# MicroVMS
# Release Notes, Version 4.5

Order Number: AA-JG66A-TN

**September 1986**

This document describes Version 4.5 of the MicroVMS operating system and explains the method for updating a Version 4.4 system to Version 4.5. It lists and discusses system changes, new features, corrected problems, and restrictions in the use of the system. It also describes changes and corrections to the MicroVMS documentation set.

**September 1986**

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# Preface

The *MicroVMS Release Notes, Version 4.5* manual describes Version 4.5 of the MicroVMS operating system and explains the method for updating a Version 4.4 system to Version 4.5. It lists and discusses changes to the system, new features, corrected problems, and restrictions in its use. It also describes changes and corrections to the documentation set.

All system users may find information of interest in this manual. Chapters 2 and 3 contain notes that discuss aspects of the Version 4.5 operating system of concern to the general user, system manager, application programmer, and system programmer.

There are three major sections and two appendixes.

- Chapter 1 contains instructions for installing the Version 4.5 update kit.

- Chapter 2 briefly summarizes each new and changed system feature.

- Chapter 3 details Version 4.5 fixes to known problems in the operating system and published documentation. It describes restrictions that should be applied to the use of MicroVMS Version 4.5 and contains miscellaneous technical notes as well.

- Appendix A lists the contents of the update kit.

- Appendix B describes special procedures that MicroVAX I systems with RD51 disks must perform before applying the Version 4.5 update.

Apart from the documents for which corrections and additions are published in Chapters 2 and 3, you may find the following documents helpful while reviewing the new material presented in this manual:

- *Installing or Upgrading MicroVMS From Diskettes* or *Installing or Upgrading MicroVMS From a Tape Cartridge*

- The *MicroVMS Release Notes Version 4.4*

- The *MicroVMS User's Manual*

- The *MicroVMS Operating System, Version 4.5 Software Product Description* (SPD 28.05.08)

- The *System Software Ordering Table* (SPD 28.98.xx)

MicroVMS users have the option of purchasing any or all manuals of the full VAX/VMS documentation set.

The following conventions are observed in this manual:

| Convention | Meaning |
| --- | --- |
| RET | A symbol with a one- to six-character abbreviation indicates that you press a key on the terminal, for example, RET. |
| $ SHOW TIME<br>11-NOV-1986 11:55:22 | Command examples show all output lines or prompting characters that the system prints or displays in black letters. All user-entered commands are shown in red letters. |
| $ TYPE MYFILE.DAT<br>.<br>.<br>. | Vertical series of periods, or ellipsis, means either that not all the data that the system would display in response to the particular command is shown or that not all the data a user would enter is shown. |
| file-spec,... | Horizontal ellipsis indicates that additional parameters, values, or information can be entered. |
| [logical-name] | Square brackets indicate that the enclosed item is optional. (Square brackets are not, however, optional in the syntax of a directory name in a file specification or in the syntax of a substring specification in an assignment statement.) |
| quotation marks (")<br>apostrophe (') | The term quotation marks is used to refer to double quotation marks ("). The term apostrophe (') is used to refer to a single quotation mark. |

# Chapter 1

# Installing the Version 4.5 Update Kit

This chapter outlines the procedures necessary to install the Version 4.5 update to the MicroVMS operating system. When you install the update kit, a Version 4.5 system is produced.

## 1.1 The Version 4.5 Kit

The MicroVMS Version 4.5 update kit consists of documentation, patches, and replacement files. It includes the following components:

- The *MicroVMS Operating System, Version 4.5 Software Product Description* (SPD 28.05.08)

- The *MicroVMS Release Notes, Version 4.5*

- Distribution media: Five diskettes or one tape cartridge

Appendix A lists the patches, new images, and miscellaneous fixes contained in the Version 4.5 update kit.

### 1.1.1 Optional Software Products

The Version 4.5 kit does not contain updates to any MicroVMS optional software products except DECnet–VAX. For more information about optional software products, see the *System Software Ordering Table* (SPD 28.98.xx). Documentation for a specific optional software product is shipped with that product.

## 1.1.2 Requirements

The following cautions and restrictions *must* be observed for this update:

- The system must be running Version 4.4 prior to the application of the Version 4.5 update kit:

  - If the system being updated is not currently running MicroVMS Version 4.4, you must upgrade it to Version 4.4 before installing the Version 4.5 update kit.

  - If you are installing MicroVMS on a *new* system, you must install Version 4.4 before applying the Version 4.5 update.

  *Installing or Upgrading MicroVMS From Diskettes* and *Installing or Upgrading MicroVMS From a Tape Cartridge* contain instructions for installing or upgrading your system to MicroVMS Version 4.4 and for installing MicroVMS options.

- You must reapply the MicroVMS Version 4.5 update if you install any of the MicroVMS options (PROG, SYSP, USER, and UTIL) or the DECnet–VAX optional software product after you have installed the Version 4.5 update.

  Because the MicroVMS Version 4.4 "Common Utilities Option" (UTIL) is necessary to perform the required rebuilding of standalone BACKUP when the update procedure completes, that option *must* be installed prior to performing the Version 4.5 update.

- Because MicroVMS Version 4.5 contains an update for DECnet–VAX, certain steps must be followed when installing DECnet–VAX and Version 4.5, depending on the installation scenario as follows:

| Case | Action(s) |
| --- | --- |
| System currently has both MicroVMS Version 4.4 and DECnet–VAX Version 4.4 installed and MicroVMS Version 4.5 is to be installed | Install MicroVMS Version 4.5. This will upgrade both MicroVMS and DECnet–VAX to Version 4.5. |
| System is currently running MicroVMS Version 4.4 and both DECnet–VAX Version 4.4 and MicroVMS Version 4.5 are to be installed | 1. Install DECnet–VAX on the system. |

| Case | Action(s) |
| --- | --- |
| | 2. Install MicroVMS Version 4.5. |
| | This will upgrade both MicroVMS and DECnet–VAX to Version 4.5. |
| System currently has MicroVMS Version 4.5 installed and DECnet–VAX Version 4.4 is to be installed | 1. Install DECnet–VAX Version 4.4, but do *not* install the MicroVMS Version 4.4 mandatory update. (The Version 4.4 mandatory update will not install on a MicroVMS Version 4.5 system.) All DECnet–VAX patches that were in the V4.4 mandatory update are included in the MicroVMS V4.5 kit. |
| | 2. Reinstall MicroVMS V4.5 so that DECnet–VAX will be upgraded to Version 4.5. |

- If you are updating a MicroVAX I with an RD51 disk, you must remove all MicroVMS operating system options from the disk to make room for the update procedure. However, because the update procedure requires the "Standalone BACKUP on System Disk" and "DIFF Utility" suboptions of the UTIL option, you must install (or retain) these suboptions before proceeding with the update. (See Appendix B for instructions for performing this procedure.)

  For MicroVAX I systems with RD51 disks, MicroVMS Version 4.5 updates only the MicroVMS base system, and none of the operating system options. After the update has completed, if you wish to install or reinstall a Version 4.4 MicroVMS operating system option or suboption, refer to the *MicroVMS Operating System, Version 4.5 Software Product Description* (SPD 28.05.08) for the number of disk blocks required by each option. See Chapter 5 of the *Installing or Upgrading MicroVMS From Diskettes* for instructions for installing a MicroVMS option or suboption.

- If you are installing the update on a system running the VAX Ada optional software product, you must install VAX Ada Version 1.3 after applying the update.

## 1.2   Preparing to Update Your System

This section describes the activities you must perform before applying the Version 4.5 update to your system. You should read this entire section before proceeding with the update.

Perform these steps to prepare your system for the update:

1. **Back up and restore the system disk.**

   By backing up the system disk, you preserve the original system disk in the event that a system failure at a critical point in the update results in unusable or deleted files. Restoring the system disk improves disk performance by making all free space on the disk contiguous.

   **CAUTION:**   If you elect not to back up your system disk, a system failure at a critical point of the update procedure may cause the previous contents of the disk to become irretrievable.

   To back up and restore the system disk, use standalone BACKUP as described in Section 4.1.1 of *Installing or Upgrading MicroVMS From Diskettes* or *Installing or Upgrading MicroVMS From a Tape Cartridge*.

2. **Reserve space for the update files.**

   The MicroVMS Version 4.5 update procedure requires that a minimum number of free blocks be available on the system disk so that the procedure can properly perform the update. To ensure that there are sufficient free blocks to meet the update procedure's *peak disk block utilization* (see Table 1–1), perform the following actions:

   a. Confirm the number of free blocks on the system disk by entering the following DCL command:

      `$ SHOW DEVICE SYS$SYSDEVICE:`

   b. Compare the number of *free blocks* shown on the display against the required peak disk block utilization shown in Table 1–1.

**Table 1–1   Approximate Disk Block Utilization for Version 4.5 Installation Procedure**

| | |
|---|---|
| Peak disk block utilization | 10000 |
| Net disk block utilization if files are purged during the update | 3000 |

If you have fewer blocks available than the peak disk block utilization figure, you must reduce the number of used disk blocks to acquire enough free space for the

Version 4.5 update. DIGITAL recommends that you use the following procedure to gain the needed disk space:

a.  Log in to an account with sufficient privileges to create space on the system disk. DIGITAL recommends that you do not log in to the SYSTEM account. The SYSTEM account, which has all privileges (including BYPASS), is intended only for software installation, bootstrapping, and system problem diagnosis. You can avoid problems by creating another account and assigning it the minimum privileges required.

b.  Delete or purge all unwanted or redundant files from the system disk.

c.  If there still is not enough available space, copy the following files to another media and delete them from the system disk:

 • All files with JNL, MAP, LOG, and STB[1] extensions

 • The files SYS$ERRORLOG:ERRLOG.SYS and SYS$MANAGER:ACCOUNTNG.DAT

 • All files in the directories [SYSHLP.EXAMPLES] and [SYSTEST]

If you cannot make a sufficient number of free blocks available on the system disk to meet peak utilization requirements, the update procedure will operate in an alternate mode that reduces these requirements. However, if a system failure occurs while the procedure is operating in this alternate mode, you must restore the Version 4.4 system disk from a backup copy, and restart the update procedure from the beginning.

3.  **Confirm the quotas and limits of the SYSTEM account.**

Because you will later install the update from the SYSTEM account, you must ensure that the account has sufficient quotas and limits to successfully complete the update. To do so, perform the following actions:

a.  Log in to the SYSTEM account.

b.  Run the Authorize Utility (AUTHORIZE) by entering the following commands:

```
$ SET DEFAULT SYS$SYSTEM
$ RUN AUTHORIZE
UAF> SHOW SYSTEM
```

---

[1] Once the Version 4.5 update is installed, DIGITAL recommends that you copy all STB files back to their original directories, except RMS.STB (for which Version 4.5 supplies a new file).

   c.  Compare the SYSTEM account's limits and quotas to the following values:

| | |
|---|---|
| Open file quota (Fillm) | 20 |
| Buffered I/O limit (BIOlm) | 18 |
| Direct I/O limit (DIOlm) | 18 |
| AST limit (ASTlm) | 24 |
| Enqueue quota (Enqlm) | 30 |
| Buffered byte quota count (Bytlm) | 20480 |

   d.  Adjust the corresponding UAF parameters, as appropriate, to ensure that they are equal to or greater than the required values. You can change each value by entering the following command:

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

For example:

```
UAF> MODIFY SYSTEM/DIOLM=18
```

   e.  Return to DCL command level by issuing the following command:

```
UAF> EXIT
```

   f.  If you have adjusted any of the SYSTEM account's values, log out and log in again so that the new values take effect.

**4. Reserve sufficient global pages.**

The installation procedure requires at least 10 unused global sections and 200 unused global pages. Ensure that sufficient *unused* global sections and global pages are available to the procedure by performing the following operations:

   a.  Display the number of *used* global sections, and *used* and *unused* global pages, by issuing the following commands:

```
$ INSTALL :== $INSTALL/COMMAND_MODE
$ INSTALL
INSTALL> LIST/GLOBAL/SUMMARY
INSTALL> EXIT
```

   b.  Determine the *current* number of global sections by invoking the System Generation Utility (SYSGEN) and proceeding as follows:

```
$ RUN SYS$SYSTEM:SYSGEN
SYSGEN> USE CURRENT
SYSGEN> SHOW GBLSECTIONS
```

   c.  Determine the number of *unused* global sections by subtracting the number of *used* global sections (determined in step **a** from the INSTALL display) from the current number of global sections (determined in step **b** from the SYSGEN display).

d.  If the number of *unused* global sections is less than 10, increase the *GBLSECTIONS* parameter,[1] using the following command:

```
SYSGEN> SET GBLSECTIONS new-value
```

To compute **new-value**, add 10 to the number of *used* global sections (determined in step **a** from the INSTALL display).

e.  If the number of *unused* global pages (determined in step **a** from the INSTALL display) is less than 200, you must increase the *GBLPAGES* parameter.[1] Use the following command:

```
SYSGEN> SET GBLPAGES new-value
```

To compute **new-value**, add 200 to the number of *used* global pages (determined in step **a** from the INSTALL display).

f.  Save the modified values and exit from SYSGEN using the following commands:

```
SYSGEN> WRITE CURRENT
SYSGEN> EXIT
```

g.  If you have modified either of the SYSGEN parameters *GBLPAGES* or *GBLSECTIONS*, use the SYS$SYSTEM:SHUTDOWN.COM command procedure to shut down the system. Reboot the system so that the new SYSGEN parameter values take effect.

5.  **Isolate the system from users.**

Make sure that nobody but you is logged in to the system. This is a twofold procedure:

a.  Notify current users that they must log out.

b.  Ensure that no new user can log in. The following command prevents users from logging in:

```
$ SET LOGINS/INTERACTIVE=0
```

6.  **Shut down the network.**

Perform this task only if your system is running DECnet–VAX. If you are not sure whether your system includes DECnet–VAX, enter the following command:

```
$ SHOW NETWORK
```

---

[1] DIGITAL recommends that you also edit SYS$SYSTEM:MODPARAMS.DAT to reflect the modified system parameters. (Refer to the procedures described in Section 1.6 of the *MicroVMS User's Manual* whenever you change SYSGEN parameters.)

If the message "%SHOW-I-NONET, network unavailable" appears, skip to step 7. If your system includes DECnet–VAX, shut it down by issuing the following commands:

```
$ RUN SYS$SYSTEM:NCP
NCP> SET EXECUTOR STATE OFF
NCP> EXIT
```

7. **Stop all batch and print queues.**

   To do so, perform the following tasks:

   a. Enter the following command to determine the state of all system queues:
      ```
      $ SHOW QUEUE/DEVICE/BATCH/FULL/ALL
      ```

   b. Stop each active queue by issuing the command
      ```
      $ STOP/QUEUE/NEXT queue_name
      ```

      The NEXT qualifier allows the current job to complete before the system stops the queue. If this job may take a long time to complete, you may want to ensure that it is safe to stop it prior to completion.

8. **Review special considerations.** Under various circumstances and within certain configurations, you may be required to perform other actions before proceeding with the update. See Section 1.1.2 to determine if any special requirements apply to your system.

## 1.3  Installing the Version 4.5 Update

After completing the procedures described in Section 1.2, perform the steps in this section to install the Version 4.5 update kit.

1. **Invoke the VMSINSTAL command procedure.**

   Use the following command:
   ```
   $ @SYS$UPDATE:VMSINSTAL VMS045 device-name
   ```

   where **device-name** is the physical name of the device holding the update distribution media. Specify **device-name**, using the format *ddcu* as follows:

   > *dd* specifies the type of device.
   > *c* refers to the controller number.
   > *u* refers to the device unit number.

   For example, if your MicroVAX has one fixed disk and the distribution diskette is in diskette drive 1, you would enter the following command:
   ```
   $ @SYS$UPDATE:VMSINSTAL VMS045 DUA1:
   ```

If you are updating from a tape cartridge, you would enter the following command:

`$ @SYS$UPDATE:VMSINSTAL VMS045 MUAO:`

(See Appendix B of *Installing or Upgrading MicroVMS From Diskettes* or *Installing or Upgrading MicroVMS From a Tape Cartridge* for a list of the physical names of MicroVAX devices.)

If the VMSINSTAL command fails, determine whether either of the following conditions occurred:

- If VMSINSTAL displays the message "%VMSINSTAL-E-NOPRODS, None of the specified products were found", it is likely that you specified the letter "O" in the product name "VMS045" instead of a zero.

- If VMSINSTAL displays an "invalid device" error message, it will issue prompts for a device name until you specify the correct name of a device existing on the system. Remember to terminate the device name with a colon ( : ).

When the command succeeds, VMSINSTAL displays the following message:

```
        VAX/VMS Software Product Installation Procedure V4.5

It is (date) at (time).
Enter a question mark (?) at any time for help.
```

2. **Reply to VMSINSTAL prompts.**

As the update procedure begins, VMSINSTAL presents its first prompt:

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

If you are content with the current backup of the system disk, press the RETURN key and continue.

If you have not yet backed up your system disk or are otherwise dissatisfied with the current backup, perform the following operations:

a. Enter *NO* and press the RETURN key. VMSINSTAL returns to DCL level to permit you to perform the backup.

b. Back up and restore your system disk using standalone BACKUP as described in Section 4.1.1 of either *Installing or Upgrading MicroVMS From Diskettes* or *Installing or Upgrading MicroVMS From a Tape Cartridge*.

c. Restart the update procedure at step 1 when the backup is completed.

As it proceeds, VMSINSTAL may request additional information from you or display various messages. For instance, if you did not specify the name of a load device in the command that invoked VMSINSTAL in step 1, VMSINSTAL will prompt for the name of the device holding the distribution volume:

`* Where will the distribution volume be mounted:`

To respond, enter the physical name (as described in Appendix B of *Installing or Upgrading MicroVMS From Diskettes* or *Installing or Upgrading MicroVMS From a Tape Cartridge*) of the device that will hold the distribution media during the update operation.

VMSINSTAL displays informational messages that describe the actions it is performing. During the entire process, look for error and warning messages that indicate tasks you must perform manually. Many informational messages will be displayed; these messages can usually be ignored. For instance, if you are installing from an operator's terminal, you will receive a message after each mount operation if the SYSGEN parameter *MOUNTMSG* is set and after each dismount operation if the SYSGEN parameter *DISMOUMSG* is set. Each message will appear within 30 seconds of its associated operation.

3. **Mount the first (or only) volume of the update kit.**

   VMSINSTAL next displays the following prompt:

   `Please mount the first volume of the set on ddcu:.`

   `* Are you ready?`

   To respond, perform the following actions:

   a. Insert the first (or only) distribution volume into the load device. If you are installing from diskettes, insert the first volume in the drive. If you are installing from a tape cartridge, insert the cartridge into the drive. See Chapter 2 of either *Installing or Upgrading MicroVMS From Diskettes* or *Installing or Upgrading MicroVMS From a Tape Cartridge* for instructions on inserting media into a drive.

   b. After you have inserted the first (or only) volume into the appropriate drive, enter Y and press RETURN.

   VMSINSTAL then displays the following information:

   ```
   %MOUNT-I-MOUNTED, VMS045 mounted on _ddcu:
   The following products will be processed:

      VMS V4.5

            Beginning installation of VMS V4.5 at (time)
   ```

4. **Select an update option.**

   Shortly after it has copied the first save set from the installation volume (or volumes), VMSINSTAL displays the following menu:

   ```
   1)  Apply all fixes to the system
   2)  Create a file with the descriptions of all fixes
   3)  Both of the above

   * What would you like to do [3]:
   ```

   - Under option 1, VMSINSTAL performs *only* the update.

   - Under option 2, VMSINSTAL does *not* perform the update. It simply creates the update description file, SYS$UPDATE:VMS045.TXT. (Appendix A lists the contents of this file.)

   - Under option 3, VMSINSTAL *both* performs the update and creates the update description file.

   Type one of these option numbers and press RETURN.

   If you choose option 2 or 3, VMSINSTAL issues the following prompt:

   ```
   %VMS-I-FIXDESC, The fixes are described in SYS$UPDATE:VMS045.TXT
   ```

5. **Proceed with the update.**

   If you elect to proceed with the update by specifying option 1 or 3, VMSINSTAL displays the following question:

   ```
   * Do you want to purge files replaced by this installation [YES]?
   ```

   If you want VMSINSTAL to automatically purge files replaced by the update, press RETURN. (Refer to Section 1.4 for additional details on other ways to economize on disk space after the update has completed.) Answer *N* if you do not want these files purged. When VMSINSTAL receives your reply to this prompt, it restores the remainder of the update save sets and continues the copy operation from the specified drive.

   If you are installing the update from a set of diskette volumes, VMSINSTAL automatically requests, as it completes its operations from one volume, that you remove the current volume and insert the subsequent one.

   If you are installing from a tape cartridge, there is only one tape for you to insert.

   When VMSINSTAL completes the restoration of the save sets, it begins to apply the update to the system disk. During this time, ensure that the last (or only) volume of the update media remains mounted until the update is fully completed.

As VMSINSTAL proceeds, it displays the name of each image that is patched or installed, plus various informational messages describing the characteristics of the patches and images. You should be aware of the following situations which result in messages:

- The Patch Utility will commonly generate the following informational messages:

  ```
  %PATCH-I-NOLCL, image does not contain local symbols
  %PATCH-I-NOGBL, some or all global symbols not accessible
  ```

  These messages are a normal result of the construction of some update patches and should be ignored.

- When updating the NETACP.EXE image, VMSINSTAL displays the following:

  ```
  %PATCH-I-BRTOOFAR, destination FFFFFF74 is too far for branch operand
  ```

  This message simply informs you that a JMP instruction was used in the code generating the patch instead of a BRB or BRW instruction. The message is informational only and does not affect the validity of the patch.

- When updating an image that has already been patched, VMSINSTAL will display the following informational message:

  ```
  %PATCH-I-ECOSET, eco level nn already set in 'xxx$ROOT:filename'
  ```

  This message indicates that a patch has previously been applied, most likely during the application of the Version 4.4 mandatory update. For this reason, you can ignore messages of this sort.

  If *all* of the supplied patches in an image have already been applied, VMSINSTAL additionally displays the warning message:

  ```
  %VMSINSTAL-W-NOFILE, New file 'Filename' does not exist.
  ```

  In other words, if all the necessary patches have already been made to the file, there is no need for VMSINSTAL to create a new version of the file.

- Each time it attempts to add a new image, replace an existing image, or patch an image that is part of a MicroVMS operating system option that is not installed on the system disk, VMSINSTAL generates a warning message of the following form:

  ```
  %VMSINSTAL-W-NOFILE, New file 'Filename' does not exist.
  ```

  At its completion, VMSINSTAL will advise you to review the various fixes in which it encountered the "NOFILE" warning message. For the previously described reasons, you can usually ignore these messages.

- If you reapply the Version 4.5 update (that is, in order to update a MicroVMS option installed after a prior application of the update), you will encounter the following error message when the standalone BACKUP image is patched:

  ```
  %VMSINSTAL-E-TAMPER, File VMI$ROOT:[SYSUPD]STABACKIT.COM has been
  tampered with.
  ```

  This message is normal and should be ignored.

VMSINSTAL also creates a journal file (with a file extension of .JNL) for each image that is patched during the update process. (See Section 1.5 for additional information on the .JNL files produced by the Version 4.5 update.)

When it completes the update, VMSINSTAL displays the following message:

```
Installation of VMS V4.5 completed at (time)
```

and performs an orderly shutdown of the system.

## 1.4  Tasks to Perform After the Version 4.5 Update

After VMSINSTAL has completed its installation of the Version 4.5 update kit, DIGITAL recommends that you perform the following tasks:

1. **Reboot the system.** Manually reboot the system as described in Section 2.4.4 of *Installing or Upgrading MicroVMS From Diskettes* or *Installing or Upgrading MicroVMS From a Tape Cartridge*.

2. **Free up disk space.**

   VMSINSTAL permanently uses a certain number of disk blocks (as described in Table 1–1) called the *net disk block utilization*. This figure can vary, depending on whether you chose (in step 4 of Section 1.3) to purge the old copies of system files that are replaced during the update.

   Use the following methods to free up disk space:

   a. Confirm the free block count by issuing the command

      ```
      $ SHOW DEVICE SYS$SYSDEVICE:
      ```

   b. Purge those files that the Version 4.5 update procedure cannot purge. In this manner you can recover approximately 2100 disk blocks. Use the PURGE command to remove old versions of the following files (files that are part of MicroVMS options and the DECnet–VAX optional software are so designated):

      - SYS$LIBRARY:CONVSHR.EXE

      - SYS$LIBRARY:ERFCTLSHR.EXE (Common Utilities Option)

      - SYS$LIBRARY:ERFSHR.EXE (Common Utilities Option)

- SYS$LIBRARY:ERFSHR2.EXE (Common Utilities Option)
- SYS$LIBRARY:LBRSHR.EXE
- SYS$SYSTEM:BACKUP.EXE
- SYS$SYSTEM:DCL.EXE
- SYS$SYSTEM:ERFBRIEF.EXE (Common Utilities Option)
- SYS$SYSTEM:ERFPROC1.EXE (Common Utilities Option)
- SYS$SYSTEM:F11BXQP.EXE
- SYS$SYSTEM:MTAAACP.EXE (System Programming Option)
- SYS$SYSTEM:NETACP.EXE (DECnet–VAX Optional Software Product)
- SYS$SYSTEM:JOBCTL.EXE
- SYS$SYSTEM:NODRIVER.EXE (DECnet–VAX Optional Software Product and Common Utilities Option)
- SYS$SYSTEM:PUDRIVER.EXE
- SYS$SYSTEM:RMS.EXE
- SYS$SYSTEM:RUNDET.EXE
- SYS$SYSTEM:SYS.EXE
- SYS$SYSTEM:SYSBOOT.EXE
- SYS$SYSTEM:TTDRIVER.EXE
- SYS$MANAGER:WELCOME.TXT
- SYS$UPDATE:VMSINSTAL.COM

3. **Rebuild standalone BACKUP.**

MicroVMS Version 4.5 contains several corrections to images that are part of the standalone BACKUP procedure. To include these corrections, rebuild a standalone BACKUP kit after you install Version 4.5. Section 1.4.7 of the *MicroVMS User's Manual* explains how to use SYS$UPDATE:STABACKIT.COM to generate a copy of standalone BACKUP on diskettes or tape cartridge.

If your system has more than one fixed disk, you may also choose to build standalone BACKUP in an alternate system root, as described in Section 2.1.1 of these Release Notes.

4.  **Adjust system parameters.**

    Run the AUTOGEN procedure to adjust system parameters, issuing the
    command

    ```
    $ @SYS$UPDATE:AUTOGEN SAVPARAMS SHUTDOWN
    ```

    If, in step 4 of Section 1.2, you modified the values of *GBLSECTIONS* and
    *GBLPAGES* and stored their old values in SYS$SYSTEM:MODPARAMS.DAT,
    you may want to restore these values at this time.

## 1.5  Printing Patches Applied by the Update Kit

If you select either option 2 or 3 as an update option (in step 4 of Section 1.3),
VMSINSTAL produces the update description file, SYS$UPDATE:VMS045.TXT.
This file lists the patches, new images, and miscellaneous fixes that are part of the
Version 4.5 update kit. If you print this file, you will obtain the listing that appears
in Appendix A of these release notes.

If you select either option 1 or 3, VMSINSTAL produces a journal file (with the
extension .JNL) for each image that is patched during the update. Journal files
contain a record of each patch made to these images but do not contain information
about modules that are replaced.

If you want a listing of the patches produced by the update process, print the journal
files using the following steps:

1.  Complete the update procedure that installs Version 4.5, including rebooting the
    system as described in Section 2.2.4 of either *Installing or Upgrading MicroVMS
    From Diskettes* or *Installing or Upgrading MicroVMS From a Tape Cartridge*.

2.  Log in to any account that has SYSPRV privilege and issue the following
    command:

    ```
    $ PRINT SYS$SYSTEM:*.JNL,SYS$LIBRARY:*.JNL
    ```

The journal files produced by the Version 4.5 update procedure occupy approxi-
mately 700 blocks. If you must conserve disk space, you may want to delete these
files from the system disk after you print them.

# Chapter 2

# New and Changed Features

This chapter discusses features of MicroVMS Version 4.5 primarily of interest to a system manager. To find specific topics, consult the index in the back of this manual.

## 2.1 System Manager Information

The following section describes the new features of MicroVMS Version 4.5 of interest to the system manager. It also discusses changes to the operating system since Version 4.4.

### 2.1.1 Using Standalone BACKUP from an Alternate System Root

Section 1.4.7 of the *MicroVMS User's Manual* describes procedures for using diskettes and tape cartridges to build a standalone BACKUP kit. You can also build a standalone BACKUP kit in the alternate root SYSE on the system disk. It is much faster to boot standalone BACKUP from SYSE than from diskettes, and slightly faster than booting from a tape cartridge. The only disadvantage of booting standalone BACKUP from SYSE is that you cannot restore files to the same disk from which you boot standalone BACKUP. Therefore, if your MicroVAX is a single disk system, there is no reason to build standalone backup on an alternate system root.

#### 2.1.1.1 Building Standalone BACKUP on the Alternate System Root SYSE

Use the STABACKIT command procedure to build standalone BACKUP in the alternate system root SYSE. First, log in to the system manager's account, SYSTEM. Then, enter the following command:

```
$ @SYS$UPDATE:STABACKIT SYS$SYSDEVICE:
```

Be sure to enter the command exactly as shown. The STABACKIT command procedure automatically builds standalone BACKUP in the alternate system root SYSE. When the following message appears on the screen, the kit has been built.

```
The kit is complete.
```

### 2.1.1.2 Booting Standalone BACKUP from an Alternate System Root

In order to boot standalone BACKUP from the alternate system root SYSE, the halt enable/disable switch on a MicroVAX II must be set to the enable position. (Because MicroVAX I systems have no halt enable/disable switch, halts are permanently enabled on a MicroVAX I.)

Boot standalone BACKUP from alternate system root SYSE as follows:

1. Enter the following command to shut down the system:

   ```
   $ @SYS$SYSTEM:SHUTDOWN
   ```

2. Respond to the questions output by the SHUTDOWN command procedure by pressing the RETURN key.

3. As the shutdown continues, the console terminal prints several informational messages. When the console terminal prints the following message, the shutdown is completed:

   ```
   SHUTDOWN COMPLETE - USE CONSOLE TO HALT SYSTEM
   ```

4. Halt the processor by pressing the HALT button twice.

5. Enter the following command to boot standalone BACKUP from SYSE:

   ```
   >>> B/E0000000 ddcu
   ```

   where **E** is followed by seven zeros and **ddcu** is the device name of the system disk.

6. When it has booted, standalone BACKUP identifies itself and displays the dollar sign ($) prompt:

   ```
   %BACKUP-I-IDENT, Standalone BACKUP V4.4; the date is <dd-mmm-yyyy hh:mm>
   $
   ```

## 2.1.2  MicroVAX II Large Memory Systems

MicroVMS Version 4.5 supports MicroVAX II systems with up to 16 megabytes of main memory. Earlier versions of MicroVMS only support up to 9 megabytes of main memory. If you would like to run MicroVMS V4.4 with more than 9 megabytes of memory, you may do so, but you may experience the following cosmetic problems:

- AUTOGEN sets the PQL_DWSDEFAULT SYSGEN parameter to a value which is too small, resulting in the following error message every time you boot the system:

  ```
  %SYSBOOT-W-WS, default and quota raised to PHD+MINWSCNT
  ```

  There is no actual harm because of the low SYSGEN parameter value. However, you can work around the error message by raising the value of the *PQL_DWSDEFAULT* SYSGEN parameter.

- The MicroVMS SHOW MEMORY display will report up to 2 bad pages of memory, when in fact all the pages are good. There is no workaround for this problem.

If the output volume is the first volume in the backup operation, only QUIT and CONTINUE are available as valid recovery options. If the output volume is some subsequent volume in the backup operation, then RESTART is also available.

RESTART causes BACKUP or standalone BACKUP to restart the backup operation at the beginning of the current save set volume. As of Version 4.5, the utility unloads the current tape from the drive as soon as the RESTART option is taken and then prompts for a replacement volume. It is important that the operator *not* load the new tape until the utility has prompted for it.

Prior to Version 4.5, if more than a threshold number of errors were detected on the output tape and the operator wanted to select the RESTART option, the operator had to remove the tape from the drive before replying to the BACKUP prompt.

### 2.1.3  ADD_ Records for Numeric SYSGEN Parameters Allowed in AUTOGEN

With Version 4.5, AUTOGEN allows ADD_ records to be included in SYS$SYSTEM:MODPARAMS.DAT for all numeric SYSGEN parameters. Previous to this release, an ADD_ record would affect only those parameters that AUTOGEN itself calculated, the amount specified by the record being added to AUTOGEN's calculated value.

In Version 4.5, the value specified in an ADD_ record for a parameter that AUTOGEN does not calculate will be added to that parameter's default value. For example, if AUTOGEN encounters the record "ADD_WSINC=50" in MODPARAMS.DAT, *WSINC* will be set to *200* (the default of 150 plus the specified 50) after the next boot.

# Chapter 3

# Problems, Restrictions, and Notes

This chapter discusses problems that have been corrected in Version 4.5 of the MicroVMS operating system. It also describes any restrictions that may apply to the use of the Version 4.5 operating system, and contains other information concerning the release.

For ease of reference, the material in this chapter is arranged under the following categories:

Section 3.1—General User Information
Section 3.2—System Manager Information
Section 3.3—Application Programmer Information
Section 3.4—System Programmer Information

To find specific topics, consult the index in the back of this manual.

## 3.1   General User Information

This section describes problems resolved in MicroVMS Version 4.5, lists known restrictions, and contains other information about the release of interest to the general user.

### 3.1.1   VAXTPU GET_INFO Command

Version 4.5 corrects a VAXTPU problem in which the GET_INFO built-in procedure would cause an access violation when too few arguments were passed to it. GET_INFO code has been fixed to check the number of parameters properly.

### 3.1.2  VAXTPU and Terminal Widths

Version 4.5 corrects a problem that occurred when VAXTPU set up a terminal width other than 80, 132, or 84. Until this release, VAXTPU forced to 80 a terminal width less than or equal to 80. VAXTPU forced to 132 a terminal width greater than 80, and treated a device type of VK100 as a special case of a terminal width of 84. This behavior is undesirable on such systems as the VAXstation, which permits terminal widths other than 80 and 132.

The Version 4.5 replacement image TPU$CCTSHR.EXE corrects this problem for terminal widths other than 80 or 132 by preserving the terminal width at startup. If a terminal width *other than* 80 or 132 is specified, in either a SET WIDTH command issued through the EVE interface or a SET SCREEN command issued through the EDT emulator interface, VAXTPU will *not* send an escape sequence to the terminal to change the width to 80 or 132. (This caused the character size to change on a VT100 or VT200, and the font to change on a VAXstation.)

For a terminal width of 80 or 132, there is no change in behavior.

If, for some applications, it is important to preserve the old behavior, you can access both the EVE interface and the EDT emulator interface sources in directory SYS$LIBRARY. Change the interface accordingly:

- If the terminal width to be set is *less than* 80, first set the width to 80. Then set it to the desired width.

- If the terminal width to be set is *greater than* 80, first set the width to 132. Then set it to the desired width.

Remember to record any changes you make to the EVE interface or EDT emulator interface sources. Future releases of the operating system may supply new versions of the sources and require that you redo your edits.

## 3.2  System Manager Information

This section describes problems resolved in MicroVMS Version 4.5, lists known restrictions, and contains other information about the release of interest to the system manager.

### 3.2.1 Recommendation to Start Error Logging on MicroVAX Systems

DIGITAL recommends that the error logging process always be started on a MicroVAX system with RA-series disks. The information contained in the error log is essential to DIGITAL field service personnel.

To have the error logging process start automatically each time the system is bootstrapped, edit the site-independent startup procedure, SYS$MANAGER:SYSTARTUP.COM. Delete the comment delimiter (!) from the following line:

```
$! @SYS$SYSTEM:STARTUP ERRFMT
```

See the comments in the template site-specific startup command procedure, SYS$MANAGER:SYSTARTUP.COM, for additional information.

The error logging process may be started at any time after the system has been bootstrapped using the following DCL command:

```
$ @SYS$SYSTEM:STARTUP ERRFMT
```

**NOTE:**  To conserve disk space, managers of small MicroVAX configurations (less than 5,000 free blocks on the system disk) may prefer not to start up the error logging process.

### 3.2.2 Documentation Correction: Normal System Startup

The instructions for Normal System Startup (booting) were inadvertently omitted from Chapter 1 of the Version 4.4 edition of the *MicroVMS User's Manual*. They should appear on page 1-1 as follows:

Before starting the system for the first time, the base system must be installed. See *Installing or Upgrading MicroVMS From Diskettes* and *Installing or Upgrading MicroVMS From a Tape Cartridge* for installation instructions.

#### 3.2.2.1 Starting Up the System If Halts Are Enabled

The MicroVAX I system does not have a halt enable/disable switch. Therefore, halts are always enabled on a MicroVAX I system and you should always use this procedure to start up a MicroVAX I. All MicroVAX II systems have a halt enable/disable switch, which is described in Section 2.1.2.2 of *Installing or Upgrading MicroVMS From Diskettes* or *Installing or Upgrading MicroVMS From a Tape Cartridge*. If the halt enable switch is set to the enable position, use this procedure to start up the system. If the halt enable switch is set to the disable position, use the procedure described in Section 3.1.2.2.

1.  To start up (boot) the system, turn on the console terminal if it is not already on.

2.  Turn on the processor by pressing the power switch to the 1 (ON) position. Make sure the control panel is set for normal operations (only the Ready button and the DC OK light should glow).

3.  If the console-mode prompt ( $>>>$ ) does not appear on the console terminal screen, press the Halt button on the processor control panel twice.

4.  Enter the following command at the console-mode prompt and press RETURN:

    `>>> B`

5.  The message ATTEMPTING BOOTSTRAP will appear on your screen, followed by a message stating the version number of the operating system. If your processor is a MicroVAX I, or if your MicroVAX II has been turned off for more than 240 hours, the system will prompt you to enter the date and time:

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

    Enter the date and time in *exactly* the following format and press RETURN:

    `dd-mmm-yyyy hh:mm`

    | | |
    |---|---|
    | dd | Day of the month (one or two digits) |
    | mmm | Month (first three letters of the month's name) |
    | yyyy | Year (four digits) |
    | hh | Hour of the day in 24-hour format (one or two digits) |
    | mm | Minute of the hour (two digits) |

    You must follow the format exactly or you will be prompted again. The hyphens, space, and colon must appear as shown and you must use four digits for the year. For example, September 25, 1986, at 3:30 P.M. is typed as follows:

    `25-SEP-1986 15:30`

    You do not have to be exact in the value of the date and time. However, you should be as close as possible. Otherwise, file activity, security-related events, and accounting data will not be recorded properly. If you will be performing incremental backups, starting up the system with the correct time is essential.

    Startup takes several minutes. You will see several console-mode and MicroVMS messages. The final message reads as follows:

    `SYSTEM    Job terminated at dd-mmm-yyyy hh:mm:ss.ss`

You have successfully started up (booted) your system. You can now log in.

### 3.2.2.2 Starting Up the System If Halts Are Disabled

If the halt enable/disable switch, which is described in Section 2.1.2.2 of *Installing or Upgrading MicroVMS From Diskettes* or *Installing or Upgrading MicroVMS From a Tape Cartridge*, is set to the disable position, use this procedure to start up the system.

1. Turn on the console terminal.

2. Turn on the processor by pressing the power switch to the 1 (ON) position. Make sure the control panel is set for normal operations, only the Ready button and the DC OK light should glow.

3. The system will boot automatically, and will prompt you to enter the date and time only if power has been turned off for more than 240 hours.

4. Startup takes several minutes. You will see several console-mode and MicroVMS messages. The final message reads as follows:

   SYSTEM job terminated at dd-mmm-yyyy hh:mm:ss.ss

You have successfully started up (booted) your system. You can now log in.

## 3.2.3 Documentation Correction: Additional MicroVAX I Bootstrap Support

A description of MicroVAX I bootstrap support was inadvertently omitted from Chapter 1 of the Version 4.4 edition of the *MicroVMS User's Manual*. It should appear as follows:

**REQUIRES THE COMMON UTILITIES OPTION**

The MicroVAX I bootstrap ROM can only bootstrap a system disk attached to the first Mass Storage Control Protocol (MSCP) controller. If you want to bootstrap a system disk on another MSCP controller, you must first install MicroVMS Version 4.1 or greater on the system disk, and then create a special diskette to be used as a console diskette.

If you have an RC25 disk drive with one fixed and one removable disk, DIGITAL recommends that you use the removable disk as the system disk. The physical device name of this removable disk is DAB0:. In this way, when you perform backups, you can remove the system disk and back up the fixed disk (containing user files) to a spare removable disk. If there are user files on the system disk, you can back them up to diskettes.

### 3.2.3.1 Creating the Console Diskette

Take the following steps to create the console diskette. This example assumes that the first RC25 disk attached to the second MSCP controller (DAB0:) will be the new system disk.

1. Log in to the system manager's account, SYSTEM.

2. Check the first diskette drive to ensure that it is inactive. If there is a diskette in the drive, remove it following the procedure described in Section 2.2.3.2 of *Installing or Upgrading MicroVMS From Diskettes.*

3. Label a scratch diskette CONSOLE DISKETTE. A scratch diskette is a new diskette or a diskette that contains no information that you wish to save.

4. Enter the following command to invoke the command procedure that creates a console diskette for a MicroVAX I:

   ```
   $ @SYS$UPDATE:VMBUVAX1
   What system disk do you want to be able to boot from? DAB0:
   ```

   Ignore the informational messages that are displayed on your terminal screen. The system will then prompt you for the name of the diskette drive on which the intermediate media (console diskette) will be mounted. In this example, the media is mounted in diskette drive 1 (DUA1:).

   ```
   Where will the intermediate RX50 media be mounted? DUA1:
   ```

   You will then be prompted to insert a diskette into drive 1 and asked if you are ready. Insert the diskette labeled CONSOLE DISKETTE into drive 1 and enter YES in response to the following prompt:

   ```
   Are you ready? YES
   ```

   When it has finished building the console diskette, the system will display the following message:

   ```
   The media on DUA1 may now be used to boot device DAB0.
   ```

After you create the console diskette, write-protect it in order to prevent anyone from accidentally overwriting the contents. To write-protect a diskette, cover the square notch in the upper right corner of the diskette with a silver tab.

Note that in order to bootstrap the system, the console diskette must be in diskette drive 1.

You may wish to add the following command to the end of the SYS$MANAGER:SYSTARTUP.COM command procedure to mount the console diskette automatically every time you bootstrap the system. This will prevent other users from removing the diskette thinking that the drive is not in use.

```
$ MOUNT/SYSTEM/FOREIGN $FLOPPY1 INTERMEDIATE
```

### 3.2.3.2 Copying the MicroVMS Operating System to the New System Disk

Take the following steps to copy the MicroVMS operating system to a disk on the second MSCP controller.

**CAUTION:** This procedure will destroy the previous contents of the new system disk.

1. Load the system disk in the drive and spin it up. See the user's guide for the disk drive for instructions.

2. Log in to the system manager's account, SYSTEM.

3. Insert the console diskette into diskette drive 1 and mount it.

   ```
   $ MOUNT/SYSTEM/FOREIGN $FLOPPY1 INTERMEDIATE
   ```

4. Notify current users to log out. Ensure that no new user can log in. The following command prevents users from logging in:

   ```
   $ SET LOGINS/INTERACTIVE=0
   ```

5. Shut down the network if it is running. Perform this step only if your system is running DECnet–VAX. If you are not sure whether your system is running DECnet–VAX, enter the following command:

   ```
   $ SHOW NETWORK
   ```

   If the following message appears, your system is not running DECnet–VAX.

   ```
   %SHOW-I-NONET, network unavailable
   ```

   If your system is running DECnet–VAX, turn off the network by entering the following commands:

   ```
   $ RUN SYS$SYSTEM:NCP
   NCP> SET EXECUTOR STATE OFF
   NCP> EXIT
   ```

6. Stop all batch and print queues. To do so, perform the following tasks:

   a. Enter the following command to determine the state of all queues:

      ```
      $ SHOW QUEUE/DEVICE/BATCH/ALL
      ```

   b. Stop each active queue by entering the following command:

      ```
      $ STOP/QUEUE/NEXT queue-name
      ```

      where **queue-name** is the name of an active queue.

7. Enter the following commands to copy MicroVMS and all other files on the old system disk to the new system disk:

   ```
   $ INITIALIZE new-disk MICROVMS
   $ MOUNT/FOREIGN new-disk
   $ BACKUP/IMAGE/VERIFY/IGNORE=INTERLOCK old-disk: new-disk:
   ```

where **old-disk** is the physical device name of the disk that currently serves as your system disk and **new-disk** is the physical device name of the disk that will serve as your new system disk.

For example, if your current system disk is DUA0: (the fixed RD51 or RD52 disk) and you want your new system disk to be DAB0:, enter the BACKUP command as follows:

```
$ BACKUP/IMAGE/VERIFY/IGNORE=INTERLOCK DUA0: DAB0:
```

Ignore any error messages that report specific files not copied by BACKUP.

8.  To complete this procedure, enter the following command to dismount the new system disk.

```
$ DISMOUNT/NOUNLOAD new-disk
```

where **new-disk** is the physical device name of your new system disk.

### 3.2.3.3 Bootstrapping from the New System Disk

Take the following steps to bootstrap the system from the new system disk.

1.  Make sure that the console diskette is loaded in diskette drive 1.

2.  If the system is running, enter the following command to shut it down:

```
$ @SYS$SYSTEM:SHUTDOWN
```

Reply to the prompts output by the shutdown procedure by pressing RETURN.

If the system is *not* running, halt the system. Press the HALT button on the processor control panel twice to enter console mode; the console-mode prompt ($> > >$ ) should appear on the console terminal.

3.  Bootstrap the system by entering the following command:

```
>>> B ddcu
```

where **ddcu** is the name of the diskette drive that contains the console diskette. For example, if the console diskette is in diskette drive 1, enter the following bootstrap command:

```
>>> B DUA1
```

4.  Continue with normal system startup.

When you are satisfied that your new system disk is working properly, delete all the MicroVMS files from the old system disk. If you do not delete the MicroVMS files from your old system disk, the system might accidentally use the old system disk if the console diskette is not loaded in the drive.

### 3.2.4  Error Count for Remote (RTA*n*:) Devices

The error count for remote terminals may be randomly incremented due to a software protocol error. You can observe the error count by using the DCL command SHOW DEVICE RTA*n*:. The increase in error count, however, does not reflect a hardware error or any other data corruption.

This problem will be fixed in a future release of the operating system.

### 3.2.5  SDA COPY Command Marks SYSDUMP.DMP As Empty

The correct behavior of the System Dump Analyzer (SDA) COPY command varies depending on whether the crash dump is in PAGEFILE.SYS or SYSDUMP.DMP. In the former case, page file pages should be released (that is, the copy of the dump in PAGEFILE.SYS is lost) when the copy completes. In the latter, the original dump in SYSDUMP.DMP should be retained until the next time the system crashes or is shut down.

In Version 4.5, SDA incorrectly marks SYSDUMP.DMP as empty after a successful copy, indicating that the data in SYSDUMP.DMP is no longer accessible to SDA. The dump should be analyzed using the dump file created by the SDA COPY command.

This problem will be corrected in a future release.

## 3.3  Application Programmer Information

This section describes problems resolved in MicroVMS Version 4.5, lists known restrictions, and contains other information about the release of interest to the application programmer.

### 3.3.1  SS$_NOENTRY Error Reported in XABPRO Block for ACL-Protected Files

In Versions 4.4 and 4.5 of MicroVMS, files that have access control lists (ACLs) associated with them will get a status return of SS$_NOENTRY in the XAB$L_ ACLSTS field of the XABPRO block if this XABPRO block was associated with the file when it was opened.

There are two suggested workarounds:

1.  Ignore the status and check the size of the access control list (XAB$W_ACLLEN) returned by RMS to ensure that the user buffer size was large enough to contain the ACL.

2.  Perform a $DISPLAY operation after opening the file. This will correctly return the status in XAB$L_ACLSTS.

This problem will be corrected in a future release of the operating system.

### 3.3.2  Ethernet/802 Drivers: Promiscuous Mode Change Planned

Software that currently utilizes the promiscuous mode feature of the Ethernet/802 drivers may need to be modified to run properly on future releases of the operating system. Since the Ethernet/802 drivers now allow a wide variety of packets to be transmitted and received, some restrictions will be placed on channels that turn on the promiscuous mode (NMA$C_PCLI_PRM) parameter. When this parameter is turned on, the following rules will apply:

- Both Ethernet and IEEE 802 formatted packets will be received. The P5 buffer, if specified, must be at least 16 bytes long.

- Only one type of packet may be transmitted: either Ethernet or IEEE 802. The value of the NMA$C_PCLI_FMT parameter will be used to determine which format will be used for transmissions.

- The NMA$C_PCLI_PAD parameter will be ignored during READ operations on channels that are running in promiscuous mode.

- The promiscuous mode channel may not be put into SHARED access mode. Attempts to put the promiscuous mode channel into shared mode will result in an SS$_BADPARAM error.

Applications using the promiscuous mode feature should note these planned restrictions. Those applications should be modified to run within these restrictions before the restrictions are applied and shipped in the VMS Ethernet/802 drivers.

### 3.3.3  Ethernet Controller: List of Expected Errors

Certain Ethernet controllers support features that allow them to communicate with the hardware outside the VAX system to detect hardware failures. If the hardware connected to the Ethernet controller does not support these "hardware failure detection" features, then the controller and driver will report errors which are not true errors.

To facilitate the detection of true errors, use the following list of "expected" errors to eliminate those errors which are caused by the lack of hardware failure detection support.

- When using the DEQNA with the DECOM transceiver, a "Send failure" with reason code "Short circuit" will be reported for each packet transmitted.

- When using the DEUNA or DELUA with broadband, a "Collision detect check failure" will be reported for each packet transmitted.

### 3.3.4  Documentation Correction: IO$M_OUTBAND

Please replace the description of IO$M_OUTBAND on page QIO-25 of the *MicroVMS Programming Support Manual* with the following text:

> **IO$M_OUTBAND [.OR. IO$M_INCLUDE] [.OR. IO$M_TT_ABORT]**
>
> Delivers an AST for the process if the user enters any control character specified in P2. Only one AST can be queued. An out-of-band AST is a repeating AST and will remain queued until explicitly disabled. Specify 0 for P1 if the AST entered on the channel is to be canceled. The optional IO$M_INCLUDE modifier includes the control character in the data stream. The optional IO$M_TT_ABORT modifier aborts the current I/O operation.

### 3.3.5  Documentation Correction:  FORTRAN IBITS Function

On page FOR-128 of the *MicroVMS Programmer's Manual*, please correct the argument list for the IBITS function so that

  **IBITS**(start_position,end_position,integer)

is replaced by

  **IBITS**(integer,start_position,end_position)

### 3.3.6  Documentation Corrections:  SMG$SET_KEYPAD_MODE and SMG$READ_STRING

In the description of SMG$SET_KEYPAD_MODE on page RTL-233 of the *MicroVMS Programming Support Manual*, please reverse the mode values in the table so that *0* indicates numeric mode and *1*, applications mode.

In the description of SMG$READ_STRING on page RTL-218 of the same manual, please add the following **term-code** values to those listed:

| Keyname | Code |
|---------|------|
| FIND    | 311  |
| INSERT  | 312  |
| REMOVE  | 313  |
| SELECT  | 314  |
| PREV    | 315  |
| NEXT    | 316  |

## 3.3.7 SCNRTL Problems Corrected

Version 4.5 corrects the following VAX SCAN Run-Time Library (SCNRTL) problems:

- A PRUNE statement causing an access violation, depending on the order in which nodes have been added to the tree that is being pruned.

- A call to SCN$GET_TOKEN_NAME resulting in an access violation during virtual memory cleanup.

- Specification of VARYING STRING as the input stream resulting in data corruption, because of the length being improperly determined from the descriptor.

## 3.3.8 Debugging Shareable Images—Change in Behavior from Pre-Version 4.4 Releases

If, prior to Version 4.4, you linked your shareable images using the LINK/SHARE command, you should be aware that linking shareable images in this manner will now result in traceback information being passed to the shareable image.

When you debug your program, and execution is suspended within that shareable image, the debugger will set the image automatically. This is called dynamic image setting.

This will result in different symbolic information being made available. For example, the display for SHOW CALLS will look different. In contrast to module setting, the symbol information for only the currently set image is available at any one time.

If you prefer the old behavior, you can link your shareable image with the command LINK/SHARE/NOTRACE. Traceback information will not be present in the image and DEBUG will not set the image.

To take full advantage of the new shareable image support, you should link your shareable image with the command LINK/SHARE/DEBUG. Then full symbol table information will be available, the debugger will set the image, and you can perform symbolic debugging of that shareable image.

### 3.3.9  Debugger Window—Change in Behavior from MicroVMS V4.4

Prior to MicroVMS Version 4.5, if the debugger detected that it was running on a VAXstation, it would create a separate emulated terminal window for its own input and output. This meant that terminal I/O performed by the program was logically and physically separated from the debugger's I/O— an arrangement that was particularly helpful in debugging screen mode applications.

In order to remove a potential problem on the VAXstation, the method that the debugger uses to control the separate window has been changed. Previously, the debugger controlled the separate window with UIS$xxx calls. It now uses the new Operating System Command (OSC) sequences to communicate control functions to the terminal emulator.

With this update, the debugger's behavior is slightly different. It will still create a separate window, but only if the VAXstation meets both of the following conditions:

- It must be running the SDC release of VWS 3.0 (or higher).

- You must have defined the system logical name UIS$VT_ENABLE_OSC_ STRINGS as follows:

  ```
  $ DEFINE /SYSTEM/EXEC  UIS$VT_ENABLE_OSC_STRINGS  TRUE
  ```

This patch also includes fixes for several other non-VAXstation bugs.

### 3.3.10  Failure of VAX BASIC SET INITIAL CHOICE Statement

In VAX BASIC Version 3.0, the SET INITIAL CHOICE statement will fail when it is used with a choice array with no count specified. To avoid this problem, specify a count clause when you use this statement.

This problem will be corrected in a future software release.

### 3.3.11 SYS$CREMBX and Process-Private Logical Names

Version 4.4 introduced a change to the behavior of logical names that are automatically created as a part of mailbox creation or when a volume is mounted. Specifically, if a logical name table has been redirected to point to a process-private name table, the logical name is no longer deleted when the mailbox disappears or the volume is dismounted. (See the *MicroVMS Release Notes Version 4.4* for details of this change.)

Version 4.5 completes the decoupling of associated logical names from their creator when the names are placed into a process-private table. This change may affect a small number of programs that use the Create Mailbox system service (SYS$CREMBX).

Programs will only be affected under the following set of circumstances.

- The associated logical name table (LNM$TEMPORARY_MAILBOX or LNM$PERMANENT_MAILBOX) has been redefined to point to a process-private table.

- The program issues several $CREMBX calls from several threads of execution, using the same logical name.

The new behavior is that each call to $CREMBX under these circumstances will cause a new mailbox unit to be created and assigned to a new channel.

Note that applications that place mailbox names into shared name tables are unaffected by this change. That is, the second and succeeding calls to $CREMBX will assign new channels to the existing mailbox unit.

Note further that applications using several cooperating processes are also unaffected, even if the names are placed into a process-private table. (If the names existed in a process-private table, they were invisible to other processes even before this change was made.)

## 3.4 System Programmer Information

This section describes problems resolved in MicroVMS Version 4.5, lists known restrictions, and contains other information about the release of interest to the system programmer.

### 3.4.1  NETACP Verification of MOP Messages

Version 4.5 of the network ancillary control program (NETACP) performs some verification before it starts up a maintenance operation module (MOM) process to service an incoming maintenance operation protocol (MOP) request.

NETACP will only start up a MOM process under the following conditions:

- The request is not directed at a multicast address.

- The source node specified in the MOP request is defined in NETACP's node database.

- The MOP message requests an operating system and contains the software identification of the file to be loaded.

- The MOP request is not for a load or dump.

If NETACP does not start up a MOM process, it will generate an event message of type 0.7 (aborted service request, Line open error). The Ethernet address of the source node will also be displayed with the message.

### 3.4.2  Behavior of Zero-Length and Negative Byte Counts Submitted in $QIO Requests

Version 4.4 introduced a change into function-decision table (FDT) routines that prevented negative byte counts from being passed to the Queue-I/O Request system service (SYS$QIO) and its support subroutines. This check also disallowed byte counts of zero. While this change did not affect any drivers that are part of the VMS kit, it may have caused problems for user-written drivers.

Version 4.5 relaxes the restriction. While negative byte counts still cause an error return of SS$_BADPARAM, zero-length byte count transfers are again allowed.

# Appendix A

# MicroVMS Version 4.5 Update Description

This appendix contains a listing of the patches, new images, and miscellaneous
fixes contained in Version 4.5 update kit. This listing is obtained from the text file
SYS$UPDATE:VMS045.TXT that is produced by the installation procedure if option
2 or 3 is selected, as described in step 4 of Section 1.3.

```
1) ADARTL (patch image)

   ! ADARTL.EXE
   !
   !   EC001   SBL             23-Apr-1986
   !           MODULE: ADA$END_OF_FILE (X-3)
   !           SPR: 11-87184
   !           An uninitialized variable prevented END_OF_FILE from
   !           returning a consistent value when used in packages
   !           DIRECT_IO or DIRECT_MIXED_IO.

2) AGEN (miscellaneous fix)

   ! AUTOGEN.VUG
   !
   !   EC001   GHC0002         23-May-1986
   !           MODULE: AUTOGEN
   !           Set up to use the appropriate AUTOGEN update file based
   !           on which version of AUTOGEN currently exists on the
   !           system.

3) AUTOGEN (edit text file)

   ! AUTOGEN.COM
   !
   !   EC001   GHC0005         12-May-1986
   !           MODULE: AUTOGEN
   !           Allow ADD_, MIN_, MAX_ symbols in MODPARAMS.DAT for any
   !           numeric SYSGEN parameter. Start the MSCP server early in
   !           the boot cycle.
```

4) BACKUP (patch image)

```
! BACKUP.EXE
!
!   ECO006  KGW00021        30-May-1986
!           MODULE: TAPEUTIL
!           Patch MUST be applied to VMS V4.4 systems ONLY.
!
!           Excessive parity errors on a TA78 would result in
!           access to the tape being lost.
!           Repair this by unloading the tape if the RESTART
!           option is taken from the error handler.
```

5) BASRTL (patch image)

```
! BASRTL.EXE
!
!   ECO01   JCW1003         04-Mar-1986
!           MODULE: BAS$POWHH
!           Fix SPR 11-84761. Routine sometimes incorrectly
!           returned a negative result.
!
!           KC2009          07-Apr-1986
!           MODULE: BAS$CTRLC
!           Clear ASTs only if the user is trapping CTRL/Cs.
!
!           KC2011          18-Apr-1986
!           MODULE: BAS$ERROR
!           Change OPTION HANDLE semantics.
!
!           KC1119          20-Apr-1986
!           MODULE: BAS$OPEN
!           OPEN_HANDLER should free the wildcard context that
!           gets allocated.
!
!   ECO02   KC1080          15-May-1986
!           MODULE: BAS$$UDF_WL
!           Fix SPR 11-87232.  PRINT 1,2,3,4,5,6,7,8,9,10
!           correctly does not repeat the ninth element.
!
!           KC1019          15-May-1986
!           MODULE: BAS$$EXIT_HANDL
!           PUTMSG and UNWIND instead of resignaling conditions.
!
!           KC1012          15-May-1986
!           MODULE: BAS$$PUR_IO_BUF
!           If the RAB ISI is zero, do not try to purge the
!           dirty buffer.
```

```
!
!           KC1119          16-May-1986
!           MODULE: BAS$OPEN
!           Fix quad-key test.
!
!   ECO03   KC1063          19-May-1986
!           MODULE: BAS$CVT_OUT
!           Fix PRINT USING and FORMAT$ packed decimal bug.
!
!   ECO04   KC2012          16-Jun-1986
!           MODULE: BAS$ERROR
!           Fix an ON ERROR GO BACK bug.  Fix handling of
!           non-BASIC errors.
!
!           KC1120          24-Jun-1986
!           MODULE: BAS$OPEN
!           Fix OPEN_HANDLER so it does not destroy the
!           expanded string name.

6) BASRTL2 (patch image)

  ! BASRTL2.EXE
  !
  !   ECO0001  Bundled fixes for V4.5.
  !
  !           KC1010          25-Feb-1986
  !           MODULE: BAS$GR_OUTPUT_MISC
  !           Complain if the user specified one point, did not have a
  !           semicolon, and the beam was not previously on.
  !
  !           KC1005          25-Feb-1986
  !           MODULE: BAS$GR_INIT_INP
  !           For choice, verify that the count specified is within the
  !           size of the array.
  !
  !           KC1006          25-Feb-1986
  !           MODULE: BAS$GR_SET_ECHO_AREA
  !           For choice, call the routine that handles INQ_CHOICE_STATE.
  !
  !           KC1008          27-Feb-1986
  !           MODULE: BAS$GR_ASK_ECHO_AREA
  !           For choice, call the routine that handles INQ_CHOICE_STATE.
  !
  !           KC1015          02-Mar-1986
  !           MODULE: BAS$GR_ASK_MISC
  !           Change ASK TEXT ANGLE formula.
  !
```

```
!              KC1010          02-Mar-1986
!              MODULE: BAS$GR_ASK_CAP
!              ASK MAX COLOR should return NPREIDX - 1.
!
!              KC1019          02-Mar-1986
!              MODULE: BAS$MAT_ASSIGN
!              Correct conversion to double precision to handle scaling
!              properly.
!   ECO0002  More bundled fixes for V4.5.
!
!              KC1007          06-Mar-1986
!              MODULE: BAS$GR_INIT_INP
!              Fix earlier patch for edit KC1007 to reflect the source
!              fix.
!
!              KC1011          06-Mar-1986
!              MODULE: BAS$GR_ERROR
!              In SCAN_ERROR, only scan the list if the list was
!              specified.
!
!   ECO0003  More bundled fixes for V4.5.
!
!              KC1009          15-Mar-1986
!              MODULE: BAS$GR_ASK_ECHO_AREA
!              For string input, make sure the string descriptor has a
!              nonzero pointer.   A null string is not valid.
!
!              KC1019          15-Mar-1986
!              MODULE: BAS$$GR_UTIL
!              Change the exit handler to be a special routine that
!              calls GKS$EMERGENCY_CLOSE.
!
!              KC1006          17-Mar-1986
!              MODULE: BAS$GR_INIT_INP
!              For point, initialize RET_SIZE to work around a GKS bug.
!
!   ECO0004  More V4.5 bundled fixes.
!
!              KC1005          19-Apr-1986
!              MODULE: BAS$INKEY
!              If we get a CTRL/C then signal CTRL/C.
!
!   ECO0005  More V4.5 bundled fixes.
!
!              KC1015          15-May-1986
!              MODULE: BAS$GR_CTRL
!              CLEAR_WS should update the workstation.
!
```

```
!          KC1011           15-May-1986
!          MODULE: BAS$GR_OUTPUT
!          If the count specified is larger than the size of
!          the arrays then signal an error.
!
!          KC1007           15-May-1986
!          MODULE: BAS$GR_INIT_INP
!          If the count specified is larger than the size of the
!          arrays, then signal an error.   Also, DIM parameter should
!          be read/write storage not read-only.  Also, for valuator,
!          check that the initial value is within the range.
!
!          KC1013           15-May-1986
!          MODULE: BAS$GR_INPUT
!          LOCATE VALUE should check that the initial value is within
!          the range, if one is specified.
!
!          KC1012           16-May-1986
!          MODULE: BAS$GR_OUTPUT
!          Correctly handle cases where the user specified too few
!          coordinates.
!
!          KC1010           16-May-1986
!          MODULE: BAS$GR_SET_VIEWING
!          Fix SET_INP_PRIO.
!
!          KC1012           16-May-1986
!          MODULE: BAS$GR_ERROR
!          Translate some new messages.
!
!   ECO0006  More V4.5 fixes.
!
!          KC1008           20-May-1986
!          MODULE: BAS$GR_ASK_WS
!          Check that the text extent arrays are at least four
!          elements long.
!
!          KC1013           22-May-1986
!          MODULE: BAS$GR_ERROR
!          Translate some more messages.
!
!          KC1008           27-May-1986
!          MODULE: BAS$GR_INIT_INP
!          Correct KC1007.
!
!          KC1014           27-May-1986
!          MODULE: BAS$GR_INPUT
!          Correct KC1013.
```

```
!
!    ECO007  More V4.5 fixes.
!
!            KC1014          16-Jun-1986
!            MODULE: BAS$GR_ERROR
!            Fix the translation table.
```

7) COBRTL (patch image)

```
! COBRTL.EXE
!
!    ECO01   MDL             01-Apr-1986
!            MODULE: COB$ACCEPT, routine COB$ACC_SCR
!            Zero FIRST_CHARS_READ when there is a conversion
!            error in the case of NO BLANK CONVERSION.  Otherwise
!            corrupt data can be returned on a reprompt.
!
!    ECO02   MDL             14-Apr-1986
!            MODULE: COB$ACCEPT, routine COB$ACC_SCR
!            Reset ACC_SIZE in the same situation as above (ECO01).
!
!    ECO03   MDL             14-Apr-1986
!            MODULE: COB$ACCEPT, routine COB$$ILLEGAL_TERM
!            Subtract off FIRST_CHARS_READ when figuring remaining
!            number of characters to get after an illegal terminator
!            has been entered and the field is not full yet.
!
!    ECO04   MDL             12-May-1986
!            MODULE: COB$ACCECV, routine COB$$NUMERIC_CONV
!            Fix stripping of trailing zeros after the decimal point.
!            This is a correction to edit 1-002, introduced in V4.4.
```

8) CONVSHR (patch image)

```
! CONVSHR.EXE
!
!    ECO 1   JWT0238         23-Apr-1986
!            MODULE: RECL$REC
!            CONVERT/RECLAIM can leave behind partially
!            reclaimed buckets under the same circumstances
!            as the earlier problem discovered with the
!            reclaiming of records with key compression.
!            If any nondeleted record is encountered in
!            the bucket, don't modify the bucket.
```

```
 9) CTDRIVER (new image)

    ! CTDRIVER.EXE
    !
    !   ECO0001 DSS003         11-Mar-1986
    !           Add quota checking to prevent RWAST state. Add OOB
    !           INCLUDE checking.

10) DCL (new image)

    ! DCL.EXE
    !
    !   ECO01   HWS0002        16-May-1986
    !           Fix various DCL problems.

11) DCLTABLES (miscellaneous fix)

    ! DCLTABLES
    !
    !   ECO01   HWS0001        16-May-1986
    !           Update the command definition for SET.

12) DEBUG (patch image)

    !
    ! DEBUG.EXE
    !
    !   ECO01   RT001              Apr-1986
    !           Part of the patch to turn DEBUG V4.4 into DEBUG V4.5.
    !           This ECO fixes two bugs in the shareable image support.
    !
    !   ECO02   RT002              Apr-1986
    !           Part of the patch to turn DEBUG V4.4 into DEBUG V4.5.
    !           This ECO fixes two more bugs: a bug with examining
    !           arrays whose elements are larger than 2**16 bytes, and
    !           a bug in which the debugger infinite-loops if an Ada a
    !           program has BPT instruction in it which was not placed
    !           there by the debugger.
    !
    !   ECO03   RT003              May-1986
    !           Correction to fix #1. Make sure we set the SEC$M_WRT
    !           bit as well as the SEC$M_CRF bit.
    !
    !   ECO04   RT004              May-1986
    !           Fix a problem where DEBUG fails with UIS V3.0 on VAX
    !           stations if the default VT220 window size is set to
    !           anything other than 24 by 80.
```

```
!
!   ECO05   RTO05              Jun-1986
!           Fix error in ECO04.
!
!   ECO06   RTO06              Jul-1986
!           Change the method DEBUG uses to control the separate
!           window it creates on a VAXstation to using the terminal
!           emulator OSC sequences. This avoids a potential VAXstation
!           hang or crash situation.
```

13) DTKRTL (miscellaneous fix)

```
! DTKMSG.OBJ
!
!   1-002   TS                 11-Apr-1986
!           MODULE: DTK$MSGDEF
!           Add the error messages for the DTK$
!           facility to STARLET.OLB so users can
!           access them from their source code.
```

14) DTKSHR (new image)

```
! DTKSHR.EXE
!
!   1-003   TS                 11-Apr-1986
!           MODULE: DTK$UTIL
!           Fix to an internal routine, DTK$$GET_STATUS
!           for a timing problem with reading back a phone
!           status from the DECtalk.
```

15) DUDRIVER (new image)

```
! DUDRIVER.EXE
!
!    ECO03    MAS0065         27-May-1986
!             Fix connection walking bug that leads to spurious host
!             clears of HSCs following virtual circuit failures during
!             failover. Correct other miscellaneous problems involving
!             host and controller timeouts.  Relevant module audit
!             versions are DUDRIVER (X-27) and DUTUSUBS (X-30).
!
!    ECO02    PRD0226         16-May-1986
!             MODULE: DUDRIVER
!             Relink with new DUTUSUBS so image matches V4.5 stream.
!
!    ECO01    ROW0560         26-Apr-1986
!             MODULE: DUDRIVER
!             Fix the SSM test after RECORD_UNIT_STATUS in IO$_PACKACK
!             processing to use R3 (the UCB address) instead of R5
!             (the CDRP address).
```

16) ERFBRIEF (patch image)

```
! ERFBRIEF.EXE
!
!    ECO01    SAR0496         17-Apr-1986
!             MODULE: BRIEF_C_DISPATCHER
!             Enable VAXBI port communications controller support.
!
!             MODULE: BRIEF_DEVICE_ENTRY_ROUTINES
!             Enable VAXBI port communications controller support.
```

17)

```
! ERFBUS.EXE
!
!    ECO01    SAR0500         16-Apr-1986
!             MODULE: DECODE_PA_PB_DRIVER_ENTRIES
!             Correct output of PMDATR and control store value.
!             Update PESR MISC text as per new CI codes.
```

18) ERFCTLSHR (patch image)

```
! ERFCTLSHR.EXE
!
!   ECO01   RAP0093         23-Apr-1986
!           MODULE: RECSELECT.B32
!           Currently when /BEFORE is selected and we are processing
!           a record later than the date specified ERF exits
!           prematurely. This patch allows ERF to continue processing
!           subsequent records.
!
!   ECO02   RAP0095         23-Apr-1986
!           MODULE: ERFCONTRL.B32
!           Initialize SYE$L_OPTIONS with 'S' before calling
!           FULL_DISPATCHER. Update the version number of
!           ANALYZE/ERROR_LOG.
```

19) ERFLIB (new file)

```
! ERFLIB.TLB
!
!   ECO01   SAR0505         15-Apr-1986
!           MODULE: N/A
!           Enable AIE-NI support.
```

20) ERFPROC1 (patch image)

```
! ERFPROC1.EXE
!
!   ECO01   RAP0092         09-Apr-1986
!           MODULE: MSCPTXT.B32
!           Text change: RETRIES <-- RETRIES LEFT
!           This field was incorrectly translated as the number of
!           retries left.
!
!   ECO02   SAR0503         29-Apr-1986
!           MODULE: PADRIVER_LOGMESSAGE
!           Update port text routine.
!
!   ECO03   RAP0103         06-Jul-1986
!           MODULE: RAXXDVDP.B32
!           Only call DECODE_HSC_REQUESTOR if controller is an HSC.
!
!           MODULE: MSCPDTDSP.B32
!           Change the known length of SDI format packet from 56
!           to 49.
```

21) ERFSHR (patch image)

```
! ERFSHR.EXE
!
!    ECO01    SAR0502         29-Apr-1986
!             MODULE: DECODE_PA_PB_SHARE
!             Add AIE-NI support.
!
!    ECO02    RAP0094         28-Apr-1986
!             MODULE: LOGGER.B32
!             Add 8700 and 8550 support.
```

22) ERFSHR2 (patch image)

```
! ERFSHR2.EXE
!
!    ECO01    SAR0499         22-Apr-1986
!             MODULE: DECODE_BIIC_REGISTERS
!             Correct the AIE/AIO DTYPE values and the index
!             calculation for the NSLAVE_RTN table.
```

23) ETDRIVER (new image)

```
! ETDRIVER.EXE
!
!    ECO01    RBH0001         02-Apr-1986
!             MODULE: ETDRIVER
!             Add support for VAXBI port communications device.
!
!    ECO02    RBH0002         16-May-1986
!             MODULE: ETDRIVER
!             Include support for IEEE 802 protocol and multiport
!             synchronization.
```

24) F11AACP (patch image)

```
! F11AACP.EXE
!
!    ECO01    ACG0521         20-Jun-1986
!             MODULES: NONE
!             Build a patch descriptor for the remaining unused space
!             in the image file.
!
!    ECO02    ACG0521         20-Jun-1986
!             MODULES: DISPAT, IODONE
!             Correct the dispatching of IO$_DSE (data security erase)
!             functions when they are sent to the file system for a
!             window turn.
```

25) F11BXQP (patch image)

```
! F11BXQP.EXE
!
!    ECO01    ACG0519         08-May-1986
!             MODULE: CREATE
!             Correct a problem that could result in noncontiguous
!             space allocation on Files-11 subset 0 volume sets.
!
!    ECO02    LMP0331         11-Jun-1986
!             MODULE: DEACCS
!             Undo the change made in LMP0331 to enable the protection
!             check on the write attributes call.
!
!    ECO03,   ACG0521         20-Jun-1986
!    ECO04    MODULES: DISPAT, IODONE
!             Correct the dispatching of IO$_DSE (data security erase)
!             functions when they are sent to the file system for a
!             window turn.
!
!    ECO05    ACG0523         14-Jul-1986
!             MODULE: DIRSCN
!             Correct a problem that resulted in new versions of
!             files created on a volume set sometimes acquiring
!             incorrect protection and ownership attributes.
!
!    ECO06    ACG0524         15-Jul-1986
!             MODULE: DELFIL
!             When a multivolume file is deleted, ensure that the
!             file ID of the primary header is released on the right
!             volume. This problem occasionally causes HDRNOTMAP
!             bugchecks when operating on volume sets.
```

26) FORRTL (patch image)

```
! FORRTL.EXE
!
!    ECO01    KC1018         12-May-1986
!             MODULE: FOR$INQUIRE
!             Fix QAR171 from the V4.4 database.  INQUIRE should
!             be sure to dispense with the wildcard context
!             created for use by RMS.
```

27) JOBCTL (patch image)

```
! JOBCTL.EXE
!
!    ECO01    JES0001        02-Apr-1986
!             MODULE: ACCOUNTNG
!             Remove call to CLEAR_ACCOUNTING_FLAGS from routine
!             CLOSE_ACCOUNTING_FILE to fix bug where a SET ACCOUNTING
!             /NEW would unintentionally turn off accounting.
!
!             Add a call to CLEAR_ACCOUNTING_FLAGS in routine
!             WRITE_ACCOUNTING_FILE to turn off accounting if there
!             is an error while trying to write to the accounting file.
!
!    ECO02    JES002         02-Apr-1986
!             MODULE: SNDJBC
!             Add a call to CLEAR_ACCOUNTING_FLAGS to fix command
!             SET ACCOUNTING/DISABLE.  Previously this command would
!             have had no effect. Now accounting is turned on with
!             all options as stated in the documentation.
!
!    ECO03    JES003         16-Apr-1986
!             MODULE: SNDJBC
!             Check status after call to ENQUEUE_JOB in routine
!             ALTER_JOB. If an error is returned do not rewrite the
!             job record.
!
!    ECO04    JES004         16-Apr-1986
!             MODULE: SCHEDULER
!             Check status after call to ENQUEUE_JOB in routine
!             AFTER_NONAST. If an error is returned do not rewrite the
!             job record.
!
!    ECO05    JES005         16-Apr-1986
!             MODULE: SYMBIONT
!             Check status after call to ENQUEUE_JOB in routine
!             PROCESS_SYMBIONT_MESSAGE.  If an error is returned do not
!             rewrite the job record.
```

```
!
!   EC006    JES006          12-May-1986
!            MODULE: EXECUTOR
!            Call FIND_PENDING_JOBS in RESUME_EXECUTION routine to fix
!            bug where jobs that could execute after a queue had been
!            started remained pending.
!
!   EC007    JES007          12-May-1986
!            MODULE: SCHEDULER
!            Call EXECUTOR_ACCEPTS_JOB a final time in FIND_AVAILABLE
!            _EXECUTOR to ensure that the job's form is correct.
!
!   EC008    JES008          21-Aug-1986
!            MODULE: CONTROL
!            Nullify use of VMSD2 parameters by clearing the
!            FLAGS_V_READ_VMSD2 bit.
```

28) LBRSHR (new image)

```
! SYS$LIBRARY:LBRSHR
!
!            ROP0084         02-Apr-1986
!            Correct truncation of help text.
```

29) LIB (miscellaneous fix)

```
! LIB.MLB
!
!   EC002    EJL004          13-May-1986
!            MODULES: $ADPDEF, $BVPDEF
!            Add VAXBI VAX Port definitions.
!
!   EC001    EJL003          24-Apr-1986
!            MODULE: $CIBDTDEF
!            Correct CI BDT alignment.
```

30) LPDRIVER (new image)

```
! LPDRIVER.EXE
!
!   EC00001 RRB0001          03-Mar-1986
!            Fix byte count quota problems when I/O fails.  Support
!            uppercase characters for open and close brace characters.
```

31) MAIL (patch image)

```
! MAIL.EXE
!
!    ECO 1    ROP0095        12-Jun-1986
!             Check for nodes in a cluster when
!             running as a server.
```

32) MONITOR (patch image)

```
! MONITOR.EXE
!
!    ECO001                 28-Apr-1986
!             MODULE: COLLECTION_EVENT/CLASS_INIT
!             During class initialization, check to
!             determine whether we are monitoring a multiprocessor.
!             If we are, larger data buffers are needed for the
!             modes class. This code path was being taken more than
!             once if more than one dual processor was being monitored.
!             This resulted in a divide-by-zero error with the CLUSTER
!             class and bogus data for MODES and SYSTEM classes.
```

33) MTAAACP (patch image)

```
! MTAAACP.EXE
!
!    ECO01    JWT0241        16-May-1986
!             MODULE: END_OF_VOL
!             When encountering a serious exception, clear
!             it before calling START_VIO.  Failure to clear
!             the serious exception for HSC tapes was causing
!             the process to hang and lock up the drive.
```

34) NCP (patch image)

```
! NCP.EXE
!
!    ECO001   SFN004         12-May-1986
!             MODULE: NCPTABLES
!             Modify the ASCII string associated with the line BUFFER
!             SIZE parameter.  It used to read "UNA device buffer size",
!             change to read "Device buffer size".
```

35) NETACP (patch image)

```
! NETACP.EXE
!
!               *** NOTE: ECOs 14 through 16 were from the V4.4 mandatory
!               update. ECO 17 was assigned a number and we then decided
!               to start renumbering from ECO 1.  Once all ECOs (i.e., up
!               to and including 13) are used, we must skip up to ECO 18.
!
!
!   ECO014  PRB014        27-Mar-1986
!           MODULE: NETACPTRN
!           Work around problem of misaligned LTB structure.
!           For now, save size of structure when allocated, and
!           restore it just before it's deallocated. Also fix type
!           field.
!
!   ECO015  PRB015        27-Mar-1986
!           MODULE: NETACPTRN
!           Copy alias link region to new LTB when enlarging LTB on
!           the fly.
!
!   ECO016  PRB016        01-Apr-1986 (ignore implications)
!           MODULE: NETCLUSTR
!           Dequeue lock to a node's ILR when dequeuing its IDL.
!           Otherwise, as nodes come and go in the cluster, NETACP's
!           ENQLM is slowly eroded.
!
!   ECO17   BAS           11-Apr-1986
!           MODULE: NETCNFDLL
!           Change the DEVTRN entry for DSV to allow multiple units
!           on a controller.
!
!   ECO01   LY            30-Apr-1986
!           MODULE: NETTRN - code, NETTRN - NET_IMPURE psect
!           Change timer handling to use delta time instead of
!           absolute.
!
!   ECO02   PRB           08-May-1986
!           MODULE: NETCONFIG
!           Change version number for V4.5.
!
!   ECO03   PRB           08-May-1986
!           MODULE: NETCNFDLL
!           Fix problem where NETACP would remember the volatile
!           setting of the PSI parameter MICROCODE DUMP from one call
!           to the next.
!
```

```
!   ECO04   PRB           09-May-1986
!           MODULE: NETDLLTRN
!           Don't allocate cost/hops buffer in end node on designated
!           router transition.
!
!   ECO05   SN            14-May-1986
!           Fix the DSV device table entry in module NETCNFDLL.
!
!   ECO06   MMD394        16-May-1986
!           Fix the NET$PROC_XWB such that, if an error occurred while
!           processing the fields in the CI message, the logical link
!           is not created and the XWB is deleted.
!
!   ECO07   SN            16-May-1986
!           Add algorithm into NETACP such that NETACP will not start
!           up MOM unless 1) the requesting node is in the database,
!           2) the MOP message has a software ID in it, 3) the request
!           is not for the multicast address.
!
!   ECO08   SN            16-May-1986
!           Add new formatting routine to NETEVTLOG to account for the
!           event to be output if NETACP chooses not to start up MOM.
!
!   ECO09   PRB           01-Jun-1986
!           MODULE: NETACPTRN
!           Fix problem with LTB getting corrupted when number of
!           local links is decreased while number of alias links is
!           increased.
!
!   ECO10   PRB           14-Jul-1986
!           ** reserved **
!
!   ECO11   PRB           23-Jul-1986
!           ** reserved **
!
!   ECO12   LMP0384       06-Aug-1986
!           MODULE: NETCNFDLL.MAR
!           Ensure that the Ethernet object's UCB is appropriately
!           protected.
36) NETCONFIG (edit text file)

!   NETCONFIG.COM
!
!   ECO01   TRC0041       26-Mar-1986
!           Re-add the line for PA that got dropped in X-5.
```

37) NETDRIVER (patch image)

```
! NETDRIVER.EXE
!
!   EC003   PRB03          27-Mar-1986
!           MODULES: NETDRVNSP.MAR, NETDRVXPT.MAR
!           If packet is marked "return to sender", use the source
!           link ID, not the destination link ID, in selecting which
!           node in the cluster should get the packet. This prevents
!           unwarranted link timeouts (instead of timely notification)
!           when attempting to access an unreachable node with an
!           object with  OBJECT ALIAS OUTGOING enabled, which results
!           if the returned packet is misdirected within the cluster.  .
```

38) NMLSHR (patch image)

```
! NMLSHR.EXE
!
!   EC001   BAS            10-Apr-1986
!           MODULE: NMLSEDEST
!           Correct database IDs for six destination parameters of
!           the X29-SERVER database: SDTE, RDTE, CDTE, IDTE, RED,
!           and NET.
```

39) NODRIVER (patch image)

```
!
!NODRIVER.EXE
!
!   EC003   MMD0381        08-Apr-1986
!           Fix to the DDCMP's REQUEUE_XMT routine to save R2
!           around the call to DDCMP$SETCRC.
```

40) PATCH (patch image)

```
! PATCH.EXE
!
!   EC001   JAK0001        16-May-1986
!           JMS0001        02-Apr-1986
!           MODULE: PATWRT
!           Fix logic which computes the next block address for
!           multiblock image headers when updating the base VBN
!           in the ISDs.
```

41) PBDRIVER (new image)

```
! PBDRIVER.EXE
!
!   ECO01   WCY0050        01-May-1986
!           MODULE: PBDRIVER
!           Change the BDT alignment from quadword to octaword
!           in FPC$INITIAL routine.
```

42) PUDRIVER (new image)

```
! PUDRIVER.EXE
!
!   ECO01   RLRPURHANG      14-May-1986
!           MODULE: PUDRIVER
!           Software workarounds for two problems that sometimes
!           cause UDA ports to hang.
!
!           1. Introduce ability to alleviate "lost interrupts"
!           by calling POLL_RSPRING from PU$SA_POLL under appropriate
!           conditions.
!
!           2. In ISR (PU$INT) copy PDT$W_CMDINT and PDT$W_RSPINT to
!           UCB$W_PU_CMDINT and UCB$W_PU_RSPINT respectively and only
!           test for PURGE requests if both these flags are zero.
!           This corrects a timing error in UDA50 that sometimes
!           leaves UDA50 hanging waiting for a signal that purge has
!           been done.
!
!           RLRGLBPAGE      27-Aug-1986
!           Fix problem encountered when doing unaligned I/O
!           to or from a global page.  Fix is in SETUP_COPY_SEGx
!           routines.
```

43) REMACP (patch image)

```
! REMACP.EXE
!
!   ECO01   DSS0001         17-Mar-1986
!           MODULE: REMPROTCL
!           Set the UCB for a remote device online only after
!           the address of CTDRIVER has been inserted.
```

44) REMOVE (edit text file)

```
! REMOVE.COM
!
!   ECO01   JES0001        05-May-1986
!           Fix bug where the entire system would be removed
!           if SEARCH.EXE did not exist.
!
!           Fix bug where a given bad suboption would
!           result in an undefined symbol error.
!
!           Fix bug where a list of options is given for
!           deletion and only the first option gets deleted.
```

45) RMS (new image)

```
! RMS.EXE
!
!   ECO1    EJ0301        01-Apr-1986
!           MODULE: RMOSTALL
!           Check for failure in the $DCLAST call in order
!           to avoid hanging a number of processes waiting
!           for a lock.
!
!           PJH0001        07-Apr-1986
!           MODULE: RM1GETINT
!           Timeouts on record locks for shared sequential file
!           can cause process to be deleted. Problem occurs when
!           wait-on-timeout must give up bucket lock and doesn't
!           go back and get bucket lock after record lock is granted.
!           Patch is to go back and get bucket lock.
!
!           KPS031        09-Apr-1986
!           MODULE: RMSORNDWN
!           Ensure that rundown will check to see if a rundown
!           is already active before proceeding with the rundown. The
!           problem was that batch jobs in rundown that were deleted
!           with a DELETE/QUEUE/ENTRY command would sometimes incur an
!           executive mode bugcheck because two rundown threads were
!           active at the same time.
!
!           KPS032        09-Apr-1986
!           MODULE: RMSOSETDD
!           Ensure that SYS$SETDDIR will set and clear the
!           RMS active bit around operations in its internal parse
!           routines that allocate RMS data structures. This prevents
!           an executive mode bugcheck that was possible if SETDDIR
```

! was active when a call was made to RMS rundown. This most
! commonly would occur in batch jobs that were deleted by
! the job controller sending an executive mode AST to the
! target process.
!
! JWT0236          29-Apr-1986
! Use different key buffer for scratch area.  RMS was
! using key buffer 5 and destroying the value there.
!
! JWT0237          29-Apr-1986
! Fix "$UPDATE Corrupter."  RMS does a scan to
! determine the optimal split point.  As is the usual
! practice, RMS saves a little bit of state at each
! potential split point and goes on to evaluate the
! next potential split point.  Once the current split
! point is evaluated as less optimal than the
! previous, things can only go downhill.  So RMS restores
! the state from the previously evaluated split point
! and splits there.
!
! RMS was not restoring all of the saved state info
! from the previous split point, however.  Specifically,
! SAVE_REC_W_LO, a flag that indicates whether or not
! the new record ends up in the new (hi) or old (lo)
! bucket was not being restored.  This was leaving
! strange configurations of index records and
! continuation buckets when lots of duplicates were
! present.
!
! PJH002           29-Apr-1986
! Fix deadlock in the RMS last chance handler when a process
! is run down as a result of a STOP/ID on the process. The
! deadlock is possible only on a process which has a file
! using global buffers opened by more than one FAB within
! the process.
!
! JEJ0294          18-Mar-1986
! MODULE: RMOSETDID
! RMS was incorrectly handling full 16-directory-deep
! requests.  This was due to a directory path cache that
! was one element too short.  The directory path cache
! pruning code went berserk when it found this.  Correct
! it by allocating a larger directory path cache.
!
! JEJ0310          09-May-1986
! MODULE: RMOBUFMGR
! Further optimize the disk buffer clearing logic in
! order to speed up $CONNECT.

```
!
!            JEJ0311          11-May-1986
!            MODULE: NTOCREATE
!            Properly propagate UPI sharing option to RSX-based
!            remote partners.
!
!            JEJ0312          12-May-1986
!            MODULE: NTOLNKCSH
!            Add support for timing out cached logical links.  If the
!            link is not reused within 30 seconds of being cached, it
!            is deaccessed and deassigned.
!
!   ECO2:   JEJ0340          14-Jul-1986
!            MODULE: RM1GET
!            Bucket locks may not be returned if a $GET encounters
!            end-of-file at the wrong moment.
!
!            JEJ0342          21-Jul-1986
!            MODULE: RMSOREWIN
!            $REWIND incorrectly dropped shared sequential files out
!            of "connected for append" mode, thus causing later
!            append operations to potentially corrupt the data file.
!
!            JEJ0344          22-Jul-1986
!            MODULE: RMOCACHE
!            An $EXTEND operation may incorrectly fail on a shared
!            sequential file if VBN 1 had been previously cached with
!            deferred writeback enabled.
!
!            JEJ0347          29-Jul-1986
!            MODULE: RM1GETINT
!            Setting USZ to zero would fail to reset the BDB pointer
!            before exiting with an error.
```

46) RUNDET (patch image)

```
! RUNDET.EXE
!
!   ECO1   ROP0094          15-May-1986
!            Correct LIB$CVT_DTIME call to correctly deal with delta
!            times greater than 24 hours.
```

47) SCNRTL (patch image)

```
! SCNRTL.EXE
!
!   ECO01   MIZ             05-May-1986
!           MODULE: SCN$START
!           Use proper length for string input stream descriptor.
!
!   ECO02   MIZ             05-May-1986
!           MODULES: SCN$UTIL, SCN$DBGEXT, SCN$ERROR
!           Return dynamic string, if requested, from
!           SCN$GET_TOKEN_NAME. Initialize output descriptor in calls
!           to SCN$GET_TOKEN_NAME.
!
!   ECO03   MIZ             05-May-1986
!           MODULE: SCN$PRUNE
!           Fix bug in pruning algorithm for interior tree nodes.
```

48) SDA (patch image)

```
! SDA.EXE
!
!   ECO01   SJF4501         16-May-1986
!           MODULE: CRASH
!           Correct error message for new members of 8NN CPU family.
```

49) SETPO (patch image)

```
! SETPO.EXE
!
!   ECO01   ACG0516         28-Mar-1986
!           MODULE: SETPASSWORD
!           Correct a problem that could cause occasional access
!           violation faults in the processing of SET PASSWORD
!           commands.
!
!   ECO02   LMP0366         01-Aug-1986
!           MODULE: SETPWD
!           Correct severity of "no privilege" message in
!           unsuccessful attempts to set the system password.
```

50) SETRIGHTS (new image)

```
! SETRIGHTS.EXE
!
!   ECO01                    11-Jun-1986
!           Provide the SETRIGHTS image that was missing from the
!           base MicroVMS system.  This eliminates the noise
!           message that appears when the system is booted.
```

51) SMBSRVSHR (new image)

```
! SMBSRVSHR.EXE
!
!   ECO0001 RRB0001          07-May-1986
!           Fix problem with files left open.  Specifically, device
!           control library modules, main input files.  Fixes yet
!           another instance of unexpected symbiont process
!           termination.
```

52) SMGRTL (miscellaneous fix)

```
! SMGDEF.SDI
!
!   1-002   TS               01-May-1986
!           MODULE: $SMGDEF
!           Provide $SMGDEF as one module instead
!           of two appended modules.
```

53) STABACKIT (edit text file)

```
! STABACKIT.COM
!
!   ECO01   CWH4005          16-Apr-1986
!           Make sure that WRITEBOOT is on the system before
!           using it, because MicroVMS has VMB but not WRITEBOOT.
```

54) STABACKIT2 (edit text file)

```
! STABACKIT.COM
!
!   ECOnn   JJO0022          27-Feb-1986
!           Provide hooks to build RX50 kits which can be removed
!           when booting standalone BACKUP. Track the SYSBOOT change
!           which removes the need to use B/20000 when booting from
!           TK50s.
```

55) STABACKUP (patch image)

```
! STABACKUP.EXE
!
!   ECO007  KGW00022        30-May-1986
!           MODULE: TAPEUTIL
!           Patch MUST be applied to VMS V4.4 systems ONLY.
!
!           Excessive parity errors on a TA78 would result in
!           access to the tape being lost.
!           Repair this by unloading the tape if the RESTART
!           option is taken from the error handler.
```

56) STARLET (miscellaneous fix)

```
! LIB.MLB
!
!   ECO01   JLV001          13-May-1986
!           MODULE: $MSGDEF
!           Add symbols for VAX Workstation VT220 emulator
!           mailbox messages.
!
!   ECO02   MMD             15-May-1986
!           MODULE: $DCDEF
!           Add new device type symbol.
!
!   ECO03   CBD             19-May-1986
!           MODULE: $PRDEF
!           Add 8550/8700 processor symbols.
```

57) SUBMIT (patch image)

```
! SUBMIT.EXE
!
!   ECO01   JES0001         16-Apr-1986
!           MODULE: SUBMIT
!           Fix the /NOKEEP qualifier.
!           Change call to parse /KEEP qualifier from PARSE_IF_TRUE
!           to PARSE_IF_TRUE_FALSE so that the presence of a /NOKEEP
!           qualifier would get sent to the job controller.
```

58) SYS (patch image)

```
! SYS.EXE
!
!   EC097   JAY             02-Jun-1986
!           MODULES: MDAT, SYSPARAM
!           Increase the size of the nonpaged read-only patch area
!           by 512 bytes to accommodate large patches.
!
!   EC060   DWT82638        24-Feb-1986
!           MODULE: SYSGETLKI
!           Correct handling of buffer overflow for $GETLKI item
!           LKI$_LOCKS for a locally mastered lock.
!
!   EC063   DAS/PMV         21-Jan-1986
!           MODULE: CMODSSDSP
!           Change RUF service vectors to do CHMEs instead of CHMKs
!           so that RUF will run in executive mode.  Also change the
!           register save mask to also save registers R7 through R11.
!
!   EC064   CJM/TBE         18-Jul-1986
!           MODULES: INIT, SYSCOMMON
!           Set version to X4.5.
!
!   EC065   LJK4026         21-Apr-1986
!           MODULE: SYSIMGACT
!           Use correctly calculated access mode when deleting
!           address space mapped as part of a failed activation.
!
!   EC066   JJW/JAY         14-May-1986
!           MODULE: INIT
!           Check for the existence of a subport driver.  If one
!           exists, create the appropriate data structures in the
!           I/O database.
!
!           CWH0045         16-May-1986
!           MODULE: SYSGETDVI
!           Use spare item code to return MSCP unit number.
!
!           CWH0045.1       04-Jun-1986
!           MODULE: SYSGETLKI
!           Fix synchronization problem in $GETLKI.
!
!           WES0045         04-Jun-1986
!           MODULE: SYSENQDEQ
!           Clear R9 in DEQALL loop to avoid value block corruption
!           under obscure circumstances.
!
```

```
!   ECO67    CJM             03-Sep-1986
!            MODULE: INIT, SYSCOMMON
!            Set version to V4.5.
!
!   ECO68    LJK4027         05-May-1986
!            MODULES: DISMOUNT, MBDRIVER
!            The check for an associated name must be synchronized
!            with possible parallel explicit deletion of the logical
!            name.
!
!   ECO69    ACG0520         16-May-1986
!            MODULE: SYSCRMPSC
!            Correct a stack overflow problem in the auditing of
!            accesses to global sections that can cause a
!            "kernel stack not valid" bugcheck.
!
!   ECO70    CBD0015         16-May-1986
!            Change NOTRULUCB BUGCHECK to FATMEMERR.
!
!   ECO71    WMC0001         08-Jul-1986
!            Fix to ECO 30 to transfer data in correct direction.
!
!   ECO72    LJK4029         10-Jun-1986
!            MODULE: SYSQIOFDT (really it's ECO 62)
!            Allow a byte count of zero to pass limit checks in
!            EXE$READCHKR and EXE$WRITECHKR. Only disallow very large
!            byte counts (with bit 31 set).
!
!            LJK4030         21-Aug-1986
!            MODULE: SYSLNM
!            Effectively eliminate pointer from logical name block
!            to UCB or MTL (by changing its index from -127 to -125).
!            When coupled with ECO 55, this completely decouples the
!            logical name structures from either a UCB or a MTL,
!            preventing spurious channel assignments.
!
!   ECO73    TCM0001         22-Aug-1986
!            MODULE: SYSUPDSEC
!            Fix $UPDSEC to fault in page table pages when updating a
!            global section.
!
!            CWH4004         25-Aug-1986
!            Increase item JPI$_PROC_INDEX to longword from byte.
```

59) SYSBOOT (new image)

```
! SYSBOOT.EXE
!
!    ECO01    JJO0021          10-Feb-1986
!             Add hooks that allow the RX50 to be removed when
!             booting standalone BACKUP. Also remove the need
!             to use B/20000 for booting TK50 standalone BACKUP.
!
!    ECO02    JAY0001          12-May-1986
!             Add support to process EXE$GL_AUXDRLIST in
!             BOOTDRIVR.
!
!    ECO03    CBD0012          16-May-1986
!             Add 8550/8700 name support.
```

60) SYSGEN (new image)

```
! SYSGEN.EXE
!
!    ECO01    EMB0001          16-Apr-1986
!             MODULES: AUTOCONFG, LOADER, SHOWADAP
!             Minor bug fixes for VAXBI devices.
!
!    ECO02    WCY0052          14-May-1986
!             MODULE: AUTOCONFG
!             Add device support for BVPSSP ports in systems
!             also containing UQSSP ports.
!
!    ECO03    EMB0219          15-May-1986
!             MODULES: AUTOCONFG, CONFIG
!             Correctly configure LDP devices and add a device entry
!             to the UNIBUS device list.
!
!    ECO04    WCY0056          16-May-1986
!             MODULE: AUTOCONFG
!             Correct bug introduced in WCY0051.
```

61) SYSLOA8SS (new image)

```
! SYSLOA8SS.EXE
!
!             WCY0054         16-May-1986
!             Add support for BVPSSP ports in CALC_CTRLLTR.
!
!             EMB0001         09-May-1986
!             Correctly set up the hardware type in the system
!             block (SB) to distinguish between an 8200 and an
!             8300.
!
!             EJL0052         09-Apr-1986
!             Fix ADPSUB to wait two milliseconds after initiating
!             self test on the CIBCI.
```

62) SYSLOAUV1 (patch image)

```
! SYSLOAUV1.EXE
!
!   ECO01   ROW0562         15-May-1986
!           MODULE: MOUNTVER
!           Fix VALIDATE_HOME to handle clusterwide inconsistencies
!           created by SET VOLUME/LABEL.  Most of the code to handle
!           this problem already exists.  However, VALIDATE_HOME
!           renders it useless because it improperly returns an
!           error status.
```

63) SYSLOAUV2 (patch image)

```
! SYSLOAUV2.EXE
!
!   ECO01   ROW0562         15-May-1986
!           MODULE: MOUNTVER
!           Fix VALIDATE_HOME to handle clusterwide inconsistencies
!           created by SET VOLUME/LABEL.  Most of the code to handle
!           this problem already exists.  However, VALIDATE_HOME
!           renders it useless because it improperly returns an
!           error status.
!
!   ECO02   DGB0158         09-Jun-1986
!           Work around VMB problem, where two bad pages of memory
!           are reported on 16MB MicroVAX II systems.
```

64) SYSLOAWS1 (patch image)

```
! SYSLOAWS1.EXE
!
!    ECO01   ROW0562          15-May-1986
!            MODULE: MOUNTVER
!            Fix VALIDATE_HOME to handle clusterwide inconsistencies
!            created by SET VOLUME/LABEL.  Most of the code to handle
!            this problem already exists.  However, VALIDATE_HOME
!            renders it useless because it improperly returns an
!            error status.
```

65) SYSLOAWS2 (patch image)

```
! SYSLOAWS2.EXE
!
!    ECO01   ROW0562          15-May-1986
!            MODULE: MOUNTVER
!            Fix VALIDATE_HOME to handle clusterwide inconsistencies
!            created by SET VOLUME/LABEL.  Most of the code to handle
!            this problem already exists.  However, VALIDATE_HOME
!            renders it useless because it improperly returns an
!            error status.
!
!    ECO02   DGB0160          12-Jun-1986
!            Work around VMB problem, where two bad pages of memory
!            are reported on 16MB MicroVAX II systems.
```

66) SYSLOAWSD (patch image)

```
! SYSLOAWSD.EXE
!
!    ECO01   ROW0562          15-May-1986
!            MODULE: MOUNTVER
!            Fix VALIDATE_HOME to handle clusterwide inconsistencies
!            created by SET VOLUME/LABEL.  Most of the code to handle
!            this problem already exists.  However, VALIDATE_HOME
!            renders it useless because it improperly returns an
!            error status.
!
!    ECO02   DGB0161          12-Jun-1986
!            Work around VMB problem, where two bad pages of memory
!            are reported on 16MB MicroVAX II systems.
```

67) SYSMSG (patch image)

```
! SYSMSG.EXE
!
!   ECO01   KCO0001          16-Apr-1986
!           MODULE: BASMSG
!           Patch the text of various messages for use by
!           BASIC V3.0 and BASRTL.
!
!   ECO02   KCO0002          16-May-1986
!           MODULE: BASMSG
!           More message text changes.
!
!   ECO03   KCO0003          21-May-1986
!           MODULE: BASMSG
!           More message text changes.
!
!   ECO04   KCO0004          16-Jun-1986
!           MODULE: BASMSG
!           Change text of FROLINOEG, add ILLCOLMIX.
```

68) TPU$CCTSHR (new image)

```
! SYS$LIBRARY:TPU$CCTSHR
!
!           STLO001          14-May-1986
!           Fix support of terminal widths.
```

69) TPUSHR (patch image)

```
! TPUSHR.EXE
!
!   ECO01   BMTO001          02-Apr-1986
!           MODULE: TPUSHR.EXE
!           Change the protection mask specified for the mailboxes
!           used to communicate with the TPU subprocesses to allow
!           only owner access.
!
!   ECO02   BMTO02           10-Apr-1986
!           MODULE: TPUSHR.EXE
!           Add check to GET_INFO built-in to check for sufficient
!           parameters.
```

70) TRACE (new image)

```
! TRACE.EXE
!
!   ECO01                    14-May-1986
!           MODULE: TBKDPC.B32
!           This module contains a fix for handling BASIC statement
!           and line numbers correctly in tracebacks.
```

71) TTDRIVER (new image)

```
! TTDRIVER.EXE
!
!   ECO02   MIR0713
!           Fix some workstation problems with CTRL/Y and CTRL/C
!           ASTs and subprocesses.  Add several port control bits
!           to disable modem and connect/disconnect for a particular
!           line using a port control field.
```

72) TUDRIVER (new image)

```
! TUDRIVER.EXE
!
!   ECO02   MAS0065         27-May-1986
!           Fix connection walking bug that leads to spurious host
!           clears of HSCs following virtual circuit failures during
!           failover. Correct other miscellaneous problems involving
!           host and controller timeouts.  Relevant module audit
!           versions are TUDRIVER (X-23) and DUTUSUBS (X-30).
!
!   ECO01   PRD0227         16-May-1986
!           MODULE: TUDRIVER
!           Add support for static dualporting.
!           Recognize unit flags upon system boot.
```

73) VAXCRTL (patch image)

```
! VAXCRTL.EXE
!
!    ECO01    CHH0061         10-Apr-1986
!             MODULE: C$VAXCIO (061)
!             Miscalculating the end-of-file byte offset and block
!             number in subroutine WRITE_OUTPUT.
!
!    ECO02    CHH0023         28-Apr-1986
!             MODULE: SHELL$CLINT (002) and C$$MAIN (023)
!             Internal buffer overflow can happen in the SHELL$GET_ARGV
!             routine when trying to get "argv" and "argc" under
!             DEC/SHELL.
!
!    ECO03    CHH0013         01-May-1986
!             MODULE: SHELL$FROM_VMS (013)
!             Add checks in SHELL$TRANSLATE_VMS routine and COPY_TOKEN
!             routine to avoid buffer overflow.
!
!    ECO04    CHH0018         01-May-1986
!             MODULE: SHELL$TO_VMS (018)
!             Modify SHELL$TO_VMS routine to avoid buffer overflow
!             and to handle the foreign filespecs correctly.
!
!    ECO05    CHH0031         13-May-1986
!             MODULE: C$$DOPRINT (031)
!             Fix for SPR 87940.  Modify C$$DOSCAN routine to match a
!             character string pattern correctly.
!
!    ECO06    CHH0062         13-May-1986
!             MODULE: C$VAXCIO (062)
!             Fix for SPR 87940.  Modify READ_STREAM subroutine to
!             avoid overwriting an internal buffer.
!
!    ECO07    CHH0063         27-May-1986
!             MODULE: C$VAXCIO (063)
!             Fix for SPR 88853.  Modify the LSEEK function to return
!             the correct byte offset after a write operation for
!             record file.
!
!    ECO08    CHH0063         28-May-1986
!             MODULE: C$VAXCIO (063)
!             Fix in the CHDIR function. SYS$DISK is not a terminal
!             logical name.
!
```

```
!    EC009   CJN0064          07-Aug-1986
!            MODULE: C$VAXCIO (064)
!            Fix in WRITE_TRANSFER to check for zero-length transfer
!            and to do nothing if such is found.
!
!    EC010   CJN0064          07-Aug-1986
!            MODULE: C$VAXCIO (064)
!            Fix in WRITE function to not flush buffer if device is
!            a SHELL pipe.
!
!    EC011   CJN064           07-Aug-1986
!            MODULE: C$VAXCIO (064)
!            Fix in _FLSBUF_STREAM, to remove optimization of no
!            preload of next block if read access is not permitted.
```

74) VAXCRTLG (patch image)

```
!  VAXCRTLG.EXE
!
!    EC001   CHH0002          10-Apr-1986
!            MODULE: C$ECVT (002)
!            Passing 0 to FCVT function fails with ACCVIO.
!
!    EC002   CHH0061          10-Apr-1986
!            MODULE: C$VAXCIO (061)
!            Miscalculating the end-of-file byte offset and block
!            number in subroutine WRITE_OUTPUT.
!
!    EC003   CHH023           28-Apr-1986
!            MODULE: SHELL$CLINT (002) and C$$MAIN (023)
!            Internal buffer overflow can happen in the SHELL$GET_ARGV
!            routine when trying to get "argv" and "argc" under
!            DEC/SHELL.
!
!    EC004   CHH0013          01-May-1986
!            MODULE: SHELL$FROM_VMS (013)
!            Add checks in SHELL$TRANSLATE_VMS routine and COPY_TOKEN
!            routine to avoid buffer overflow.
!
!    EC005   CHH0018          01-May-1986
!            MODULE: SHELL$TO_VMS (018)
!            Modify SHELL$TO_VMS routine to avoid buffer overflow
!            and to handle the foreign filespecs correctly.
!
!    EC006   CHH0031          13-May-1986
!            MODULE: C$$DOPRINT (031)
!            Fix for SPR 87940.  Modify C$$DOSCAN routine to match a
!            character string pattern correctly.
```

```
!
!   EC007   CHH0062         13-May-1986
!           MODULE: C$VAXCIO (062)
!           Fix for SPR 87940.  Modify READ_STREAM subroutine to
!           avoid overwriting an internal buffer.
!
!   EC008   CHH0063         27-May-1986
!           MODULE: C$VAXCIO (063)
!           Fix for SPR 88853.  Modify the LSEEK function to return
!           the correct byte offset after a write operation for
!           record file.
!
!   EC009   CHH0063         28-May-1986
!           MODULE: C$VAXCIO (063)
!           Fix in the CHDIR function. SYS$DISK is not a terminal
!           logical name.
!
!   EC010   CJN0064         07-Aug-1986
!           MODULE: C$VAXCIO (064)
!           Fix in WRITE_TRANSFER to check for zero-length transfer
!           and to do nothing if such is found.
!
!   EC011   CJN0064         07-Aug-1986
!           MODULE: C$VAXCIO (064)
!           Fix in WRITE function to not flush buffer if device is
!           a SHELL pipe.
!
!   EC012   CJN064          07-Aug-1986
!           MODULE: C$VAXCIO (064)
!           Fix in _FLSBUF_STREAM, to remove optimization of no
!           preload of next block if read access is not permitted.
```

75) VMB (new image)

```
!   VMB.EXE
!
!   EC002   CBD0010         05-May-1986
!           MODULE: VMB
!           Output a message when greater than 10 percent of main
!           memory tests bad.
!
!   EC001   EJL0002         23-Apr-1986
!           MODULE: PABTDRIVR
!           Correct errors in new device support.
```

76) VMSINSTAL (edit text file)

```
! VMSINSTAL.COM
!
!   ECO01   JES0001         21-Apr-1986
!           Fix problem with PROVIDE_FILE option C.  Option C
!           ignored if system disk not identical to target disk.
!
!           Fix bug with printing of release notes in callback
!           RELEASE_NOTES.
!
!           Add /PAGE to TYPE command in RELEASE_NOTES callback.
!
!           Fix bug in PROVIDE_IMAGE, where we were not checking
!           status after a VMI$FIND call.
!
!           Add code for low-end cluster layered product the ability
!           to install in the specific root.
```

77) WELCOME (miscellaneous fix)

```
! WELCOME.TXT
!
!   ECO01   CJM             05-May-1986
!           Update the MicroVMS version number in
!           SYS$MANAGER:WELCOME.TXT. This patch only applies to
!           MicroVMS systems.
```

# Appendix B

# Preparing an RD51-Based MicroVAX I System for an Update

If you are updating a MicroVAX I with an RD51 disk, you must remove all MicroVMS operating system options from the disk to make room for the update procedure. However, because the update procedure requires the "Standalone BACKUP on System Disk" and "DIFF Utility" suboptions of the UTIL option, you must install (or retain) these suboptions before proceeding with the update.

To determine whether your MicroVAX I has an RD51 disk, enter the following command:

```
$ SHOW DEVICE/FULL SYS$SYSDEVICE
```

The device type appears on the first line of the display output by the system.

If your MicroVAX I has an RD51 disk, you must remove any Version 4.4 MicroVMS options that are installed on your system by using the SYS$UPDATE:REMOVE.COM command procedure.

Perform the following steps:

1. Log into the system manager's account, SYSTEM, and enter the following command to invoke the REMOVE.COM command procedure:

   ```
   $ @SYS$UPDATE:REMOVE.COM
   ```

2. The following display appears on your screen:

   ```
   This command procedure removes entire options or sub-options of the
   MicroVMS kit.  Help may be obtained for any of the prompts by
   typing HELP.
   ```

3. The command procedure lists the options and suboptions that may be removed and prompts you for the options that you want to remove.

   ```
   What layered VMS options(s) do you want to remove.
   Options must be separated by commas, e.g., USER,UTIL,SYSP:
   ```

If the UTIL option *is* installed on your system, delete most suboptions and retain those needed for installation (suboptions D and L) by performing these actions:

a.  Respond to the prompt by entering *UTIL* and pressing RETURN.

b.  Enter *N* in response to the prompts that ask you if you wish to remove the entire option.

c.  Respond to the prompt asking for the suboptions that you want removed from option UTIL as follows: (You will delete all suboptions *except* suboptions D and L.)

```
What sub-options(s) do you want removed for option UTIL.
Sub-options must be separated
by commas. e.g., A,C,F: A,B,C,E,F,G,H,I,J,K,M,N,O
```

4.  If any of the USER, NET, PROG, and SYSP options are installed on your system, remove each by reinvoking REMOVE.COM for each option to be deleted. (This is contrary to the prompt in REMOVE.COM which suggests that you can enter the name of more than one option to be removed.)

Remove these four options in their entirety by answering *Y* to the prompt asking if you wish to remove the entire option.

REMOVE.COM displays informational messages in the following format when it has successfully removed an option.

```
***** SYSP removed *****
```

If the UTIL option is *not* installed on your system, you must install the Version 4.4 "DIFF utility" and "Standalone BACKUP on system disk support" suboptions of the UTIL option. You will need the Version 4.4 distribution diskettes to install these suboptions.

1.  Back up and restore your system disk, following the steps provided in Section 4.4 of *Installing or Upgrading MicroVMS From Diskettes, before* you install these suboptions.

2.  Invoke the VMSINSTAL command procedure:

```
$ @SYS$UPDATE:VMSINSTAL DUA1:
```

3.  The following will appear on your screen:

```
     VAX/VMS Software Product Installation Procedure V4.4
```

```
It is dd-mmm-yyyy at hh:mm.
Enter a question mark (?) at any time for help.
```

4.  Next, VMSINSTAL will ask if you are satisfied with the backup of your system disk:

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

If you are content with the current backup of the system disk, press the RETURN key and continue.

If you have not yet backed up your system disk or are otherwise dissatisfied with the current backup, perform the following operations.

a.   Enter *NO* and press the RETURN key. VMSINSTAL returns to DCL level to permit you to perform the backup.

b.   Back up and restore your system disk using standalone BACKUP as described in Section 4.1.1 of *Installing or Upgrading MicroVMS From Diskettes*.

c.   Restart the update when the backup is completed.

5.   VMSINSTAL will then prompt you to mount on DUA1: the first volume of the set. Insert the first of the nine diskettes of the Version 4.4 UTIL option in diskette drive 1. Enter *Y* and press RETURN.

6.   The following display will appear:

```
The following products will be processed:

  UTIL V4.4


        Beginning installation of UTIL V4.4 at hh:mm

%VMSINSTAL-I_RESTORE, Restoring product saveset A...
```

7.   Enter *N* in response to this prompt:

```
*Do you want to install the entire kit:
```

8.   Enter *N* in response to all but these two prompts:

```
*Do you want to install the DIFF utility: Y
*Do you want to install the Stand-alone backup on system disk support: Y
```

9.   Respond to the prompts of the installation procedure. To install the Version 4.4 "DIFF utility" and "Standalone BACKUP on system disk support" suboptions of the UTIL option, you need only to load the first five diskettes of the UTIL option.

10.   The following display will appear when you have successfully completed the installation:

```
        Installation of UTIL V4.4 completed at hh:mm
```

11.   If VMSINSTAL displays the following prompt, type EXIT and press RETURN.

```
Enter the products to be processed from the next distribution volume set.
*Products:
```

12.   Proceed with Section 1.2 of these release notes.

After the update has completed, if you wish to install or reinstall a Version 4.4 MicroVMS operating system option or suboption, refer to the *MicroVMS Operating System, Version 4.5 Software Product Description* (SPD 28.05.08) for the number of blocks required by each option. See Chapter 5 of *Installing or Upgrading MicroVMS From Diskettes* for instructions for installing a MicroVMS option or suboption.

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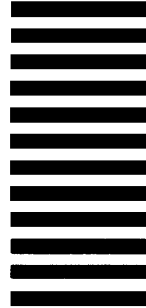
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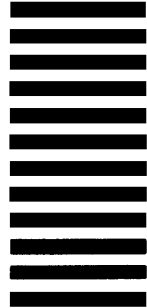
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