_A_LONG_NAME
My File.1.Facts	MY_FILE.1$FACTS
VAXshare&	VAXSHARE_

Assigning VAXshare File Creator and Type

File creator and type are used by the Macintosh Finder to locate and work with files. The file creator helps the Finder determine what application to use when you double-click a document. The file type depends upon the application and helps the creator determine what file format to use.

Files created by VMS users do not have a file creator and type assignment. VAXshare software assigns file creator and type attributes to files that were not created on the Macintosh computer.

The file creator and type determine what icon is displayed on the Macintosh desktop. For example, if you are working with an Excel document on a Macintosh computer, the creator and type could be as follows:

```
TYPE = TEXT
CREATOR = XCEL
```

The XCEL creator helps the Finder determine which application to start when you double-click on the file from the Macintosh. The TEXT type indicates an acceptable file format for the Excel application. The Excel icon is defined and then displayed on the desktop.

The MSA$ROOT:[MSA] MSAF$FILE_TYPES.DAT file controls file creator and type assignment. A file that does not have a creator and type is compared with MSAF$FILE_TYPES.DAT entries.

VAXshare software assigns the creator and type according to the first match it encounters.

VAXshare software checks for creator and type whenever:

- A volume is mounted and the verification level is specified as FULL or PARTIAL.
- A volume is enumerated (enumeration occurs, for example, whenever a VAXshare file server is required to display a directory, or the Macintosh user opens a window).

VAXshare assigns creator/type to a file created by a VMS user.

Example

A file created by a VMS or DOS user does not initially have a creator and type assignment. Suppose you created a .WKS file from DECdecision and you want to be able to double-click the file and modify it, using Excel.

VAXshare checks the MSAF$FILE_TYPE.DAT file and looks for a creator and type to match the .WKS file extension. Refer to Table 5–4 which is a sample MSAF$FILE_TYPE.DAT file. The table indicates the following information for the .WKS file:

```
TYPE = TEXT
CREATOR = XCEL
```

VAXshare assigns this creator and type to the file when it is first added to a served volume. The Macintosh user can display the file on the desktop, using the Excel icon.

Editing the MSAF$FILE_TYPES.DAT file

You need to edit the MSAF$FILE_TYPES.DAT file when you want to:

- Add a new file creator and type for an application that is not defined in the MSAF$FILE_TYPES.DAT file.

  For example, suppose you created some files in GIF (Graphics Interchange Format) on VMS. You want to double-click the files on the Macintosh computer and edit them using Giffer, a shareware program. Because Giffer is not defined, you need to add the following line to the MSAF$FILE_TYPES.DAT file.

Table 5–3 Add Creator and Type to MSAF$FILE_TYPES.DAT file

Format	Attr	Semantic	.Ext	Creator	Type	Trans
*	*	*	.GIF	Bozo	GIFf	none

- Change a creator and type. You can reassign the creator and type.

  For instance, suppose you created a .WKS file using DECdecision. You want to double-click the file and edit it using the WingZ spreadsheet application. Edit MSAF$FILE_TYPE.DAT to change the creator for .WKS files from XCEL to WNGZ as follows:

```
TYPE    = TEXT
CREATOR = WNGZ
```

After you make changes to the MSAF$FILE_TYPES.DAT file, stop the file server and restart it for the changes to take effect.

```
$ ADMIN/MSA STOP FILE_SERVER
$ ADMIN/MSA START FILE_SERVER
```

Table 5–4 is a sample MSAF$FILE_TYPES.DAT file. This file defines type and creator for files that are not created from a Macintosh computer. Lines beginning with an exclamation point and blank lines are ignored. An asterisk means that any corresponding value is a match.

A VAXshare file server compares a file that does not have a creator and type to the first four fields in the following table. When it finds the first match, it assigns the creator, type, and translation, as defined in this table.

Note *The "Semantics" column is reserved for future use. Do not make modifications to this column.*

The common file types are listed first.

Table 5–4 Example of MSAF$FILE_TYPES.DAT

Format	Attr	Semantic	.Ext	Creator	Type	Trans
*	*	*	.MACBINARY	DECM	mbin	none
*	*	*	.MBIN	MSAF	DECM	none
*	*	*	.MACWRITE	MACA	WORD	none
*	*	*	.MACPAINT	MPNT	PNTG	none
*	*	*	.PICT	MDRW	PICT	none

All spreadsheet formats can be read by Excel and WingZ. If you want to use WingZ, change the XCEL creator to WNGZ.

(continued on next page)

Table 5–4 (Cont.) Example of MSAF$FILE_TYPES.DAT

Format	Attr	Semantic	.Ext	Creator	Type	Trans
*	*	*	.WK1	XCEL	TEXT	none
*	*	*	.WKS	XCEL	TEXT	none
*	*	*	.SK	XCEL	TEXT	none
*	*	*	.SLK	XCEL	TEXT	none
*	*	*	.SYL	XCEL	TEXT	none
*	*	*	.SYLK	XCEL	TEXT	none
The following are WordPerfect files.						
*	*	*	.WPF	SSIW	WPDC	none
*	*	*	.WP	SSIW	WPDC	none
*	*	*	.TIFF	????	TIFF	none
The following are Aldus PageMaker files.						
*	*	*	.PUB	ALD2	ALB2	none
*	*	*	.PM3	ALD3	ALB3	none
*	*	*	.PM4	ALD4	ALB4	none
The following is an Adobe Illustrator file.						
*	*	*	.ADB	EPSP	ARTZ	none
Microsoft Word uses the .DOC extension. DECwrite also stores files in DDIF format with the .DOC extension.						
FIX	*	*	DOC	MSWD	WDBN	none
*	*	*	.TXT	ttxt	TEXT	CR
*	*	*	.SYS	MSAF	NOGO	none
FIX	*	*	.COM	MSAF	NOGO	none
Recognize VMS command files.						
*	*	*	.COM	VMSS	.COM	none
The following are various forms of text files.						
VAR	CR	*	*	ttxt	TEXT	CR
VFC	PRN	*	*	ttxt	TEXT	CR
STM	*	*	*	ttxt	TEXT	CR
STMCR	*	*	*	ttxt	TEXT	CR
STMLF	*	*	*	ttxt	TEXT	CR
Recognize executables and objects.						

(continued on next page)

Table 5–4 (Cont.) Example of MSAF$FILE_TYPES.DAT

Format	Attr	Semantic	.Ext	Creator	Type	Trans
*	*	*	.EXE	VMSS	.EXE	none
*	*	*	.OBJ	VMSS	.OBJ	none
*	*	*	.OLB	VMSS	.OLB	none
Recognize CDA files.						
*	*	*	.DDIF	CDAD	DDIF	none
*	*	*	.DTIF	CDAD	DTIF	none
*	*	*	.DOTS	CDAD	DOTS	none
The following is the default and should always be the last entry in the file.						
*	*	*	*	MSAF	?	none

Field Descriptions:

- **Format** - Specifies the file's RMS record format
- **Attr** - Specifies the file's RMS record attributes
- **Semantics** - Reserved for future use
- **Ext** - Specifies the RMS file type, also called file extension. Any valid RMS file type is legal.
- **Creator** - Specifies the Macintosh creator
- **Type** - Specifies the Macintosh type
- **Trans** - Specifies the type of translation to be performed.

  These fields specify the creator, type, and translation to be assigned to any files that match the criteria in the FORMAT, ATT, and EXT fields.

Valid values for the Format field are:

Table 5–5 Format Field Values

String	Meaning
FIX	Fixed length record
STM	Stream (FF, VT, LF, or CR/LF-delimited)

(continued on next page)

Table 5–5 (Cont.) Format Field Values

String	Meaning
STMCR	Stream (CR-delimited)
STMLF	Stream (LF-delimited)
VAR	Variable length
VFC	Variable length with fixed control

Valid values for the Attributes field are:

Table 5–6 Attribute Field Values

String	Meaning
BLK	Records cannot span blocks
CR	Carriage return carriage control
FTN	Fortran carriage control
PRN	Print format carriage control

Valid values for the Translation field are:

Table 5–7 Translation Field Values

Value	Meaning
none	No translation
CR	VMS text file to Apple Stream/CR conversion

Converting Text Files

The MSAF$FILES_TYPE.DAT file provides a way for VAXshare to support automatic text file conversion between most common Macintosh and VMS text file formats.

You can edit VMS text files stored on a VAXshare volume by using any Macintosh application that supports file type "TEXT". For example, you can create and edit a file using any VMS editor, such as EVE, and edit the same file with a Macintosh editor such as Microsoft Word. A VAXshare file server automatically performs the file conversion for you.

6

Setting Up Volumes, User Accounts, and Applications

To provide file sharing between VMS and Macintosh users, you need to:

- Decide how to set up volumes
- Add volumes
- Set up user accounts
- Install applications from a Macintosh computer

Setting Up Volumes

To make VMS directories and files available to Macintosh users, you need to add a volume to the VAXshare file server's volume database. A volume makes VMS directories, subdirectories, and files accesible to Macintosh users.

For example, you can add a volume to:

- Make an existing VMS directory available as a Macintosh volume
- Provide a new directory
- Store files for popular applications such as spreadsheets and word processors

Once a volume has been added and mounted, Macintosh users can connect to the volume and see its folders and files using Macintosh procedures. VMS users can set their default directory to the same disk/directory and access files using VMS methods.

Methods for Sharing Volumes

When you add a volume, either a new VMS directory is created or an existing directory becomes available to Macintosh users.

There are two methods you can use to share volumes.

1 **Add one public volume and within that volume, users can create their own folders.** This method is best if you are creating a new shared common area. (You do not have existing VMS directories that you want Macintosh users to access.)

With this method:

- Users can easily access each other's folders and files within the same group because individual volume logins and passwords are not required.
- Users can restrict access to their folders without assistance from the system administrator.
- You can store an application in a folder, and the folder can have world privileges.
- Performance can be better because memory usage is lower for folders than for volumes.

To set up this volume, try to determine how much VMS disk space the volume needs. Think about how many users are going to need space on this group volume.

The following sample commands create a new VMS directory, MACVOLUME, and make it accessible to the Macintosh user:

```
MSA$MANAGER> ADD VOL "Mac volume"-
_MSA$MANAGER> /ROOT=disk1:[MACVOLUME]
MSA$MANAGER> MOUNT "Mac volume"
```

2 **Add a volume for each user and for each application.** This method is best if you have existing VMS directories, such as a user's account, that you want to make available to Macintosh users.

With this method:

- A higher level of security is provided because each volume has its own password. Users do not have to remember to set folder security.
- Users can mount and dismount their own volumes.
- Performance can be impacted because a large number of volumes uses more memory.

The following sample command makes the VMS directory, Kelly, accessible to Macintosh users if they know the password "songtree".

```
$ ADMIN/MSA
MSA$MANAGER> ADD VOL "John Kelly"/PASSWORD="songtree"-
_MSA$MANAGER> /ROOT=disk1:[kelly]
MSA$MANAGER> MOUNT "John Kelly"
MSA$MANAGER> EXIT
```

Adding a Volume

Before you start to add volumes, read the following guidelines to help you make some decisions.

- Before you create the volume, decide where disk space is available. Use the /ROOT qualifier to specify where to store the volume.
- Do not create a volume inside a volume. You cannot define a volume's root directory to be the same as or within an existing root directory.

  The following sample command creates a volume and defines its root directory.

  ```
  MSA$MANAGER> ADD VOL "Robert"/ROOT=DUA2:[ROBERT]
  ```

  Do not add another volume with the same root directory, ROBERT, or with a subdirectory of the root.

The following steps describe how to add a volume to a VAXshare file server. A volume is displayed as a VMS directory.

1 To add a volume, log into a VMS account with the SYSPRV privilege.

2 The following sample commands create the volume Micro_Word that makes the VMS directory USERDISK:[JONES.WORD] available as a Macintosh volume. This volume is available to all users in the VMS group PAYROLL. The name and root parameters are required.

  ```
  $ ADMIN/MSA ADD VOLUME MICRO_WORD/-
  -$ ROOT=USERDISK:[JONES.WORD]-
  _$ /ACCESS=WRITE/VERIFY=FULL
  ```

  After the command is executed, MSA$MANAGER does the following:

  - Creates the root directory if it does not exist.

In this example, the WORD subdirectory did not exist. MSA$MANAGER creates the subdirectory with UIC ownership and file protection equal to the parent directory.

The USERDISK:[JONES] directory has a UIC of [PAYROLL,JONES] and a file protection of (S:RWE,O:RWED). The WORD root directory is assigned the same UIC and protection values.

- Adds the volume to the file server's volume database. The volume entry is assigned the WRITE attribue and FULL verification.

3 Enter the following command to allow all users in the PAYROLL group read, write, delete, and execute access to the new volume.

```
$ SET FILE USERDISK:[JONES]WORD.DIR-
_$ /PROTECTION=(G:RWED)
```

4 Mount the volume to make it accessible to Macintosh users:

```
$ ADMIN/MSA MOUNT MICRO_WORD
```

The new volume "Micro Word" now is available to Macintosh users in the Chooser.

To change the volume's parameters, use the MODIFY VOLUME command. See Chapter 7.

Setting Up User Accounts

You must have one VMS user or guest account to access VAXshare files.

To access files on a VAXshare file server, you must have at least one VMS user account. You can create a **guest account**. A VAXshare file server allows guests to log on to Macintosh computers without a password. Guests can create and use folders but they have limited access to folders created by other Macintosh users.

If you want full file security, then you can also create an account for each user. Use the AUTHORIZE utility to create the account. Before you add the account, determine the following:

- User name and password
- Unique user identification code (UIC)
- Location (device and directory) of the account's files
- Security requirements for the account

For more information on creating VMS user accounts, see the VMS System Manager's Manual.

You can set up user accounts for file sharing with any of the following three methods:

- Create a shared public volume for all users.
- Create a personal volume for each user.
- Create a guest user account to store public documents.

Create One Volume for All Users

Creating a public shared volume involves:

- Adding the volume
- Creating a VMS account for each user if an account does not already exist
- Creating a folder to match the VMS account for each user

The following example lists the steps for setting up a group volume called MACVOLUME and for adding an individual user account and folder.

```
$!Add and mount the group volume, MACVOLUME.
$
MSA$MANAGER> ADD VOL "MACVOLUME"/PASSWORD="junesnow"-
_MSA$MANAGER> /ROOT=DISK1:[MACVOLUME]
MSA$MANAGER> MOUNT MACVOLUME
MSA$MANAGER> EXIT
$
$! repeat the following steps for each user
$
$ SET DEFAULT SYS$SYSTEM
$
$ RUN AUTHORIZE
UAF> ADD SUSAN -          !User Name
_/PASSWORD=WIN12          !Password
_/UIC=[237,1]-            !UIC
_/ACCOUNT=DOC             !Accounting group name
_/OWNER="SUSAN JONES"-    !Owner
_/DEVICE=DISK1-          !Default directory
_/DIRECTORY=[MACVOLUME.SUSAN]
UAF> EXIT
$
$
$ !Create a folder for Susan in the MACVOLUME
$! users' directory.
$ SET DEF DISK1:[MACVOLUME]
$ CREATE/DIRECTORY [.SUSAN]/OWNER=[Susan]
$ SET PROTECTION =(S:RWED,O:RWED,G,W) SUSAN.DIR
$
```

Phone Susan with the following information:

Server Name:	VAXshare@Building1
User Name:	Susan
Password:	VMS account password
Volume Name:	MACVOLUME
Volume Password:	junesnow; case sensitive

Create a Personal Volume for Each User

Create a personal volume for each user when you want to match an existing VMS user's directory.

For example, you can add a volume to match a user's personal file directory. If there are many files in the directory, you can create a new subdirectory. Then add the volume to match the new subdirectory.

The following example summarizes the steps for setting up a personal volume to match an existing subdirectory.

```
$! repeat these steps for each user that needs a
$! personal volume
$
$ !Add a volume
$ !
$ ADMIN/MSA
 MSA$MANAGER> ADD VOL "Fred Macstuff"/PASSWORD="happy"-
 _MSA$MANAGER> /ROOT=DISK1:[FRED.MACSTUFF]
 MSA$MANAGER> MOUNT "Fred Macstuff"
 MSA$MANAGER> EXIT
$
```

Create a Guest Account

You also can create a guest VMS account with read and write world privileges. Although this account does not have security protection, it provides the following advantages:

- It is easy for users to share files.
- You do not have to set up VMS accounts for each user.

You might want to set up a guest account to store public documents. On Macintosh computers, guests have access to unprotected information but they cannot protect information themselves.

The following example summarizes the steps for setting up a guest account.

```
$  SET DEFAULT SYS$SYSTEM
$
$! The guest account should only allow network access.
$! You probably do not want to allow interactive
$! logins or batch jobs.
$! Assign a password that is difficult to decode.
$
$  RUN AUTHORIZE
UAF>  ADD MSAF$GUEST-              !User Name
_/PASSWORD=HEL12LO-               !Password
_/UIC=[277,1]-                    !UIC
_/ACCOUNT=ENG-                    !Accounting group name
_/OWNER="MSAF$GUEST"-   !Owner
_/DEVICE=$DISK1-                  !Default directory
_/DIRECTORY=[MSAF$GUEST]_
_/NOINTERACTIVE/NOBATCH
UAF>  EXIT
$
$
$ !Create the VMS username, MSAF$GUEST, for guest login
$ !
$  ADMIN/MSA
$ MSA$MANAGER>  SET CHAR/GUEST_NAME-
_MSA$MANAGER>  =MSAF$GUEST/PERM
$ MSA$MANAGER>  EXIT
$
```

You can now connect to the fileserver using the Macintosh Chooser to access the guest account.

Installing Applications from a Macintosh Computer

Install a popular application such as Excel on a VAXshare volume.

To make applications available to users on the network, you need to install them on a VAXshare volume. You can group commonly used applications together in one volume. Or you can create a volume for each application.

Keep in mind that although most applications can be used in a shared environment, not all of them can. Check the application's instructions before you make your decisions.

Note *On a VAXshare volume, only install software that can legally be shared in a network environment.*

1. Set the write lock tab on the application diskettes.
2. Create a backup copy of the application by copying the application diskettes as instructed by the manufacturer.

3 Determine where to store the application. Remember you can add a new volume or create a folder within an existing volume.

4 To install the application:

- Connect to the volume from the Macintosh Chooser window.
- Select the AppleShare icon, the zone, and the file server.
- Connect to the selected file server, and then select the volume you want. The icon is displayed on the desktop.
- Close the Chooser.

5 Install the application on the service. Follow the application's instructions.

6 If you need to use a printer with the application, set up printer services on the server before running the application. See Chapter 8.

7

Managing Volumes and File Servers

This chapter provides the information you need to manage VAXshare file servers and volumes. Commands are described as they relate to specific tasks. Detailed information on all commands, including usage, is in the *System Administrator's Reference Manual.*

The tasks described in this chapter include:

- Modifying file server characteristics
- Managing volumes
- Adding file servers
- Selecting file servers
- Removing file servers
- Starting and stopping file servers

Modifying File Server Characteristics

The VAXshare file server provides volume services. A volume service makes VMS directories, subdirectories, and files accessible to Macintosh users.

You can modify the operation of a VAXshare file server to:

- Change its configuration
- Control how security works
- Improve performance and reduce memory usage

To specify when changes to the file server take place, use the NOPERMANENT/PERMANENT qualifier. Changes specified with the PERMANENT qualifier do not take effect until after the file server is restarted. NOPERMANENT is the default.

Changing the Configuration

Change the number of users permitted to log in.

Change the number of users permitted to log in

You can change the number of connections permitted by the file server. The default value is 0, which means that there are no restrictions to the number of connections.

For dedicated file serving, you can temporarily change this number to a specific value. The following example sets the number of connections to 10:

```
MSA$MANAGER> SET CHAR/FILE_SERVER/MAX_CON=10
```

Change the depth limit for folders.

Change the depth limit for folders

The RMS file structure used by most VMS applications limits the depth of a directory to eight files from a logically rooted directory. Appleshare does not limit the depth of folders.

For VAXshare file servers, the default folder depth is 7. Increasing the depth can cause problems because folders created beyond the limit are not accessible using VMS utilities, such as Backup.

Increase this value only if you do not use VMS utilities for this file server. The maximum value is 16.

Controlling File Server Security

Allow or deny user ability to change password.

Allow or deny user ability to change password

If you have multiple users on one account, you can deny users the ability to change passwords. For example, if several users access the same account with the same password, specify the qualifier, NOCHANGE_PASSWORD.

The following example illustrates this procedure:

```
MSA$MANAGER> SET CHAR/FILE_SERVER/NOCHANGE_PASSWORD
```

Control file security checks.

Control file security checks

You can control the extent of security checking for files stored on a specific server. Use the default FULL_CHECK_ACCESS qualifier to ensure a high degree of file checking.

With FULL_CHECK_ACCESS, access control lists (ACLs) always are checked for each file. (ACLs can be used to grant or deny file access to individual users or groups based on UICs.)

However, if the standard file protection, available with UICs, is sufficient for your environment, you can turn off this feature and improve file access performance. The following example illustrates the procedure:

```
MSA$MANAGER>  SET CHAR/FILE_SERVER/NOFULL_CHECK_ACCESS
```

The following table describes how to change the default values for other security characteristics:

Table 7–1 Examples of Changing Security Characteristics

To change default	At the prompt, enter
VMS folder protection	SET CHAR/FILE_SERVER /DEFAULT_FOLDER_PROTECTION =(O:RWED,G:RWED,W:RWED)
File protection inheritance	SET CHAR/FILE_SERVER/NOINHERIT_PROTECTION
Console logging	SET CHAR/FILE_SERVER/NONOTIFY_OPERATOR

Improve Performance and Reduce Memory Usage

When you adjust a file server to improve performance or conserve memory, these kinds of adjustments can adversely affect each other.

For example, you can increase the size of the file cache to improve performance, but a large cache requires more virtual memory.

Change the size of the file cache.

Change the size of the file cache

The CATALOG_CACHE qualifier defines the number of catalog files that can be opened simultaneously. The default value is 64. You can raise the value to a maximum of 1024 to improve performance, however, more memory is used. Or you can decrease the value to 16.

Change the time permitted to purge files.

Change the time permitted to purge files

The PURGE_TIMER qualifier specifies how long a catalog file remains open after the specified period of inactivity. This timer works with the cache to purge the cache's contents.

The default value is 20 minutes. If you increase the time, performance improves. If you decrease it, virtual memory use is reduced. The maximum value is 59 minutes.

The following command sets the time to 59 minutes:

```
MSA$MANAGER> SET CHAR/FILE_SERVER/PURGE_TIMER=59
```

Change the size of the window block.

Change the size of the window block

The size of the window determines the number of file blocks that are read or written in one disk I/O. To improve the file server's performance during file access, you can increase the block size.

Increasing the size, however, increases virtual memory requirements.

The following command increases the number of blocks to 40.

```
MSA$MANAGER> SET CHAR/FILE_SERVER/WINDOW_SIZE=40
```

Managing Volumes

Managing volumes involves:

- Making them available or unavailable for users
- Modifying volume characteristics

Making Volumes Available and Unavailable

To allow users to share data, you need to understand how to make a volume available and unavailable to users. For a better understanding of how to add volumes, see Chapter 6.

Add and mount the volume.

Add and mount the volume

To make a VMS directory available to Macintosh users, you need to add a volume to the file server's database and then mount the volume. When you add the volume, you can also specify a password.

The following command adds the volume "Jane's Memos", and specifies the VMS directory name for the account and the password for the volume.

```
MSA$MANAGER> ADD VOL "Jane's Memos"/ROOT=disk2:[jane]-
_MSA$MANAGER> /PASS="autumn"
```

JOBSTART, job "[**jobname**]" started on [**printername**

Facility: MSAP, VAXshare Print Server

Explanation: A print job has begun printing.

User Action: No user action is required.

LINKBROKEN, management link broken—file server is offline

Facility: MSA, VAXshare Manager

Explanation: The management session has unexpectedly been broken between the VAXshare management utility and the file server.

User Action: Re-execute the VAXshare management request. If the problem persists, contact the local Digital representative.

LOGINDENIED, VAXshare login denied : User [**Choosername**]

Facility: MSAF, VAXshare File Server

Explanation: An unsuccessful attempt to log into a VAXshare file server was made via the AFP client.

User Action: Enter the correct VMS username/password pair. See the *System Administrator's Reference Manual.*

MACNAMETOOLONG, Macintosh chooser name is too long

Facility: MSA, VAXshare Manager

Explanation: The Macintosh chooser name specified exceeds the maximum length of 31 characters

User Action: Enter a Macintosh Chooser name less than 32 characters

MAXSESSIONS, maximum number of sessions exceeded

Facility: MSA, VAXshare Manager

Explanation: The maximum number of 32 simultaneous management session connects to the file server has been exceeded.

User Action: Exit from one or more of the active MSA$MANAGER sessions or wait for another user to exit.

NAMDIRFIL, error retrieving name of directory file

Facility: MSAF, VAXshare File Server

Explanation: VAXshare cannot determine the name of a directory file.

User Action: This error only occurs at VAXshare startup during a partial verification. VAXshare terminates the partial verification and automatically starts a full verification on the volume.

The full verification attempts to correct the problem, however, the directory will not be accessible by using VAXshare. This error is accompanied by another error from a VMS component such as RMS. Follow the user action described in the VMS System Messages and Recovery Procedures manual.

NAMRSCFIL, error retrieving name of resource directory for [**directoryname**]

Facility: MSAF, VAXshare File Server

Explanation: VAXshare cannot determine the name of the resource directory for the specified directory.

User Action: This error only occurs at VAXshare startup during a partial verification. If this error is encountered, VAXshare terminates the partial verification and automatically starts a full verification. The full verification attempts to correct the problem, however, the resource forks for files in the specified directory may be lost.

This error is accompanied by another error from a VMS component such as RMS. Follow the user action described in the VMS System Messages and Recovery Procedures manual.

NBREXISTS, server number already exists

Facility: MSA, VAXshare Manager

Explanation: An attempt was made to assign a new file server a service number that already exists.

User Action: Using the ADD FILE SERVER/NUMBER qualifier, specify a unique service number. The list of existing service numbers can be determined by issuing the SHOW FILE_ SERVER/ALL command.

NOAPPLE, AppleDict not found in device control library "MSAP$DEVCTL.TBL"

Facility: MSAP, VAXshare Print Server

Explanation: The requested LaserPrep setup module was not found in the LaserWriter's device control table.

User Action: Insure that the correct LaserPrep setup module has been specified for the printer. The /SETUP value specifies this module.

Refer to the printing chapters in this manual for a a table of kit supplied modules. If a setup file was specified, then check for the presence of the module in the SYS$LIBRARY:MSAP$DEVCTL.TBL device control table. If the module is missing, then re-install the printer software.

NOCATEXT, catalog file [**filename**] does not have a .MSAF$CAT extension

Facility: MSAF, VAXshare File Server

Explanation: A VAXshare catalog file does not have the required .MSAF$CAT file name extension. This could occur if the catalog file was renamed from VMS with a different file name extension.

User Action: This error only occurs at VAXshare startup during a partial verification. If this error is encountered, VAXshare terminates the partial verification and automatically starts a full verification.

The full verification corrects the problem, but it also creates a new catalog file. The new catalog file may not have the same information for each file in the directory as the original catalog file. Do not rename catalog files without the .MSAF$CAT extension.

NOCATREC, error adding [**filename**] to catalog, can't find .MSAF$CAT record

Facility: MSAF, VAXshare File Server

Explanation: VAXshare is unable to add the specified file to its catalog file because the catalog entry just created is not accessible.

User Action: If this error occurs, it is accompanied by another error from a VMS component such as RMS. Follow the user action described in the VMS System Messages and Recovery Procedures manual.

NODIREXT, directory [**directoryname**] does not have a .DIR extension

Facility: MSAF, VAXshare File Server

Explanation: A directory file name does not have a .DIR file name extension. This could occur if the directory file was renamed from VMS with a different file name extension.

User Action: This error only occurs at VAXshare startup during a partial verification. If this error is encountered, VAXshare terminates the partial verification and automatically starts a full verification on the volume. The full verification corrects the problem, however, the directory is not accessible from VAXshare. Do not rename directory files without the .DIR extension.

NODNAMETOOLONG, DECnet node name is too long

Facility: MSA, VAXshare Manager

Explanation: the specified DECnet node name is greater than 6 characters

User Action: Enter a node name less than 7 characters in length.

NOPROCSET, no ProcSets found in device control library

Facility: MSAP, VAXshare Print Server

Explanation: The LaserWriter preparation setup file is not found in the device control table.

User Action: If this is a Digital printer service, reinstall the ProcSet files by executing the MSA$ROOT:[MSA.MSAP$UTILITY]MSAP$INSERT_ DECPREP.COM procedure. If this is an Apple LaserWriter queue, check that the /SETUP value specifies a valid MSAP$DEVCTL.TBL ProcSet file.

NOPERMANENT, requires the /NOPERMANENT qualifier

Facility: MSA, VAXshare Manager

Explanation: A management operation which requires the /NOPERMANENT qualifier was entered with a /PERMANENT qualifier.

User Action: Use the /NOPERMANENT qualifier.

NOSPLDEV, device [**destination**] may not be spooled

Facility: MSAP, VAXshare Print Server

Explanation: A LaserWriter destination has been specified for a spooled device.

User Action: Serial connections can not be made to spooled devices. Issue a DCL SET DEVICE/NOSPOOL command or use a different device.

NOTCMPLTWMSG, request was not completed due to error(s)

Facility: MSA, VAXshare Manager

Explanation: The management request failed with one or more error messages

User Action: Take action based on the resulting error message list.

NOTIFYERR, error notifying user

Facility: MSAP, VAXshare Print Server

Explanation: An attempt to notify a VMS user, who is not currently logged in, about print job status has occured.

User Action: No user action is required.

NOTSTOPPED, VAXshare has NOT stopped

Facility: MSAF, VAXshare File Server

Explanation: This message accompanies other messages and informs you that the error did not cause VAXshare to stop.

User Action: No user action is required.

NOVOLFND, No volumes found in the volume file

Facility: MSAF, VAXshare File Server

Explanation: The VAXshare volume database does not specify any volume names.

User Action: Add a volume to the file server's volume database

OPNCATFIL, error opening catalog file [**filename**]

Facility: MSAF, VAXshare File Server

Explanation: VAXshare is unable to open the specified catalog file.

User Action: This error only occurs at VAXshare startup during a partial verification. If this error is encountered, VAXshare terminates the partial verification and automatically starts a full verification. The full verification attempts to correct the problem, however, it may create a new catalog file.

The new catalog file may not have the same information for each file in the directory as the original catalog file. This error is accompanied by another error from a VMS component such as RMS. Follow the user action described in the VMS System Messages and Recovery Procedures manual.

OPNROTCAT, error opening the root catalog file

Facility: MSAF, VAXshare File Server

Explanation: VAXshare is unable to open a volume's root catalog file.

User Action: This error is accompanied by another error from a VMS component such as RMS. Follow the user action described in the VMS System Messages and Recovery Procedures manual.

OPNRSCDIR, error opening resource directory

Facility: MSAF, VAXshare File Server

Explanation: VAXshare is unable to open an MSAF$RESOURCES directory.

User Action: This error only occurs at VAXshare startup during a partial verification. If this error is encountered, VAXshare terminates the partial verification and automatically startsa full verification . The full verification attempts to correct the problem, however, the resource forks for files in the specified directory may be lost. This error is accompanied by another error from a VMS component such as RMS. Follow the user action described in the VMS System Messages and Recovery Procedures manual.

PAPERR, PAP read error

Facility: MSAP, VAXshare Print Server

Explanation: Indicates a network communications problem.

User Action: If the problem persists, contact the local Digital representative.

PARDATNOTFOUND, file server parameter data file not found

Facility: MSA, VAXshare Manager

Explanation: The file server characteristic database file is missing.

User Action: Insure that the MSA$ROOT system logical is defined. If it isn't, then execute the SYS$STARTUP:MSA$STARTUP.COM procedure. If the problem still persists, then regenerate the file server's characteristic database.

PARDATOPENERR, error opening file server parameter data file

Facility: MSA, VAXshare Manager

Explanation: The file server characteristic database file cannot be opened.

User Action: Insure that the MSA$ROOT system logical is defined. If it is not, then execute the SYS$STARTUP:MSA$STARTUP.COM procedure. If the problem still persists, then regenerate the file server's characteristic database.

PERMANENT, AS must be set with the /PERMANENT qualifier

Facility: MSA, VAXshare Manager

Explanation: A management operation which requires the /PERMANENT qualifier was entered with a /NOPERMANENT qualifier.

User Action: Use the /PERMANENT qualifier.

PLE_LASPARDEC, Last PLE parameter has been decoded

Facility: MSA, VAXshare Manager

Explanation: The last parameter list element (PLE) has been encountered in a management request or managment response packet.

User Action: This is an unexpected condition, possibly caused by data packet corruption. Retry the action. If the problem persists, contact the local Digital representative.

POSTERROR, [**printer destination**]: [**PostScript error**]

Facility: MSAP, VAXshare Print Server

Explanation: A PostScript error has occured.

User Action: No user action required.

PRCSUBDIR, error processing sub-directory [**directoryname**]

Facility: MSAF, VAXshare File Server

Explanation: VAXshare is unable to process the specified sub-directory.

User Action: This error is accompanied by another error from a VMS component such as RMS. Follow the user action described in the VMS System Messages and Recovery Procedures manual.

PRTDATEMPTY, printer datafile is empty

Facility: MSA, VAXshare Manager

Explanation: No entries exist in the printer database file.

User Action: To successfully perform the printer-related operation, one or more printers to the database.

PRTDATNOTFOUND, printer data file not found

Facility: MSA, VAXshare Manager

Explanation: The printer database file does not exist.

User Action: To successfully perform the printer-related operation, add one or more printers to the database. If you have already have added printers to the database then determine if the MSA$ROOT logical has been defined. If the logical is not defined then execute the SYS$STARTUP:MSA$STARTUP.COM command procedure.

PRTERROR, [*destination*]: [*error*]

Facility: MSAP, VAXshare Print Server

Explanation: A printer error has occured.

User Action: No user action is required.

PRTEXISTS, printer already exists

Facility: MSA, VAXshare Manager

Explanation: The printer you are trying to add already exists in the printer database.

User Action: Try a different printer name.

PRTNOTFOUND, printer not found

Facility: MSA, VAXshare Manager

Explanation: The printer you are trying to manage does not exist.

User Action: Try a different printer name.

PWRDTOOLONG, password is too long

Facility: MSA, VAXshare Manager

Explanation: The password you specified is greater than the maximum allowable password.

User Action: Enter a password with fewer characters.

QUALRANGE, qualifier value [**characteristic**] is out of range

Facility: MSA, VAXshare Manager

Explanation: The numeric qualifer value is either too low or too high.

User Action: Refer to the *System Administrator's Reference Manual* to determine the proper numeric value range.

QUALTOOLONG, qualifier value [**characteristic**] is too long

Facility: MSA, VAXshare Manager

Explanation: The string qualifier has too many characters.

User Action: Refer to the *System Administrator's Reference Manual* to determine the maximum string length.

QUEEXISTS, printer for this queue already exists

Facility: MSA, VAXshare Manager

Explanation: The queue you are attempting to add already exists as a VMS print queue.

User Action: Try a different printer queue name.

REDAFPFIL, error reading AFP file

Facility: MSAF, VAXshare File Server

Explanation: An attempt to read a volume's AFP file failed.

User Action: This error is accompanied by another error from a VMS component such as RMS. Follow the user action described in the VMS System Messages and Recovery Procedures manual.

REDAPPFIL, error reading application file [**filename**]

Facility: MSAF, VAXshare File Server

Explanation: An attempt to read a volume's application file failed.

User Action: This error is accompanied by another error from a VMS component such as RMS. Follow the user action described in the VMS System Messages and Recovery Procedures manual.

REDCMTFIL, error reading comment file [**filename**]

Facility: MSAF, VAXshare File Server

Explanation: An attempt to read a volume's comment file failed.

User Action: This error is accompanied by another error from a VMS component such as RMS. Follow the user action described in the VMS System Messages and Recovery Procedures manual.

REDROTCAT, error reading root catalog file

Facility: MSAF, VAXshare File Server

Explanation: An attempt to read a volume's root catalog file failed.

User Action: This error is accompanied by another error from a VMS component such as RMS. Follow the user action described in the VMS System Messages and Recovery Procedures manual.

REGISTERED, VAXshare FileServer registered as [**servername**]

Facility: MSAF, VAXshare File Server

Explanation: VAXshare has completed its initialization process and is now online and ready to accept AFP client session connects

User Action: No user action is required.

REMOTE_MSG, result of remote connect:

Facility: MSA, VAXshare Manager

Explanation: A message from a remotely managed VAXshare installation was received.

User Action: Refer to the user action of the resulting message for instructions.

RESETERR, error resetting serial line

Facility: MSAP, VAXshare Print Server

Explanation: An error was encountered while attempting to reset a serially connected LaserWriter printer.

User Action: Insure the LaserWriter is turned on and physically connected to the VAX computer using a serial cable. Refer to the troubleshooting instructions for serial printers in this manual.

RESETFAIL, Reset failed

Facility: MSAP, VAXshare Print Server

Explanation: A PostScript reset command has failed.

User Action: Turn the printer off and back on.

RESETTING, symbiont-generated reset of printer [**destination**]

Facility: MSAP, VAXshare Print Server

Explanation: The LaserWriter printer is resetting.

User Action: No user action is required.

RETCATFIL, error retrieving name of catalog file for [**directory-name**]

Facility: MSAF, VAXshare File Server

Explanation: VAXshare is unable to determine the name of the catalog file for the specified directory.

User Action: This error only occurs at VAXshare startup during a partial verification. If this error is encountered, VAXshare terminates the partial verification and automatically starts a full verification. The full verification attempts to correct the problem, however, it may create a new catalog file. The new catalog file may not have the same information for each file in the directory as the original catalog file.

This error is accompanied by another error from a VMS component such as RMS. Follow the user action described in the VMS System Messages and Recovery Procedures manual.

ROTDIRINA, root directory inaccessible

Facility: MSAF, VAXshare File Server

Explanation: VAXshare is unable to access a volume's root directory.

User Action: This error is accompanied by another error from a VMS component such as RMS. Follow the user action described in the VMS System Messages and Recovery Procedures manual.

RSCBCKLNK, resource directory has incorrect back link

Facility: MSAF, VAXshare File Server

Explanation: An VAXshare MSAF$RESOURCES.DIR directory file has incorrect information about its parent directory. This error can occur, if the MSAF$RESOURCES.DIR directory file is improperly renamed from its original directory.

User Action: This error only occurs at VAXshare startup during a partial verification. If this error is encountered, VAXshare terminates the partial verification and automatically starts a full verification. Full verification attempts to correct the problem, however, it may create a new MSAF$RESOURCES.DIR file and the resource forks for files in the original parent directory may be lost. Do not move an MSAF$RESOURCES.DIR directory file from its original directory.

RSCDIREXT, resource directory for [**directoryname**] does not have a .DIR extension

Facility: MSAF, VAXshare File Server

Explanation: An VAXshare resource directory file does not have a .DIR file name extension. This could occur if the MSAF$RESOURCES.DIR file was renamed from VMS with a different file name extension.

User Action: This error only occurs at VAXshare startup during a partial verification. If this error is encountered, VAXshare terminates the partial verification and automatically starts a full verification. Full verification attempts to correct the problem, however, it may create a new MSAF$RESOURCES.DIR file and the resource forks for files in the parent directory may be lost. Do not rename MSAF$RESOURCES.DIR directory files.

RSCDIRNAM, name of resource directory [**directoryname**] is not MSAF$RESOURCE

Facility: MSAF, VAXshare File Server

Explanation: An VAXshare resource directory file name does not have the required name MSAF$RESOURCES.DIR. This could occur if the MSAF$RESOURCES.DIR file was renamed from VMS.

User Action: This error only occurs at VAXshare startup during a partial verification. If this error is encountered, VAXshare terminates the partial verification and automatically starts a full verification. Full verification attempts to correct the problem, however, it may create a new MSAF$RESOURCES.DIR file and the resource forks for files in the parent directory may be lost. Do not to rename MSAF$RESOURCES.DIR directory files.

RSCROTDIR, error creating resource file [**filename**] in root resource directory

Facility: MSAF, VAXshare File Server

Explanation: VAXshare is unable to create the specified resource file in the root resource directory.

User Action: This error is accompanied by another error from a VMS component such as RMS. Follow the user action described in the VMS System Messages and Recovery Procedures manual.

SECURITY, Unprivileged attempt to access [**filename**] by user [*VMS account name*]

Facility: MSAF, VAXshare File Server

Explanation: A user has unsuccessfully attempted to access a file for which they do not have privileges.

User Action: No special user action is required.

SERINITERR, error initializing serial line [**destination**]

Facility: MSAP, VAXshare Print Server

Explanation: The print symbiont failed to initialize the LaserWriter's serial device.

User Action: Refer to the serial printing troubleshooting section in this manual.

SERVEREG, MSAP Spooler registered as "[**printername**]"

Facility: MSAP, VAXshare Print Server

Explanation: The printer's receiver is registered on the network and is available for use by PAP clients.

User Action: No user action is required.

SETFILATT, error setting attributes on [**filename**]

Facility: MSAF, VAXshare File Server

Explanation: VAXshare is unable to set the file attributes of the specified file.

User Action: This error is accompanied by another error from a VMS component such as RMS. Follow the user action described in the VMS System Messages and Recovery Procedures manual.

SHTDWNCAN, VAXshare shutdown request canceled on [**server-name**]

Facility: MSAF, VAXshare File Server

Explanation: A request to cancel a shutdown of the VAXshare server has been issued using the VAXshare Manager.

User Action: No user action is required.

SHTDWNMIN, VAXshare will shutdown in "x" minute(s)

Facility: MSAF, VAXshare File Server

Explanation: A request to shutdown the VAXshare server has been issued. x minutes remain until shutdown is complete.

User Action: No user action is required.

SHTDWNREQ, VAXshare shutdown requested

Facility: MSAF, VAXshare File Server

Explanation: A request to shutdown the VAXshare server has been issued.

User Action: No user action is required.

SHUTDOWN, VAXshare shutdown complete

Facility: MSAF, VAXshare File Server

Explanation: The VAXshare server has completed a shutdown.

User Action: No user action is required.

SHUTDOWN_CANCEL, [**servername**] shutdown cancelled

Facility: MSA, VAXshare Manager

Explanation: The file server has received a cancel shutdown request.

User Action: No user action is required.

SJCERR, error sending job to queue "[**queue**]

Facility: MSAP, VAXshare Print Server

Explanation: An error occured while sending a job to the printer queue.

User Action: Refer to the user action for the resulting job controller error message.

SRVCTOOLONG, service name is too long

Facility: MSA, VAXshare Manager

Explanation: The specifed service name string has exceeded the maximum 31 character limit.

User Action: Enter a service name which contains less than 32 characters.

SRVDATNOTFOUND, server data file not found

Facility: MSA, VAXshare Manager

Explanation: The file server database file is not accesable or is missing.

User Action: Insure that the MSA$ROOT system logical is defined. If it is not, then execute the SYS$STARTUP:MSA$STARTUP.COM procedure. If the problem still persists, then re-install the file server software.

SRVEXISTS, server already exists

Facility: MSA, VAXshare Manager

Explanation: This file server name already exists in the file server database.

User Action: Try a different file server name.

SRVNOTFOUND, server not found

Facility: MSA, VAXshare Manager

Explanation: The specified file server does not exist in the file server database.

User Action: Try a different file server name.

STARTING, [**servername**] is starting

Facility: MSA, VAXshare Manager

Explanation: The file server process or print receiver process has begun execution.

User Action: No user action is required.

STARTING, VAXshare starting

Facility: MSAF, VAXshare File Server

Explanation: VAXshare is starting the initialization process.

User Action: No user action is required.

STOPPED, VAXshare has stopped

Facility: MSAF, VAXshare File Server

Explanation: This message accompanies other messages and informs you that the error has caused VAXshare to stop.

User Action: Restart the server.

STOPPING, [**servername**] is stopping

Facility: MSA, VAXshare Manager

Explanation: The file server process or print receiver process has received a stop request.

User Action: No user action is required.

SYMDIE, fatal symbiont error on queue [**queue**]

Facility: MSAP, VAXshare Print Server

Explanation: An unrecoverable symbiont error has occured.

User Action: Restart the printer service using the VAXshare Manager.

SYSTOOSML, SYSGEN parameter MAXBUF is low

Facility: MSAP, VAXshare Print Server

Explanation: The VMS system parameter MAXBUF is set below 8192 bytes.

User Action: You may choose to set this SYSGEN parameter to a higher value to improve print spooler performance.

TRNNOTFND, translator for data-type [**data-type**] not found

Facility: MSAP, VAXshare Print Server

Explanation: A text translator for the requested data-type does not exist.

User Action: Re-submit the VMS print job to the LaserWriter using a different /PARAMETERS=(DATA_TYPE) value.

UNKNWNSRVC, unknown VAXshare service

Facility: MSA, VAXshare Manager

Explanation: The specified VAXshare service does not exist.

User Action: Try a different service name.

UNSPECIFIEDROOT, volume root directory was not specified

Facility: MSA, VAXshare Manager

Explanation: The /ROOT qualifier value is missing.

User Action: Specify a full, legal VMS directory path specification. If the directory does not exist, the VAXshare Manager creates one.

UNSPECPRTQUE, print queue was not specified

Facility: MSA, VAXshare Manager

Explanation: The /QUEUE qualifier value is missing.

User Action: If the printer service is for a Digital printer, specify the existing queue name. If the printer service is for a LaserWriter printer, specify a new, unique queue name along with a valid /DESTINATION value.

UPDAFPREC, error updating AFP record for DID directoryID

Facility: MSAF, VAXshare File Server

Explanation: An attempt to update an ISAM record in a volume's AFP file failed.

User Action: This error is accompanied by another error from a VMS component such as RMS. Follow the user action described in the VMS System Messages and Recovery Procedures manual.

UPDCATREC, error updating catalog record for [**filename**]

Facility: MSAF, VAXshare File Server

Explanation: An attempt to update an ISAM record in a catalog file failed.

User Action: This error is accompanied by another error from a VMS component such as RMS. Follow the user action described in the VMS System Messages and Recovery Procedures manual.

UPDNXTNUM, error updating next assignment numbers in AFP file

Facility: MSAF, VAXshare File Server

Explanation: An attempt to update an ISAM record in a volume's AFP file failed.

User Action: This error is accompanied by another error from a VMS component such as RMS. Follow the user action described in the VMS System Messages and Recovery Procedures manual.

VOLOVRVOL, volume [**volume**] overlaps volume [**volume**]

Facility: MSAF, VAXshare File Server

Explanation: A volume root directory specified in the VAXshare volume database overlaps another volume specified in the volume database.

User Action: Remove the volume or change its root directory.

VALUEIGNORED, List too long.

Facility: MSA, VAXshare Manager

Explanation: The total number of characters contained in the value list exceedes the maximum number of characters allowed. The list will be truncuated right before the list item specified in the message.

User Action: Re-enter the list with list items, or abbrievate items in the list to their significant number of characters.

VOLDATEMPTY, volume datafile is empty

Facility: MSA, VAXshare Manager

Explanation: No entries exist in the volume database file.

User Action: To successfully perform the volume-related operation you must add one or more volumes to the database.

VOLDATNOTFOUND, volume data file not found

Facility: MSA, VAXshare Manager

Explanation: The volume database file is missing. This is a normal state if no volumes have been added yet.

User Action: To successfully perform the volume-related operation, add one or more volumes to the database. If you have added volumes to the database, determine if the MSA$ROOT logical has been defined. If the logical is not defined, execute the SYS$STARTUP:MSA$STARTUP.COM command procedure.

VOLDISMOUNTED, volume is already dismounted

Facility: MSA, VAXshare Manager

Explanation: You cannot dismount a volume that has already been dismounted.

User Action: This is an informational message.

VOLEXISTS, volume already exists

Facility: MSA, VAXshare Manager

Explanation: The volume you are attempting to add already exists.

User Action: Try a different volume name.

VOLINUSE, volume is in use

Facility: MSA, VAXshare Manager

Explanation: The volume you are attempting to dismount is in use by one or more AFP clients.

User Action: Use the SHOW CONNECTIONS command to determine which clients are connected to the file server.

VOLMOUNTED, volume is already mounted

Facility: MSA, VAXshare Manager

Explanation: An attempt to mount a previously mounted file server volume was made.

User Action: No user action is required.

VOLNOTFOUND, volume not found

Facility: MSA, VAXshare Manager

Explanation: The volume name does not exist in the volume database.

User Action: Try a different volume name.

VOLOVRVOL, volume [[**volume**]] overlaps volume [[**volume**]]

Facility: MSA, VAXshare Manager

Explanation: The directory structure of one volume is contained within the structure of the other volume.

User Action: Change the root directory specification of one volume or permanently dismount it, or remove it.

WRONGSTATE, object is in the wrong state to perform request

Facility: MSA, VAXshare Manager

Explanation: The operation you are attempting to perform requires the VAXshare service to be in a ONLINE or OFFLINE state.

User Action: Use the VAXshare Manager to start or stop the VAXshare service.

Glossary

A

AppleTalk for VMS 3.0

Networking software that allows a VMS system to communicate with an AppleTalk network.

address resolution

The translation of AppleTalk node addresses to Ethernet physical datalink addresses.

See AppleTalk Address Resolution Protocol.

ADSP

See AppleTalk Data Stream Protocol.

alias

In VAXshare, a VMS user name that has been mapped to a Macintosh Chooser name. Allows Macintosh users to log on to VAXshare with their Chooser names.

Appleshare

Apple's file and print server software that services Macintosh computers on an AppleTalk network.

AARP

See AppleTalk Address Resolution Protocol

AppleTalk Address Resolution Protocol (AARP)

The protocol that reconciles addressing differences between a physical datalink protocol and AppleTalk's datalink protocol.

AppleTalk Data Stream Protocol (ADSP)

The protocol that provides reliable full duplex service between any two sockets in an AppleTalk internet. ADSP ensures sequential, duplicate-free delivery of data over its connections.

AppleTalk Transaction Protocol (ATP)

An AppleTalk transport protocol that provides loss-free transaction service between sockets. ATP ensures the reliable exchange of request-response pairs.

AppleTalk for VMS Manager

Command interface used to define and modify AppleTalk parameters.

AppleTalk/DECnet Transport Gateway

The gateway that provides Macintosh users access to DECnet based applications. Performs data translation between AppleTalk and DECnet protocols.

C

catalog file

A VMS file that stores the Macintosh desktop information necessary for the Macintosh Finder to handle a document. This file contains icon type and folder location and is maintained only for the Macintosh.

Chooser

Macintosh desk accessory that allows users to select specific AppleTalk devices and services.

CLEAR TEXT PASSWORD

Clear text passwords are passwords that are not encrypted when they are transmitted over the network.

D

Data Access Language

Database connectivity language, formally known as CL1.

data fork

Part of Macintosh file that stores text and binary data.

datagram

A packet of data exchanged between two nodes in an AppleTalk network. AppleTalk datagrams can carry up to 586 bytes of data.

Datagram Delivery Protocol (DDP)

The network-layer protocol that is responsble for the end-to-end delivery of datagrams over an AppleTalk internet.

DDP

See Datagram Delivery Protocol.

PATHWORKS for Macintosh

An integrated set of components that enables Macintosh users to access services through local and wide area networks. VAX computers act as servers and provide shared resources for VMS and Macintosh users.

DECnet tunnel

A DECnet logical link used to connect two or more geographically separate AppleTalk internets.

DECwindows ADSP Transport

Transport that allows Macintosh users to access DECwindows applications.

device control library

A VMS text library that contains two or more files. One file resets the printer to default mode, and the other files establish a specific mode for a printer (portrait, landscape, or enhanced).

directory

A VMS file that lists a set of files stored on a disk.

See folder.

E

Ethernet

A high-speed local area network system that uses Ethernet cabling. Ethernet interconnects different kinds of computers, information processing products, and office equipment at a local site without requiring switching logic or control by a central computer.

executor

The VAX node where AppleTalk for VMS is installed and running.

F

file server

Network program that offers remote file and printer services to users.

file service

The availability of directories, subdirectories, and files on a server. A file server makes services accessible to network users.

Finder

A Macintosh application that allows access to documents and other applications; the Finder uses icons to represent objects on a disk or volume. You use it to manage documents and applications and to move information between disks.

folder

A container that can hold documents, applications and other folders on the Macintosh Desktop. Folders act as subdirectories, keeping files organized for the user.

See directory.

fork

Macintosh files have two parts known as forks. The data fork stores text and binary data. The resource fork contains specialized items that are specific to Macintosh computers such as icons, menus, and program code.

format

The format specifies the physical layout of the page on which a file is printed and includes the width of the page. Types of formats are landscape, portrait, and enhanced.

G

gateway

See AppleTalk/DECnet gateway.

generic queue(s)

Holds print jobs and then places them in any of the appropriate assigned queues when one becomes available.

guest

A VAXshare user who is logged on to a file server without a registered user name and password. A guest cannot own a directory.

H

half router

An internet router used primarily to connect two remote AppleTalk networks. Each remote network contains an internet router that interconnects to the router attached to the other network through a long-distance communication link.

hierarchical file system (HFS)

The file system used on Macintosh disk drives.

hop

Measurement of distance in an AppleTalk internet. Two nodes which are separated by a single router are said to be one hop away from each other.

I

Inter•Poll

A Macintosh tool used to troubleshoot AppleTalk network problems.

internet

Grouping of two or more distinct AppleTalk networks connected by an internet router.

Internet Router

An AppleTalk node that connects AppleTalk networks and serves as the key component in extending the datagram delivery mechanism to an internet setting.

L

Local Area Network

A privately owned network that offers a high-speed, reliable communication channel. LANs span a limited distance, such as a building or cluster of buuildings, but can be connected to wide area networks (WANs) with routers.

Local Area Transport

An Ethernet protocol, used in local area networks, that transfers data on a character-by-character basis.

Logging

Recording information from an event on the network that has potential significance in its operation and/or maintenance. This information can then be accessed by persons and/or programs to assist in troubleshooting and tuning the network.

N

Name Binding Protocol (NBP)

Provides and maintains translation tables that map understandable names to their corresponding network addresses.

NBP

See Name-Binding Protocol.

network range

A span of network numbers that is assigned to a single physical network such as an Ethernet.

network number

A 16-bit number that uniquely identifies a network in an AppleTalk internet.

nonpaged pool memory

A portion of the physical memory on the VAX computer, used by VMS to perform its normal operations.

nonseed router

A router that does not contain network identifying information. Obtains information from seed routers.

O

OPER

In VMS, the privilege that allows use of the operator communication process (OPCOM) to perform such tasks as responding to user requests, and broadcasting messages to all terminals logged in.

P

packet

A unit of data to be transmitted from a source node to a destination node.

partner

In a DECnet tunnel, the DECnet node at the opposite end of the DECnet logical link.

permanent database

The file containing information that is retained across network shutdowns.

port

A portal into an AppleTalk internet that AppleTalk for VMS uses to communicate with the internet.

printer service

The availability of a printer connected to a server. Allows users access to printers.

R

resource fork

Part of Macintosh file that contains icons, menus, and program code.

root directory

Each volume created on a VAXshare file server is mapped to a VMS directory, called the root. The volume's files and folders are stored in the root directory.

router

An AppleTalk node that connects two or more networks to form an internet. A router functions as a packet forwarding agent to allow datagrams to be sent between any two nodes of an internet.

routing table

A table, resident in each AppleTalk internet router, that serves as a map of the internet, specifying the path and distance (in hops) between the internet route and other networks.

S

seed port

A routing port that sends out identifying information about the network.

seed router

Router that transmits identifying information about a network to all other routers.

seed zone

An AppleTalk zone name that a router uses to establish the set of valid zones for a network.

socket(s)

An addressable entity on a node connected to a network. A socket is the endpoint of communication in an AppleTalk network. An individual socket is the source and destination of datagrams.

spool queue

The list of files supplied by processes that are to be processed by a symbiont. For example, a line printer queue is a list of files to be printed on the line printer.

symbiont

A process that takes disk files and prepares them for a printer.

T

transaction

In AppleTalk, a communication between two sockets requiring a response from the receiving socket. The AppleTalk Transaction Protocol (ATP) manages each transaction in a way that binds the request and response together to ensure their reliable exchange.

transaction request

The initial part of a transaction in which one socket client asks another to perform an operation and return a response.

transaction response

The concluding part of a transaction in which one socket client returns requested information or simply confirms that a requested operation was performed.

tunneling

A process that allows a DECnet wide area network to connect two or more geographically separate AppleTalk internets.

See DECnet tunnel.

V

Vaxshare Manager

Command interface used to define and modify VAXshare file and printer services.

VAXshare

File and printer software that provides transparent file and printer sharing between VMS and Macintosh users. Compatible with AppleShare Version 2.0.

volatile database

In-memory database that contains all the configuration information of the currently running AppleTalk for VMS software.

volume

A storage device that can be an entire disk or only part of disk. A volume has a name and a directory that lists the files.

zone

A conceptual way of organizing devices that makes it easier to locate network services.

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Reader's Comments

PATHWORKS for Macintosh
System Administrator's Guide
AA–PBFFB–TE

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