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MicroVMS Workstation Software Installation Guide

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July 1987

The *MicroVMS Workstation Software Installation Guide* provides instructions for installing Version 3.2 of the MicroVMS Workstation Software on a MicroVAX workstation.

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Preface

This guide explains how to install the MicroVMS Workstation Software (VWS) on a VAXstation. The chapters are organized as follows:

- Chapter 1 describes how to install MicroVMS Workstation Software on a VAXstation 2000 and color VAXstation 2000.
- Chapter 2 describes how to install MicroVMS Workstation Software on a VAXstation I, VAXstation II, or VAXstation II/GPX.
- Chapter 3 describes how to install MicroVMS Workstation Software on a Local Area VAXcluster.
- Chapter 4 provides information on tuning the workstation parameters.
- Appendix A provides a list of files installed by the MicroVMS Workstation Software.
- Appendix B provides a listing of the system responses during an installation on a VAXstation II/GPX.

The MicroVMS Workstation Software Version 3.2 relies on features in MicroVMS Version 4.5 or higher.

If you are installing software on a VAXstation I, II, II/GPX, 2000, or color VAXstation 2000, you *must* install the MicroVMS Version 4.5 (or later) base system software and any MicroVMS options first.

(The exception to this rule is any software that runs directly from diskettes, such as diagnostics.)

Associated Documents

The *MicroVMS Release Notes* contains information critical to the base kit installation. You should read the release notes before installing the MicroVMS base kit.

The MicroVMS documentation provides instructions on installing or upgrading a MicroVMS base system.

If you are installing on a Local Area VAXcluster, refer to the *VMS Local Area VAXcluster Manual*.

If you are installing a VAXstation I or II, check the distribution media.

- If your base kit distribution volume is a tape cartridge, see *Installing or Upgrading MicroVMS From a Tape Cartridge*.
- If your base kit is distributed on diskettes, see *Installing or Upgrading MicroVMS From Diskettes*.

The *Read Me First* card in your kit provides section references to guide you through each portion of the installation procedure.

After you install the MicroVMS base system and the workstation software, see the *MicroVMS Workstation User's Guide* for information about how to use the workstation software.

If you intend to work with application programs, using MicroVMS workstation graphics, consult the *MicroVMS Workstation Graphics Programming Guide*.

For detailed information about how to print hard copies from the VAXstation, see the *MicroVMS Workstation Guide to Printing Graphics*.

Conventions Used in This Document

This manual uses the following conventions in user input examples:

Conventions	Meaning
<code>RETURN</code>	The <code>RETURN</code> key is not always shown in formats and examples. Assume that you must press the <code>RETURN</code> key after typing a command or other input to the system unless instructed otherwise.
<code>CTRL/x</code>	CTRL followed by a slash and a letter means that you must type the letter while holding down the CTRL key. For example, <code>CTRL/B</code> means hold down the CTRL key and type the letter B.

Conventions	Meaning
Lists	When a format item is followed by a comma and an ellipsis (, . . .), you can enter a single item or a number of items separated by commas. When a format item is followed by a plus sign and an ellipsis (+ . . .), you can enter a single item or a number of those items connected by plus signs. If you enter a list (more than one item), you must enclose the list in parentheses. A single item need not be enclosed in parentheses.
Optional Items	An item enclosed in square brackets ([]) is optional.
Angle Brackets	In examples, angle brackets enclose user input, such as a key <code>[2]</code> , a key sequence <code>[CTRL/Z]</code> , or a parameter <code>[password]</code> .
Ellipsis . . .	A vertical ellipsis indicates that some of the format or example is not shown.
DELETE Key	The key on the VT200-series terminal keyboard that performs the DELETE function is labeled <code><X></code> .
Examples	Examples show both system output (prompts, messages, and displays) and user input. User input is printed in red.

Chapter 1

Installing on a VAXstation 2000 or Color VAXstation 2000

This chapter describes how to install workstation software on a VAXstation 2000 or color VAXstation 2000.

If you want to install workstation software on a VAXstation I, VAXstation II, or a VAXstation II/GPX, refer to Chapter 2. If your VAXstation is part of a Local Area VAXcluster, refer to Chapter 3.

To install the software described in this chapter, you must have already installed the MicroVMS base system, Version 4.5B or later.

NOTE: Before you install the MicroVMS Workstation Software, back up the fixed disk (your system disk), as described in the operation guide for your base system.

1.1 Starting the System

Before you can install the MicroVMS Workstation Software, you must perform the following steps:

1. Turn on the VAXstation 2000. (Press the power switch, the 1/0 switch, on the system unit to the 1 position.)
2. Turn on the processor unless it is already on. (Press the power switch, the 1/0 switch, on the system unit to the 1 position.)

Depending on how your processor is set up, either the system automatically boots or the console-mode prompt (> > >) appears.

If the console-mode prompt appears, boot the system by entering the following command:

```
>>> B
```

1-2 Installing on a VAXstation 2000 or Color VAXstation 2000

Wait several minutes while the system starts up. Several messages appear on the screen, beginning with the following:

The MicroVMS system is now executing the site-specific startup commands.

After startup is completed, the system issues a *job terminated* message.

1.2 Preparing to Install the Workstation Software

NOTE: Before you install the software, make sure you have a satisfactory backup copy of your system disk. Be sure to back up the system *before* proceeding with the installation. For backup instructions, see the operations guide for your base system.

To prepare for the workstation software installation, follow these steps:

1. Locate the workstation software media (diskettes or tape cartridge) labeled VWS032.
2. If MicroVMS is not running, turn on the processor (see previous section).
3. When the system displays the *job terminated* message, press **RETURN**. The Username: prompt appears.
4. Log in to the system manager's account, as follows:

Username: SYSTEM

If a password has been set for the SYSTEM account, you are prompted for it. Enter the appropriate password.

The system manager's menu automatically appears on the screen, as follows:

Main Menu

- 1 - Exit to DCL
- 2 - Log out of the system account
- 3 - Invoke the MAIL utility
- 4 - Invoke the PHONE utility
- 5 - Add a user account to the system
- 6 - Install optional software
- 7 - Add or Delete a MicroVMS component
- 8 - Create or Modify an Autologin Terminal
- 9 - Back up or Restore the user files on a disk
- 10 - Build a Standalone BACKUP kit
- 11 - Set the maximum number of interactive logins
- 12 - Configure the network
- 13 - Start up or shut down the network
- 14 - SHUT DOWN the system

Enter a number (? or ?# for HELP):

5. Exit to DCL by entering 1. The DCL prompt (\$) appears.

6. If you have already installed other applications, ensure that the following requirements are met:

- A recommended 8000 free blocks of disk space are available on your system disk. Workstation software occupies approximately 4000 blocks of disk space after installation. However, additional free blocks are required during the installation procedure. To determine the number of free blocks on the system disk, enter the following DCL command:

```
$ SHOW DEVICES SYS$SYSDEVICE
```

The number of free blocks is shown under the heading "Free Blocks." If your system disk does not contain 8000 free blocks, you must remove unnecessary applications or delete unnecessary user files before you can install the workstation software.

- The system account quotas are as follows:

Open file quota: (<i>Fillm</i>)	16 (minimum)
Paging file quota: (<i>Pgflquo</i>)	1500 (minimum)
Subprocess quota: (<i>Prclm</i>)	2 (minimum)
Working set quota: (<i>Wsquo</i>)	250 (minimum) — 400-500 (optimum)

If those quotas are not correct, you receive an error message. As a result, the installation procedure does not complete.

To check the open file quota, paging file quota, and subprocess quota for your account, enter the following DCL command:

```
$ SHOW PROCESS/QUOTA
```

```
28-JAN-1987 11:04:12.85 OPAO: User: SYSTEM
```

Process Quotas:

Account name: SYSTEM			
CPU limit:	Infinite	Direct I/O limit:	18
Buffered I/O byte count quota:	20480	Buffered I/O limit:	18
Timer queue entry quota:	20	Open file quota:	20
Paging file quota:	8843	Subprocess quota:	10
Default page fault cluster:	16	AST limit:	22
Enqueue quota:	30	Shared file limit:	0
Max detached processes:	0	Max active jobs:	0

To determine the authorized quota for the working set, enter the following DCL command:

```
$ SHOW WORKING_SET
```

```
Working Set /Limit= 594 /Quota= 1000 /Extent= 2200
Adjustment enabled Authorized Quota= 1000 Authorized Extent= 2200
```

1-4 Installing on a VAXstation 2000 or Color VAXstation 2000

To change those values, run the Authorize Utility by entering the following commands:

```
$ SET DEFAULT SYS$SYSTEM
$ RUN AUTHORIZE
```

The system responds with the UAF> prompt.

Change a value by entering the following command:

```
UAF> MODIFY SYSTEM/limit=new_value
```

For example:

```
UAF> MODIFY SYSTEM/PRCLM=2
```

Exit from Authorize, as follows:

```
UAF> EXIT
```

To put the new values into effect, log out and log in again.

When you install the workstation software on a VAXstation 2000, the command procedure file, SYSTARTUP.COM, must be located in the SYS\$MANAGER directory. Otherwise, an error message is displayed, and the installation procedure does not complete.

1.3 Loading the Workstation Software

This section describes how to load the workstation software, using the VMSINSTAL command procedure. Make sure you have prepared the system for installation, as described in Section 1.2. The installation takes about 20 minutes to complete.

See Appendix B for a sample installation on a standalone VAXstation II/GPX.

1.3.1 Loading from a Tape

If you are installing from a tape cartridge, enter the following command to invoke the VMSINSTAL command procedure:

```
$ @SYS$UPDATE:VMSINSTAL VWS032 $TAPE1:
```

You receive the following message and prompt:

```
Please mount the first volume of the set on $TAPE1:
Are you ready?
```

Load the tape cartridge labeled VWS032 into the tape drive. Type Y after the prompt and press **[RETURN]**. The installation proceeds without your having to load a second tape cartridge.

1.3.2 Loading from a Diskette

If you are installing from diskettes, enter the following command to invoke the VMSINSTAL command procedure:

```
$ @SYS$UPDATE:VMSINSTAL VWS032 $FLOPPY1:
```

You receive the following message and prompt:

```
Please mount the first volume of the set on $FLOPPY1:
Are you ready?
```

- a. Load the first diskette labeled *VWS032 1/6* into drive 1. (The number of diskettes used may vary, according to workstation type. The installation may complete without prompting for all the provided diskettes.) Type **Y** after the prompt and press **[RETURN]**. The installation proceeds until VMSINSTAL is ready for the next volume of the set. VMSINSTAL prompts you to load the successive volumes, until the last diskette has been loaded. For example:

```
%BACKUP-I-READYREAD, mount volume 2 on $FLOPPY1: for reading.
```

Enter "YES" when ready:

- b. Remove the first diskette from drive 1 and store it in its envelope. Load the workstation software diskette labeled *VWS032 2/6* into drive 1. Enter **Y** to indicate that the second diskette is ready to be processed. After the last diskette has been loaded, the installation proceeds. Do not remove the last diskette until the installation has completed.

1.4 Installing the Workstation Software

After you have loaded the tape or diskette, VMSINSTAL begins the installation and displays a series of messages about the products being installed. For example:

```
%MOUNT-I-MOUNTED, VWSnnn mounted on _DUA1:
```

The following products will be processed:

```
VWS V3.2
```

```
Beginning installation of VWS V3.2 at 10:08
```

```
%VMSINSTAL-I-RESTORE, Restoring product save set A...
```

```
Installing MicroVMS Workstation Software - V3.2
```

```
This installation builds description files that are
needed when using the UIS programming interface.
```

The save set specified by the informational message "VMSINSTAL-I-RESTORE" may vary, according to the workstation type.

1-6 Installing on a VAXstation 2000 or Color VAXstation 2000

The first prompt asks if you want description files built for all of the supported programming languages. To compile a program that references the UIS routines or constants, the description file must be built for the language in which the program is written. You may build all or some of the language description files.

* Would you like all the description files built [Y]:

If you answer Y, you receive the following messages:

The following languages have been chosen:
(BLISS, CC, FORTRAN, MACRO, PASCAL, PLI)

No further questions will be asked during the installation.

If you answer N, you must respond to several prompts to determine which (if any) programming languages are to be included in the MicroVMS Workstation Software.

If you want the language installed, enter Y in response to each prompt; otherwise, press . After you have answered the language prompts, VMSINSTAL lists the selected languages and prompts for verification. The following is an example of choosing description files:

Please enter Yes or No if you want files built
for the following languages:

* BLISS [N]? Y
* CC [N]?
* FORTRAN [N]? Y
* MACRO [N]? Y
* PASCAL [N]?
* PLI [N]?

The following languages have been chosen:
(BLISS,FORTRAN,MACRO)

* Is this OK [Y]?

After you select which description files to build, you receive no more prompts until the installation is complete. The installation does the following:

1. Completes restoration of the workstation save sets
2. Runs AUTOGEN
3. Shuts down the system

The following is an example of some of the messages you may receive:

No further questions will be asked during the installation.

Installing the examples for your system.

Installing the fonts for your system.

%VMSINSTAL-I-RESTORE, Restoring product saveset B...

Installation of MicroVMS Workstation Software V3.2 is now complete.

The VMS AUTOGEN procedure will now be automatically run so that your SYSGEN parameters will be set, and your system will be properly configured. After that, your system will be automatically shut down.

When the shut down is complete, press the RESTART button to reboot the system.

After the system has been rebooted and initialized, successful installation of the workstation software will be indicated by the brief appearance of a "Getting Started" window on the screen. If necessary, the window can be recalled by striking any key on the keyboard.

If you are reinstalling the VWS software, the UISBG.DAT (menu customization) and UISSETUP.DAT (workstation setup) files you used previously have been renamed to UISBG.DAT;-1 and UISOLDSETUP.DAT respectively.

%AUTOGEN-I-BEGIN, SAVPARAMS phase is beginning.

SYSTEM SHUTDOWN COMPLETE---USE CONSOLE TO HALT SYSTEM

1.5 Unloading the Workstation Software

Remove the last diskette (or the tape cartridge) and store the distribution media.

Reboot the system by performing the following steps:

1. Turn off the processor by pressing the power switch, the 1/0 switch, on the system unit to the 0 position.
2. Turn on the processor again by pressing the power switch to the 1 position.

1-8 Installing on a VAXstation 2000 or Color VAXstation 2000

Depending on how your processor is set up, either the system automatically boots or the console-mode prompt (> > >) appears. If the console-mode prompt appears, boot the system by entering the following command:

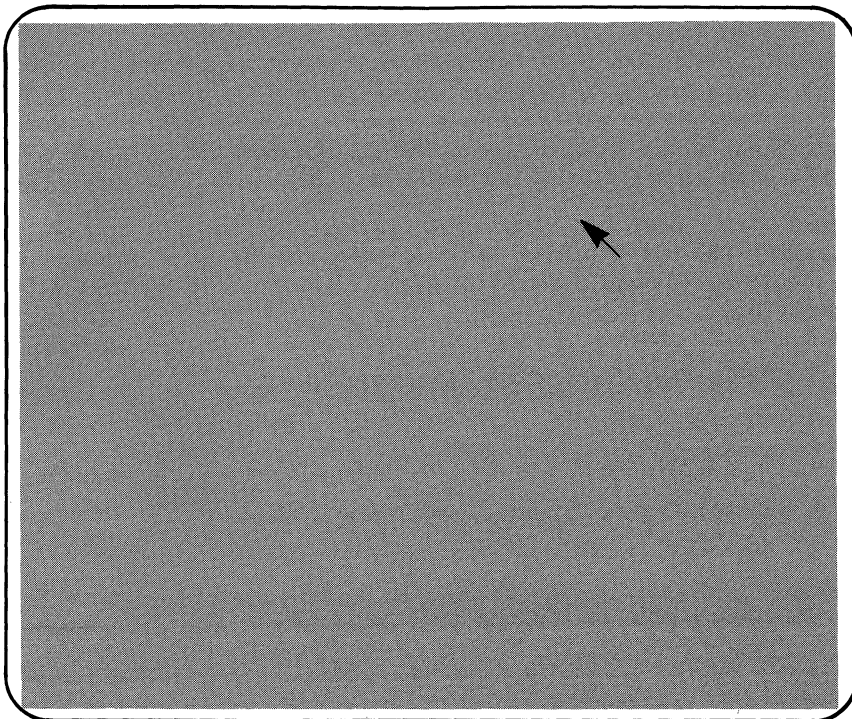
```
>>> B
```

Wait several minutes while the system starts up. Several messages appear on the screen, beginning with the following:

The MicroVMS system is now executing the site-specific startup commands.

After startup is completed, the system issues a *job terminated* message. The screen display goes dark for a few minutes, and then changes to a shaded area with a black pointer, as shown in Figure 1-1.

Figure 1-1 VAXstation Screen with Pointer



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1.6 Where to Go from Here

After you install the MicroVMS base system and the workstation software, perform the following steps:

1. Install the Hardcopy UIS software, labeled *HCUIS032 1/3*. Refer to the *MicroVMS Workstation Guide to Printing Graphics*.
2. Install the workstation demonstration software, labeled *MicroVMS Workstation Demos VWSDEMO032 1/1*, using the `VMSINSTAL` command procedure.
3. Install other optional software.

After all software is installed, see the *MicroVMS Workstation User's Guide* for information about how to use the workstation software.

When you are familiar with using MicroVMS Workstation Software, proceed to the *MicroVMS User's Manual*, which contains information about the rest of the MicroVMS operating system.

If you are the only user or if you are the system manager for your VAXstation, read the sections of the *MicroVMS User's Manual* that discuss setting up accounts, startup and login procedures, backups, and disk management. If you have the DECnet option, you also need to read the section on DECnet.

For information about how to tune the MicroVMS Workstation Software, see Chapter 4.

Chapter 2

Installing on a VAXstation I, VAXstation II, or VAXstation II/GPX

This chapter describes how to install MicroVMS Workstation Software on a VAXstation I, VAXstation II, or a VAXstation II/GPX.

If your VAXstation is part of a Local Area VAXcluster, read Chapter 3 instead of this chapter.

To install Workstation Software, you must have already installed the base system. The base system must be MicroVMS Version 4.5 or later.

NOTE: Before you install the MicroVMS Workstation Software, you should back up the fixed disk (your system disk), as described in the *MicroVMS Installation Guide*.

2.1 Starting the System

Before you can install the MicroVMS Workstation Software, you must perform the following steps:

1. Turn on the VAXstation monitor. (Press the power switch, the 1/0 switch, on the monitor to the 1 position.)
2. Turn on the processor. (Press the power switch, the 1/0 switch, on the monitor to the 1 position.) Make sure the control panel is set for normal operations, as described in the owner's manual for your processor.
3. If your processor is a VAXstation II or VAXstation II/GPX, set the halt enable/disable switch (on the back panel) to the enable position.
4. Press the Halt push button on the control panel of the system unit twice, making sure that the button pops back out and the red light in the center of the button turns off.
5. Enter the following command at the console-mode prompt (> > >):
>>> B

2-2 Installing on a VAXstation I, VAXstation II, or VAXstation II/GPX

The system automatically boots.

6. If the system displays a prompt for the date and time, enter the current date and time in the format requested.

Wait several minutes while the system starts up. Several messages appear on the screen, beginning with the following:

The MicroVMS system is now executing the system startup commands.

After startup is completed, the system issues a *job terminated* message.

2.2 Preparing to Install the Workstation Software

NOTE: Before you install the software, make sure you have a satisfactory backup copy of your system disk. Be sure to back up the system *before* proceeding with the installation. For backup instructions, see the *MicroVMS Installation Guide*.

To prepare for the workstation software installation, follow these steps:

1. Locate the workstation software media (either six diskettes or one tape cartridge), labeled VWS032.
2. If MicroVMS is not running, press the Restart push button on the control panel of the system unit. If requested, enter the date and time.
3. When the system displays the *job terminated* message, press **RETURN**. The Username: prompt appears.
4. Log in to the system manager's account as follows:
Username: SYSTEM

If a password has been set for the SYSTEM account, you are prompted for it. Enter the appropriate password.
5. If you have already installed other applications, ensure that the following requirements are met:

- A recommended 8000 free blocks of disk space are available on your system disk. Workstation software occupies approximately 4000 blocks of disk space after installation. However, additional free blocks are required during the installation. To determine the number of free blocks on the system disk, enter the following DCL command:

```
$ SHOW DEVICES SYS$SYSDEVICE
```

The number of free blocks is shown under the heading "Free Blocks." If your system disk does not contain 8000 free blocks, you must remove unnecessary applications or delete unnecessary user files before you can install the workstation software.

- The system account quotas are as follows:

Open file quota: (<i>Fillm</i>)	16 (minimum)
Paging file quota: (<i>Pgflquo</i>)	1500 (minimum)
Subprocess quota: (<i>Prclm</i>)	2 (minimum)
Working set quota: (<i>Wsquo</i>)	250 (minimum)—400-500 (optimum)

If these quotas are not correct, you receive an error message. As a result, the installation procedure does not complete.

To check the open file quota, paging file quota, and subprocess quota for your account, enter the following DCL command:

```
$ SHOW PROCESS/QUOTA
```

```
28-JAN-1987 11:04:12.85 OPAO: User: SYSTEM
```

```
Process Quotas:
```

```
Account name: SYSTEM
```

CPU limit:	Infinite	Direct I/O limit:	18
Buffered I/O byte count quota:	20480	Buffered I/O limit:	18
Timer queue entry quota:	20	Open file quota:	20
Paging file quota:	8843	Subprocess quota:	10
Default page fault cluster:	16	AST limit:	22
Enqueue quota:	30	Shared file limit:	0
Max detached processes:	0	Max active jobs:	0

To determine the authorized quota for the working set, enter the following DCL command:

```
$ SHOW WORKING_SET
```

```
Working Set /Limit= 594 /Quota= 1000 /Extent= 2200
```

```
Adjustment enabled Authorized Quota= 1000 Authorized Extent= 2200
```

To change those values, run the Authorize Utility by entering the following commands:

```
$ SET DEFAULT SYS$SYSTEM
```

```
$ RUN AUTHORIZE
```

The system responds with the UAF> prompt.

Change a value by entering the following command:

```
UAF> MODIFY SYSTEM/limit=new_value
```

For example:

```
UAF> MODIFY SYSTEM/PRCLM=2
```

Exit from Authorize, as follows:

```
UAF> EXIT
```

To put the new values into effect, log out and log in again.

2-4 Installing on a VAXstation I, VAXstation II, or VAXstation II/GPX

When you install the workstation software on a VAXstation I, VAXstation II, or VAXstation II/GPX, the command procedure file, SYSTARTUP.COM, must be located in the SYS\$MANAGER directory. Otherwise, an error message is displayed, and the installation procedure does not complete.

2.3 Installing the Workstation Software

This section describes how to load the workstation software, using the VMSINSTAL command procedure. Make sure you have prepared the system for installation, as described in Section 1.2. The installation takes about 20 minutes to complete.

See Appendix B for a sample installation on a standalone VAXstation II/GPX.

1. If you are installing from a tape cartridge, enter the following command to invoke the VMSINSTAL command procedure:

```
$ @SYS$UPDATE:VMSINSTAL VWS032 $TAPE1:
```

If you are installing from diskettes, enter the following command to invoke the VMSINSTAL command procedure:

```
$ @SYS$UPDATE:VMSINSTAL VWS032 $FLOPPY1:
```

The VMSINSTAL command procedure identifies itself and asks whether you have a satisfactory backup copy of your system.

VMS Software Product Installation Procedure V4.5

It is 28-JAN-1987 at 09:10

Enter a question mark (?) at any time for help.

*Are you satisfied with the backup of your system disk [YES]?

2. If your backups are current, or if you are installing for the first time, press **RETURN**. Otherwise, enter **N** to exit from VMSINSTAL, back up the fixed disk, as described in the *MicroVMS Installation Guide*, and begin the installation procedure again.
3. If you press **RETURN** to continue, VMSINSTAL instructs you to mount the first volume of the set and asks if you are ready.
 - If you are installing from a tape cartridge, you receive the following message and prompt:
Please mount the first volume of the set on \$TAPE1:
Are you ready?

Load the tape cartridge labeled VWS032 into the tape drive. Type **Y** and press **RETURN**. The installation proceeds without your having to load a second tape cartridge.

- If you are installing from diskettes, you receive the following message and prompt:

```
Please mount the first volume of the set on $FLOPPY1:
Are you ready?
```

- a. Load the first diskette labeled *VWS032 1/6* into drive 1. (The number of diskettes used may vary according to workstation type. The installation may complete without prompting for all the provided diskettes.) Type **Y** after the prompt and press **RETURN**. The installation proceeds until **VMSINSTAL** is ready for the next volume of the set. **VMSINSTAL** prompts you to load the successive volumes, until the last diskette has been loaded. For example:

```
%BACKUP-I-READYREAD, mount volume 2 on $FLOPPY1: for reading.
Enter "YES" when ready:
```

- b. Remove the first diskette from drive 1 and store it in its envelope. Load the workstation software diskette labeled *VWS032 2/6* into drive 1. Enter **Y** to indicate that the second diskette is ready to be processed. After the last diskette has been loaded, the installation proceeds. Do not remove the last diskette until the installation has completed.
4. **VMSINSTAL** begins the installation and displays a series of messages about the products being installed.

The following is an example of some of the messages you may receive:

```
%MOUNT-I-MOUNTED, VWSnnn mounted on _DUA1:
```

The following products will be processed:

```
VWS V3.2
```

```
Beginning installation of VWS V3.2 at 10:08
```

```
%VMSINSTAL-I-RESTORE, Restoring product save set A...
```

```
Installing MicroVMS Workstation Software - V3.2
```

```
This installation builds description files that are
needed when using the UIS programming interface.
```

5. The first prompt asks if you want description files built for all of the supported programming languages. To compile a program that references the UIS routines or constants, the description file must be built for the language in which the program is written. You may build all or some of the language description files.

```
* Would you like all the description files built [Y]:
```

- If you answer **Y**, you receive the following messages:

2-6 Installing on a VAXstation I, VAXstation II, or VAXstation II/GPX

The following languages have been chosen:
(BLISS, CC, FORTRAN, MACRO, PASCAL, PLI)

No further questions will be asked during the installation.

- If you answer N, you must respond to several prompts to determine which (if any) programming languages to include in the MicroVMS Workstation Software.

If you want the language installed, enter Y in response to each prompt; otherwise, press . After you answer the language prompts, VMSINSTAL lists the selected languages and prompts for verification. The following is an example of selectively choosing description files:

Please enter Yes or No if you want files built for the following languages:

```
* BLISS [N]? Y 
* CC [N]? 
* FORTRAN [N]? Y 
* MACRO [N]? Y 
* PASCAL [N]? 
* PLI [N]? 
```

The following languages have been chosen:
(BLISS, FORTRAN, MACRO)

```
* Is this OK [Y]? 
```

In this example, the user chose the BLISS, FORTRAN, and MACRO languages.

6. After you select which description files to build, you receive no more prompts until the installation is complete. The procedure does the following:
 - a. Completes restoration of the workstation save sets
 - b. Runs AUTOGEN
 - c. Shuts down the system

The following is an example of some of the messages you may receive:

No further questions will be asked during the installation.

Installing the examples for your system.

Installing the fonts for your system.

%VMSINSTAL-I-RESTORE, Restoring product saveset B...

⋮

Installation of MicroVMS Workstation Software V3.2 is now complete.

The VMS AUTOGEN procedure will now be automatically run so that your SYSGEN parameters will be set, and your system will be properly configured. After that, your system will be automatically shut down.

When the shut down is complete, press the RESTART pushbutton to reboot the system.

After the system has been rebooted and initialized, successful installation of the workstation software will be indicated by the brief appearance of a "Getting Started" window on the screen. If necessary, the window can be recalled by striking any key on the keyboard.

If you are reinstalling the VMS software, the UISBG.DAT (menu customization) and UISSETUP.DAT (workstation setup) files you used previously have been renamed to UISBG.DAT;-1 and UISOLDSETUP.DAT respectively.

%AUTOGEN-I-BEGIN, SAVPARAMS phase is beginning.

SYSTEM SHUTDOWN COMPLETE---USE CONSOLE TO HALT SYSTEM

The save set specified by the informational message "VMSINSTAL-I-RESTORE" may vary according to the workstation type.

7. Remove the last diskette (or the tape cartridge) and store the distribution media.
8. You do not need to halt the system. Press the Restart push button on the front control panel of the system unit; the system automatically reboots.

If the system displays a date and time prompt, enter the current date and time in the format requested. Figure 2-1 illustrates the startup screen display with the date and time prompt.

2-8 Installing on a VAXstation I, VAXstation II, or VAXstation II/GPX

Figure 2-1 Screen Display Showing Date and Time Prompt

```
MICROVERIFY STARTED
MICROVERIFY PASSED
ATTEMPTING REBOOT

VAX/VMS Version 4.4 20-MAY-1986 08:31

PLEASE ENTER DATE AND TIME (DD-MMM-YYYY HH:MM)
```

MLO-1092-87

A series of startup messages appears, ending with a *job terminated* message. Then the screen display changes to a shaded area with a black pointer, as shown in Figure 2-2.

Figure 2-2 VAXstation Screen with Pointer



MLO-1093-87

NOTE: If you are starting up a color or intensity system and the system is inactive following the *job terminated* message, you may need to press the F2 (operator window) key to change the screen display. Section 4.1 provides a detailed description of the operator window.

2.4 Where to Go from Here

After you install the MicroVMS base system and the workstation software, perform the following steps:

1. Install the Hardcopy UIS software, labeled *HCUIS032 1/3*. Refer to the *MicroVMS Workstation Guide to Printing Graphics*.
2. Install the workstation demonstration software, labeled *MicroVMS Workstation Demos VWSDEMO032 1/1*, using the `VMSINSTAL` command procedure.
3. Install any other optional software.

After software is installed, see the *MicroVMS Workstation User's Guide* for essential information about how to use the workstation software.

When you are familiar with using MicroVMS Workstation Software, proceed to the *MicroVMS User's Manual*, which contains information about the rest of the MicroVMS operating system.

If you are the only user, or if you are the system manager for your VAXstation, read the sections of the *MicroVMS User's Manual* that discuss setting up accounts, startup and login procedures, backups, and disk management. If you have the DECnet option, you also need to read the section on DECnet.

For information about how to tune the MicroVMS Workstation Software, see Chapter 4.

3.4 Adding a Workstation to a Cluster That Has Running Workstations

To add a workstation to a cluster that already has running workstations, run the SATELLITE_CONFIG.COM command procedure to configure the new workstation. See the *Guide to Local Area VAXclusters*.

3.5 Installing New Versions of Workstation Software

To install new versions of workstation software on clusters currently running workstation software, follow these steps:

1. Install the new version of the workstation software on the cluster boot node. See Section 3.5.
2. Reboot the satellites, as follows:
 - If you are booting a VAXstation I, VAXstation II, or VAXstation II/GPX, enter the following:
>>> B XQ
 - If you are booting a VAXstation 2000, enter the following:
>>> B ES

Any satellites that are workstations *automatically* boot, using the new version of the workstation software. If the current SYSGEN parameters are wrong for the new version, the startup procedure displays the incorrect parameters and asks if you want to automatically run AUTOGEN.

3.6 Installing Workstation Software on the Boot Node

In the following subsections, you are assumed to have already installed the Local Area VAXcluster kit.

NOTE: Before you begin installing the workstation software, you should back up your system disk, as described in the installation booklet for your processor.

3-4 Installing on a Local Area VAXcluster

3.6.1 Preparing to Install the Workstation Software

NOTE: Make sure you have a satisfactory backup copy of your system disk. Be sure to back up the system *before* proceeding with the installation. For backup instructions, see your processor's installation guide.

To prepare for the workstation software installation, follow these steps:

1. Locate the workstation software media (diskettes, tape cartridge, or magnetic tape), labeled *VWS032*.
2. Turn on the console monitor. (Press the power switch, the 1/0 switch on the monitor, to the 1 position.)
3. Turn on the processor. (Press the power switch, the 1/0 switch on the system unit, to the 1 position.)
4. If the system is not running, boot the system according to the instructions in your processor's installation guide.
5. When the system displays the *job terminated* message, press **RETURN**. The Username: prompt appears.

6. Log in to the system manager's account as follows:

Username: SYSTEM

If a password has been set for the SYSTEM account, you are prompted for it. Enter the appropriate password.

7. If you have already installed other applications, ensure that the following requirements are met:
 - A recommended 8000 free blocks of disk space are available on your system disk. Workstation software occupies approximately 6000 blocks of disk space after installation. However, additional free blocks are required during the installation procedure. To determine the number of free blocks on the system disk, enter the following DCL command:

```
$ SHOW DEVICES SYS$SYSDEVICE
```

The number of free blocks is shown under the heading "Free Blocks." If your system disk does not contain 8000 free blocks, you must remove unnecessary applications or delete unnecessary user files before you can install the workstation software.
 - The system account quotas are as follows:

Open file quota: (<i>Fillm</i>)	16 (minimum)
Paging file quota: (<i>Pgflquo</i>)	1500 (minimum)
Subprocess quota: (<i>Prclm</i>)	2 (minimum)
Working set quota: (<i>Wsquo</i>)	250 (minimum)—400–500 (optimum)

If these quotas are not correct, you receive an error message. As a result, the installation procedure does not complete.

To check the open file quota, paging file quota, and subprocess quota for your account, enter the following DCL command:

```
$ SHOW PROCESS/QUOTA
```

```
28-JAN-1987 11:04:12.85 OPAO: User: SYSTEM
```

Process Quotas:

Account name: SYSTEM

CPU limit:	Infinite	Direct I/O limit:	18
Buffered I/O byte count quota:	20480	Buffered I/O limit:	18
Timer queue entry quota:	20	Open file quota:	20
Paging file quota:	8843	Subprocess quota:	10
Default page fault cluster:	16	AST limit:	22
Enqueue quota:	30	Shared file limit:	0
Max detached processes:	0	Max active jobs:	0

To determine the authorized quota for the working set, enter the following DCL command:

```
$ SHOW WORKING_SET
```

```
Working Set /Limit= 594 /Quota= 1000 /Extent= 2200
Adjustment enabled Authorized Quota= 1000 Authorized Extent= 2200
```

To change those values, run the Authorize Utility by entering the following commands:

```
$ SET DEFAULT SYS$SYSTEM
```

```
$ RUN AUTHORIZE
```

The system responds with the UAF> prompt.

Change a value by entering the following command:

```
UAF> MODIFY SYSTEM/limit=new_value
```

For example:

```
UAF> MODIFY SYSTEM/PRCLM=2
```

Exit from Authorize, as follows:

```
UAF> EXIT
```

To put the new values into effect, log out and log in again.

8. Ensure that there is a SYSTARTUP.COM file in SYS\$COMMON:[SYSMGR].

3-6 Installing on a Local Area VAXcluster

By default, the VWS installation procedure attempts to edit a SYSTARTUP.COM file in SYS\$COMMON:[SYSMGR] during the installation. If the file is not found, the installation fails and displays an error message.

If you previously modified your system so that no SYSTARTUP.COM exists in SYS\$COMMON:[SYSMGR], perform the following steps:

- a. Create a SYSTARTUP.COM file in SYS\$COMMON:[SYSMGR].
- b. Edit the newly created file to invoke startup files that you use. For example, the following command procedure segment gets the node name of the node being booted and invokes the node-specific command procedure:

```
$ node = f$getsysi("NODENAME")
$ IF F$SEARCH("SYS$MANAGER: ' 'NODE'_SYSTARTUP.COM") .NES. "" THEN -
    @SYS$MANAGER: 'NODE'_SYSTARTUP.COM
```
- c. Leave SYSTARTUP.COM in place for future installations.

3.6.2 Installing the Workstation Software

This section describes how to install the workstation software, using the VMSINSTAL command procedure. Before proceeding with the following instructions, make sure you prepare the system for installation, as described in the previous section. The installation takes about 20 minutes to complete.

See Appendix B for a sample installation on a standalone VAXstation II/GPX.

1. Invoke VMSINSTAL.

- If you are installing from a tape cartridge, enter the following command to invoke the VMSINSTAL command procedure:

```
$ @SYS$UPDATE:VMSINSTAL VWS032 MUA0:
```
- If you are installing from diskettes, enter the following command to invoke the VMSINSTAL command procedure:

```
$ @SYS$UPDATE:VMSINSTAL VWS032 ddcu:
```

where:
ddcu: is the drive where the diskette is mounted—for example, DUA1:.
- If you are installing from a magnetic tape, enter the following command to invoke the VMSINSTAL command procedure:

```
$ @SYS$UPDATE:VMSINSTAL VWS032 MUcu:
```

where:

- c is the letter indicating the controller
- u is the unit number of the device

The VMSINSTAL command procedure identifies itself and asks whether you have a satisfactory backup copy of your system.

VMS Software Product Installation Procedure V4.5

It is 28-JAN-1987 at 09:10

Enter a question mark (?) at any time for help.

*Are you satisfied with the backup of your system disk [YES]?

2. If your backups are current, or if you are installing software for the first time, press **RETURN**. Otherwise, enter **N** to exit from VMSINSTAL, back up the fixed disk as described in the installation booklet for your processor, and begin the installation procedure again.
3. If you press **RETURN** to continue, VMSINSTAL instructs you to mount the first volume of the set and asks if you are ready.
 - If you are installing from a tape cartridge, you receive the following message and prompt:

Please mount the first volume of the set on MUA0:
Are you ready?

Load the tape cartridge labeled VWS032 into the tape drive. Type **Y** and press **RETURN**. The installation proceeds without your having to load a second tape cartridge.
 - If you are installing from diskettes, you receive the following message and prompt:

Please mount the first volume of the set on **ddcu**:
Are you ready?

 - a. Load the first diskette labeled VWS032 1/6 into drive 1. Type **Y** and press **RETURN**. The installation proceeds until VMSINSTAL is ready for the next volume of the set. VMSINSTAL prompts you to load the continuation volumes, until the last diskette has been loaded. For example:

%BACKUP-I-READYREAD, mount volume 2 on **ddcu**: for reading.
Enter "YES" when ready:
 - b. Remove the first diskette from drive 1 and store it in its envelope. Load the diskette labeled VWS032 2/6 into drive 1. Enter **Y** to indicate that the second diskette is ready to be processed. After the last diskette has been

3-8 Installing on a Local Area VAXcluster

loaded, the installation proceeds. Do not remove the last diskette until the installation has completed.

4. VMSINSTAL begins the installation and displays a series of messages about the products being installed.

The following is an example of some of the messages you may receive:

```
%MOUNT-I-MOUNTED, VWSnnn mounted on _DUA1:
```

The following products will be processed:

```
VWS V3.2
```

```
Beginning installation of VWS V3.2 at 10:08
```

```
%VMSINSTAL-I-RESTORE, Restoring product save set A...
```

```
Installing MicroVMS Workstation Software - V3.2
```

```
This installation builds description files that are  
needed when using the UIS programming interface.
```

The save set specified by the message "VMSINSTAL-I-RESTORE" may vary according to workstation type.

5. The first prompt asks if you would like description files built for all of the supported programming languages. To compile a program that references the UIS routines or constants, the description file must be built for the language in which the program is written. You may build all or some of the language description files.

```
* Would you like all the description files built [Y]:
```

- If you answer **Y**, you receive the following messages:

```
The following languages have been chosen:
```

```
(BLISS, CC, FORTRAN, MACRO, PASCAL, PLI)
```

```
No further questions will be asked during the installation.
```

- If you answer **N**, you must respond to several prompts to determine which (if any) programming languages are to be included in the MicroVMS Workstation Software.

If you want the language installed, enter **Y** in response to each prompt; otherwise, press **RETURN**. After you answer the language prompts, VMSINSTAL lists the selected languages and prompts for verification. The following is an example of selectively choosing description files:

Please enter Yes or No if you want files built for the following languages:

```
* BLISS [N]? Y  RETURN
* CC [N]?  RETURN
* FORTRAN [N]? Y  RETURN
* MACRO [N]? Y  RETURN
* PASCAL [N]?  RETURN
* PLI [N]?  RETURN
```

The following languages have been chosen:
(BLISS,FORTRAN,MACRO)

```
* Is this OK [Y]?  RETURN
```

In this example, the user has chosen the BLISS, FORTRAN, and MACRO languages.

- After you select which description files to build, you receive no more prompts until the installation is complete. The procedure completes restoration of the workstation save sets and returns you to DCL level.

The following is an example of some of the messages you may receive:

Installing the examples for your system.

```
%VMSINSTAL-I-SYSDISK, This product creates system disk directory
VMI$ROOT: [SYSHLP.EXAMPLES]
```

```
%SEARCH-I-NOMATCHES, no strings matched
```

```
%VSI-I-SYSTARTUP, Modifying SYSTARTUP.COM to invoke workstation
startup procedure.
```

Installing the fonts for your system.

```
%VMSINSTAL-I-SYSDISK, This product creates system disk directory
VMI$ROOT: [SYSFONT].
```

```
%VMSINSTAL-I-RESTORE, Restoring product saveset B...
```

```
%VMSINSTAL-I-RESTORE, Restoring product saveset C...
```

```
%VMSINSTAL-I-MOVEFILES, Files will now be moved to their target directories...
```

```
Installation of VWS V3.2 completed at 16:51
```

```
VMSINSTAL procedure done at 16:51
```

- Remove the last diskette (or the tape cartridge) and store the distribution media.

At this point, the workstation software is installed. To configure your cluster with the SATELLITE_CONFIG.COM command procedure, refer to the *Guide to Local Area VAXclusters*.

3.7 Booting a Workstation Satellite

When you boot a workstation satellite on a cluster that has been configured and has the workstation software installed on the boot node, the satellite *automatically* boots as a workstation.

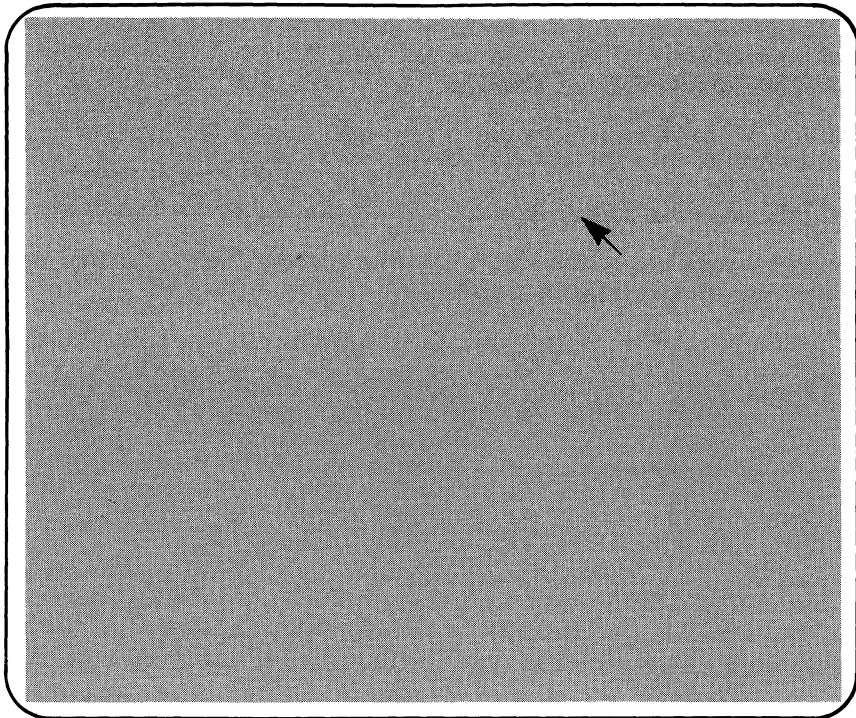
Boot the satellite as follows:

- If you are booting a VAXstation I, VAXstation II, or VAXstation II/GPX, enter the following:
>>> B XQ
- If you are booting a VAXstation 2000 or color VAXstation 2000, enter the following:
>>> B ES

You observe the following behavior in the satellite:

1. A series of startup messages appears, ending with a *job terminated* message.
2. The screen display is cleared while the workstation software is loading.
You should not attempt to log in at this point; wait a few minutes for the next step to occur.
3. The screen display changes to a shaded area with a black pointer, as shown in Figure 3-1.

Figure 3-1 VAXstation Screen with Pointer



MLO-1094-87

NOTE: If you are starting up a color or gray-scale system that is inactive following the *job terminated* message, you may need to press the F2 (operator window) key to change the screen display. Section 4.1 provides a detailed description of the operator window.

3.8 Where to Go from Here

After you install the Local Area VAXcluster kit and the workstation software, perform the following steps:

1. Install the Hardcopy UIS software, labeled *HCUIS032 1/3*. Refer to the *MicroVMS Workstation Guide to Printing Graphics*.
2. Install the workstation demonstration software, labeled *MicroVMS Workstation Demos VWSDEMO032 1/1*, using the *VMSINSTAL* command procedure.
3. Install other optional software.

After software is installed, see the *MicroVMS Workstation User's Guide* for information about how to use the workstation software.

For information about how to tune the MicroVMS Workstation Software, see Chapter 4.



Chapter 4

VAXstation Management and Tuning

This chapter explains how to tune MicroVMS Workstation Software. You need to refer to this chapter, for example, when you need to modify parameters of the VMS System Generation Utility (SYSGEN).

In addition, Sections 4.1.1 and 4.1.2 describe the function of the operator window on the VAXstation. If you are the system manager of your VAXstation or if you intend to perform tasks that involve rebooting the system (such as modifications to some SYSGEN parameters), you need to be familiar with the operator window.

4.1 The Operator Window

The operator window on the VAXstation, OPA0, is a viewport to both the console and the operator terminal. When the MicroVMS operating system is halted, you can use the operator window to enter commands at the console-mode prompt (> > >). When MicroVMS is running (but the workstation software is not), you can use the window to log in to OPA0. The operator window is dependent only on the MicroVMS base system and is different from the workstation software terminal emulator windows. OPA0 is not a full-function terminal.

The operator window appears at the top of the VAXstation screen, regardless of whether the workstation software is running. If you were to install MicroVMS without the workstation software, the entire screen would be dark and OPA0 would be your only means of logging in to the system.

4-2 VAXstation Management and Tuning

4.1.1 Using the Operator Window

The operator window appears on your VAXstation screen in the following two instances:

- When you press the F2 function key
Pressing this key displays messages sent to the operator device (OPA0). For example, if you try to print on a remote device that is not accessible, the software sends a message to OPA0.
To erase the operator display, press the F2 function key.
- When a message is sent to OPA0
When a message is sent to OPA0 (for example, a message that says a device is offline), the operator window automatically appears; however, the keyboard does not automatically connect to the window. The keyboard connects to the operator window only if the display manager process has not yet been started.

Once you log in to OPA0, keyboard input is directed to the window until you log out of that process.

To erase the operator window display, press the F2 function key.

NOTE: In a Local Area VAXcluster, messages to OPA0 are disabled on all workstations.

4.1.2 Operator Window Functions on Color and Gray-Scale Systems

The operation of the operator window is not the same on color and intensity systems as it is on monochrome systems. The following characteristics are unique to color and intensity systems:

- Writing or drawing to the screen does not continue while the operator window is present.
- The operator window is automatically removed 30 seconds after it becomes active.
- When the system boots or fails, the entire screen is used as the operator window. The windowing system does not appear until the startup procedure has completed.

Because the operator window covers the monitor screen, the system may appear to be hung at startup or shutdown time. If a message is written to the operator window, the window remains on the screen for 30 seconds (or until you press the F2 function key).

- The screen color changes when the operator window appears. To return the screen to its original colors, remove the operator window from the screen, using the F2 function key.
- The data in the operator window is lost when the operator window is erased from the screen.

4.2 Changing Window Memory Size

If your system fails frequently or if your processes are being deleted when you have a large number of windows on your screen, a problem may exist with the amount of memory allocated for use by windows.

You can change the window memory size to support more or fewer windows, as described in the following sections.

4.2.1 Monochrome Systems

On monochrome systems, the initial default value supports about 14 concurrent normal size (24-line) VT220 windows, or about 5 full-screen windows. (The number of windows possible varies according to their size.) Windows that are partially off the screen require twice as much window memory as those that are completely on the screen.

To support more windows than the default, you must do the following:

1. Modify the default window memory size by redefining the logical name `UIS$QVSS_POOL_SIZE`. Table 4-1 lists values to support various numbers of windows.
2. Modify the file `MODPARAMS.DAT` to increase the value of the `SYSGEN` parameter `PAGEDYN`. Table 4-1 lists correct values to be added to `PAGEDYN` to support various numbers of windows.
3. Run `AUTOGEN` to enable the new `PAGEDYN` parameter value. You do not run `SYSGEN` to modify the parameter.

4-4 VAXstation Management and Tuning

Table 4-1 Values for Increasing Window Memory Size (Monochrome)

Number of Windows	New UIS\$QVSS_POOL_SIZE Value	New ADD_PAGEDYN Value
14	900972	0
20	1351532	711532
25	1854172	1214172
30	2476812	1836812

Table 4-1 assumes the average window size of a 24-line VT220 terminal emulator window. Full-screen windows require an extra 60,000 bytes for each window. Smaller windows require about 25,000 bytes fewer for each window.

The following sections describe the steps for modifying UIS\$QVSS_POOL_SIZE and MODPARAMS.DAT and for running AUTOGEN.

4.2.1.1 Modifying the Default Window Memory Size

To modify the default window memory size, follow these steps:

1. Create a terminal emulator window and log in to the SYSTEM account or a privileged user account.
2. Invoke the editor as follows:

```
$ EDIT SYS$MANAGER:SYSTARTUP.COM
```
3. Search for the following line:

```
$ @SYS$MANAGER:STARTVWS
```
4. Define the logical name UIS\$QVSS_POOL_SIZE to be equal to the appropriate value from Table 4-1 *before* STARTVWS.COM is invoked, as follows:

```
$ DEFINE/SYSTEM UIS$QVSS_POOL_SIZE new_value
```

For example, to support 20 windows on your system, define the logical name UIS\$QVSS_POOL_SIZE to be 1351532 by entering the following:

```
$ DEFINE/SYSTEM UIS$QVSS_POOL_SIZE 1351532
```
5. Exit from the editor by pressing **CTRL/Z**. Type "EXIT" at the asterisk, and press **RETURN**.

4.2.1.2 Modifying MODPARAMS.DAT

To modify MODPARAMS.DAT, follow these steps:

1. Invoke the editor as follows:

```
$ EDIT SYS$SYSTEM:MODPARAMS.DAT
```
2. Move the cursor to the end of the file.
3. Add the appropriate value from Table 4-1 to the current value of PAGEDYN, using the following syntax:

```
ADD_PAGEDYN= n
```

For example, to support 20 windows on your system, add 711532 to the current value of PAGEDYN by entering the following:

```
ADD_PAGEDYN= 711532
```

4. Exit from the editor by pressing **CTRL/Z**. Type "EXIT" at the asterisk, and press **RETURN**.

4.2.1.3 Running AUTOGEN

To enable the new parameter value, run AUTOGEN by entering the following command:

```
$ SYS$UPDATE:AUTOGEN SAVPARAMS REBOOT
```

AUTOGEN alters the parameters, then automatically shuts down and reboots the system.

4.2.2 Intensity and Color Systems

On intensity and color systems, window memory is stored in permanent system global page file sections. Normal size windows (24 lines) require 12 global sections at 55 pages/global section. A full-screen window requires 32 global sections at 55 pages/global section.

The initial default value supports about 13 concurrent 24-line VT220 windows, or about 5 full-screen windows. (The number of windows varies, according to their size.)

For the system to support more windows than the default, you must do the following:

1. Modify the default window memory size by redefining the logical name `UIS$QVSS_POOL_SIZE`. Table 4-2 lists values to support various numbers of windows.
2. Modify the file MODPARAMS.DAT to increase the value of the SYSGEN parameter PAGEDYN. Table 4-2 lists correct values to be added to PADEDYN to support various numbers of windows.

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3. Modify the file MODPARAMS.DAT to increase the SYSGEN parameters GBLPAGES and GBLPAGFIL, as follows:
 - Increase each parameter by 660 for each additional 24-line window.
 - Increase each parameter by 1760 for each additional full-screen window.
4. Modify the file MODPARAMS.DAT to increase the SYSGEN parameter GBLSECTIONS, as follows:
 - Increase the parameters by 12 for each additional 24-line window.
 - Increase the parameters by 32 for each additional full-screen window.
5. Modify the file MODPARAMS.DAT to increase the SYSGEN parameter NPAGEDYN by 25,000 for each additional window, regardless of window size.
6. Run AUTOGEN to enable the new parameter values. You do not run SYSGEN to modify these parameters.

Table 4-2 Values for Increasing Window Memory Size (Color)

Number of Windows	New UIS\$QVSS_POOL_SIZE Value	New ADD_PAGEDYN Value
13	256000	0
15	373380	197380
20	807840	831840
25	1522300	1746300
30	2586760	3010760

The following sections describe the steps for modifying the parameters in MODPARAMS.DAT and for running AUTOGEN.

4.2.2.1 Modifying MODPARAMS.DAT

To modify MODPARAMS.DAT, follow these steps:

1. Create a terminal emulator window and log in to the SYSTEM account or a privileged user account.
2. Invoke the editor as follows:
\$ EDIT SYS\$SYSTEM:MODPARAMS.DAT
3. Move the cursor to the end of the file.

4. Add 660 (for each additional 24-line window) to the current values of GBLPAGES and GBLPAGFIL, using the following syntax:

```
ADD_GBLPAGES= n  
ADD_GBLPAGFIL= n
```

For example, to support two additional 24-line windows, you would enter the following:

```
ADD_GBLPAGES= 1320  
ADD_GBLPAGFIL= 1320
```

5. Add 12 (for each additional 24-line window) to the current value of GBLSECTIONS, using the same syntax as above. For example, to support two additional 24-line windows, you would enter the following:

```
ADD_GBLSECTIONS= 24
```

6. Add 25,000 to the current value of NPAGEDYN for each additional window. For example, to support two additional normal-sized windows, you would enter the following:

```
ADD_NPAGEDYN= 50000
```

7. Add the appropriate value from Table 4-2 to the current value of PAGEDYN, using the following syntax:

```
ADD_PAGEDYN= n
```

For example, to support 15 windows on your system, add 197380 to the current value of PAGEDYN by entering the following:

```
ADD_PAGEDYN=197380
```

8. Exit from the editor.

4.2.2.2 Running AUTOGEN

To enable the new parameter value, run AUTOGEN by enter the following command:

```
$ SYS$UPDATE:AUTOGEN SAVPARAMS REBOOT
```

AUTOGEN alters the parameters, then automatically shuts down and reboots the system.

4.3 Modifying SYSGEN Parameters

The workstation software installation modifies the following System Generation Utility (SYSGEN) parameters:

CHANNELCNT—Channel count
PQL_MDIOLM—Direct I/O limit
PQL_MBIOLM—Buffered I/O limit
PQL_MASTLM—AST limit

Each of the following sections describes one of these parameters, explains how the installation modifies it, and explains how and why you might choose to modify it further.

The recommended procedure for modifying a SYSGEN parameter is as follows:

1. Modify the parameter value in the MODPARAMS.DAT file.
2. Run AUTOGEN to enable the new value.

4.3.1 Modifying the CHANNELCNT Parameter

The CHANNELCNT parameter determines the maximum number of open channels permitted on your system. A channel is assigned to the MicroVMS workstation driver when a pointer region, button region, or cursor region is created. In addition, a channel is assigned for every window created on the color or intensity system.

When AUTOGEN is run during the installation of the MicroVMS Workstation Software, it adds 175 to the CHANNELCNT parameter.

If your application programs create large numbers of regions or large numbers of windows, appropriately raise the CHANNELCNT parameter and run AUTOGEN.

4.3.2 Modifying the PQL_MASTLM Parameter

The PQL_MASTLM parameter determines the minimum value for the process quota ASTLM. (ASTLM determines the maximum number of ASTs that may be outstanding on a process.) Typically, an AST is associated with each pointer region, button region, or cursor region. If the AST limit (ASTLM) process quota is incorrectly set, the process could BUGCHECK or the system could hang or fail.

When AUTOGEN is run during the installation of MicroVMS Workstation Software, the SYSGEN parameter PQL_MASTLM is set to 325.

You may also want to modify the process quota that corresponds to the parameter ASTLM for every process on the system. (This is done for clarity; the actual value used is the greater of the two.) The easiest way to do this is to invoke the Authorize Utility and modify all records, using a wildcard character as follows:


```
UAF> MODIFY * /ASTLM=325
```

If you have processes that use more than the minimum, ensure that they are properly incremented.

If your application programs create large numbers of regions or windows, raise the PQL_MASTLM parameter appropriately and run AUTOGEN.

4.3.3 Modifying the PQL_MBIOLM and PQL_MDIOLM Parameters

NOTE: This section applies only to intensity and color systems.

The PQL_MBIOLM parameter determines the minimum value for the process quota BIOLM, and the PQL_MDIOLM parameter determines the minimum value for the process quota DIOLM. (BIOLM determines the maximum number of buffered I/O that can be outstanding for a process. DIOLM determines the maximum number of direct I/O that can be outstanding for a process.) If these parameters are incorrectly set, the process could BUGCHECK or the system could hang or fail.

By default, the MicroVMS Workstation Software sets BIOLM to 40 and DIOLM to 100.

You may also want to modify the process quota limits that correspond to the parameters BIOLM and DIOLM for every process on the system. (This is done for clarity; the actual value used is the greater of the two.) Invoke the Authorize Utility and modify all records, using a wildcard character as follows:

```
UAF> MODIFY * /BIOLM=40
UAF> MODIFY * /DIOLM=100
```

If you have processes that use more than the minimum, ensure that they are properly incremented.

The recommended value of 40 allows a process to create approximately 12 windows. Use the following algorithm to determine how much BIOLM is needed for the process:

$$16 + (2 * \text{maximum number of windows created by the process})$$

4.4 Adding User-Defined Fonts to the Workstation

This section explains how to install a font and how to tune the system according to the type of font installation you choose.

The default workstation parameters allow for up to eight additional (user-defined) font files (files in which fonts are stored). You can add more than eight fonts to the workstation, but you may need to adjust certain system parameters in order to provide sufficient system resources.

The MicroVMS Workstation Software allows you to add your own font files in any of the following ways:

- As a process-based font—You can place the font in the directory
If more than eight user-defined fonts are in use on the system, you need to increase the section count for the process (SYSGEN parameter PROCSECTCNT) and the open-file limit (process quota FILLM).
- As a shareable process-based font—You can use the VMS Install Utility (INSTALL) to enable the font as a shareable image. This improves performance when the font is called from a program and does not count against PROCSECTCNT or FILLM. However, you also need to increase the SYSGEN parameters GBLPAGES and GBLSECTIONS.
- As a system font—You can use the workstation Font Utility (FONT) to load the font into the *system font list* (list of fonts that use system paged pool). You may want to do this if you use the font on a regular basis, as it improves performance. The system font does not count against PROCSECTCNT or FILLM. However, you also need to increase the value of PAGEDYN to allow for sufficient memory in paged pool.

Once you have added a font to the system list, the only way to remove it is to reboot the system.

If a font is to be used from kernel mode, it *must* be loaded into the system list.

To determine which method of installing user-defined fonts is best for you, consider the advantages and disadvantages of each. Tables 4-3, 4-4, and 4-5 summarize each method in terms of ease of use and system resource requirements.

Table 4-3 Process-Based Font

Advantages	Disadvantages
Easy to use as it does not require extensive setup	Counts as an open file
Eight font files supported without modification to system parameters	

Table 4-4 Shareable Process-Based Font

Advantages	Disadvantages
Faster loading time when called from an application	Requires more setup procedures
Does not count as an open file	Uses global sections and global pages

Table 4-5 System Font

Advantages	Disadvantages
Fastest loading time when called from an application	Most complicated setup
Font is loaded once and remains loaded	Uses paged pool
Does not count as an open file	
Font is shared (because it is in the system)	

Regardless of how you decide to use the font file, you must first compile it with the Font Utility. You must have the MACRO assembler installed on your system, as the Font Utility uses MACRO to perform the compile operation. In addition, the Font Utility requires CMKRNL privilege.

The following sections describe the procedures for compiling the font file and for tuning the system parameters to allow for additional fonts.

4.4.1 Compiling a Font File

To compile a font file, follow these steps:

1. Copy the font file into the directory SYS\$SYSTEM:UISFONTS.
2. Invoke the Font Utility and enter the COMPILE command, as in the following example:

```
$ RUN SYS$SYSTEM:UISFONTS X
Font Utility> (COMPILE X)
$
```

The Font Utility assumes a default file type of FNT. If your file is named X.FNT, you only need to specify X.

The Font Utility automatically exits after compiling the specified file. The resulting (compiled) file is an executable image with one of the following file types, depending on workstation type:

- **VWS\$FONT**—for monochrome systems
If the source file is named X.FNT, the image is named X.VWS\$FONT.
- **VWS\$VAFONT**—for color and intensity systems
If the source file is named X.FNT, the image is named X.VWS\$VAFONT.

4.4.2 Using a Font from Within Your Process

Using a process-based font requires no installation steps other than copying the file into SYS\$FONT and compiling it. After you perform these steps, you can call the font from an application. However, if the number of user-defined fonts on the system is greater than eight, you may need to increase the values of the SYSGEN parameter PROCSECTCNT and the process quota FILLM.

For example, if you are adding two user-defined fonts beyond the eight allowed by the workstation software, follow these steps:

1. Edit the file SYS\$SYSTEM:MODPARAMS.DAT to modify PROCSECTCNT. For example:

```
$ EDIT SYS$SYSTEM:MODPARAMS.DAT
```

2. Move the cursor to the end of the file.
3. Add or modify the following line to increase the value of PROCSECTCNT by four for each font you are adding to the system:

```
ADD_PROCSECTCNT= 8
```

4. Exit from the editor.

5. Enter the following DCL command to determine the open file quota for your account:

```
$ SHOW PROCESS/QUOTA
```

```
28-JAN-1987 11:04:12.85 WTA1: User: WORKERBEE
```

```
Process Quotas:
```

```
Account name:
```

```
CPU limit: Infinite Direct I/O limit: 18
```

```
Buffered I/O byte count quota: 20480 Buffered I/O limit: 18
```

```
Timer queue entry quota: 20 Open file quota: 20
```

```
Paging file quota: 8843 Subprocess quota: 10
```

```
Default page fault cluster: 16 AST limit: 22
```

```
Enqueue quota: 30 Shared file limit: 0
```

```
Max detached processes: 0 Max active jobs: 0
```

6. Increase the open file quota by one for each additional font, using the VMS Authorize Utility.

For example, if your open file quota is 20 and you have two additional fonts, you would enter the following commands:

```
$ SET DEFAULT SYS$SYSTEM:
```

```
$ RUN AUTHORIZE
```

```
UAF> MODIFY WORKERBEE/FILLM=22
```

```
%UAF-I-MDFYMSG, user record(s) updated
```

```
UAF> EXIT
```

```
%UAF-I-DONEMSG, system authorization file modified
```

```
%UAF-I-NAFNOMODS, no modifications made to network authorization file
```

```
%UAF-I-RDBNOMODS, no modifications made to rights database
```

```
$
```

7. Perform an orderly shutdown to reboot the system, as described in the installation guide for your base system.

4.4.3 Using a Shareable Process-Based Font

After you copy the font file into `SYSS$FONT` and compile it, you have the option of installing the font as an image to be shared by programs. You invoke the font as you would invoke a font that is not shared, but the file is read into memory more quickly.

The following sections describe how to install the shareable font and how to tune the system accordingly.

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4.4.3.1 Installing a Shareable Process-Based Font

To install a font as a shareable image, follow these steps:

1. Establish VMS Version 4.0 INSTALL as the default for your site by defining the global symbol INSTALL in SYSTARTUP.COM, as follows:
\$ INSTALL ::= INSTALL/COMMAND_MODE
2. Invoke the VMS Install Utility (INSTALL), using the following command:
\$ RUN SYS\$SYSTEM:INSTALL
INSTALL>
3. At the INSTALL> prompt, enter the file name, as in the following examples:
 - For monochrome systems:
INSTALL> CREATE SYS\$FONT:X.VWS\$FONT/OPEN/HEADER_RESIDENT/SHARE
 - For intensity and color systems:
INSTALL> CREATE SYS\$FONT:X.VWS\$VAFONT/OPEN/HEADER_RESIDENT/SHARE
4. Press **CTRL/Z** to exit from the Install Utility.

4.4.3.2 Tuning the System for Shareable Fonts

If the number of user-defined fonts on the system is greater than eight, you need to increase the values of the SYSGEN parameters GBLPAGES and GBLSECTIONS.

To modify GBLPAGES and GBLSECTIONS, follow these steps:

1. To determine the block size of the font files, enter the following command:
\$ DIRECTORY/SIZE SYS\$FONT:X,Y
X.VWS\$FONT;1 11
Y.VWS\$FONT;1 15

In this example, the total number of blocks is 26.
2. Edit the file SYS\$SYSTEM:MODPARAMS.DAT to modify GBLPAGES and GBLSECTIONS.
\$ EDIT SYS\$SYSTEM:MODPARAMS.DAT
3. Move the cursor to the end of the file.
4. Add or modify the appropriate lines to increase GBLPAGES by the total number of additional font blocks and GBLSECTIONS by four for each additional font.
For example:
ADD_GBLPAGES= 26
ADD_GBLSECTIONS= 8
5. Exit from the editor by pressing **CTRL/Z**. Type "EXIT" at the asterisk, and press **RETURN**.

6. Enable the new parameter values by running AUTOGEN, as follows:

```
$ SYS$UPDATE:AUTOGEN SAVPARAMS REBOOT
```

AUTOGEN alters the parameters, then automatically shuts down and reboots the system.

4.4.4 Using a System-List Font

After you compile the font, you can include it in the system list by using the workstation Font Utility.

Each font you add to the system list requires 512 bytes of paged pool for every block. (For example, if the size of the font file is 10 blocks, the font requires 5120 bytes of paged pool.) If you need to access a user-defined font from only one process at a time, the amount of available paged pool should be sufficient.

The following sections describe how to place the font into the system list and how to increase the amount of system paged pool.

4.4.4.1 Loading a System Font

To load a font into the system list, follow these steps:

1. Invoke the Font Utility, as follows:

```
$ RUN SYS$SYSTEM:UISFONTS  
Font Utility>
```

2. Enter the load command, as follows:

```
Font Utility> LOAD X  
Font Utility>
```

You do not need to specify a directory or file type. The Font Utility assumes the default directory SYS\$FONT and looks for the default type VWS\$FONT (for monochrome systems) or VWS\$VAFONT (for color and intensity systems).

The Font Utility> prompt appears when the load operation is completed.

3. Press **CTRL/Z** to exit from the Font Utility.

4.4.4.2 Tuning the System for System-List Fonts

To add the appropriate amount of paged pool to your system, you need to modify the value of the SYSGEN parameter PAGEDYN. Use the following procedure:

1. To determine the size of the font files, enter the following command:

```
$ DIRECTORY/SIZE SYS$FONT:X,Y
X.VWS$FONT;1          11
Y.VWS$FONT;1          15
```

2. To determine the byte value by which you need to increase paged pool, multiply the size (number of blocks) of each additional font file by 512 and add the results.

For example, if X.VWS\$FONT is 11 blocks and Y.VWS\$FONT is 15 blocks, add 5632 and 7680. You need a total of 13,312 bytes of additional paged pool.

3. Edit the file SYS\$SYSTEM:MODPARAMS.DAT to modify PAGEDYN.

```
$ EDIT SYS$SYSTEM:MODPARAMS.DAT
```

4. Move the cursor to the end of the file.
5. Add or modify the following line to specify the value you need to add to paged pool. For example:

```
ADD_PAGEDYN= 13312
```

6. Exit from the editor.
7. Enable the new parameter values by running AUTOGEN, as follows:

```
$ SYS$UPDATE:AUTOGEN SAVPARAMS REBOOT
```

AUTOGEN alters the parameters, then automatically shuts down and reboots the system.

Appendix A

Files Installed by MicroVMS Workstation Software

The following files are installed with the workstation software:

```
SYS$$SYSROOT:[SYSEXE]CSDRIVER.EXE
SYS$$SYSROOT:[SYSEXE]TKDRIVER.EXE
SYS$$SYSROOT:[SYSEXE]UISBG.EXE
SYS$$SYSROOT:[SYSEXE]UISHELP.EXE
SYS$$SYSROOT:[SYSEXE]UISLOA.EXE
SYS$$SYSROOT:[SYSEXE]UISLOASYM.STB
SYS$$SYSROOT:[SYSEXE]UISMEMFONTS.COM
SYS$$SYSROOT:[SYSEXE]UISSTRUCT.STB
SYS$$SYSROOT:[SYSEXE]UIS$EMULATOR.EXE
SYS$$SYSROOT:[SYSEXE]PME_LOADER.EXE
SYS$$SYSROOT:[SYSEXE]UIS$TEK_PME.EXE
SYS$$SYSROOT:[SYSEXE]UIS$VT200_PME.EXE
SYS$$SYSROOT:[SYSEXE]SYSLOAWS1.EXE
SYS$$SYSROOT:[SYSEXE]UISFONTS.EXE
SYS$$SYSROOT:[SYSEXE]UISVTSETUP.EXE
SYS$$SYSROOT:[SYSEXE]VFDRIIVER.EXE
SYS$$SYSROOT:[SYSEXE]VADRIIVER.EXE
SYS$$SYSROOT:[SYSEXE]VCDRIIVER.EXE
SYS$$SYSROOT:[SYSEXE]VEDRIIVER.EXE
SYS$$SYSROOT:[SYSEXE]WTDRIIVER.EXE
SYS$$SYSROOT:[SYSEXE]WTDRIIVER.STB
SYS$$SYSROOT:[SYSMGR]STARTVWS.COM
SYS$$SYSROOT:[SYSMMSG]UISBG.DAT
SYS$$SYSROOT:[SYSMMSG]UISBGMSG.EXE
SYS$$SYSROOT:[SYSMMSG]UISMSGLOA.EXE
SYS$$SYSROOT:[SYSMMSG]UISVTMSG.EXE
SYS$$SYSROOT:[SYSLIB]VWSSYSDEF.*
SYS$$SYSROOT:[SYSLIB]UISENTRY.*
SYS$$SYSROOT:[SYSLIB]UISKEYBOARD.TLB
SYS$$SYSROOT:[SYSLIB]UISMSG.*
```

A-2 Files Installed by MicroVMS Workstation Software

```
SYS$SYSROOT:[SYSLIB]UISSHR.EXE  
SYS$SYSROOT:[SYSLIB]UISSHRXFR.EXE  
SYS$SYSROOT:[SYSLIB]UISUSRDEF.*  
SYS$SYSROOT:[SYSHLP]UISHELP.HLB  
SYS$SYSROOT:[SYSHLP]VWS032.RELEASE_NOTES  
SYS$SYSROOT:[SYSHLP.EXAMPLES]DVORAK$.MAR  
SYS$SYSROOT:[SYSHLP.EXAMPLES]DVORAK.COM  
SYS$SYSROOT:[SYSHLP.EXAMPLES]KEYBOARD_MACROS.MAR
```

The file SYS\$SYSROOT:[SYSEXE]UISSETUP.DAT is recreated each time the system is installed. This causes the workstation setup options to be set to their original default values. Therefore, you may need to reset site-specific setup attributes.

The file UISBG.DAT is installed with the workstation software. If an earlier version exists, it is renamed with a lower version number. To restore a customized UISBG.DAT file, rename it with a higher version number.

Appendix B

Sample Installation on a Standalone VAXstation II/GPX

\$ @sys\$update:vmsinstal vws032 SYS\$UPDATE:

VAX/VMS Software Product Installation Procedure V4.5

It is 28-MAY-1987 at 08:17.

Enter a question mark (?) at any time for help.

* Are you satisfied with the backup of your system disk [YES]?

The following products will be processed:

VWS V3.2

Beginning installation of VWS V3.2 at 08:17

%VMSINSTAL-I-RESTORE, Restoring product saveset A...

Installing MicroVMS Workstation Software - V3.2

This installation builds the description files that are needed when using the UIS programming interface.

* Would you like all the description files built [Y]? n

Please enter Yes or No if you want files built for the following languages:

- * BLISS [N]?
- * CC [N]? y
- * FORTRAN [N] y
- * MACRO [N]?
- * PASCAL [N]? y
- * PLI [N]?

The following languages have been chosen:
(CC,FORTRAN,PASCAL)

* Is this OK [Y]?

No further questions will be asked during the installation.

B-2 Sample Installation on a Standalone VAXstation II/GPX

Installing the examples for your system.

Installing the fonts for your system.

%VMSINSTAL-I-RESTORE, Restoring product saveset C...

%VMSINSTAL-I-MOVEFILES, Files will now be moved to their target directories...

Installation of MicroVMS Workstation Software V3.2 is now complete.

The VMS AUTOGEN procedure will now be automatically run so that your SYSGEN parameters will be set, and your system will be properly configured. After that, your system will be automatically shut down.

When the shut down is complete, press the RESTART button to reboot the system.

After the system has been rebooted and initialized, successful installation of the workstation software will be indicated by the brief appearance of a "Getting Started" window on the screen.

If necessary, the window can be recalled by striking any key on the keyboard.

If you are reinstalling the VWS software, the UISBG.DAT (menu customization) and UISSETUP.DAT (workstation setup) files you used previously have been renamed to UISBG.DAT;-1 and UISOLDSETUP.DAT respectively.

%AUTOGEN-I-BEGIN, SAVPARAMS phase is beginning.

%AUTOGEN-I-NEWFILE, New versions of SYS\$SYSTEM:OLDSITE*.DAT have been created.

You may wish to purge these files.

%AUTOGEN-I-END, SAVPARAMS phase has successfully completed.

%AUTOGEN-I-BEGIN, GETDATA phase is beginning.

%AUTOGEN-I-NEWFILE, A new version of SYS\$SYSTEM:PARAMS.DAT has been created.

You may wish to purge this file.

%AUTOGEN-I-END, GETDATA phase has successfully completed.

%AUTOGEN-I-BEGIN, GENPARAMS phase is beginning.

%AUTOGEN-I-NEWFILE, A new version of SYS\$SYSTEM:SETPARAMS.DAT has been created.

You may wish to purge this file.

%AUTOGEN-I-END, GENPARAMS phase has successfully completed.

%AUTOGEN-I-BEGIN, GENFILES phase is beginning.

%AUTOGEN-I-PAGEFILE, No new page file will be created.

%AUTOGEN-I-SWAPFILE, No new swap file will be created.

%AUTOGEN-I-END, GENFILES phase has successfully completed.

%AUTOGEN-I-BEGIN, SETPARAMS phase is beginning.

%AUTOGEN-I-END, SETPARAMS phase has successfully completed.

Installation of VWS V3.2 completed at 08:48

%VMSINSTAL-I-REBOOT, This product requires that the system be rebooted.

SHUTDOWN -- Perform an Orderly System Shutdown

...
...
...

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