RT–11 Update User's Guide

Order Number AA–V610E–TC

August 1991

This guide describes:

- A general procedure for updating your RT–11 operating system
- Some helpful hints when updating your operating system
- How to use the RT–11 UPDATE program to update RT–11 and its layered-product distribution kits.

  Read this guide and the *RT–11 Update Release Notes* before running the UPDATE program.

Revision/Update Information: This guide supersedes the *RT–11 Update User's Guide*, AA–V610D–TC.

Operating System: RT–11 Version 5.6

Software Version: RT–11 UPDATE Version 2/89

Digital Equipment Corporation
Maynard, Massachusetts

First Printing, December 1983
Revised, June 1985
Revised, January 1987
Revised, August 1989
Reprinted, August 1991

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This document was prepared using VAX DOCUMENT, Version 1.2.

Chapter 1
Introduction

Who Should Run the UPDATE Program

- If RT–11 distributes a remastered operating-system distribution kit to all customers, you do not need to run UPDATE.
- If you are an RT–11 customer and your distribution is on an RX50, RX01, RX02, TK50, or 1600 bits/inch magtape, you do not need to run the UPDATE program. Included in the update kit is a remastered RT–11 kit.
- If you are an RT–11 customer and your distribution is on an RL01 or RL02, you must run the UPDATE program.
- If you are a layered-product customer, you must run the UPDATE program.

Chapter Outline

This chapter describes:

- Contents of the RT–11 update-kit media.
- Definitions of update terms.
- A general procedure for updating your working system disk. The manual's other chapters focus primarily on Step 4 of that procedure, running the UPDATE program.
- Diagrams of UPDATE sessions, when running the UPDATE program.
- How to access the *RT–11 Update Release Notes*.
- Hardware configurations the UPDATE program supports.

1.1 Contents of the RT–11 Update-Kit Media

The RT–11 update-kit media contain the following:

- *RT–11 Update Release Notes*.
- UPDATE program—the software that copies updated modules from the update kit to RT–11 and/or layered-product distribution kits.
- Updated software modules for RT–11 layered products requiring updates.
- Updated software modules for RT–11 (only on RL01 and RL02 distribution media), unless RT–11 is releasing a new version.
- Remastered RT–11 operating-system distribution kit (for all distribution media except RL01s and RL02s).

A remastered operating-system distribution kit contains all the operating system files as revised to the current level. You do not run the UPDATE program on this kit.

The update modules contain corrections to software problems. The RT–11 UPDATE program automatically copies these update modules from the update kit to the RT–11 and layered-product distribution kits.

1.2 Definitions of Update Terms

Table 1–1 lists some of the terms used in this manual.

Table 1–1: Update Terms

Term	Definition
Kit map	A directory listing of an update kit. If the kit is composed of more than one volume, the kit map shows where the files are located on each volume.
Layered product	An optional software product. Layered products are sold separately from the RT–11 operating system but will not run without the RT–11 environment. For example, FORTRAN IV /RT–11 and BASIC–PLUS/RT–11 are RT–11 layered products.
Layered-product distribution kit	The unaltered layered-product kit distributed by Digital.
Module	A unit of software that is part of the RT–11 operating system or a layered product. For example, the RT–11 device handlers DL.SYS and DX.SYS are modules.
RT–11 distribution kit	The unaltered RT–11 kit distributed by Digital or an updated version of the RT–11 kit containing a remastered RT–11.
System volume	The volume on which the operating system is stored.
Update data file	A data file included in the UPDATE program that specifies which modules are updated. RT–11 and its layered products have corresponding update data files.
Update kit	The UPDATE program, update modules, and update release notes distributed to users of RT–11 and its layered products.
Update module	Any module copied by the update kit that replaces distributed software.
UPDATE program	The software that copies updated modules from the update kit to RT–11 and/or layered-product distribution kits.
Update system volume	The update volume containing the UPDATE system program. For multivolume kits, the update system volume is Volume 1.
Volume identification number	A number and owner name, each consisting of 1- to 12-alphanumeric characters that identify a volume.

1.3 A General Procedure for Updating Your Working System Disk

The following general procedure is for updating your working system disk. This procedure includes steps you take both before and after you run the UPDATE program. Adapt the procedure to suit your situation.

1. Read the update cover letter and update release notes.
2. Check your update kit to see if you have in it a remastered RT–11 distribution kit.
   - If you have received a remastered RT–11 distribution kit, go to Step 6.
   - If you have not received a remastered RT–11 distribution kit, back up your current RT–11 distribution media and your unaltered layered-product distribution media (or make sure you have a backup copy of these).
3. If you need to update your RT–11 distribution kit or your layered-product distribution kit, run the UPDATE program on the appropriate distribution media.

   How you run UPDATE depends on the devices you use and the product(s) you are updating. See Chapters 2, 3, and 4 of this manual for instructions on running the UPDATE program.
4. Identify through the *RT–11 Update Release Notes* those updated layered-product modules that need rebuilding and rebuild those modules. See the appropriate layered-product manual for instructions and make a backup copy of the rebuilt modules.
5. Back up your current working system disk. Or, if making a complete backup of your system disk is not feasible, carefully back up those files you want to preserve that are not part of the new RT–11 distribution; for example:
   - Logical disks (.DSK files)
   - Customized start-up command files (STARTx.COM)
   - User command-linkage data file (UCL.DAT)—if you have defined your own commands
   - SYSGEN condition and answer files (*.CND and *.ANS files)—if you have used SYSGEN
   - User or third-party programs/data you want to save
6. Install the new (updated) version of RT–11. See the *RT–11 Installation Guide* or the *RT–11 Automatic Installation Guide* for directions. Follow the installation procedure that is suitable for you.
7. If you want to create your own monitor and handlers (optional):
   - Restore to your system disk any customized SYSGEN answer files that you saved in Step 5.
   - Run SYSGEN. See the *RT–11 System Generation Guide* for directions.

8. Run the configuration procedure (IND CONFIG) to delete unneeded system files.
9. Restore to your system disk the files you saved in Step 2 that are not part of the RT–11 distribution and that you still need; for example, a customized start-up command file and logical disks.
10. Install the layered products that were affected by the update.
11. Make sure all your system and layered-product files are protected.

    These files are distributed as protected. But, for example, if you have done a system generation, some files could now be unprotected.

1.4 Diagrams of UPDATE Sessions

The following diagrams show the sequence of a complete UPDATE session.

Figure 1–1: UPDATE Session Running in All Drive Units Except RX33 and TK50 Units

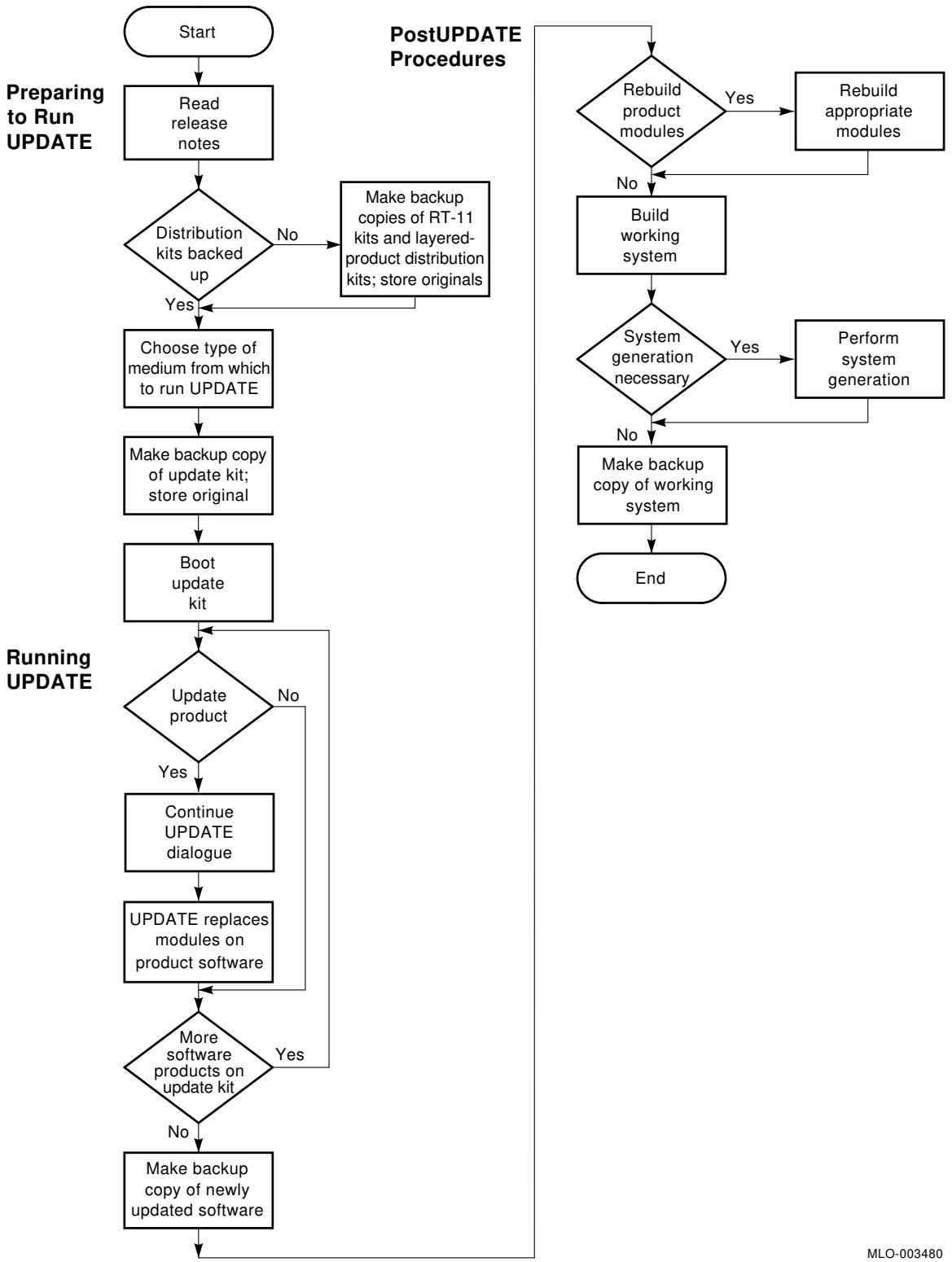


Figure 1–2: UPDATE Session Running in RX33 Drive Unit

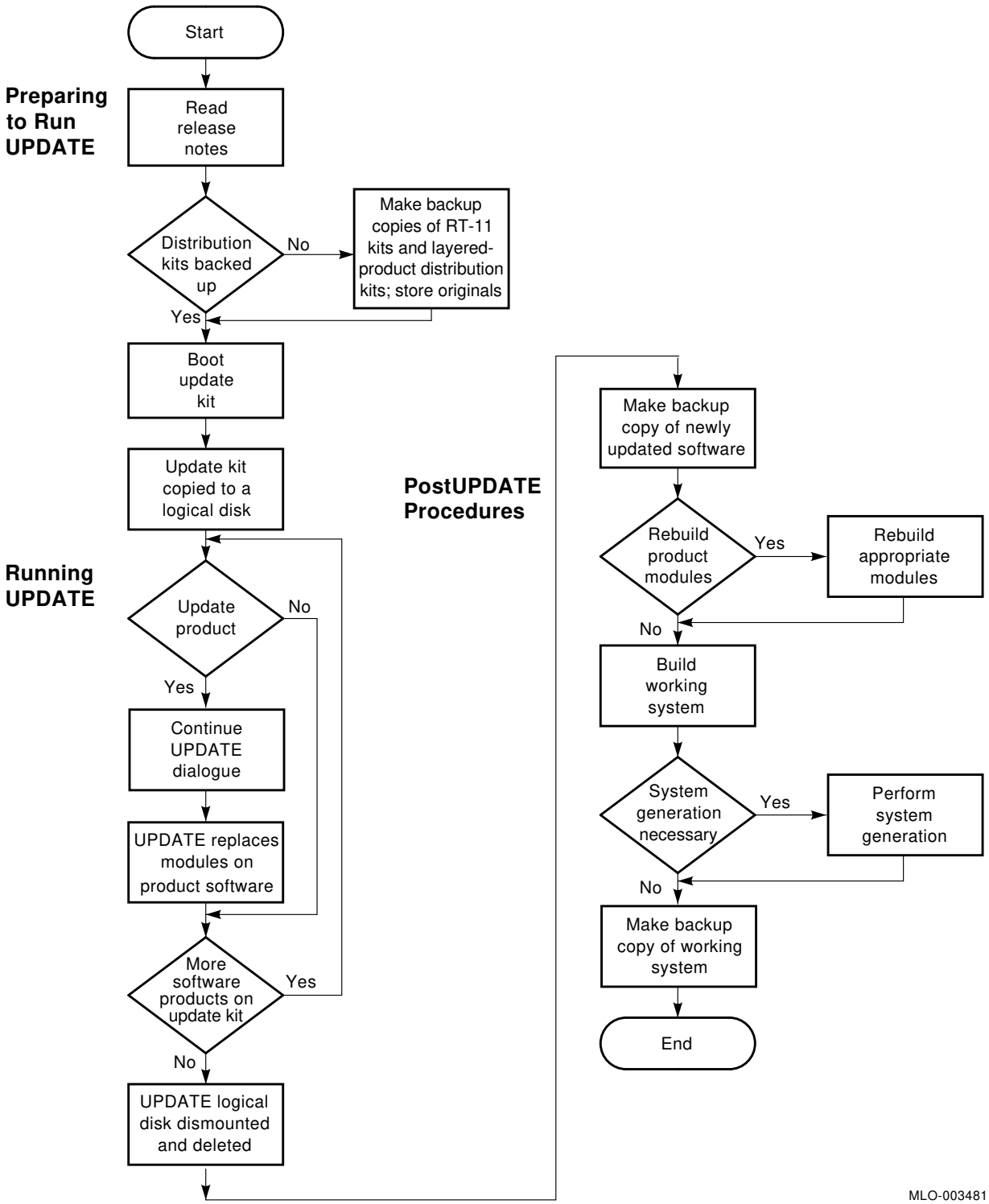
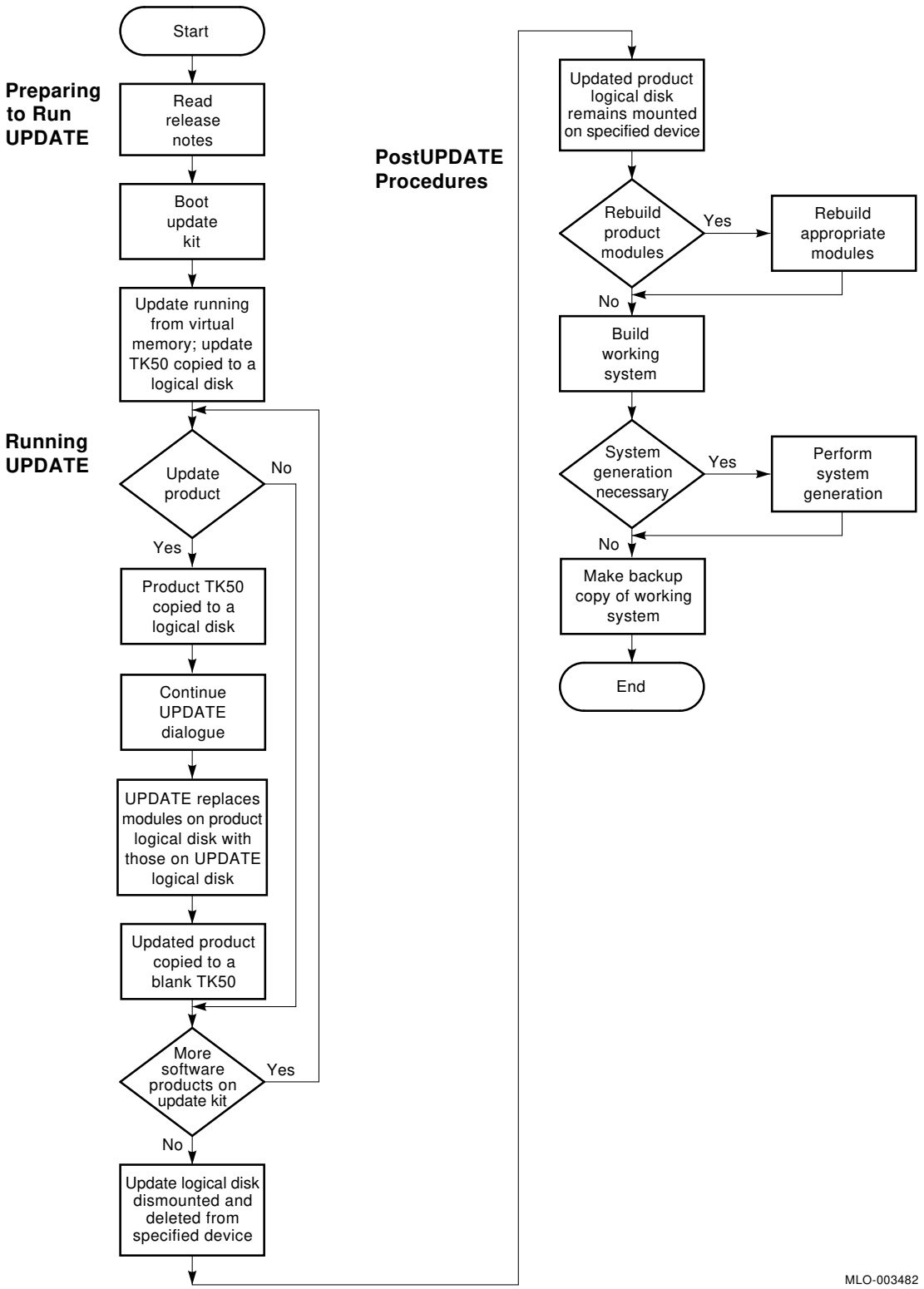


Figure 1–3: UPDATE Session Running in TK50 Drive Unit



1.5 How to Access RT–11 Update Release Notes

Each update kit includes the *RT–11 Update Release Notes*, which provides the following information:

- A list of the contents of the update kit
- Space requirements for updating from logical disks
- A list of volume identification numbers for RT–11 distribution volumes
- A summary of the problems that have been corrected in the update
- A description of the workarounds for the problems not corrected in the update
- Kit maps for each type of update distribution medium
- Any extra postUPDATE procedures

You should be familiar with the release notes before performing an update. They are provided in a text file, UPDATE.TXT, in the RT–11 update kit. To read the release notes, follow these steps:

1. Bootstrap the RT–11 system volume.
2. Mount the RT–11 update kit (Volume 2 of a multivolume kit) in another drive unit that UPDATE supports; write-protect the update kit if possible.
3. Read the release notes. You can print the release notes on a printer or hard-copy terminal or display them on a terminal screen.

   To print the release notes on a printer, type:

   ```
   .PRINT ddn:UPDATE.TXT RET
   ```

   The device specification ddn represents the physical device name (dd) and drive unit number (n) of the device where the update kit is mounted.

   To print the release notes on a hard-copy terminal or display them on a terminal screen, type:

   ```
   .TYPE ddn:UPDATE.TXT RET
   ```

1.6 Hardware Configurations the UPDATE Program Supports

To run RT–11 UPDATE, your hardware configuration must include at least 32K bytes of memory.

To run in all drive units except the RX33 and TK50 units, you must have two drive units. To run in an RX33 or TK50 drive unit, you need only one drive unit.

Table 1–2 lists the physical device names and corresponding devices that RT–11 UPDATE supports.

Table 1–2: Hardware Configurations

Device	Physical Name	Drive Unit Number
RK06, RK07 disk	DMn:	n = 0 or 1
RL01, RL02 disk	DLn:	n = 0 or 1
RX01 diskette	DXn:	n = 0 or 1
RX02 diskette	DYn:	n = 0 or 1
RX50 diskette	DUn:	n = 1, 2, or 3
RX50 Professional series diskette	DZn:	n = 0 or 1
RX50 diskette in RX33 drive	DUn:	n = 1, 2, or 3
TK50 magtape	MUn:	n = 0

Chapter 2
Preparing to Run RT–11 UPDATE

Do the following before you begin the RT–11 UPDATE session:

1. Determine which software products to update.
2. Preserve your current version of RT–11 and the original distribution kit for each layered product you want to update.
3. Choose the type of medium from which to run RT–11 UPDATE.
4. Preserve the update kit.

2.1 Determine Which Software Products to Update

You must determine which software products you want to update so you will know which distribution kits you need and how many blank volumes you need to preserve the distribution software.

You should update RT–11 (if you do not receive a remastered RT–11 kit) and all its layered-product software. Digital does not support software that has not been updated to the current level.

2.2 Preserve the Distribution Volumes

Make backup copies of the current version of RT–11 and the original distribution kit for each layered product you want to update. Should an error occur that corrupts the software, you can generate another copy of the distribution kit and start again.

Make sure each volume has the correct volume identification number. Volume identification numbers are listed in the *RT–11 Update Release Notes*. That document also contains the correct procedure to use in copying the volume identification numbers.

Use separate volumes for the backup copy of each distribution kit.

RT–11 UPDATE can update only the current version of RT–11 and the original layered-product distribution kits. If you have created an RT–11 system, using the system generation procedure, or performed a postinstallation procedure to customize a layered product, the system must be rebuilt and customized following each UPDATE session. For information on the system generation procedure, see the *RT–11 System Generation Guide*.

If your distribution kit resides on 9-track 1600 bits/inch magtape, you must copy the distribution kit to a disk or diskettes. The files on the disk or diskettes must reside on the volumes as they are listed in the kit maps provided with the distribution

kit. The arrangement of files on a volume is especially important when you copy a magtape distribution kit to diskettes.

For detailed instructions on preserving your distribution volumes, see the following documents:

- The *RT–11 Installation Guide* provides hardware-specific instructions for bootstrapping and preserving distribution volumes. Read the chapter that pertains to your configuration.
- The *RT–11 System User's Guide* explains all the keyboard monitor commands you can use to back up the distribution volumes.

For RT–11 layered products, you may also need to refer to the installation documents for those products.

2.3 Choose the Medium for Running RT–11 UPDATE

RT–11 UPDATE is distributed on the following media:

RL01 disk RL02 disk

RX01 diskettes RX02 diskettes

RX50 diskettes TK50 magtape

9-track 1600 bits/inch magtape

UPDATE can run from any of the distribution media above, except 1600 bits/inch magtape. Update kits distributed on that magtape are not bootable and must be copied to a disk or diskettes.

UPDATE can also run from RK06 and RK07 disks.

Choose the medium from which you want to run RT–11 UPDATE, but note that the type of medium you choose affects the amount of time required to run UPDATE. Disks have a better performance time than diskettes.

2.4 Preserve the Update Kit

Make a backup copy of the update kit. Should an error occur that corrupts the update software, you can generate another copy from the original kit and start again.

See the kit maps provided in the *RT–11 Update Release Notes* before you back up your update kit. Kit maps show how files should be arranged on each type of medium. When you have finished backing up the update kit, check the directory of the newly created volume(s) against the kit maps to make sure that each volume contains the correct files.

Making a backup copy of the update kit is similar to using RT–11 software to make a backup copy of a data disk. You must use RT–11 distribution volumes to perform the operations listed below. The update kit can be used only as input volumes for copy operations.

To create a backup copy of the update kit:

1. See the *RT–11 Update Release Notes* to determine how many volumes the update kit requires for your medium and obtain the necessary number of blank volumes.
2. Bootstrap the RT–11 system volume.
3. If you are backing up the update kit on new RX02 diskettes, format the blank volumes.
4. Initialize the blank volumes and replace or cover any bad blocks.
5. Write-protect the original update kit, if possible. The update distribution volumes can be used only as input volumes during copy operations.
6. Copy the update kit to the initialized volumes. As you copy the update kit, label each new volume as shown on the kit maps.
7. Copy the bootstrap to the boot blocks of the UPDATE system volume (Volume 1 of a multivolume kit) in device ddn:, using the following command:

   ```
   .COPY/BOOT ddn:RT11UP ddn: RET
   ```

   NOTE

   The RX50 update kit is distributed with a DU bootstrap. This bootstrap will only boot a PDP–11 computer. If you are going to run RT–11 UPDATE on a Professional series computer, you must issue this command. This command copies the DZ bootstrap, allowing you to boot the diskette on a Professional computer.
8. Store the original update kit in a safe place.

For detailed instructions on performing any of the preceding steps, see the following documents:

- The *RT–11 Installation Guide* provides hardware-specific instructions for bootstrapping and preserving distribution volumes. The procedures can also be applied to preserving your update kit. Read the chapter pertaining to your configuration.
- The *RT–11 System User's Guide* explains the keyboard monitor commands you need to back up the update kit.

Once you have made backup copies of the RT–11 and layered-product distribution kits and the update kits, you can begin the UPDATE session. Chapter 3 explains how to bootstrap the update software and describes the UPDATE dialogue for different hardware configurations.

Chapter 3
Running RT–11 UPDATE

Summary of UPDATE Procedure

When you bootstrap the RT–11 UPDATE system volume, it executes an interactive dialogue. The dialogue asks a series of questions to determine which software products to update and what device you are using for the product-distribution kit. Most of the questions require only a yes or a no answer.

The updating operations are automatically initiated when RT–11 UPDATE has the information it needs. The amount of time the procedure takes depends on the media you use and the product you are updating.

Chapter Division

This chapter is divided into five sections that explain how to run RT–11 UPDATE on different configurations. See Table 3–1 to determine which section covers your configuration.

Table 3–1: Location of UPDATE Instructions for Your Media

Update Kit Media	Distribution Kit Media	Section to Read
RX01, RX02, RX50	RX01, RX02, RX50	3.1
RX01, RX02, RX50	RK06, RK07, RL01, RL02	3.2
RK06, RK07, RL01, RL02	RK06, RK07, RL01, RL02	3.3
RX50 in RX33 drive	RX50 in RX33 drive	3.4
TK50	TK50	3.5

Conventions Used

[ ]	Enclose possible responses from which you can choose one. The choices are separated by a slash (/).
( )	Indicate you can substitute a word or value of your choice.
<variable>	Represents a word or value that the UPDATE program changes during a processing operation.
ddn:	dd represents a 2-character physical device name, and n represents the drive unit number of that device.

Unless specified otherwise, terminate commands by pressing RETURN.

3.1 Update Kit and Distribution Kit on Diskettes (Layered Products Only)

If your update and distribution kits reside on diskettes, do the following to update your distribution kit:

1. Insert the UPDATE system volume in any drive unit that RT–11 UPDATE supports (see Section 1.6).
2. Bootstrap the UPDATE system volume.

   When you have bootstrapped the UPDATE system volume, the following dialogue begins:

   ```
   Welcome to RT-11 UPDATE <version>. This kit updates the following products:

            <List of products that have modules in update kit>

   Please refer to the RT-11 Update User's Guide for assistance
   with this UPDATE session.

   Please enter today's date (dd-mmm-yy)
   ```

3. Enter the date as *dd-mmm-yy*, where *dd* represents the day, *mmm* represents the first three characters of the name of the month, and *yy* represents the year.

   After you enter the date, you are asked:

   ```
   Have you backed up the update kit? [Y/N]
   ```

4. Make sure you have a backup of the update kit and respond with a Y or N.

   - If you type N, a fatal error message appears on your terminal screen, the UPDATE session terminates, and the monitor prompt (.) appears. Bootstrap the RT–11 system disk again and make a backup copy of the update kit as described in Section 2.4. Then, start the UPDATE session again.
   - If you type Y, UPDATE asks:

     ```
     Do you want to update <product>? [Y/N]
     ```

5. Check the name of the product you want to update and respond with a Y or N.

   - If you type N, UPDATE specifies another product. When there are no more products on the update kit to specify, the UPDATE session ends and the monitor prompt (.) appears.
   - If you type Y, UPDATE asks:

     ```
     Have you backed up the <product> distribution kit? [Y/N]
     ```

6. Make sure you have a backup of your distribution kit and respond with a Y or N.

   - If you type N, a fatal error message appears on your terminal screen, the UPDATE session terminates, and the monitor prompt (.) appears. Bootstrap the RT–11 system volume again and back up the distribution kit as described in the *RT–11 Installation Guide*. Then, start the UPDATE session again.

- If you type Y, UPDATE asks:

```
In which device will you mount the <product> kit? (ddn)
```

7. Type the 3-character code for the device in which you will mount the distribution kit (see Section 1.6). The drive unit occupied by the UPDATE system volume cannot be used for the distribution kit.

   - If you specify an RX01 or RX50 device, UPDATE directs you to mount a specific update volume in the appropriate device.
   - If the distribution kit is distributed on RX01 and RX02 diskettes and you specify an RX02 device, UPDATE prompts you:

```
On which type of medium does the <product> distribution kit reside?

1 = single density (RX01)
2 = double density (RX02)

Enter [1 or 2]
```

     — If the distribution kit resides on single-density diskettes, type 1.

     — If the distribution kit resides on double-density diskettes, type 2.

     Then, UPDATE prompts:

```
Mount update <volume> in <device>
Continue? [Y/N]
```

8. Mount the specified update volume in the appropriate device and type Y in response to the *Continue?* prompt. If you type N, UPDATE repeats the prompt.

   As UPDATE reads the update data file, the following messages appear:

```
NOW READING IN DATA FILE....

WORKING ...
```

   UPDATE instructs you when to mount the distribution volume in the appropriate device:

```
Mount the distribution volume <label> in <device>
Continue? [Y/N]
```

9. Mount the specified distribution volume in the appropriate device and type Y in response to the *Continue?* prompt.

   UPDATE unprotects and deletes each module specified in the update data file and copies the updated module to the appropriate distribution volume. The following message appears as each module is updated:

```
Now updating <module-name>
```

   When the updated modules are copied to the distribution volume, UPDATE instructs you to mount the next volume in the appropriate device.

10. Remove the current volume, mount the specified volume, and type Y in response to the prompt. Continue to mount the diskettes and respond to the prompt in that

fashion until all the updated modules are copied to the appropriate distribution volumes.

11. When UPDATE has finished updating a product, UPDATE does the following:

    - If there are more products on the update kit to specify, UPDATE asks:

      ```
      Do you want to update <product>? [Y/N]
      ```

      If you type Y, the UPDATE session repeats for the specified product. If you type N, UPDATE specifies another product.

    - If there are no more products on the update kit to specify, the UPDATE session ends and the following message and monitor prompt (.) appear:

      ```
      The UPDATE session has completed successfully.

             <List of layered-product modules that must be rebuilt>

      @ <EOF>

      .
      ```

3.2 Update Kit on Diskettes—Distribution Kit on Hard Disk (Layered Products Only)

If your update kit resides on diskettes and your distribution kit resides on hard disk, do the following to update your distribution kit:

1. Insert the UPDATE system volume in any drive unit that RT–11 UPDATE supports (see Section 1.6).
2. Bootstrap the UPDATE system volume.

   When you have bootstrapped UPDATE, the following dialogue begins:

   ```
   Welcome to RT-11 UPDATE <version>. This kit updates the following products:

            <List of products that have modules in update kit>

   Please refer to the RT-11 Update User's Guide for assistance
   with this UPDATE session.

   Please enter today's date (dd-mmm-yy)
   ```

3. Enter the date as *dd-mmm-yy*, where *dd* represents the day, *mmm* represents the first three characters of the name of the month, and *yy* represents the year.

   After you enter the date, you are asked:

   ```
   Have you backed up the update kit? [Y/N]
   ```

4. Make sure you have a backup of your update kit and respond with a Y or N.

   - If you type N, a fatal error message appears on your terminal screen, the UPDATE session terminates, and the monitor prompt (.) appears. Bootstrap the RT–11 system disk again and back up the update kit as described in Section 2.4. Then, start the UPDATE session again.

- If you type Y, UPDATE asks:

  ```
  Do you want to update <product>? [Y/N]
  ```

5. Check the name of the product you want to update and respond with a Y or N.

   - If you type N, UPDATE specifies another product. When there are no more products on the update kit to specify, the UPDATE session ends, and the monitor prompt (.) appears.
   - If you type Y, UPDATE asks:

     ```
     Have you backed up the <product> distribution kit? [Y/N]
     ```

6. Make sure you have a backup of your distribution kit and respond with a Y or N.

   - If you type N, a fatal error message appears on your terminal screen, the UPDATE session terminates, and the monitor prompt (.) appears. Bootstrap the RT–11 system disk again and back up the distribution kit as described in your layered-product installation guide. Then, start the UPDATE session again.
   - If you type Y, UPDATE asks:

     ```
     In which device will you mount the <product> kit? (ddn)
     ```

7. Type the 3-character code for the device in which you will mount the distribution kit (see Section 1.6). UPDATE responds with the following prompt:

   ```
   Mount update <volume> in <device>
   Continue? [Y/N]
   ```

8. Mount the specified update volume in the appropriate device and type Y in response to the *Continue?* prompt.

   As UPDATE reads the update data file, the following messages appear:

   ```
   NOW READING IN DATA FILE....

   WORKING ...
   ```

   UPDATE instructs you when to mount the distribution kit in the appropriate device.

   ```
   Mount the <product> distribution volume labeled <label> in <device>
   Continue? [Y/N]
   ```

9. Mount the specified distribution volume in the appropriate device and type Y in response to the *Continue?* prompt.

   When you have done so, UPDATE unprotects and deletes each module specified in the update data file and copies the updated module to the distribution kit. The following message appears as each module is updated:

   ```
   Now updating <module-name>
   ```

10. When UPDATE has finished updating a product, UPDATE does the following:

    - If there are more products on the update kit to specify, UPDATE asks:

```
Do you want to update <product>? [Y/N]
```

If you type Y, the UPDATE session repeats for the specified product. If you type N, UPDATE specifies another product.

- When there are no more products on the update kit to specify, the UPDATE session ends and the following message and monitor prompt (.) appear:

```
The UPDATE session has completed successfully.

       <List of layered-product modules that must be rebuilt>

@ <EOF>

.
```

3.3 Update Kit and Distribution Kit on Hard Disk (RT–11 and Layered Products)

If your update and distribution kits reside on hard disk, do the following to update your distribution kit:

1. Insert the update kit in any drive unit that UPDATE supports (see Section 1.6).
2. Bootstrap the update kit.

   When you have bootstrapped UPDATE, the following dialogue begins:

```
Welcome to RT-11 UPDATE <version>. This kit updates the following products:

         <List of products that have modules in update kit>

Please refer to the RT-11 Update User's Guide for assistance
with this UPDATE session.

Please enter today's date (dd-mmm-yy)
```

3. Enter the date as *dd-mmm-yy*, where *dd* represents the day, *mmm* represents the first three characters of the name of the month, and *yy* represents the year.

   Next, UPDATE asks if you have backed up your update kit:

```
Have you backed up the update kit? [Y/N]
```

4. Make sure you have a backup of the update kit and respond with a Y or N.

   - If you type N, a fatal error message appears on your terminal screen, the UPDATE session terminates, and the monitor prompt (.) appears. Bootstrap the RT–11 distribution kit again and make a backup copy of the update kit as described in Section 2.4. Then, start the UPDATE session again.
   - If you type Y, UPDATE asks:

```
Do you want to update <product>? [Y/N]
```

5. Check the name of the product you want to update and respond with a Y or N.

   - If you type N, UPDATE specifies another product. When there are no more products on the update kit to specify, the UPDATE session ends, and the monitor prompt (.) appears.

- If you type Y, UPDATE asks:

  ```
  Have you backed up the <product> distribution kit? [Y/N]
  ```

6. Make sure you have a backup of the distribution kit and respond with a Y or N.

   - If you type N, a fatal error message appears on your terminal screen, the UPDATE session terminates, and the monitor prompt (.) appears. Bootstrap the RT–11 distribution kit again and make a backup copy of the distribution kit as described in Chapter 2 of the *RT–11 Update Release Notes* (See Section 1.5 for how to access the *RT–11 Update Release Notes*). Then, start the UPDATE session again.

   - If you type Y, UPDATE asks:

     ```
     In which device will you mount the <product> kit? (ddn)
     ```

7. Type the 3-character code for the device in which you will mount the distribution kit (see Section 1.6). The drive unit occupied by the update kit cannot be used for the distribution kit.

   As UPDATE reads the update data file, the following messages appear:

   ```
   NOW READING IN DATA FILE....
   ```

   ```
   WORKING ...
   ```

   UPDATE instructs you when to mount the distribution kit in the appropriate device:

   ```
   Mount the <product> distribution volume labeled <label> in <device>
   Continue? [Y/N]
   ```

8. Mount the specified distribution volume in the appropriate device and type Y in response to the *Continue?* prompt. If you type N, the UPDATE session instructs you to mount the specified distribution volume in the appropriate device.

   UPDATE checks the volume identification number (ID) for RT–11. If the volume ID is correct, UPDATE proceeds with the UPDATE session. If the volume ID is incorrect, UPDATE displays an error message.

   UPDATE unprotects and deletes each module specified in the update data file and copies the updated module to the distribution kit. The following message appears as each module is updated:

   ```
   Now updating <module-name>
   ```

   When all the updated modules for the product are copied to the distribution volumes, UPDATE automatically copies the new volume identification number to the RT–11 distribution volume and displays the message:

   ```
   Now updating volume identification number
   ```

9. When UPDATE has finished updating a product, UPDATE does the following:

   - If there are more products on the update kit to specify, UPDATE asks:

     ```
     Do you want to update <product>? [Y/N]
     ```

If you type Y, the UPDATE session repeats for the specified product. If you type N, UPDATE specifies another product.

- If there are no more products on the update kit to specify, the UPDATE session ends and the following message and monitor prompt (.) appear:

```
The UPDATE session has completed successfully.

       <List of layered-product modules that must be rebuilt>

@ <EOF>

.
```

3.4 Update Kit and Distribution Kit on RX50 Diskettes—Using One RX33 Diskette Drive (Layered Products Only)

If your update and distribution kits reside on RX50 diskettes and you have only one RX33 diskette drive, follow the procedure described in this section to update your distribution kit.

What the Procedure Does

Because this is a single-drive update, when you have bootstrapped the UPDATE system volume, UPDATE boots VM on your system device. UPDATE then copies your update distribution kit to a logical disk on the volume you specify. After the update logical disk is created, the RX33 drive is free to update the distribution kit. UPDATE copies the files from the update logical disk to the distribution diskettes mounted in the RX33 drive.

Procedure Prerequisites

Before you begin the UPDATE program with one RX33 diskette drive, do the following:

1. Make sure you are not using (have not mounted) logical disk LD0.
2. Make sure you have the minimum number of contiguous blocks of free space specified in the *RT–11 Update Release Notes*.

Procedure

1. Insert update volume 1 in the RX33 diskette drive.
2. Bootstrap update volume 1.

   When you have bootstrapped update volume 1, the following dialogue begins:

```
Determining system configuration, please wait...

Welcome to RT-11 UPDATE <version>. This kit updates the following products:

      <List of products that have modules in update kit>

Please refer to the RT-11 Update User's Guide for assistance
with this UPDATE session.

Please enter today's date (dd-mmm-yy)
```

3. Enter the date as *dd-mmm-yy*, where *dd* represents the day, *mmm* represents the first three characters of the name of the month, and *yy* represents the year. UPDATE then displays the following messages:

```
The UPDATE system is now running from Virtual Memory (VM).

The update <version> kit will be copied to a logical disk.

The device that you specify must have <nnnn>. contiguous free blocks.

To which device do you want the update <version> kit copied? (ddn)
```

4. Type the 3-character code for the device to which the update kit will be copied (your fixed disk or another device that has enough contiguous free space).

   - If you specify a removable disk device, the following message appears:

     ```
     Mount the volume which the update <version> kit will be copied to in ddn:
     Continue? [Y/N]
     ```

     Mount the specified volume in the specified device and type Y in response to the *Continue?* prompt. If you type N, UPDATE repeats the prompt.

   - If the volume you specified does not have enough contiguous free space, these messages appear:

     ```
     ;?UP-E-Not enough contiguous free space on ddn:

     Do you want to use another device? [Y/N]
     ```

     Type N if you want to end the UPDATE session and prepare your disk by using the DELETE and SQUEEZE commands. If you type Y, you are prompted again for another device and asked to mount a volume in that device.

   - If the volume you specified has enough contiguous free space, the dialogue continues:

     ```
     The following procedure should produce an informational message
     in the form ?DUP-I-Message.  No action is required as a result
     of this message.

     ....Now copying update kit <version> - 1 to LD0:

     Mount the volume labeled UPDATE <version> RX50 - <volume-number> in ddn:
     Continue? [Y/N]
     ```

5. Mount the update volume in the appropriate device and then type Y in response to the *Continue?* prompt. If you type N, UPDATE repeats the prompt.

   ```
   ....Now copying update kit <version> - <volume-number> to LD0:
   ```

   When the update volume is copied to the logical disk, UPDATE instructs you to mount the next volume in the same device.

6. Remove the current update volume, mount the next specified update volume, and type Y in response to the prompt. Continue to mount the diskettes and respond to the prompt in that fashion until all the update volumes are copied to the logical disk.

UPDATE then names a product that has been updated and asks if you want to update that product.

```
Do you want to update <product>? [Y/N]
```

7. Check the name of the product you want to update and respond with a Y or N.

   - If you type N, UPDATE specifies another product. When there are no more products on the update kit to specify, the UPDATE session ends, and the monitor prompt (.) appears as shown at the end of this section.
   - If you type Y, UPDATE asks:

     ```
     Have you backed up the <product> distribution kit? [Y/N]
     ```

8. Make sure you have a backup of the distribution kit and respond with a Y or N.

   - If you type N, a fatal error message appears on your terminal screen, the UPDATE session terminates, and the monitor prompt (.) appears. Bootstrap the RT–11 distribution kit again and make a backup copy of the product distribution kit as described in the *RT–11 Installation Guide*. Then, start the UPDATE session again.
   - If you type Y, UPDATE proceeds to the next messages:

     ```
     NOW READING IN DATA FILE....

     WORKING ...

     Mount the volume labeled <product> <version> BIN RX50 <vol-num> in ddn:
     Continue? [Y/N]
     ```

9. Mount the specified product volume in the appropriate device and then type Y in response to the *Continue?* prompt. If you type N, UPDATE repeats the prompt.

   UPDATE unprotects and deletes each module specified in the update data file and copies the updated module to the product distribution kit. The following message appears as each module is updated:

   ```
   Now updating <module-name>
   ```

   When the updated modules are copied to the distribution volume, UPDATE instructs you to mount the next distribution volume in the same device.

10. Remove the current volume, mount the specified volume, and type Y in response to the prompt. Continue to mount the diskettes and respond to the prompt in that fashion until all the updated modules are copied to the appropriate distribution volumes.

11. When UPDATE has finished updating a product, UPDATE does the following:

    - If there are more products on the update kit to specify, UPDATE asks:

      ```
      Do you want to update <product>? [Y/N]
      ```

      If you type Y, the UPDATE session repeats for the specified product. If you type N, UPDATE specifies another product.

- If there are no more products on the update kit to specify, the UPDATE session ends and the following message and monitor prompt (.) appear:

```
The UPDATE session has completed successfully.

       <List of layered-product modules that must be rebuilt>
```

The UPDATE logical disk is dismounted and deleted.

```
@ <EOF>

.
```

3.5 Update Kit and Distribution Kit on TK50 Magtape (Layered Products Only)

When your update and distribution kits reside on TK50 magtape, follow the procedure described in this section to update your distribution kit.

What the Procedure Does

When the kits reside on TK50 magtape, the UPDATE program copies the update kit to one logical disk (LD0) and the layered-product TK50 kit to another logical disk. If you specify one device for both logical disks, that device must have enough contiguous free space for both kits.

The updating is done from logical disks. During the procedure, you are instructed to mount a new TK50 to which the updated layered product is copied. Then, the UPDATE logical disk is deleted, though the layered-product logical disk remains mounted.

Procedure Prerequisites

Before you begin the UPDATE program with a TK50 magtape, do the following:

- Make sure you are not using (have not mounted) any logical disks. Note that logical disks are not automatically dismounted when you turn off your computer.
- Make sure you have the minimum number of contiguous blocks of free space specified in the *RT–11 Update Release Notes*.
- Have a new TK50 magtape available.

Procedure

1. Insert the update TK50 magtape in the magtape drive.
2. Bootstrap the update TK50 magtape (this will take about 5 minutes):

```
MSBOOT V05.0x
*MDUP.UP RET
MDUP V05.x
*/V:400.
*VM0:/Z/B
?MDUP-I-No bad blocks detected VM0:
*VM0:A=MU0:
```

When you have bootstrapped the update TK50 magtape, virtual memory is booted and the following dialogue begins:

```
Welcome to RT-11 UPDATE <version>. This kit updates the following products:

      <List of products that have modules in update kit>

Please refer to the RT-11 Update User's Guide for assistance
with this UPDATE session.

Please enter today's date (dd-mmm-yy)
```

3. Enter the date as *dd-mmm-yy*, where *dd* represents the day, *mmm* represents the first three characters of the name of the month, and *yy* represents the year.

   When you have done so, the following is displayed:

```
The UPDATE system is now running from Virtual Memory (VM).

The update <version> kit will be copied to a logical disk.

The device that you specify must have <nnnn>. contiguous free blocks.

To which device do you want the update <version> kit copied? (ddn)
```

4. Type the 3-character code for the device to which the update kit will be copied (your fixed disk or another device that has enough contiguous free space).

   - If you specify a removable disk device, the following message appears:

```
Mount the volume which the update <version> kit will be copied to in ddn:
Continue? [Y/N]
```

     When you have mounted the volume in the specified device, type Y in response to the *Continue?* prompt. If you type N, UPDATE repeats the prompt.

   - If the device you specified does not have enough contiguous free space, these messages appear:

```
;?UP-E-Not enough contiguous free space on ddn:

Do you want to use another device? [Y/N]
```

     Type N if you want to end the UPDATE session and prepare your disk by using the DELETE and SQUEEZE commands. If you type Y, you are prompted again for another device.

   - If the device you specified has enough contiguous free space, the dialogue continues:

```
The following procedure should produce an informational message
in the form ?DUP-I-Message.  No action is required as a result
of this message.

?DUP-I-No bad blocks detected ddn:

....Now copying update <version> TK50 tape to LD0:
```

5. UPDATE then asks if you want to update one of the products on the update kit:

```
Do you want to update <product>? [Y/N]
```

   - If you type N, UPDATE specifies another product. When there are no more products on the update kit to specify, the UPDATE session ends, and the monitor prompt (.) appears as shown at the end of this section.
   - If you type Y, the following messages appear:

```
The <product> kit will be copied to a logical disk.

The device that you specify must have <nnnn>. contiguous free blocks.

To which device do you want the <product> <version> kit copied? (ddn)
```

6. Type the 3-character code for the device to which the product kit will be copied (your fixed disk or another device that has enough contiguous free space).
   - If you specify a removable disk device, the following message appears:

```
Mount the volume which the <product> <version> kit will be copied to in ddn:
Continue? [Y/N]
```

     When you have mounted the volume in the specified device, type Y in response to the *Continue?* prompt. If you type N, UPDATE repeats the prompt.
   - If the device you specified does not have enough contiguous free space, these messages appear:

```
;?UP-E-Not enough contiguous free space on ddn:

Do you want to use another device? [Y/N]
```

     Type N if you want to end the UPDATE session and prepare your disk by using the DELETE and SQUEEZE commands. If you type Y, you are prompted again for another device.
   - If the device you specified has enough contiguous free space, the dialogue continues:

```
The following procedure should produce an informational message
in the form ?DUP-I-Message.  No action is required as a result
of this message.

?DUP-I-No bad blocks detected ddn:

Dismount the update TK50 and store it in a safe place.

Mount the volume labeled <product> in MU0.  Make sure the
TK50 device is on line.

Press RETURN when ready.
```

7. Press RETURN.
   a. The product distribution is then copied to another logical disk:

```
....Now copying <product> TK50 to LDn:
```

      The time required for copying to a logical disk varies from 5 minutes to 1 hour, depending on the product or products included in the update kit. You

may or may not see the following messages, depending on the utility used for the copy operation:

```
?BUP-I-Restore operation started from volume 1
?BUP-I-Copy operation is complete
```

b. After the copy operation is complete, the dialogue continues:

```
NOW READING IN DATA FILE....

WORKING ...

Now updating <module-name>
```

When the updated modules are copied to the logical disk, UPDATE displays messages similar to the following. The N/YY in the display represents the version number of your update release (for example, the first update release in 1989 is 1/89):

```
The updated <product> kit will be copied to a new TK50.

Select a blank TK50, label it "UPDATED N/YY <PRODUCT>" and
mount it in MU0:.

Please be sure the TK50 device is on line.....

Please be sure your output device in MU0 is not write protected...

Continue? [Y/N]
```

8. Dismount the product TK50 magtape and mount a blank TK50 magtape in the same device.

9. Respond to the *Continue?* prompt.

   - If you type N, the messages repeat to let you mount another TK50 magtape.
   - If you type Y, the dialogue continues, and the following messages may or may not appear, depending on the utility used for initializing the TK50 magtape:

     ```
     The next procedure initializes MU0:.  As a result, any files
     that currently reside in MU0 will be permanently lost.  If you
     would like to retain these files unload MU0 and insert
     another TK50.

     Do you want to use the TK50 that is mounted in MU0? [Y/N]
     ```

     — If you type N, the messages repeat to let you mount still another TK50 magtape.

     — If you type Y, the dialogue continues. The following message may or may not appear, depending on the utility used for the copy operation:

     ```
     ....Now copying <product> to MU0:
     ```

     The time required for copying to a logical disk varies from 5 minutes to 1 hour, depending on the product or products included in the update kit. You

may or may not see the following messages, depending on the utility used for the copy operation:

```
?BUP-I-Creating volume 1
?BUP-I-Verify pass started....
?BUP-I-Copy operation is complete
```

10. When UPDATE has finished updating a product, UPDATE does the following:

    - If there are more products on the update kit to specify, UPDATE displays the question:

      ```
      Do you want to update <product>? [Y/N]
      ```

      If you type Y, the UPDATE session repeats for the specified product. If you type N, UPDATE specifies another product.

    - If there are no more products on the update kit to specify, the UPDATE session ends and the following message and monitor prompt (.) appear:

      ```
      The UPDATE session has completed successfully.

             <List of layered-product modules that must be rebuilt>
      ```

      The UPDATE logical disk is dismounted and deleted. The product logical disk remains mounted and is not deleted. See the product chapter in the *RT–11 Update Release Notes* for the file name of the product logical disk.

      ```
      @ <EOF>

      .
      ```

Chapter 4
Performing PostUPDATE Procedures

After the UPDATE session, perform the following postUPDATE procedures:

- Preserve the newly updated kits.
- Rebuild specified modules.
- Build a working system and, if necessary, perform a system generation.

4.1 Preserve Newly Updated Distribution Volumes

During the UPDATE session, updated modules are copied to your distribution kits. After the UPDATE session, make a backup copy of the newly updated distribution kit for each product you updated. Use separate volumes for the backup copy of each updated distribution kit. Make a new label for each volume.

Use the backup copies for your working system and store the newly updated distribution kits in a safe place. The newly updated RT–11 distribution kits will be used in the next UPDATE session.

4.2 Rebuild Modules

The *RT–11 Update Release Notes* identifies those components or subcomponents that you must rebuild before you create a working system. For example, if you updated BASIC–11/RT–11, you must rebuild the BASIC interpreter.

After rebuilding components or subcomponents, make a backup copy of the rebuilt kit.

For detailed instructions on preserving distribution volumes, see the *RT–11 Installation Guide*.

4.3 Final Installation/Reinstallation Procedures

You must build or rebuild a working system and perform a system generation, if you want to include features that are available only through system generation.

The following sections describe hints for backing up files you might want to save, installing the operating system, running SYSGEN, and optimizing the speed of your working system disk.

4.3.1 Backup Hints

The following hints are for backing up the files you want to save before you update your system disk:

- Use logical disks (.DSK files) in which to organize and back up your files.
- If you want to save all your files but your RT–11 system files, you can use the creation date of the system files as a fast way to distinguish them from your other files.

  The following example procedure saves all your files but your RT–11 files. The example uses several diskettes as the storage medium.

  1. Initialize enough diskettes to hold all the files you want to save (except your RT–11 system files).
  2. Get the date of your RT–11 system files.

     ```
     .DIR PIP.SAV RET
      01-Mar-89
     PIP    .SAV     30P 06-Sep-86
     ```

  3. If you have any files you want to save that have the same date as your system files, then copy those files now to your output volume.
  4. Copy all your files dated before the system date.

     ```
     .COPY/SYSTEM/MULTIVOLUME/BEFORE:6:SEP:86 DU0:*.* DU1:*.* RET
     ```

     The /SYSTEM option is included in this example in case you have files that are not RT–11 system files but that have a SYS file type.
  5. Copy all your files dated after the system date.

     ```
     .COPY/SYSTEM/MULTIVOLUME/SINCE:7:SEP:86 DU0:*.* DU1:*.* RET
     ```

     Note that the /SINCE option includes all files on and after the specified date. So, you should add one day to the system file creation date to avoid copying RT–11 system files.
  6. Visually check the directories of your storage diskettes to make sure all the files you want to save are stored on those diskettes.

4.3.2 Installation Hints

Depending on your computer configuration and your needs, you can install the updated operating system in a variety of ways. See the *RT–11 Installation Guide* and the *RT–11 Automatic Installation Guide* for the installation procedure that might be most suitable for you.

See the *RT–11 System Generation Guide* if you want to include features that are available only through system generation.

However, when installing the operating system, you can save time if you have saved the following:

- Start-up command file

- SYSGEN answer file (if you do a system generation)
- UCL.DAT (if you have defined commands of your own)

If you understand the basic steps of installing the operating system (whether it be a manual or an automatic one), you can adapt the installation to suit your needs and you are not limited to an automatic installation.

- **Major Steps Required for Installing RT–11**

  The following major steps are involved in any RT–11 operating system installation:

  1. Making or getting a bootable volume (other than your normal system volume) with a minimum RT–11 operating system. This is an auxiliary volume with just enough files to have a running computer so that you can install the updated system files. This volume could be a distributed diskette; for example, volume 1 of the RT–11 distribution kit.
  2. Booting the auxiliary volume as a temporary system volume.
  3. Initializing the volume to which you want to copy the updated operating system files so that it can become your system volume.
  4. Copying the updated operating system files to that volume.
  5. Copying the boot procedure to the boot blocks.
  6. Booting the new volume.

- **How to Make a Bootable Volume**

  To make a bootable volume, you need to copy the files listed in Table 4–1 to that volume and then copy the boot code to the boot blocks on the volume.

Table 4–1: Files Needed to Make a Bootable Volume

File	Description
RT11xx.SYS	One monitor—Can be the SJ, FB, or XM monitor; but should not be the RT11AI monitor
SWAP.SYS	External monitor swap blocks
dd.SYS	Device handler for your working system volume
dd.SYS	Device handler for your auxiliary volume (the volume you want to boot), if your auxiliary volume is not of the same type as your working system volume
SL.SYS	Command line editor (optional)
LD.SYS	Logical disk handler, if you intend to use logical disks (optional)
PIP.SAV	File maintenance utility
DUP.SAV	Disk maintenance utility

Table 4–1 (Cont.): Files Needed to Make a Bootable Volume

File	Description
DIR.SAV	Directory utility
RESORC.SAV	System resource display utility, handles mostly SHOW commands (optional)

The following example procedure is for creating a bootable RX50 diskette:

1. Initialize a diskette that has no file you want to save.

   ```
   INIT DU1:
   ```

2. Copy needed SYS files onto the diskette.

   ```
   COPY SY:(RT11FB,SWAP,DU,SL,LD).SYS DU1:
   ```

3. Copy needed SAV files onto the diskette.

   ```
   COPY SY:(PIP,DUP,DIR,RESORC).SAV DU1:
   ```

4. Copy the boot procedure to the boot blocks of the diskette.

   ```
   COPY/BOOT DU1:RT11FB.SYS DU1:
   ```

4.3.3 SYSGEN Hint

If you need to do a SYSGEN:

1. Run SYSGEN to create a new RT–11 monitor and handlers.
2. Boot an auxiliary volume. See Section 4.3.2 for instructions on how to make a bootable volume, if you have not done so already.
3. Unprotect the system files on ddn: (the device that will become your system device).

   ```
   UNPROTECT ddn:*.SYS
   ```

4. Copy the new SYSGEN files to your targeted system device.

   ```
   COPY ddn:*.SYG ddn:*.SYS
   ```

   The first *ddn* represents the device on which you ran the SYSGEN, while the second *ddn* represents your targeted system device.

5. Copy the bootstrap to the boot blocks of your new system disk.

   ```
   COPY/BOOT ddn:RT11xx.SYS ddn:
   ```

   where xx represents the system monitor you choose (FB, SJ, or XM).

6. Boot your new system.

   ```
   BOOT ddn:
   ```

4.3.4 Optimization Hints

The operating system files on the distribution media are arranged in an order to maximize your operating system's efficiency. If you copy the files onto your system disk in the order given, you will have an efficiently working operating system.

Sometimes, however, the order of your files on your system disk can change. For example, if you update only one or a few system files (rather than all of them at once) or if you do a system generation. Therefore, it is good to understand how to arrange your files for the best system performance.

4.3.4.1 How to Organize Your Files

You can increase the speed of your computer if you organize your files on your system disk in a way that places the most frequently used files near the beginning of the directory. This positioning minimizes directory read operations as well as reducing the disk distance between a directory pointer and the system file to which the directory points. And this in turn increases the speed of your computer.

Digital suggests the following general order:

RT11(XM,FB,SJ).SYS (monitors)
SWAP.SYS
PIP.SAV
DUP.SAV
DIR.SAV
RESORC.SAV
UCL.SAV, UCL.DAT
UCF.SAV (if used)
SYSLIB (and whatever language libraries you use)
LINK (with the assemblers and compilers you use, if you are a developer)
handlers

Note that your handler files are not at the top of this list, even though handlers can be used often, because RT–11 has a fast look-up method for handlers and generally does not do a directory search for a handler file.

4.3.4.2 Procedure for Organizing Your Files

To organize your files, use a procedure that best suits the storage space on your computer system.

The following sample command file illustrates a procedure for reorganizing your system disk by using a large auxiliary volume. The auxiliary device(s) serves as a place to temporarily move your files so that you can then reposition them on your system disk for the best system performance.

Example Command Procedure

```
! REORG.COM
! Reorganize system disk
!
ASSIGN DU0 SRC  ❶
ASSIGN DU4 AUX
!
! Transfer time-critical files to "top" of disk
!
INIT AUX:
COPY SRC:(RT11*,SWAP).SYS AUX:
COPY SRC:(PIP,DUP,DIR,RESORC).SAV AUX:
COPY/INFO SRC:(UCL,UCF,SYSLIB,SYSMAC) AUX: ❷
COPY/INFO/NOREPLACE SRC:*.(MLB,SAV,REL,OBJ) AUX: ❸
!
! Transfer medium time-critical files
!
COPY/INFO/SYSTEM/NOREPLACE/EXCLUDE SRC:*.(DSK,BAK,...) AUX: ❹
!
! Transfer non-time-critical files last
!
COPY/NOREPLACE/SYS SRC:*.(DSK,BAK,...) AUX: ❺
!
COPY/BOOT AUX:RT11XM.SYS AUX:
!
! Now copy the result back to the original disk with the SQUEEZE
! command.  This consolidates and packs the directory segments
! for best performance.
!
INIT SRC:
SQUEEZE/OUT:SRC: AUX: ❻
```

❶ SRC and AUX are logicals used to specify your primary system device (SRC) and your auxiliary device (AUX—which becomes your temporary system device when you boot it).

❷ The /INFORMATION option specifies that you do not want the procedure to abort if RT–11 does not find all the files specified. This is included here since the UCF file may not be present.

❸ The /NOREPLACE option specifies that a file not be copied if it already exists on the output device. This option is necessary since you do not want to replace the files copied in the preceding copy operations.

❹ The /SYSTEM option specifies that SYS files be copied. The /EXCLUDE option specifies that all files on SRC: be copied *except* those having the file type you specify in the parentheses. DSK and BAK are given as example file types. The ellipsis indicates that you can add any type you want here. These file types should specify non-time-critical files. These are the files you copy last.

❺ With this command, you should transfer back to your system disk all the rest of the files you placed on the auxiliary volume.

The /NOREPLACE option is so that you will not recopy files you already copied, and the /SYSTEM option is so you can copy non-time-critical system files.

❻ The /OUTPUT qualifier specifies the destination of the SQUEEZE operation.

Directories are not normally packed or consolidated when copying several files to a disk. One function of the SQUEEZE operation is to consolidate directory segments. This means leaving no space between directory entries, filling up a directory segment before going on to the next segment, and placing the entries in a segment in the same order as the files on a disk. This can speed up a directory search when you have many files.

Appendix A
Error Messages

The appendix lists all the RT–11 UPDATE error messages. Section A.1 describes the format of the messages. Section A.2 lists the error messages and provides explanatory text.

All UPDATE error messages begin with the prefix ;?UP. Error messages generated by the RT–11 operating system or its layered products have different prefixes. Some conditions may cause an error message from the RT–11 operating system and the update software. If you receive an RT–11 error message with an UPDATE error message, look up the UPDATE error message in this appendix. The text explains the error conditions and possible solutions and may refer you to RT–11 documentation for more information.

If you receive an RT–11 error message that is not accompanied by an UPDATE error message, look up the message in the *RT–11 System Message Manual*.

A.1 Format of Error Messages

RT–11 UPDATE error messages are listed alphabetically in the following format:

;?UP–ErrorLevel–MessageText

The error level indicates the severity of the error and can be either E or F:

E Indicates a nonfatal error. When a nonfatal error occurs, execution is suspended but the UPDATE session is not aborted. In most cases, you can take corrective actions and continue the UPDATE session.

F Indicates a fatal error. When a fatal error occurs, the UPDATE session aborts. You cannot recover any part of the UPDATE session for the product being updated when the error occurred.

In the message text:

FILSPEC Represents a file specification that includes the device name, the file name, and the file type (DEV:FILNAM.TYP).

DEV: Represents a device specification. DEV: appears in the form ddn, where dd represents a 2-character physical device name and n represents the drive unit number of the device.

A.2 UPDATE Error Messages

;?UP–E–Error copying FILSPECS to FILSPEC

Explanation: A hard error occurred while UPDATE was copying files between devices.

User Action: Make sure all devices are write enabled. Follow the procedures for recovery from hard error conditions listed in the *RT–11 System Message Manual*.

If possible, correct the problem without removing the UPDATE system volume or booting RT–11. Type Y in response to the *Try again?* prompt and continue with the UPDATE session. Otherwise, type N in response to the prompt. Make sure each volume of the update kit contains the necessary files. Make a backup copy of the distribution kit and the update kit, if necessary. Then, bootstrap the UPDATE system volume.

Explanation: Files are missing from the input volume.

User Action: Make sure that each volume of the update kit contains the necessary files. See the kit maps provided in the *RT–11 Update Release Notes*.

If possible, correct the problem without removing the UPDATE system volume or booting RT–11. Type Y in response to the *Try again?* prompt and continue with the UPDATE session. Otherwise, type N in response to the prompt. Make a backup copy of the distribution kit and the update kit, if necessary. Then, bootstrap the UPDATE system volume.

;?UP–E–Error deleting FILSPECS

Explanation: A hard error occurred while UPDATE was deleting the file specified.

User Action: Make sure all devices are write enabled. Follow the procedures for recovery from hard error conditions listed in the *RT–11 System Message Manual*.

If possible, correct the problem without removing the UPDATE system volume or booting RT–11. Type Y in response to the *Try again?* prompt and continue with the UPDATE session. Otherwise, type N in response to the prompt. Make sure each volume of the update kit contains the necessary files. Make a backup copy of the distribution kit and the update kit, if necessary. Then, bootstrap the UPDATE system volume.

Explanation: Files are missing from the volume on the specified device.

User Action: Make sure you are using a copy of the correct distribution kit, and each volume of the update kit contains the necessary files. See the kit maps provided in the *RT–11 Update Release Notes*.

If possible, correct the problem without removing the UPDATE system volume or booting RT–11. Type Y in response to the *Try again?* prompt and continue with the UPDATE session. Otherwise, type N in response to the prompt. Make a backup copy of the distribution kit and the update kit, if necessary. Then, bootstrap the UPDATE system volume.

;?UP–E–Invalid volume identification number mounted in DEV:

Explanation: The distribution volume mounted in the specified device has an invalid volume identification number.

User Action: Make sure the correct distribution volume is mounted in the specified device. Type Y in response to the *Continue?* prompt to continue the UPDATE session. Type N in response to the prompt to terminate the UPDATE session.

See the volume identification numbers provided in the *RT–11 Update Release Notes*.

Use the INITIALIZE/VOLUMEID[:ONLY] command to copy a volume identification number.

;?UP–E–Not enough contiguous free space on ddn:

Explanation: The volume in the device you specified does not have enough contiguous free space.

User Action: Specify another device, mount another volume in the current device, or exit from the UPDATE session and prepare the volume currently in the device by using the DELETE and SQUEEZE commands.

;?UP–E–System device DEV: specified for distribution kit

Explanation: The device specified for mounting the distribution kit is the same device on which the update kit is mounted.

User Action: UPDATE reprompts you to specify the device on which you will mount the distribution kit. Specify a drive unit other than the one containing the UPDATE system volume.

;?UP–E–Unsupported device DEV:

Explanation: UPDATE does not support the device specified for mounting the distribution kit, or the drive unit number specified is too large.

User Action: Specify a valid device for mounting the distribution kit. See Section 1.6 for a list of valid devices and drive unit numbers.

Explanation: Your configuration does not include the device specified.

User Action: Make sure the device you specified is included in your configuration.

;?UP–E–Wrong format for date

Explanation: The date specified is an illegal date or was entered using the wrong format.

User Action: Check for a typing error in the date specified. Reenter the date, using the form dd-mmm-yy.

;?UP–E–Wrong volume mounted in DEV:

Explanation: The wrong volume was mounted on the specified device, or the correct volume was mounted on the wrong device.

User Action: The system prompts you again. Mount the correct volume on the specified device.

Explanation: The volume mounted on the device specified does not contain all the necessary files.

User Action: Make sure you are using a copy of the correct distribution kit, and each volume of the update kit contains the necessary files. See the kit maps provided in the *RT–11 Update Release Notes*.

;?UP–F–Distribution kit not backed up

Explanation: You did not make a backup copy of the distribution kit.

User Action: Bootstrap RT–11 and make a backup copy of your distribution kit as described in the *RT–11 Installation Guide*. Store the original distribution kit in a safe place. Then, bootstrap the UPDATE system volume.

;?UP–F–Error copying bootstrap

Explanation: A hard error occurred while UPDATE was copying the bootstrap.

User Action: Make sure all devices are write enabled. Follow the procedures for recovery from hard error conditions listed in the *RT–11 System Message Manual*.

Make backup copies of the distribution kit and the update kit, if necessary. Then, bootstrap the UPDATE system volume.

;?UP–F–Error executing ASSIGN DEV: <LOGICAL DEVICE NAME>

Explanation: An error exists in the update software.

User Action: Submit a Software Performance Report (SPR) to Digital; include with the SPR a listing and a machine-readable medium. Do not attempt to restart UPDATE.

;?UP–F–Error executing LOAD DEV:

Explanation: UPDATE tried to load the specified device, but the device handler for that device is missing from the UPDATE system volume.

User Action: Make sure the UPDATE system volume contains all the necessary files. See the kit maps provided in the *RT–11 Update Release Notes*.

Make a backup copy of the distribution kit and the update kit, if necessary. If the update kit occupies more than one volume, be careful to copy the update files to the appropriate volumes. Then, bootstrap the UPDATE system volume.

;?UP–F–Error squeezing DEV:

Explanation: A hard error occurred while UPDATE was squeezing the volume specified.

User Action: Make sure all devices are write enabled. Follow the recovery procedures for hard error conditions listed in the *RT–11 System Message Manual*.

Make a backup copy of the distribution kit and the update kit, if necessary. Then, bootstrap the UPDATE system volume.

;?UP–F–Invalid volume identification number mounted in DEV:

Explanation: The distribution volume mounted in the specified device has an invalid volume identification number.

User Action: Make sure the correct distribution volume is mounted in the specified device. See the volume identification numbers provided in the *RT–11 Update Release Notes*.

Use the INITIALIZE/VOLUMEID[:ONLY] command to copy a volume identification number.

;?UP–F–Update file FILSPEC missing from system volume

Explanation: The specified file is not on the UPDATE system volume.

User Action: Make sure each volume of the update kit contains all the necessary files. See the kit maps provided in the *RT–11 Update Release Notes*.

Make a backup copy of the update kit. If the update kit occupies more than one volume, be careful to copy the update files to the appropriate volumes. Then, bootstrap the UPDATE system volume.

;?UP–F–Update kit in illegal device DEV:

Explanation: You cannot run UPDATE from the type of volume on which the update kit resides.

User Action: Copy the update kit to a valid type of medium. See Section 1.6 for a list of devices from which you can run UPDATE. Then, bootstrap the update system volume on a valid device.

;?UP–F–Update kit not backed up

Explanation: You did not make a backup copy of the update kit.

User Action: Bootstrap RT–11 and make a backup copy of the update kit as described in the *RT–11 Installation Guide*. Store the original update kit in a safe place. Then, bootstrap the UPDATE system volume.