DEC RT Integrator Installation Guide

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This document describes the procedures for installing the DEC Realtime Test Integrator (DEC DEC RT Integrator) Development Kit and Runtime Kit on RISC ULTRIX and VMS systems.

NOTE

DEC RT Integrator was formerly called VAXlab Software Library.

Revision/Update Information:	This is a revised document.
Operating System and Version:	ULTRIX Version 4.0 or higher VMS Version 5.3 or higher
Software Version:	DEC RT Integrator Version 1.0 (ULTRIX) DEC RT Integrator Version 2.0 (VMS)

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Preface

Intended Audience

This guide describes how to install the DEC RT Integrator Version 1.0 (ULTRIX) Development and Runtime Kits and the DEC RT Integrator Version 2.0 (VMS) Development and Runtime Kits. This guide is for ULTRIX or VMS system managers or the persons responsible for performing the system installation.

For those installing DEC RT Integrator on RISC ULTRIX, this guides assumes experience with the following:

- The setld ULTRIX utility
- The fverify ULTRIX utility
- Remote Installation Service (ris)
- Diskless Management Services (dms)

For those installing DEC RT Integrator on VMS, this guide assumes experience with VMSINSTAL.

Organization

This guide has two parts. Part I describes how to install DEC RT Integrator on RISC ULTRIX. Part II describes how to install DEC RT Integrator on VMS. Parts I and II and their chapters follow:

Chapter Number	Contents
Part I	**Installing DEC RT Integrator on a RISC ULTRIX System**
Chapter 1	Discusses the preparations and requirements necessary for installing DEC RT Integrator on RISC ULTRIX.
Chapter 2	Explains how to install DEC RT Integrator on RISC ULTRIX and how to recover from errors.
Chapter 3	Shows how to run the Installation Verification Procedure (IVP) under ULTRIX.
Part II	**Installing DEC RT Integrator on a VMS System**
Chapter 4	Explains DEC RT Integrator installation prerequisites for a VMS system.
Chapter 5	Provides instructions for installing DEC RT Integrator from a tape cartridge or magnetic tape on a VMS system.
Chapter 6	Describes procedures you perform after a successful DEC RT Integrator installation on VMS, such as editing the startup command files and changing parameter settings.
Chapter 7	Shows how to run the Installation Verification Procedure (IVP) under VMS.
Appendix A	Contains a list of the files created or modified by the ULTRIX installation procedure.
Appendix B	Contains sample listings for an ULTRIX DEC RT Integrator installation.
Appendix C	Contains sample listings for a VMS DEC RT Integrator installation.

Associated Documentation

The following is a complete list of the DEC RT Integrator documentation set:

Basic manuals:

- The *DEC RT Integrator Installation Guide* describes how to install DEC RT Integrator on RISC ULTRIX and VMS systems.
- The *DEC RT Integrator Master Index for ULTRIX* lists the index entries in all the DEC RT Integrator documents for ULTRIX.
- The *DEC RT Integrator Master Index for VMS* lists the index entries in all the DEC RT Integrator documents for VMS.

DECwindows graphical user interface manuals:

- The *DEC RT Integrator User's Guide* describes how to develop and run applications with the DECwindows graphical user interface.
- The *DEC RT Integrator Icon Developer's Guide* describes how to develop icons for the DECwindows graphical user interface.

Subroutine library manuals:

- *Getting Started with the Subroutine Libraries* describes the subroutine library components of the product.
- The *DEC RT Integrator Laboratory Graphics Package (LGP) Reference Manual* describes how to plot realtime data or data produced by calculations in two dimensions, three dimensions, and 2-dimensional contours from a 3-dimensional view.
- The *DEC RT Integrator Laboratory Input/Output (LIO) Reference Manual for ULTRIX* describes how to initiate, control, process, and terminate I/O to and from I/O devices on an ULTRIX system.
- The *DEC RT Integrator Laboratory Input/Output (LIO) Reference Manual for VMS* describes how to initiate, control, process, and terminate I/O to and from I/O devices on a VMS system.
- The *DEC RT Integrator Laboratory Signal Processing (LSP) Reference Manual* describes how to use the signal processing routines to perform Fourier transforms, correlation functions, and data filtering.

See the following documents for more information about installing software products on RISC ULTRIX systems:

- *ULTRIX-32 Introduction to System and Network Management*
- *ULTRIX-32 Reference Pages Section 8*: setld(8) command

- *ULTRIX-32 System Management Volume 2: Guide to System Configuration File Maintenance*
- *ULTRIX-32 Installation Guide* for your processor: installing ULTRIX layered products

See the following documents for more information about installing software products on VMS systems:

- *Guide to Setting Up a VMS System*
- *Introduction to VMS System Management*

Conventions

The DEC RT Integrator documentation set uses the following conventions:

Convention	Meaning
Italics	Words in italics indicate one of the following: • Emphasis on a term or phrase • The name of a manual
. . .	Ellipses indicate that portions of a display or example are excluded for presentation purposes.
Ctrl/X	A key combination indicating that you hold down the first key while pressing the second key. For example, Ctrl/C indicates that you hold down the key labeled Ctrl while you press the key labeled C.
"Double quotes"	Double quotes enclose system messages or screen prompts appearing in text.
[Brackets]	Square brackets indicate a required argument.
UPPERCASE TEXT	The ULTRIX system differentiates between lowercase and uppercase letters. Enter uppercase characters only when they are specifically indicated by an example or syntax line.

Part I
Installing DEC RT Integrator on a RISC ULTRIX System

Part I contains information about installing DEC RT Integrator on a RISC ULTRIX system.

Chapter 1

Preparing to Install DEC RT Integrator on RISC ULTRIX

Chapter 1 discusses the preparations and requirements necessary for installing DEC RT Integrator on RISC ULTRIX:

- Lists where the release notes can be found (see Section 1.1)
- Describes the difference between the Development Kit and the Runtime Kit (see Section 1.2)
- Describes requirements for using RIS for client installations (see Section 1.3)
- Describes installing DEC RT Integrator into a RIS Server area (see Section 1.4)
- Describes installing DEC RT Integrator into a DMS Server area (see Section 1.5)
- Describes the media software distribution kit (see Section 1.6)
- Lists the prerequisite hardware (see Section 1.7)
- Lists the prerequisite and optional software (see Section 1.8)
- Lists the time, privileges required, disk space, and backup procedures necessary to install DEC RT Integrator (see Section 1.9)

Your bill of materials (BOM) and indented bills report (BIL) specify the number and contents of your media. Verify the contents of your kit with this information. If your kit is damaged or if you find that parts of it are missing, contact your Digital representative.

1.1 Release Notes

DEC RT Integrator provides online release notes. Digital strongly recommends that you read the release notes before using the product. The release notes may contain information about changes to the application.

After you install DEC RT Integrator, you can find online release notes in the following file:

```
/usr/lib/X11/help/rti/rti100.release_notes
```

1.2 Development Kit Distinguished From Runtime Kit

The Development Kit allows the user to develop realtime applications, including data acquisition, IEEE-488 and RS-232 instrument control, and test and measurement. The Runtime kit allows the user to run an application but not to develop one.

Instructions for installing the Development Kit and the Runtime Kit are similar. The Development Kit installation procedure is described in Section 2.6. The Runtime Kit installation procedure is described in Section 2.7.

1.3 Using RIS for Client Installations

If you expect to install DEC RT Integrator subsets from a Remote Installation Services (RIS) server area of a remote system for installation on your local system, first check with your site system administrator to make sure that:

- A DEC RT Integrator kit is installed in the RIS server area and is available for use
- Your system is registered as a RIS client

If DEC RT Integrator subsets are available to you on a RIS server system, you will need the name of that system to start the installation procedure described in this guide.

1.4 Installing DEC RT Integrator into a RIS Server Area

If you manage a Remote Installation Services (RIS) server area and intend to install DEC RT Integrator into your server area, read the following sections of this guide:

- Section 1.6 for information about contents of the media kit
- Section 1.7 for hardware requirements
- Section 1.8 for software requirements
- Section 2.4 for information about the displays and prompts that are specific to DEC RT Integrator installations

1.5 Installing DEC RT Integrator into a DMS Server Area

If you manage a Diskless Management Services (DMS) server area and intend to install DEC RT Integrator into your server area, read the following sections of this guide:

- Section 1.6 for information about contents of the media kit
- Section 1.7 for hardware requirements
- Section 1.8 for software requirements
- Section 1.9.3 for disk space requirements
- Section 2.4 for information about the displays and prompts that are specific to DEC RT Integrator installations

1.6 Checking the Media Software Distribution Kit

For installations from media, use the Bill of Materials (BOM) to check the contents of your software distribution kit.

The kit includes this installation guide and the TK50 tape cartridge, labeled DEC RT Integrator V1.0, for systems with TK50 or TK70 tape cartridge drives.

1.7 Hardware Requirements

To perform the installation, you need the following hardware:

- Software distribution device (if installing from media)

  You need a distribution device that corresponds with the software distribution media. For example, if you have a TK50 software kit, you need a TK50 or TK70 tape drive. You must know how to load the media supplied with the software distribution kit on the appropriate drive. The documentation for the tape or disk drive that you are using explains how to load media.

- Terminal

  You can use either a hardcopy or video terminal to communicate with the operating system and respond to prompts from the installation procedure for DEC RT Integrator.

- Processors

  DEC RT Integrator requires one of the following processors:

  - DECstation 2100
  - DECstation 3100
  - DECstation 3100S
  - DECstation 5000 series
  - DECsystem 3100
  - DECsystem 5400
  - DECsystem 5810
  - DECsystem 5820

1.8 Software Requirements

DEC RT Integrator Version 1.0 requires that ULTRIX Version 4.0 or higher and ULTRIX/UWS Version 4.0 or higher be installed.

To use the DEC RT Integrator graphical user interface or the LGP subroutine library, DEC GKS-3D for ULTRIX Version 1.1 must be installed on your system.

If you are using only the LIO or LSP subroutine libraries for applications, you do not not need to install DEC GKS-3D for ULTRIX Version 1.1.

To develop user-written icons for DEC RT Integrator, the Worksystem Development Software ((UDWXDEV400) and the Software Development Utilities (UDTPGMR400) subsets are required from the ULTRIX Version 4.0 or higher software.

1.8.1 Optional Software

If you will be using the IEZ11 device, you can install the IEZ11 driver either before or after installing DEC RT Integrator.

To develop user-written icons for DEC RT Integrator, you must have access to the compiler for the language in which you are programming.

C for RISC is included with the ULTRIX operating system. If you will be using FORTRAN for RISC, you must purchase it separately.

Refer to the System Software Addendum (SSA) for a complete list of compatible products and their required version numbers. The SSA is part of the Software Product Description (SPD).

1.9 Installation Procedure Requirements

This section discusses time, privileges, disk space and system disk backup for installing DEC RT Integrator.

1.9.1 Time

A local DMS server or RIS server installation takes approximately 20 minutes, depending on your type of media and your system configuration. A RIS client installation may take longer because it is dependent on network activity at the time you do the installation. If the network is not active, you should expect an installation time roughly equal to a local installation.

1.9.2 Privileges

To install DEC RT Integrator, you must be logged in to the root or super user account.

1.9.3 Disk Space Required for DEC RT Integrator

To install the entire Development Kit for DEC RT Integrator on RISC ULTRIX you must have 29,400 Kbytes available on your /usr file system.

To install the entire Runtime Kit for DEC RT Integrator on RISC ULTRIX you must have 14,400 Kbytes available on your /usr file system.

Table 1–1 shows the disk space required for software subsets in both the DEC RT Integrator Development Kit and DEC RT Integrator Runtime Kit.

Table 1–1: Disk Space Required by DEC RT Integrator

Description	Subset Name	Kbytes
Development Kit Subsets		
Laboratory Graphics Package (LGP)	RTILGP100	5000
Laboratory Input/Output (LIO)	RTILIO100	400
Laboratory Signal Processing (LSP)	RTILSP100	200
DEC RT Integrator (Development)	RTIBASE100	6000
ULTRIX ek device driver	RTI488100	2100
DEC RT Integrator (Runtime)	RTIRTBASE100	6000
DEC RT Integrator Manual Pages	RTIMAN100	400
DEC RT Integrator Examples	RTIEXA100	300
Icon Development	RTIICON100	9000
Total Development Kit Files		**29400**
Runtime Kit Subsets		
Laboratory Graphics Package (LGP)	RTILGP100	5000
Laboratory Input/Output (LIO)	RTILIO100	400
Laboratory Signal Processing (LSP)	RTILSP100	200
DEC RT Integrator (Runtime)	RTIRUN100	6000
ULTRIX ek device driver	RTI488100	2100
DEC RT Integrator Manual Pages	RTIRTMAN100	400
DEC RT Integrator Examples	RTIEXA100	300
Total Runtime Kit Files		**14400**

Use the following ULTRIX command to determine the amount of space presently available in the /usr file system:

```
% df
```

If the disk does not have enough space, delete unnecessary files to provide space.

1.9.4 System Disk Backup

Digital recommends that you do a system disk backup before installing any layered product. This backup protects your files from being corrupted in case a system failure occurs during the installation.

Install DEC RT Integrator on the backup disk. Use this backup disk with DEC RT Integrator installed as your new system disk.

For more information about backing up your system disk, refer to the ULTRIX documentation.

Chapter 2

Installing DEC RT Integrator on RISC ULTRIX

Chapter 2 describes how to install DEC RT Integrator on RISC ULTRIX:

- License registration (see Section 2.1)
- Aborting the installation (see Section 2.2)
- Installing DEC RT Integrator locally (see Section 2.3)
- Installation procedure prompts (see Section 2.4)
- Installing DEC RT Integrator into a server environment (see Section 2.5)
- Development Kit installation procedure (see Section 2.6)
- Runtime Kit installation procedure (see Section 2.7)
- Reconfiguring the kernel to support the ek driver (see Section 2.8)
- Reconfiguring the kernel to delete the ek driver (see Section 2.9)
- Installation Verification Procedure (IVP) (see Section 2.10)
- Error messages (see Section 2.11)
- Determining the files added to the system (see Section 2.12)
- Reporting problems (see Section 2.13)

2.1 License Registration

A License Product Authorization Key (License PAK) must be registered in the License Database (LDB) in order to use DEC RT Integrator on a newly-licensed node. The License PAK may be shipped along with the kit if you ordered the license and media together; otherwise, it is shipped separately to a location based on your license order. If you are installing DEC RT Integrator as an update on a node already licensed for this software, you have already completed the License PAK registration requirements.

NOTE

You need to register the PAK before you install DEC RT Integrator.

If you are installing in a DMS environment, you need to register the PAK on the client, not the server.

To register a license under ULTRIX, first log in as superuser.

At the superuser prompt, edit an empty PAK template with the `lmf register` command and include all the information on your License PAK as follows:

```
# lmf register
```

After you register your license, use the following `lmf reset` command to copy the license details from the License Database (LDB) to the kernel cache:

```
# lmf reset
```

For complete information on using the ULTRIX License Management Facility, see the *ULTRIX Version 4.0 Guide to Software Licensing* or the `lmf(8)` reference page.

2.2 Aborting the Installation

To abort the installation procedure at any time, press the interrupt character (usually Ctrl/C within a Digital environment). When you abort the installation procedure, it does not delete files created up to that point. You must delete these files interactively. See Appendix A for a list of files and directories created during the installation procedure.

2.3 Installing DEC RT Integrator Locally

This installation procedure loads DEC RT Integrator files on a disk that belongs to the system where you perform the installation. When DEC RT Integrator is run, its executable images are mapped into memory on this system.

This section explains how to start a local installation procedure and how to respond to installation procedure prompts.

If you are installing DEC RT Integrator from tape media, start with Section 2.3.1.

If you are installing DEC RT Integrator on a client system using a RIS kit, start with Section 2.3.2.

2.3.1 Using TK50 Distribution Media

If you are installing DEC RT Integrator from tape media, start the installation procedure as follows:

1. Mount the media on the appropriate tape drive.
2. Log in as superuser (login name root) to the system where you are installing DEC RT Integrator.
3. Make sure that you are at the root (`/`) directory by entering the following command:

   ```
   # cd /
   ```

4. Enter a `setld` command that specifies the `-l` (load) function and the device special file name for the tape drive where the media is mounted. For example, if you load a magnetic tape on tape unit 0, enter the following command:

   ```
   # setld -l /dev/rmt0h
   ```

   The installation procedure displays the following information and prompt:

   ```
   Please make sure your installation tape is mounted and on-line.
   Are you ready (y/n)?
   ```

   After all tape rewind and wind operations are complete and the tape drive indicates online status, enter `y`.

See Section 2.4 to continue the installation.

2.3.2 Installing DEC RT Integrator from a RIS Server

To install DEC RT Integrator from a Remote Installation Services (RIS) server to a RIS client you must first install DEC RT Integrator in your RIS server environment. See your RIS manager if DEC RT Integrator is not already installed in the RIS server.

To install DEC RT Integrator subsets that reside in a `/var/adm/ris` distribution area on a remote system, start the installation procedure as follows:

1. Log in as superuser (login name root) to the system where you are installing DEC RT Integrator.
2. Make sure that you are at the root (`/`) directory by entering the following command:

   ```
   # cd /
   ```

3. Enter a `setld` command that requests the load function and identifies the system where DEC RT Integrator subsets are located. For example, if you are loading DEC RT Integrator subsets from a RIS distribution area on node `bigsys`, enter the following command:

   ```
   # setld -l bigsys:
   ```

If you receive an error, verify that you correctly followed the preparation steps in Section 1.3.

See Section 2.4 to continue the installation.

2.4 Responding to Installation Procedure Prompts

This section explains the installation procedure displays and prompts. See Section 2.4.2 for prompts for the Development Kit subsets. See Section 2.4.4 for prompts for the Runtime Kit subsets.

2.4.1 Determining Which Development Kit Subsets to Install

All subsets are optional and will be installed only if you choose them. In deciding whether to install a subset, consider whether you will make use of it and how much disk space you have available. Appendix A lists the files in each subset.
The subsets are described as follows:

- Laboratory Graphics Package (LGP) (RTILGP100), 5000 Kbytes, is a set of subroutines used in the graphical presentation of scientific and engineering applications.
- Laboratory Input/Output (LIO) (RTILIO100), 400 Kbytes, is a set of subroutines used to control realtime I/O devices.

- Laboratory Signal Processing (LSP) (RTILSP100), 200 Kbytes, is a set of subroutines designed to make standard measurements and analyses common in the laboratory.
- DEC RT Integrator (Development) (RTIBASE100), 6000 Kbytes, allows the user to develop realtime applications using the DECwindows graphical user interface, including data acquisition, IEEE-488 and RS-232 instrument control, and test and measurement.
- ULTRIX ek device driver (RTI488100 Subset), 2100 Kbytes, supports the IEZ11. The IEZ11 is an IEEE-488 bus-controller for Digital workstations with a SCSI interface. DEC RT Integrator manages all SCSI interactions, allowing the user to communicate directly with the IEEE-488 bus.
- DEC RT Integrator (Runtime) (RTIRTBASE100), 6000 Kbytes, runs the DEC RT Integrator applications that have already been developed.
- DEC RT Integrator Manual Pages (RTIMAN100 Subset) for ULTRIX, 400 Kbytes, provides online reference pages for the subroutine libraries.
- DEC RT Integrator Examples (RTIEXA100 Subset), 300 Kbytes, includes sample programs for LIO, LGP, LSP and DEC RT Integrator applications.
- Icon Development (RTIICON100 Subset), 9000 Kbytes, provides tools for you to use to develop user-defined icons. It also provides a library and tools to link the user-defined icons into the DEC RT Integrator environment.

2.4.2 Selecting Development Kit Subsets

After you enter the `setld` command for local (node-specific) installations or after you start the `dms` or `ris` utility for server installations, the installation procedure displays the names of DEC RT Integrator subsets and asks you to specify the subsets that you want to load:

```
The subsets listed below are optional:
 1) DEC RT Integrator (Development)      2) ULTRIX ek device driver
 3) Laboratory Graphic Package (LGP)     4) Laboratory IO (LIO)
 5) Laboratory Signal Processing (LSP)   6) Icon Development
 7) DEC RT Integrator (Runtime)          8) DEC RT Integrator Manual Pages
 9) DEC RT Integrator Examples

10) All of the Above
11) None of the Above
12) Exit without installing subsets

Enter your choice(s): 10
```

When installing from a RIS server, note that the subset numbers may vary depending on what products are available in the RIS area.

NOTE

If you specify more than one number at the prompt, separate each number with a space, not a comma.

Next, the installation lets you verify your choice. For example, if you enter `10` in response to the previous prompt, you will see the following list of optional subsets:

```
Enter your choice(s): 10

You are installing the following subsets:
   DEC RT Integrator (Development)         ULTRIX ek device driver
   Laboratory Graphic Package (LGP)        Laboratory IO (LIO)
   Laboratory Signal Processing (LSP)      Icon Development
   DEC RT Integrator (Runtime)             DEC RT Integrator Manual Pages
   DEC RT Integrator Examples

Is this correct? (y/n): y
```

If the displayed subsets are not the ones you intended to choose, enter `n`. In this case, the subset selection menu is again displayed, and you can correct your choice of optional subsets.

If the displayed subsets are the ones you want to load, enter `y`.

2.4.3 Determining Which Runtime Kit Subsets to Install

DEC RT Integrator (RTIRTBASE100 Subset) is used to run applications that have already been developed. This subset will install the executable files necessary to run DEC RT Integrator.

All subsets are optional and will be installed only if you choose them. In deciding whether to install a subset, consider whether you will make use of it and how much disk space you have available. Appendix A lists the files in each subset.

The subsets are described as follows:

- Laboratory Graphics Package (LGP) (RTILGP100), 5000 Kbytes, is a set of subroutines used in graphical presentation of scientific and engineering applications.
- Laboratory Input/Output (LIO) (RTILIO100), 400 Kbytes, is a set of subroutines used to control realtime I/O devices.

- Laboratory Signal Processing (LSP) (RTILSP100), 200 Kbytes, is a set of subroutines designed to make standard measurements and analyses common in the laboratory.
- ULTRIX ek device driver (RTI488100 Subset), 2100 Kbytes, supports the IEZ11. The IEZ11 is an IEEE-488 bus-controller for Digital workstations with a SCSI interface. DEC RT Integrator manages all SCSI interactions, allowing the user to communicate directly with the IEEE-488 bus.
- DEC RT Integrator (Runtime) (RTIRUN100), 6000 Kbytes, runs the DEC RT Integrator applications that have already been developed.
- DEC RT Integrator Manual Pages (RTIRTMAN100 Subset) for ULTRIX, 400 Kbytes, provides online reference pages for the subroutine libraries.
- DEC RT Integrator Examples (RTIEXA100 Subset), 300 Kbytes, includes sample programs for LIO, LGP, LSP and DEC RT Integrator applications.

2.4.4 Selecting Runtime Kit Subsets

After you enter the `setld` command for local (node-specific) installations, or after you start the `dms` or `ris` utility for server installations, the installation procedure displays the names of DEC RT Integrator subsets and asks you to specify the subsets that you want to load:

```
The subsets listed below are optional:
 1) DEC RT Integrator (Runtime)          2) ULTRIX ek device driver
 3) Laboratory Graphic Package (LGP)     4) Laboratory IO (LIO)
 5) Laboratory Signal Processing (LSP)   6) DEC RT Integrator Manual Pages
 7) DEC RT Integrator Examples

 8) All of the Above
 9) None of the Above
10) Exit without installing subsets

Enter your choice(s): 8
```

When installing from a RIS server, note that the subset numbers may vary depending on what products are available in the RIS area.

NOTE

If you specify more than one number at the prompt, separate each number with a space, not a comma.

Next, the installation lets you verify your choice. For example, if you enter `8` in response to the previous prompt, you will see the following display:

```
You are installing the following subsets:
   DEC RT Integrator (Runtime)            ULTRIX ek device driver
   Laboratory Graphic Package (LGP)       Laboratory IO (LIO)
   Laboratory Signal Processing (LSP)     DEC RT Integrator Manual Pages
   DEC RT Integrator Examples

Is this correct? (y/n): y
```

If the displayed subsets are not the ones you intended to choose, enter `n`. In this case, the subset selection menu is again displayed, and you can correct your choice of optional subsets.

If the displayed subsets are the ones you want to load, enter `y`.

2.4.5 Monitoring Displays During the Subset Loading Process

The procedure displays messages about the status of the installation as it progresses.

Sections 2.8 and 2.10 discuss the postinstallation requirements.

If, during the course of the installation, you encounter errors from the `setld` utility, see the Diagnostics section of the `setld(8)` manual reference page for an explanation of the error and the appropriate action to take.

If the verification process fails, you can look in the file `/usr/var/adm/fverify` to find information that can help you diagnose the problem.

2.5 Installing DEC RT Integrator into a Server Environment

This section explains how to start the installation procedure and load software subsets when you are installing DEC RT Integrator into an environment controlled by DMS (Diskless Management Services) or RIS (Remote Installation Services).

If installing from a TK50, mount it on the appropriate device of the server node. You will later be prompted to enter the name of the special file for that device.

Section 2.5.1 explains how to install DEC RT Integrator into a DMS server environment. Section 2.5.2 explains how to install DEC RT Integrator into a RIS server environment.

2.5.1 DMS Server Installations

In a local (node-specific) installation, the system on which you are installing DEC RT Integrator will use its own disks when DEC RT Integrator is run. A local (node-specific) installation procedure loads DEC RT Integrator files on the disks that belong to the system where you perform the installation. When DEC RT Integrator is run, its executable files are mapped into memory on the same system.

In a diskless client environment, the system on which you are installing DEC RT Integrator is a server for Diskless Management Services (DMS) and provides the disks for client systems running DEC RT Integrator software. This installation environment is referred to as ''diskless'' because the system uses DEC RT Integrator software accessed through the network by Network File System (NFS) software. When DEC RT Integrator is run by users logged into a client system, DEC RT Integrator executables are mapped into memory on the client system rather than the server system. From the perspective of the client node, DEC RT Integrator installation is handled entirely by the manager of the DMS server area.

NOTE

The diskless server area does not provide DEC RT Integrator software to users logged in to the server system itself. Installing DEC RT Integrator into the diskless environment provides DEC RT Integrator software only to client systems. Therefore, if users at your site need to use DEC RT Integrator when logged in to the local server system, you must perform a local (node-specific) installation of DEC RT Integrator in addition to the diskless installation.

The following procedure lets you install DEC RT Integrator with the ULTRIX Version 4.0 `dms` utility into the diskless server area. The examples in this section show how to install the subsets to `/dlenv0/root0.mips`.

NOTE

To start the installation procedure, use the `dms` utility. Do not use the `setld` command.

1. Log in as superuser.
2. To invoke the `dms` utility, enter the following command:

```
# /etc/dms
```

3. Select the Install Software option from the following menu by typing `i`:

```
DISKLESS MANAGEMENT SERVICES (DMS) UTILITY MENU

        a -  Add Client Processor
        m -  Modify Client Parameters
        r -  Remove Client Processor
        l -  List Registered Clients
        s -  Show Products in Diskless Environments
        i -  Install Software
        c -  Create Diskless Area on Disk
        k -  Kernel Rebuild or Copy
        e -  Exit

Enter your choice:  i
```

4. Choose option 2 in the following menu:

```
The menu below offers you two software installation alternatives:

   1)  You can install an operating system to a new diskless area.

   2)  You can install additional software to an existing diskless
       area that already contains an operating system.

Diskless Area Software Installation Menu:

        1  Install Operating System to New Area
        2  Add Software to Existing Area
        3  Return to Previous Menu

Enter your choice:  2
```

5. The following message lists the available installation directories:

```
You have chosen to install additional software into an existing diskless
environment.  These are the available installation directories:
```

   If there is more than one installed `rootn.mips` directory in the diskless server area, choose the appropriate directory from the menu that lists existing `rootn.mips` directories. For example:

```
1.  /dlenv0/root0.mips
2.  /dlenv0/root1.mips
3.  /dlenv0/root0.vax

Enter your choice:  1
```

6. You are next prompted for an input device name:

```
Enter the device special name or mount point of the distribution
media, for example, /dev/rmt0h:  /dev/rmt0h
```

7. If you want all registered clients to automatically have access to DEC RT Integrator, enter `y` to the following question:

```
The product software will automatically be propogated to every
registered client. Is this alright? (y/n):   y
```

If you answer n, DMS returns you to the main menu.

8. If your distribution media is tape, a message appears asking you to confirm that the tape is ready and on line. If it is, enter y.

```
Please make sure your installation tape is mounted and on-line.
Are you ready (y/n)?    y
Positioning Tape
```

9. The next message lists the software subsets you select for automatic installation. See Section 2.4.5 to monitor the displays during the subset load process and to complete the installation procedure.
10. If diskless clients are registered to share this area, a prompt asks you if you want to update the client_name.root directories of those clients.

    Enter yes to keep the diskless clients in a consistent state.

Repeat these installation procedures for each rootn.mips area you plan to set up.

The dms main menu appears for your next selection.

2.5.2 RIS Server Installations

NOTE

To start the installation procedure, use the ris utility. Do not use the setld command.

The following sample session describes how to add the DEC RT Integrator product to the ris0.mips area:

1. Log in as superuser.
2. Invoke the ris utility by entering the following command:

```
# /etc/ris
```

3. Select the Install Software option from the Remote Installation Services (RIS) Menu by typing i:

```
REMOTE INSTALLATION SERVICES (RIS) MENU

        a -  Add Client
        r -  Remove Client
        s -  Show Products in Remote Installation Environments
        m -  Modify Client
        i -  Install Software
        e -  Exit

Enter your choice:  i
```

4. Choose option 2 from the RIS Software Installation Menu:

```
The menu below offers you two software installation alternatives:

    1) You can create a new area to serve either RISC or VAX clients
       by installing a software product.  The ris utility automatically
       creates the new area.

    2) You can install additional software to an existing area
       that serves either RISC or VAX clients.

    RIS Software Installation Menu:

    1  Install Software to a New Area.
    2  Add Software to an Existing Area.
    3  Return to Previous Menu

Enter your choice:  2
```

5. A list of available environments appears from which you might select `ris0.mips`:

```
You have chosen to add a new product into an existing environment.

Select the remote installation environment:

1  /var/adm/ris/ris0.mips
    ULTRIX V4.0/ULTRIX WS V4.0 MANDATORY SUPPORTED (RISC)

2  /var/adm/ris/ris0.vax
    ULTRIX V4.0/ULTRIX WS V4.0 SUPPORTED (VAX)

Enter your choice:  1
```

6. You are next prompted for an input device name:

```
Enter the device special file name or the path of the directory where the
software is located, for example, /dev/rmt0h:
/dev/rmt0h
```

7. If your distribution media is tape, a message appears asking you to confirm that the tape is ready and on line. If it is, enter `y`:

```
Please make sure your installation tape is mounted and on-line.
Are you ready (y/n)?   y
Positioning Tape
```

8. The next message lists the software subsets you select for automatic installation. See Section 2.4.2 to specify the Development Kit subsets you want to load. See Section 2.4.4 to specify the Runtime Kit subsets you want to load. See Section 2.4.5 to monitor the displays during the subset load process and to complete the installation procedure.

9. After the subsets are installed, the following message appears:

```
Media extraction complete.
```

10. Repeat steps a to f for each RIS client allowed to install DEC RT Integrator.

    a. The `ris` main menu appears for your next selection. Select the Modify Client option from the Remote Installation Services (RIS) Menu by typing `m`:

```
REMOTE INSTALLATION SERVICES (RIS) MENU
        a -  Add Client
        r -  Remove Client
        s -  Show Products in Remote Installation Environments
        m -  Modify Client
        i -  Install Software
        e -  Exit

Enter your choice:  m
```

    b. Enter the name of the client to be modified from the list of available clients:

```
The following clients are available to modify:

clienta clientb

Enter the client processor's hostname:  clienta
```

    c. Make sure the client processor's hardware Ethernet address. Press Return to choose the default address, the address assigned when the client was added to the RIS environment.

```
Enter the client processor's hardware Ethernet address, for
example, 08-00-2b-02-67-e1 [08-00-2b-14-ac-d1]:  Return
```

    d. Choose the products you want this client to have access to. You are shown the client's currently selected RIS environment and the products the selected client already has access to. At the prompt, enter the products you would like this client to be able to install including DEC RT Integrator. Separate each choice with a space.

```
The existing environment is /usr/var/adm/ris/ris0.mips.

The client currently can install the following products
from /usr/var/adm/ris/ris0.mips:

    'ULTRIX V4.0/ULTRIX WS V4.0 MANDATORY SUPPORTED (RISC) '

Select one or more products for the client to install
from /usr/var/adm/ris/ris0.mips:

Product    Description
 1    'ULTRIX V4.0/ULTRIX WS V4.0 MANDATORY SUPPORTED (RISC) '
 2    'DEC RT Integrator '
 3    'DEC GKS-3D for ULTRIX'

Enter one or more choices, for example, 1 2:   1 2
```

e. If the list of products available to this client is correct, enter `y`. If the list is not correct, enter `n` to return to step d and reenter the products.

```
You chose the following products:

 1    'ULTRIX V4.0/ULTRIX WS V4.0 MANDATORY SUPPORTED (RISC) '
 2    'DEC RT Integrator '
 3    'DEC GKS-3D for ULTRIX'

Is that correct (y/n)? [y]:  y
```

f. After modifying the client's records with the new list of installable products available, the following confirmation message appears:

```
clienta has been modified.
```

2.6 Development Kit Installation Procedure

To start the installation of ULTRIX, enter the following command:

```
# setld -l /dev/rmt0h
```

The following prompt appears on your screen:

```
*** Enter Subset Selections ***

The subsets listed below are optional:
 1) DEC RT Integrator (Development)      2) ULTRIX ek device driver
 3) Laboratory Graphic Package (LGP)     4) Laboratory IO (LIO)
 5) Laboratory Signal Processing (LSP)   6) Icon Development
 7) DEC RT Integrator (Runtime)          8) DEC RT Integrator Manual Pages
 9) DEC RT Integrator Examples

10) All of the Above
11) None of the Above
12) Exit without installing subsets

Enter your choice(s): 10
```

You can choose all of the above (10), none of the above (11), or exit the installation (12). If you want to install fewer than all the subsets, choose the number(s) of the subsets and separate them with a space. For example:

```
Enter your choice(s): 1  4
```

In the sample installation, we chose to install all the subsets:

```
Enter your choice(s): 10
```

The following prompt appears, listing the subsets we chose to install:

```
You are installing the following subsets:
   DEC RT Integrator (Development)         ULTRIX ek device driver
   Laboratory Graphic Package (LGP)        Laboratory IO (LIO)
   Laboratory Signal Processing (LSP)      Icon Development
   DEC RT Integrator (Runtime)             DEC RT Integrator Manual Pages
   DEC RT Integrator Examples

Is this correct? (y/n): y
```

If you choose `y`, the installation continues. If you choose `n`, the list of subsets reappears and the prompt asks you to enter your choice(s).

Choose `y` and the installation continues as follows:

```
Copying DEC RT Integrator (Development) (RTIBASE100) from disk
Verifying DEC RT Integrator (Development) (RTIBASE100)

Copying ULTRIX ek device driver (RTI488100) from disk
Verifying ULTRIX ek device driver (RTI488100)

Copying Laboratory Graphic Package (LGP) (RTILGP100) from disk
Verifying Laboratory Graphic Package (LGP) (RTILGP100)

Copying Laboratory IO (LIO) (RTILIO100) from disk
Verifying Laboratory IO (LIO) (RTILIO100)

Copying Laboratory Signal Processing (LSP) (RTILSP100) from disk
Verifying Laboratory Signal Processing (LSP) (RTILSP100)

Copying Icon Development (RTIICON100) from disk
Verifying Icon Development (RTIICON100)

Copying DEC RT Integrator (Runtime) (RTIRTBASE100) from disk
Verifying DEC RT Integrator (Runtime) (RTIRTBASE100)

Copying DEC RT Integrator Manual Pages (RTIMAN100) from disk
Verifying DEC RT Integrator Manual Pages (RTIMAN100)

Copying DEC RT Integrator Examples (RTIEXA100) from disk
Verifying DEC RT Integrator Examples (RTIEXA100)

************************************************************
* Installation of DEC RT Integrator V1.0 complete.         *
*                                                          *
* The IVP for DEC RT Integrator for ULTRIX can be run after *
* the installation has completed.                          *
*                                                          *
* To run the IVP, enter the following command:             *
*        setld -v RTIBASE100                               *
************************************************************


Creating/Modifying necessary files for the ULTRIX ek Driver V1.0
For ULTRIX V40
```

```
Creating links to V40 objects...
Created scsi_asc.o...
Created scsi_sii.o...
Created scsi.o...
Created scsi_proc.o...
Created ekdriver.o...

Modifying appropriate driver files...
Modifying /sys/data/scsi_data.c

Modifying /sys/io/scsi/mips/scsireg.h

Modifying /sys/conf/mips/files.mips

Modifying /sys/machine/common/conf.c
```

If you are not installing in a DMS environment, the following messages appear:

```
Configuring the system to run the ULTRIX ek Driver V1.0
For ULTRIX V40


Creating /dev/ek0
Creating /dev/ek1
Creating /dev/ek2
Creating /dev/ek3
Creating /dev/ek4
Creating /dev/ek5
Creating /dev/ek6
Creating /dev/ek7
Creating /dev/ek8
Creating /dev/ek9
Creating /dev/ek10
Creating /dev/ek11
Creating /dev/ek12
Creating /dev/ek13
Creating /dev/ek14
Creating /dev/ek15

After verifying that the system is operating properly with the
ek  Driver installed you may wish to remove the following
saved files:
- /sys/conf/mips/files.mips.sav[n]
- /sys/machine/common/conf.c.sav[n]
- /sys/data/scsi_data.c.sav[n]
- /sys/conf/mips/MUNCHY.sav[n]

Reminder:
   - Edit /sys/conf/mips/MUNCHY
   - Rebuild your kernel
   - Move the new kernel to /.
   - Reboot your system.

Installation of the ULTRIX ek Driver V1.0 complete
```

After the files are copied and the IVP is run, ULTRIX verifies that the procedures were successful by displaying the ULTRIX prompt:

```
#
```

If you are installing DEC RT Integrator on a server in a DMS environment, the messages on the screen stop after the `Modifying /sys/machine/common/conf.c` message.

You must now reboot all clients before rebuilding the kernel. Then the installation begins configuring the system to run the ek driver. The following messages appear on the clients:

```
Configuring the system to run the ULTRIX ek Driver V1.0
For ULTRIX V40


Creating /dev/ek0
Creating /dev/ek1
Creating /dev/ek2
Creating /dev/ek3
Creating /dev/ek4
Creating /dev/ek5
Creating /dev/ek6
Creating /dev/ek7
Creating /dev/ek8
Creating /dev/ek9
Creating /dev/ek10
Creating /dev/ek11
Creating /dev/ek12
Creating /dev/ek13
Creating /dev/ek14
Creating /dev/ek15

After verifying that the system is operating properly with the
ek  Driver installed you may wish to remove the following
saved files:
- /sys/conf/mips/files.mips.sav[n]
- /sys/machine/common/conf.c.sav[n]
- /sys/data/scsi_data.c.sav[n]
- /sys/conf/mips/MUNCHY.sav[n]

Reminder:
   - Edit /sys/conf/mips/MUNCHY
   - Rebuild your kernel
   - Move the new kernel to /.
   - Reboot your system.

Installation of the ULTRIX ek Driver V1.0 complete
```

After the files are copied and the IVP is run, ULTRIX verifies that the procedures were successful by displaying the ULTRIX prompt:

```
#
```

2.7 Runtime Kit Installation Procedure

To start the installation of ULTRIX, enter the following command:

```
# setld -l  /dev/rmt0h
```

The following prompt appears on your screen:

```
*** Enter Subset Selections ***

The subsets listed below are optional:
 1) DEC RT Integrator (Runtime)          2) ULTRIX ek device driver
 3) Laboratory Graphic Package (LGP)     4) Laboratory IO (LIO)
 5) Laboratory Signal Processing (LSP)   6) DEC RT Integrator Manual Pages
 7) DEC RT Integrator Examples

 8) All of the Above
 9) None of the Above
10) Exit without installing subsets

Enter your choice(s): 8
```

You can choose all of the above (8), none of the above (9) or exit the installation (10). If you want to install fewer than all the subsets, choose the number(s) of the subsets and separate them with a space. For example:

```
Enter your choice(s):  2 3
```

In the sample installation, we chose to install all the subsets:

```
Enter your choice(s): 8
```

The following prompt appears, listing the subsets we chose to install:

```
You are installing the following subsets:
   DEC RT Integrator (Runtime)             ULTRIX ek device driver
   Laboratory Graphic Package (LGP)        Laboratory IO (LIO)
   Laboratory Signal Processing (LSP)      DEC RT Integrator Manual Pages
   DEC RT Integrator Examples

Is this correct? (y/n): y
```

If you choose y, the installation continues. If you choose n, the list of subsets reappears and the prompt asks you to enter your choice(s).

Choose y and the installation continues as follows:

```
Copying DEC RT Integrator (Runtime) (RTIRUN100) from disk
Verifying DEC RT Integrator (Runtime) (RTIRUN100)

Copying ULTRIX ek device driver (RTI488100) from disk
Verifying ULTRIX ek device driver (RTI488100)

Copying Laboratory Graphic Package (LGP) (RTILGP100) from disk
Verifying Laboratory Graphic Package (LGP) (RTILGP100)

Copying Laboratory IO (LIO) (RTILIO100) from disk
Verifying Laboratory IO (LIO) (RTILIO100)
```

```
Copying Laboratory Signal Processing (LSP) (RTILSP100) from disk
Verifying Laboratory Signal Processing (LSP) (RTILSP100)

Copying DEC RT Integrator Manual Pages (RTIRTMAN100) from disk
Verifying DEC RT Integrator Manual Pages (RTIRTMAN100)

Copying DEC RT Integrator Examples (RTIEXA100) from disk
Verifying DEC RT Integrator Examples (RTIEXA100)

************************************************************
* Installation of DEC RT Integrator V1.0 complete.         *
*                                                          *
* The IVP for DEC RT Integrator for ULTRIX can be run after *
* the installation has completed.                          *
*                                                          *
* To run the IVP, enter the following command:             *
*        setld -v RTIRUN100                                *
************************************************************


Creating/Modifying necessary files for the ULTRIX ek Driver V1.0
For ULTRIX V40

Creating links to V40 objects...
Created scsi_asc.o...
Created scsi_sii.o...
Created scsi.o...
Created scsi_proc.o...
Created ekdriver.o...

Modifying appropriate driver files...
Modifying /sys/data/scsi_data.c

Modifying /sys/io/scsi/mips/scsireg.h

Modifying /sys/conf/mips/files.mips

Modifying /sys/machine/common/conf.c
```

If you are not installing in a DMS environment, the following messages appear:

```
Configuring the system to run the ULTRIX ek Driver V1.0
For ULTRIX V40
```

```
Creating /dev/ek0
Creating /dev/ek1
Creating /dev/ek2
Creating /dev/ek3
Creating /dev/ek4
Creating /dev/ek5
Creating /dev/ek6
Creating /dev/ek7
Creating /dev/ek8
Creating /dev/ek9
Creating /dev/ek10
Creating /dev/ek11
Creating /dev/ek12
Creating /dev/ek13
Creating /dev/ek14
Creating /dev/ek15

After verifying that the system is operating properly with the
ek  Driver installed you may wish to remove the following
saved files:
- /sys/conf/mips/files.mips.sav[n]
- /sys/machine/common/conf.c.sav[n]
- /sys/data/scsi_data.c.sav[n]
- /sys/conf/mips/MUNCHY.sav[n]

Reminder:
   - Edit /sys/conf/mips/MUNCHY
   - Rebuild your kernel
   - Move the new kernel to /.
   - Reboot your system.

Installation of the ULTRIX ek Driver V1.0 complete
```

After the files are copied and the IVP is run, ULTRIX verifies that the procedures were successful by displaying the ULTRIX prompt:

```
#
```

If you are installing DEC RT Integrator on a server in a DMS environment, the messages on the screen stop after the `Modifying /sys/machine/common/conf.c` message.

You must now reboot all clients before rebuilding the kernel. Then the installation begins configuring the system to run the ek driver. The following messages appear on the clients:

```
Configuring the system to run the ULTRIX ek Driver V1.0
For ULTRIX V40
```

```
Creating /dev/ek0
Creating /dev/ek1
Creating /dev/ek2
Creating /dev/ek3
Creating /dev/ek4
Creating /dev/ek5
Creating /dev/ek6
Creating /dev/ek7
Creating /dev/ek8
Creating /dev/ek9
Creating /dev/ek10
Creating /dev/ek11
Creating /dev/ek12
Creating /dev/ek13
Creating /dev/ek14
Creating /dev/ek15

After verifying that the system is operating properly with the
ek  Driver installed you may wish to remove the following
saved files:
- /sys/conf/mips/files.mips.sav[n]
- /sys/machine/common/conf.c.sav[n]
- /sys/data/scsi_data.c.sav[n]
- /sys/conf/mips/MUNCHY.sav[n]

Reminder:
   - Edit /sys/conf/mips/MUNCHY
   - Rebuild your kernel
   - Move the new kernel to /.
   - Reboot your system.

Installation of the ULTRIX ek Driver V1.0 complete
```

After the files are copied and the IVP is run, ULTRIX verifies that the procedures were successful by displaying the ULTRIX prompt:

```
#
```

2.8 Reconfiguring the Kernel to Support the ek Driver

This section describes how to reconfigure the kernel to add the ULTRIX ek device driver.

NOTE

When installing the ek device driver into a DMS area, the client is responsible for reconfiguring the kernel after the server installs the ULTRIX ek driver subset (RTI488100) into the DMS area.

2.8.1 Editing the Configuration File

To add an ek device to your current system, you need to perform the following steps:

1. Set your directory to your configuration area.

   ```
   # cd /sys/conf/mips
   ```

2. Save a copy of the configuration file.

   ```
   # cp HOSTNAME HOSTNAME.sav
   ```

   NOTE

   Use the name assigned to your system in place of HOSTNAME.

3. Edit the configuration file.

   ```
   # vi HOSTNAME
   ```

4. Add a line for each ek device you are installing on your system. This line should be made up of four fields, as shown in Table 2–1. You must supply the information within the brackets ([]).

Table 2–1: ek Device Driver Configuration File

Fields			
1	**2**	**3**	**4**
device	[device name, logical unit number]	at [SCSI bus adapter name, SCSI bus adapter unit number]	drive [SCSI device unit number]
Example			
device	ek12	at asc1	drive 4

2.8.2 Computing Values in the Configuration File

The values of fields 2, 3, and 4 change for each system, depending on its configuration.

The values are dependent on one another. You have to calculate the value of field 4 first and use that to calculate the value of field 3, then field 2.

Field 4. Drive [SCSI Device Unit Number]

In field 4, the [SCSI device unit number] is the address of the ek device on the SCSI bus. The number of the address is from 0 to 7. In Table 2–1, the ek device is at SCSI bus address number 4.

You can select the address on the SCSI bus by manipulating the switches on the back of the device. (See your appropriate hardware manual for information on selecting the address of the device.)

Field 3. at [SCSI Bus Adapter Name, SCSI Bus Adapter Unit Number]

In field 3, the [bus name] is the SCSI bus adapter identifier. It is made up of two parts:

- SCSI bus adapter name, asc or sii

  The SCSI bus adapter uses different letters to identify different DECstations. The DECstation 5000 letters are ''asc.'' The DECstation 2100 and the DECstation 3100 letters are ''sii.''

- SCSI bus adapter unit number, 0 to 3

  The SCSI bus adapter unit number indicates which SCSI bus adapter the ek device connects to.

  The SCSI bus adapter unit number for the DECstation 2100 and the DECstation 3100 is always 0. The full SCSI bus adapter identifier, the letters followed immediately by the adapter unit number, is always ''sii0'' for these machines.

  The DECstation 5000 can be configured with up to 4 SCSI bus adapters. A SCSI bus adapter unit number is from 0 to 3. The SCSI bus adapter name and unit number for a DECstation 5000 can range from ''asc0'' to ''asc3.''

Field 2. [Device Name, Logical Unit Number]

In field 2, the [device name] is the name of the driver and its logical unit number. It is made up of two parts:

- Device Name

  The device name for the ek device is ''ek.''

- Logical Unit Number

  The logical unit number is derived from a formula using the [unit number] from field 3 and the [bus name] from field 4.

To obtain the logical unit number, follow these steps:

1. Multiply 8 (the maximum number of devices on the SCSI bus) times the SCSI bus adapter unit number (1 in this example, from the 1 in ‘‘asc1’’).
2. Add to this the SCSI device address [unit number] (4 in this example from ‘‘drive 4’’).

   The formula looks like the following:

```
(8 * SCSI bus adapter number) + SCSI Device Address
              (8 * 1)   +    4
                        12
```

   In the example in Table 2–1, the value for field 2 is ek12.

Examples:

- An ek device installed on the SCSI bus of the DECstation 3100 at SCSI address 4 would have the following configuration:

```
device      ek4      at sii0      drive 4
          (8*0 +4)
```

- The same ek device connected to the primary SCSI bus of a DECstation 5000 would have the following configuration:

```
device      ek4      at asc0      drive 4
          (8*0 +4)
```

- The same ek device connected to a second SCSI bus of a DECstation 5000 would have the following configuration:

```
device      ek12      at asc1      drive 4
         (8*1 +4)
```

2.8.3 Building a New Kernel

After you edit the configuration file, process it and build a new kernel:

1. Configure your kernel.

```
# doconfig -c HOSTNAME
```

   See the `doconfig(8)` Manual Page for more information on rebuilding your kernel.

2. Save your old kernel.

```
# cp /vmunix /vmunix.sav
```

3. Move your new kernel to the root directory.

```
# cp /sys/MIPS/HOSTNAME/vmunix /vmunix
```

4. Reboot your system with the new kernel.

```
# reboot
```

2.9 Reconfiguring the Kernel to Delete the ek Driver

You may for some reason need to delete the ek device driver after it is installed. This section describes how to delete the driver.

NOTE

When deleting the ek device driver from a DMS area, the client is responsible for reconfiguring the kernel before the server deletes the ULTRIX ek driver subset (RTI488100) from the DMS area.

2.9.1 Editing the Configuration File

To delete an ek device from your system, perform the following steps:

1. Set your directory to your configuration area.

```
# cd /sys/conf/mips
```

2. Save a copy of the configuration file.

```
# cp HOSTNAME HOSTNAME.sav
```

NOTE

Use the name assigned to your system in place of HOSTNAME.

3. Edit the configuration file.

```
# vi HOSTNAME
```

4. Delete the line for each ek device that was installed on your system. Refer to Section 2.8.2 for information on how each device was added to the configuration file.

2.9.2 Configuring the System to Delete the Driver from a DMS Client

This section describes an additional step that you must perform to delete the ek driver from a DMS area.

You must do the following to configure the DMS client to delete the ek driver:

```
# setld -c RTI488100 DELETE
```

The following message appears on your screen:

```
Configuring RTI488100

Configuring the system to delete the ULTRIX ek Driver V1.0
        for ULTRIX V40

        Deleting /dev/ek0
        Deleting /dev/ek1
        Deleting /dev/ek2
        Deleting /dev/ek3
        Deleting /dev/ek4
        Deleting /dev/ek5
        Deleting /dev/ek6
        Deleting /dev/ek7
        Deleting /dev/ek8
        Deleting /dev/ek9
        Deleting /dev/ek10
        Deleting /dev/ek11
        Deleting /dev/ek12
        Deleting /dev/ek13
        Deleting /dev/ek14
        Deleting /dev/ek15
```

2.9.3 Building a New Kernel

After you edit the configuration file, process it and build a new kernel, as described in Section 2.8.3.

2.10 Installation Verification Procedure (IVP)

The DEC RT Integrator Installation Verification Procedure (IVP) verifies the installation by running a sample DEC RT Integrator application.

You should run the IVP to verify that DEC RT Integrator is installed correctly.

See Chapter 3 for information about running the IVP.

2.11 Error Messages

Errors can occur during the installation if any of the following conditions exist:

- The operating system version is incorrect.
- A prerequisite software version is incorrect.
- /usr file system space is insufficient.
- The installation is being attempted on a non-RISC platform.

For descriptions of the error messages generated by these conditions, see the ULTRIX documentation on system messages, recovery procedures, and installation.

For information on DEC RT Integrator installation requirements, see Chapter 1.

2.12 Determining the Files Added to the System

The DEC RT Integrator installation procedure creates or modifies a number of files. Appendix A has a complete list of these files.

2.13 Reporting Problems

If an error occurs while using DEC RT Integrator and you believe that the error is caused by a problem with DEC RT Integrator, take one of the following actions:

- If you have a basic or DECsupport Software Agreement, call your Customer Support Center. The Customer Support Center provides telephone support for high-level advisory and remedial assistance.
- If you have a Self-Maintenance Software Agreement, submit a Software Performance Report (SPR).
- If you purchased DEC RT Integrator within the past 90 days and you think the problem is caused by a software error, submit an SPR.

If you find an error in the DEC RT Integrator documentation, fill out and submit the Reader's Comments form at the back of the document in which the error occurred. Include the section and page number where the error occurred.

Chapter 3

Running the IVP for ULTRIX

The Installation Verification Procedure (IVP) confirms that the DEC RT Integrator files are properly installed and operational.

To run the IVP for the Development Kit after installation, enter the following command at the prompt:

```
#  setld -v RTIBASE100
```

To run the IVP for the Runtime Kit after installation, enter the following command at the prompt:

```
#  setld -v RTIRUN100
```

The informational messages for the IVP are identical whether you run `setld` for the Development Kit or the Runtime Kit, except for the name of the kit. The following messages appear for the Development Kit (RTIBASE100):

```
Checking setld data files.
The Installation Verification Procedure comes in two forms:
     a DECwindows version or a non-DECwindows version.

The DECwindows version of the IVP can be chosen if you are
installing DEC RT Integrator from a system which has a
DECwindows display, such as a DECwindows terminal or a
workstation running DECwindows.

If you choose the DECwindows version of the IVP, a plot
will be displayed similar to the one shown in Chapter 3
of the DEC RT Integrator Installation Guide.

If you choose the non-DECwindows version of the IVP, a
message stating:
        DEC RT Integrator V1.0 IVP completed
will be displayed once the IVP has been performed.


Would you like to run the DECwindows version of the IVP?
(y/n) [y]:
```

If you enter `n`, the IVP is run and you receive the following message:

```
Running the RTIBASE100 for RISC V1.0 IVP
 - executing the IVP...

DEC RT Integrator V1.0 IVP completed

The installation verification of DEC RT Integrator V1.0
for RISC/ULTRIX completed successfully.
```

If you enter `y`, the IVP is run and you receive the following message:

```
Running the RTIBASE100 for RISC V1.0 IVP
 - executing the IVP...
```

Then the IVP plot is displayed, as shown in Figure 3–1. When the plot finishes displaying, you receive the following message:

```
The installation verification of DEC RT Integrator V1.0
for RISC/ULTRIX completed successfully.
```

If you enter `y` and your DISPLAY environment variable is not set, you receive the following message:

```
The DECwindows version of the IVP cannot be
performed since the DISPLAY environment variable
isn't set.

Would you like to set DISPLAY? (y/n) [y]
```

If you enter `y`, you receive the following message:

```
Set DISPLAY using the following forms:
     node:0 for Internet
     node:=0 for shared memory connection
     node::0 for DECnet

Set DISPLAY :
```

After you set the DISPLAY environment variable, you receive the following message:

```
Running the RTIBASE100 for RISC V1.0 IVP
 - executing the IVP...
```

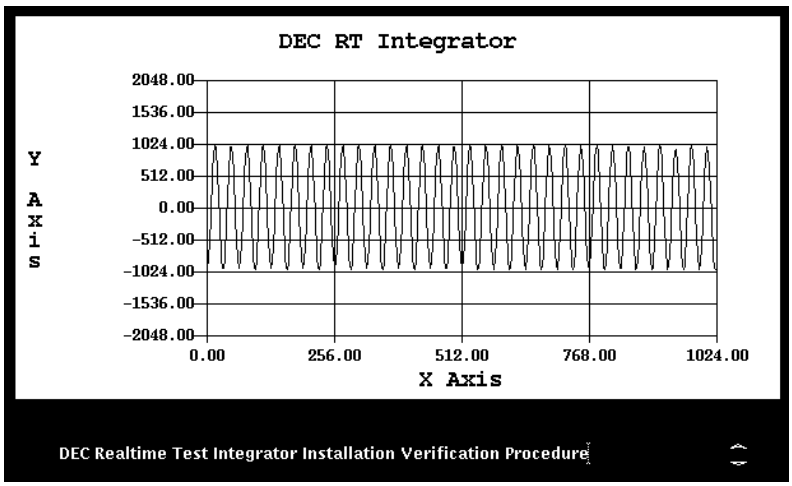
Then the IVP plot is displayed, as shown in Figure 3–1. When the plot finishes displaying, you receive the following message:

```
The installation verification of DEC RT Integrator V1.0
for RISC/ULTRIX completed successfully.
```

If you enter `n` to the question `Would you like to set DISPLAY?` the IVP does not execute and you receive the following message:

```
Exiting from the IVP...
```

Figure 3–1: IVP Plot for DEC RT Integrator



Part II
Installing DEC RT Integrator on a VMS System

Part II contains information about installing DEC RT Integrator on a VMS system.

Chapter 4

Preparing to Install DEC RT Integrator on VMS

Chapter 4 discusses the following:

- Description of Development Kit and Runtime Kit (see Section 4.1)
- Software prerequisites (see Section 4.2)
- License registration (see Section 4.3)
- Running DEC RT Integrator in a VAXcluster (see Section 4.4)
- Installation procedure requirements (see Section 4.5)

Your bill of materials (BOM) and indented bills report (BIL) specify the number and contents of your media. Verify the contents of your kit with this information. If your kit is damaged or if you find that parts of it are missing, contact your Digital representative.

The Release Notes are part of the software and are accessible during the installation process. For information on accessing the release notes, see Section 6.1.

4.1 Development Kit Distinguished From Runtime Kit

The Development Kit allows the user to develop realtime applications, including data acquisition, IEEE-488 and RS-232 instrument control, and test and measurement. The Runtime kit allows the user to run an application but not to develop one.

Instructions for installing the Development Kit and the Runtime Kit are similar. The Development Kit installation procedure is described in Section 5.2. The Runtime Kit installation procedure is described in Section 5.3.

4.2 Prerequisite and Optional Software

The following software installations must be complete before you install DEC RT Integrator:

- The VMS Version 5.3 operating system
- The graphics software package, DEC GKS Version 4.1. Either the Runtime Kit or the Development Kit is acceptable, though you must have the DEC GKS Development Kit if you plan to use GKS calls directly in a Laboratory Graphics Package (LGP) program.

  You should install the DEC GKS software before installing DEC RT Integrator. If the DEC GKS software is not installed, you receive the following warning message:

  ```
  %RTI-W-NOGKS, DEC GKS V4.0 must be installed for DEC RT Integrator
  V2.0 LGP
  ```

- VMS Workstation Software (VWS) Version 4.0 for VAXstations that will not be using DECwindows to display LGP plots

The IEZ11, DRB32 or Preston devices can be installed either before or after installing DEC RT Integrator.

4.3 License Registration

You must register and load your license for DEC RT Integrator before you start the installation to run the Installation Verification Procedure (IVP) and use the software.

To register a license under VMS, log in to the system manager's account, SYSTEM. Now you can register in one of the following ways:

- Invoke the SYS$UPDATE:VMSLICENSE.COM procedure. When it prompts you for information, respond with data from your License product authorization key (PAK).
- At the DCL prompt, enter the LICENSE REGISTER command with the appropriate qualifiers that correspond to License PAK information.

If you plan to use DEC RT Integrator on more than one node in a VAXcluster, you need to perform a license load on the other nodes after you complete this installation. See Section 6.4.

See the *Guide to Setting Up a VMS System* for information on the license registration procedure.

4.4 VAXcluster Considerations

DEC RT Integrator fully supports VAXclusters. If you are using DEC RT Integrator in a VAXcluster, DEC RT Integrator and the DEC RT Integrator license must be installed on the boot node.

NOTE

Time-critical I/O operations may be adversely affected by cluster operations. If your applications are extremely time-critical, you should not use DEC RT Integrator in a VAXcluster.

4.5 Installation Procedure Requirements

The installation takes the following approximate times:

- Tape cartridge—about 60 minutes on a MicroVAX II
- Magnetic tape—from about 15 minutes to about 40 minutes, depending on your system

These times include the time required to execute the IVP. However, they do not include the time required to install other layered products you plan to use with DEC RT Integrator. For those installation times, see the appropriate layered product installation guides.

4.5.1 Privileges and Disk Space

To install DEC RT Integrator, you must be logged in to an account that has SETPRV or at least the following privileges:

- CMKRNL
- WORLD
- SYSPRV

Note that VMSINSTAL turns off BYPASS privilege at the start of the installation.

Development Kit Disk Space Requirements

To install the Development Kit, the system disk must contain 17,000 free blocks. If your system disk contains less than 17,000 free blocks, the following error message is generated:

```
%RTI-E-NOROOM, DEC RT Integrator V2.0 requires at least 17,000 free disk
       blocks.
```

The Development Kit requires 16,200 blocks after it is installed.

Runtime Kit Disk Space Requirements

To install the Runtime Kit, the system disk must contain 11,000 free blocks. The Runtime Kit requires 10,000 blocks after it is installed.

To determine the number of free disk blocks on the current system disk, enter the following command at the DCL prompt:

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

4.5.2 System Parameters

Table 4–1 lists the minimum required system parameter values for the installation. These values represent the number of free global pages and free global sections required for the installation, not the total number you need to run your system and other software.

Table 4–1: Minimum Required System Parameter Values

GBLPAGES	n + 450
GBLSECTIONS	n + 20

4.5.2.1 Checking System Parameter Values

To check Global Pages (GBLPAGES) you have to subtract the number used from the total number available. To get the number of Global Sections and Global Pages Used enter the install command at the DCL prompt:

```
$  INSTALL
```

At the prompt, enter the following command:

```
INSTALL>  LIST/GLOBAL/SUMMARY
```

You will get information in the following form:

```
    Summary of Local Memory Global Sections

397 Global Sections Used,  40714/9286 Global Pages Used/Unused
```

This command gives you Global Sections (GBLSECTIONS) Unused. To get Global Pages Unused, you have to use the following command at the DCL prompt to invoke the System Generation Utility:

```
$  RUN SYS$SYSTEM:SYSGEN
```

At the SYSGEN> prompt, enter the SHOW command, for example:

```
SYSGEN>  SHOW GBLPAGES
```

You will get information in the following form:

```
Parameter Name     Current   Default   Minimum   Maximum Unit    Dynamic
--------------     -------   -------   -------   ------- ----    -------
GBLPAGES           50000     10000       512        -1 Pages
```

To get the number of free Global Pages, subtract the number of Global Sections Used (397 in this example) from the Current number (50000 in this example).

Enter the EXIT command at the SYSGEN> prompt to return to DCL level.

4.5.2.2 Changing System Parameter Values with AUTOGEN

Use the AUTOGEN command procedure to change system parameters. AUTOGEN automatically adjusts values for parameters that are associated with the values you reset manually.

To change system parameters with AUTOGEN, edit the following file:

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

To modify incremental parameters such as GBLPAGES and GBLSECTIONS, use ADD_. The following example increases the global page setting by 2000:

```
ADD_GBLPAGES = 2000
```

Note that when you set the page file quota, do not use a value that exceeds the amount of page file space available on the system.

After you make your changes, exit from the editor and execute the AUTOGEN procedure to recalculate your system parameters. Enter the following command at the DCL prompt:

```
$  @SYS$UPDATE:AUTOGEN GETDATA REBOOT
```

When you specify REBOOT, AUTOGEN performs an automatic system shutdown and then reboots the system. Any users logged on to the system are immediately disconnected during the shutdown. The automatic reboot puts the new parameter values into effect.

The AUTOGEN Utility automatically adjusts some of the SYSGEN parameters based on the consumption of resources since the last reboot. If you do not want to take advantage of this automatic adjustment, include the NOFEEDBACK qualifier on the AUTOGEN command line.

For more information about using AUTOGEN, see VMS System Management Subkit.

4.5.3 VMSINSTAL Requirements

When you invoke VMSINSTAL, it checks whether :

- You have logged in to the system account
- You are logged in to a privileged account
- You have adequate quotas for installation
- DECnet is running
- Any users are logged in to the system

Note that the VMSINSTAL requires that the installation account has a minimum of the following quotas:

ASTLM = 24
BIOLM = 18
BYTLM = 18,000
DIOLM = 18
ENQLM = 30
FILLM = 20

If VMSINSTAL detects any problems during the installation, it notifies you and asks if you want to continue the installation. In some instances, you can enter yes to continue. To stop the installation process and correct the situation, enter no or press Return. Then, correct the problem and restart the installation.

4.5.4 Backing Up Your System Disk

Before you begin the installation, verify that you have a backup of your system disk. If your system disk fails for any reason during installation, you need a copy of your previous system disk to recover your disk files.

For information on backing up your system disk, see the section on the Backup Utility in the VMS System Management Subkit.

Chapter 5

Installing DEC RT Integrator on VMS

Chapter 5 does the following:

- Tells how to abort the installation procedure (see Section 5.1)
- Describes the Development Kit installation procedure step-by-step (see Section 5.2)
- Describes the Runtime Kit installation procedure step-by-step (see Section 5.3)
- Discusses error recovery (see Section 5.4)

5.1 Aborting the Installation

To abort the installation procedure at any time, press Ctrl/Y. When you press Ctrl/Y, the installation procedure deletes all files it has created up to that point and exits. You can then start the installation again.

The termination process may take a few minutes depending on where you are in the installation process.

5.2 Development Kit Installation Procedure

To install the DEC RT Integrator Development Kit on your VMS system, perform the steps listed below.

1. **Run VMSINSTAL.**

   Log in to the SYSTEM account. At the DCL prompt, set your default directory to SYS$UPDATE:

   ```
   $  SET DEFAULT SYS$UPDATE
   ```

Enter the following command line to run VMSINSTAL:

```
$  @VMSINSTAL
```

The system displays the following informational messages:

```
  VAX/VMS Software Product Installation Procedure V5.4

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

2. **Confirm system backup.**

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

If you have a current backup of your system disk, press Return. If you do not have a current backup of your system disk, enter No to stop the installation.

After you back up your system disk, you can restart the installation.

VMSINSTAL then displays the following prompt:

```
* Where will the distribution volumes be mounted:
```

Enter a mnemonic for the tape, cartridge, or CDROM device you are installing onto. For example:

- MUA0 (for a tape cartridge)
- MTA0 (for generic magnetic tape)

VMSINSTAL now prompts you for the product you are installing.

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

Enter RTI020 after the ‘‘Products:’’ prompt.

VMSINSTAL prompts you for the Options parameter.

```
* Enter installation options you wish to use (none): N
```

Enter N after the ‘‘Options:’’ prompt. Specifying the N parameter causes VMSINSTAL to prompt you later in the installation procedure about the DEC RT Integrator Release Notes.

3. **Mount the media.**

VMSINSTAL displays the following instruction and prompt:

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

Enter Yes after the ''Are you ready?'' prompt when you have loaded your DEC RT Integrator distribution medium and are ready to continue.

TAPE CARTRIDGE INSTALLATION

When you load or unload a tape cartridge from the tape drive, make sure that the red light (the LOAD/UNLOAD switch) on the right of, or above, the tape drive is in the out position and not glowing, and that the small green activity light on the left of, or below, the tape drive is glowing steadily. (The location of the lights in relation to the drive depends on whether the drive is positioned vertically or horizontally.)

When you have successfully loaded the tape cartridge, the red light button is in and glowing steadily, and the green light is also glowing steadily.

When your distribution medium is successfully loaded into the drive, VMSINSTAL displays an informational message telling you that the medium is mounted.

4. **Select a release notes option.**

   VMSINSTAL displays the following informational messages and prompts you to select a release notes option.

```
The following products will be processed:
  RTI V2.0

        Beginning installation of DEC RT Integrator V2.0 at hh:mm

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

    Release notes included with this kit are always copied to SYS$HELP.

    Additional Release Notes Options:

        1.  Display release notes
        2.  Print release notes
        3.  Both 1 and 2
        4.  None of the above

* Select option [2]:
```

   Print the DEC RT Integrator Release Notes and read them before proceeding further with the installation. The release notes may contain last-minute instructions or changes to the installation procedures described in this guide. For more information on accessing the release notes, see Section 6.1.

If you want to continue the installation procedure, enter yes after the following prompt:

```
Do you want to continue the installation [NO]? Yes
%VMSINSTAL-I-RELMOVED, The product's release notes have been
 successfully moved to SYS$HELP
%RTI-I-VMSOK, Installing DEC RT Integrator V2.0 on VMS Version 5.3,
continuing . . .

        Product:      RTI-V
        Producer:     DEC
        Version:      V2.0
        Release Date: 20-JAN-91
```

5. **Verify that your PAK is registered.**

   VMSINSTAL now asks you about required PAK registration. If you have not registered your PAK, terminate the installation and register it. If your PAK is registered, enter yes at the prompt.

   ```
   * Does this product have an authorization key registered and loaded?
   ```

   If DEC GKS is not installed, you receive the following warning message:

```
%RTI-W-NOGKS, DEC GKS V4.1 must be installed for DEC RT Integrator V2.0 LGP.
```

   If a version of GKS is installed, VMSINSTAL does a GKS license check. If no GKS license is found, you receive the following warning message:

   ```
   %RTI-W-NOGKSLIC, DEC GKS License not installed.
   DEC RT Integrator V2.0 LGP facility will not work
   until the GKS license is installed.
   ```

   If you need to use LGP, terminate this installation and install GKS V4.1. You can terminate the installation by pressing Ctrl/Y. The termination process may take a few minutes.

6. **Select installation options.**

   If you continue installation, VMSINSTAL asks if you want to purge the files replaced by this installation procedure. Press Return.

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

   VMSINSTAL prompts you to install the following DEC RT Integrator standard software: LIO, LGP, LSP, and the DECwindows user interface. Press Return.

```
* Do you want to install the DEC RT Integrator V2.0 Standard Software [YES]?
```

   VMSINSTAL now asks you if this is a European installation. If you are not installing in Europe, press Return. If you are installing DEC RT Integrator in Europe, enter Yes.

   ```
   * Is this a European installation [NO]?
   ```

If you answer YES and you are installing on a Q-bus based VAX, VMSINSTAL asks you to select the European boards installed on your system. These questions are necessary because some European boards are not autoconfigured.

```
* Does your DEC RT Integrator system have an IEQ11 board installed [NO]?
* Does your DEC RT Integrator system have an IXV11 board installed [NO]?
* Does your DEC RT Integrator system have a DRQ11C board installed [NO]?
```

NOTE

For non-European installations, if you install DEC RT Integrator with an IEQ11 device already in the system, DEC RT Integrator automatically installs the IEQ11 device driver.

VMSINSTAL now prompts you to install the optional software: the Scientific Subroutines Package (SSP) and the Peak Processing Package (PEAK). (Note that SSP and PEAK are unsupported products.) If you want to install these products, enter Yes after the following prompt:

```
* Do you want to install the DEC RT Integrator V2.0 Optional Software [NO]?
```

Next, VMSINSTAL asks if you want to install the LIO example programs in executable form. If you answer yes, VMSINSTAL loads executable images of the LIO example programs into the LIO$EXAMPLES directory.

```
* Do you want to install the LIO examples in executable form? [NO]?
```

7. **Answer questions about the IEZ11 device driver.**

   The next prompt asks if you want to install the IEZ11 device driver:

   ```
   * Does your DEC Realtime Test Integrator system have an
   * IEZ11 SCSI to IEEE-488 converter [NO]? yes
   ```

   If you enter No, the installation procedure skips to the questions about the IVP.

   If you answer Yes, the procedure tests to see if your system is known to have a SCSI bus at the time DEC RT Integrator was released. If the system is known to have a SCSI bus, the procedure continues.

   If the system does not have a SCSI bus, the following information appears on the screen:

   ```
   WARNING - The IEZ11 driver can only be installed on a system
   that has a SCSI bus.  At the time that this kit was built, this
   system was not a known SCSI system.  If this system DOES have
   a SCSI bus, then the installation will succeed.  If this system
   does not have a SCSI bus, then the installation will fail.

   * Do you still want to install the IEZ11 driver [NO]?
   ```

If you enter No, the installation procedure skips to the questions about the IVP.

If you enter Yes, and your system does not have a SCSI bus, but the system is part of a cluster, the installation procedure assumes that another node on your cluster has a SCSI bus. The following information is displayed:

```
%SYSTEM-W-NOSUCHDEV, no such device available
%RTI-W-UNSUPCPU, the IEZ11 class driver is not supported on this CPU.
-RTI-W-UNSUPCPU, installation continues.
    You must create a system specific startup command procedure for each
    node in your VAXcluster which will use the IEZ11 IEEE488 Bus Converter.

    You create this startup procedure for a specific node by running the
    IEZ11$CONFIG.COM procedure interactively on the SPECIFIC node.
    The required DCL command is:

       $ @SYS$MANAGER:IEZ11$CONFIG
```

The installation continues to the questions about the IVP.

If you enter Yes, and your system does have a SCSI bus, then the installation continues as follows:

```
Your current SCSI device configuration, as known to VMS, contains:
             (Pure internal SCSI buses not shown)

   2 disks

The current SCSI ID assignment is:

   0        1        2        3        4        5        6        7
unused   unused   DKA200   DKA300   unused   unused    *CPU*   unused
                  >disk<   >disk<

You may connect up to 5 IEZ11 SCSI488/D bus converters to the
external SCSI connector of your VAXstation or MicroVAX.

WARNING: Connecting more than two IEZ11 SCSI488/D bus converters
         may conflict with future system hardware extensions.

* How many IEZ11 bus converters will you connect to the SCSI port? [1]:
* Use device EKA0:, SCSI ID 0 (currently unused)? [Y]:

    The current SCSI ID assignment is:

       0        1        2        3        4        5        6        7
     EKA0     unused   DKA200   DKA300   unused   unused    *CPU*   unused
     IEZ11             >disk<   >disk<

A new version of SYS$SPECIFIC:[SYS$STARTUP]IEZ11$STARTUP.COM has been created.
You may wish to purge this file.
```

If an IEZ11 driver is already installed (that is, if there is an EKDRIVER.EXE in SYS$LOADABLE_IMAGES), then the following information appears on the screen:

```
The IEZ11 Class Driver (EKDRIVER) is already installed on your
system. Replacement of this driver requires a system reboot.

You can defer this reboot to some later time without any problem,
however, the newly installed EKDRIVER will not be usable until
after the system reboot.

Do *not* try to simply reload the driver manually, the driver
data structures of the active and the newly installed driver
may not be compatible, which will cause a SYSTEM CRASH.
```

8. **Answer questions about the IVP.**

   VMSINSTAL prompts you about installing and executing the Installation Verification Procedure (IVP). The IVP confirms that DEC RT Integrator is properly installed and operational. If you choose to install and execute the IVP, press Return after the prompt.

```
* Do you want to install and execute the DEC RT Integrator V2.0 IVP [YES]?
```

   The next prompt asks if you want to run the DECwindows version of the IVP:

```
* Do you want to run the DECwindows version of the IVP [YES]?
```

   If you enter Yes, a plot will be displayed on your screen when you run the IVP.

   If you enter No, your terminal bell will ring seven times and a message will be displayed on your screen when you run the IVP.

   The next prompt lets you review your answers and change them if necessary.

```
* Your selections are complete, do you want to proceed [YES]?
```

   If your selections are correct, press Return and the installation procedure continues.

9. **Answer additional questions for European devices.**

   If you have European devices installed on your system, VMSINSTAL prompts you for information about these devices.

```
The next question establishes the device name for the OPTIONAL
board(s). Please do one of the following:

(1) Enter an asterisk (*) to display a list of devices currently
    known to your system.

(2) Enter a carriage return to select the default generic device
    name for your board.
```

```
(3) Enter a unique, two-letter, generic device name.  This device
    name must be different from the two-letter device name of
    all other devices known to your system.

* Enter the two-letter device name for your IXV11 board(s) [IV]:

    ------------------------------------------------------------
    Configuring a driver for IXV11 board number 1 (device IVA0).
    ------------------------------------------------------------

    The system treats each IXV11 board you install
    as a separate controller within the same driver.
    However, each board must be configured for a different
    base address within the VAX I/O space, as well as
    for a unique interrupt vector.  These two parameters are
    set by DIP switches or jumpers on the interface board.
    Please use the XCON sheet delivered with your system or
    the SYSGEN/CONFIGURE option to determine the correct base
    address and interrupt vector for your system.
    The installation procedure asks you to supply these
    parameters for each IXV11 board.

* Do you want to see a current system configuration list [YES]?

                 System Device Information

         Name: PUB  ) CSR: 760334  Vector1: 774  Vector2: 0
         Name: PUA  ) CSR: 772150  Vector1: 154  Vector2: 0
         Name: PTA  ) CSR: 774500  Vector1: 260  Vector2: 0
         Name: XQA  ) CSR: 774440  Vector1: 120  Vector2: 0
         Name: TXA  ) CSR: 760500  Vector1: 310  Vector2: 3
         Name: AZA  ) CSR: 776410  Vector1: 330  Vector2: 3
         Name: AYA  ) CSR: 776420  Vector1: 340  Vector2: 3
         Name: KZA  ) CSR: 770420  Vector1: 320  Vector2: 3
```

The next two prompts request base and vector addresses for the IXV11 board. The addresses you enter must be valid octal numbers that are word-aligned on an even octal boundary. The valid range for the base address is 760000 to 777776. The valid range for the vector address is 100 to 776. Use the XCON sheet delivered with your system or the SYSGEN/CONFIGURE option to determine the correct CSR and vector settings for your board.

```
* Enter the octal base address for your IXV11 board [771400]:
* Enter the octal vector address for your IXV11 board [400]:

      IXV11 board number 1 is now fully specified (device IVA0).

* Do you want to specify additional IXV11 boards [NO]?
```

When your configuration is complete, VMSINSTAL asks if you want to proceed with the installation. If you want to proceed with the installation, press Return.

```
* Your configuration is complete, do you want to proceed [YES]?
```

10. **Read informational messages.**

    VMSINSTAL displays the following message:

```
No further questions will be asked.
The installation takes approximately 60 minutes on a MicroVAX II.
%VMSINSTAL-I-RESTORE, Restoring product saveset B . . .
```

    VMSINSTAL continues displaying messages as it restores product savesets C to M.

    If you chose to install the DEC RT Integrator Optional Software, VMSINSTAL displays brief messages about the unsupported software: the Scientific Subroutines Package (SSP) and the Peak Processing Package (PEAK).

    Online documentation for SSP is located in SYS$SYSROOT: [UNSUPPORTED.SSP]SSP_GUIDE.MEM.

    DEC RT Integrator displays a message recommending that you read the DEC RT Integrator Release Notes located in SYS$HELP:RTI020.RELEASE_NOTES. Review the Release Notes now if you have not done so already.

    After the installation procedure is complete, see Section 6.2, for instructions on editing the startup command file, SYSTARTUP_V5.COM, the DEC RT Integrator startup command file, RTI_STARTUP.COM, and the system login command file, SYLOGIN.COM.

    VMSINSTAL now displays the following message:

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

    VMSINSTAL now moves all the DEC RT Integrator files for the standard DEC RT Integrator software and selected options from the VMSINSTAL working directory to their target directories.

11. **Observe the Installation Verification Procedure (IVP).**

    VMSINSTAL begins executing the IVP:

```
+------------------------------------------------------------------+
|                                                                  |
|        DEC Realtime Test Integrator  for VMS V2.0                |
|                                                                  |
|           Installation Verification Procedure                    |
|                                                                  |
+------------------------------------------------------------------+
```

If you said that you did not want to run the DECwindows version of the IVP, the following message is displayed:

```
                              NOTE:

You have either indicated that you are not on a DECwindows display
or GKS is not  installed.  Therefore  the  graphics section of the
Installation Verification Procedure will not be attempted.

Your terminal bell should ring seven times and the message

   'DEC RT Integrator Installation Verification Program'

Should be printed on your terminal.
```

When the IVP has completed, the following message is displayed:

```
DEC RT Integrator Installation Verification Program

+---------------------------------------------------------------------+
|                                                                     |
|      DEC RT Integrator Installation Verification Procedure          |
|            successfully completed                                   |
|                                                                     |
+---------------------------------------------------------------------+
```

If you said that you did want to run the DECwindows version of the IVP, a plot similar to Figure 7–1 is displayed on your screen for about 60 seconds and the following message appears:

```
+---------------------------------------------------------------------+
|                                                                     |
|      DEC RT Integrator Installation Verification Procedure          |
|            successfully completed                                   |
|                                                                     |
+---------------------------------------------------------------------+
```

12. **End the installation procedure.**

```
Installation of DEC RT Integrator V2.0 completed at hh:mm


VMSINSTAL procedure done at hh:mm

$ LOGOUT
  SYSTEM       logged out at dd-mmm-yyyy hh:mm:ss
```

Section C.1 contains a sample installation from a tape cartridge. The dialogue for a magnetic tape installation is similar.

When you complete the installation, see Chapter 6 for postinstallation tasks.

5.3 Runtime Kit Installation Procedure

To install DEC RT Integrator on your VMS system, perform the steps listed below.

1. **Run VMSINSTAL.**

   Log in to the SYSTEM account. At the DCL prompt, set your default directory to SYS$UPDATE:

   ```
   $  SET DEFAULT SYS$UPDATE
   ```

   Enter the following command line to run VMSINSTAL:

   ```
   $  @VMSINSTAL
   ```

   The system displays the following informational messages:

   ```
     VAX/VMS Software Product Installation Procedure V5.3

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

2. **Confirm system backup.**

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

   If you have a current backup of your system disk, press Return. If you do not have a current backup of your system disk, enter No to stop the installation.

   After you back up your system disk, you can restart the installation.

   VMSINSTAL then displays the following prompt:

   ```
   * Where will the distribution volumes be mounted:
   ```

   Enter a mnemonic for the tape, cartridge, or CDROM device you are installing onto. For example:

   - MUA0 (for a tape cartridge)
   - MTA0 (for generic magnetic tape)

   VMSINSTAL now prompts you for the product you are installing.

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

   Enter RTIRT after the ‘‘Products:’’ prompt.

   VMSINSTAL prompts you for the Options parameter.

   ```
   * Enter installation options you wish to use (none): N
   ```

Enter N after the ‘‘Options:’’ prompt. Specifying the N parameter causes VMSINSTAL to prompt you later in the installation procedure about the DEC RT Integrator Release Notes.

3. **Mount the media.**

   VMSINSTAL displays the following instruction and prompt:

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

   Enter Yes after the ‘‘Are you ready?’’ prompt when you have loaded your DEC RT Integrator distribution medium and are ready to continue.

TAPE CARTRIDGE INSTALLATION

> When you load or unload a tape cartridge from the tape drive, make sure that the red light (the LOAD/UNLOAD switch) on the right of, or above, the tape drive is in the out position and not glowing, and that the small green activity light on the left of, or below, the tape drive is glowing steadily. (The location of the lights in relation to the drive depends on whether the drive is positioned vertically or horizontally.)
>
> When you have successfully loaded the tape cartridge, the red light button is in and glowing steadily, and the green light is also glowing steadily.

   When your distribution medium is successfully loaded into the drive, VMSINSTAL displays an informational message telling you that the medium is mounted.

4. **Select a release notes option.**

   VMSINSTAL displays the following informational messages and prompts you to select a release notes option.

```
The following products will be processed:
  RTIRT V2.0

        Beginning installation of RTIRT V2.0 at hh:mm

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

    Release Notes Options:

        1.  Display release notes
        2.  Print release notes
        3.  Both 1 and 2
        4.  None of the above

* Select option [2]:
```

Print the DEC RT Integrator Release Notes and read them before proceeding further with the installation. The release notes may contain last-minute instructions or changes to the installation procedures described in this guide. For more information on accessing the release notes, see Section 6.1.

If you want to continue the installation procedure, enter Yes after the following prompt:

```
Do you want to continue the installation [NO]? Yes
%VMSINSTAL-I-RELMOVED, The product's release notes have been
 successfully moved to SYS$HELP
%RTI-I-VMSOK, Installing DEC RT Integrator V2.0 on VMS Version V5.3,
continuing . . .
```

5. **Verify that your GKS is installed.**

   If DEC GKS is not installed, you receive the following warning message:

   ```
   %RTI-W-NOGKS, DEC GKS V4.1 must be installed for DEC RT Integrator V2.0 LGP.
   ```

   If a version of GKS is installed, VMSINSTAL does a GKS license check. If no GKS license is found, you receive the following warning message:

   ```
   %RTI-W-NOGKSLIC, DEC GKS License not installed.
   DEC RT Integrator V2.0 LGP facility will not work
   until the GKS license is installed.
   ```

   If you need to use LGP, terminate this installation and install GKS V4.1. You can terminate the installation by pressing Ctrl/Y. The termination process may take a few minutes. If you are going to run the IVP, you need to have GKS V4.1 installed first.

6. **Select installation options.**

   If you continue installation, VMSINSTAL asks if you want to purge the files replaced by this installation procedure. Press Return.

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

   VMSINSTAL prompts you to install the following DEC RT Integrator standard software: LIO, LGP, LSP, and the DECwindows user interface. Press Return.

```
* Do you want to install the DEC RT Integrator V2.0 Standard Software [YES]?
```

VMSINSTAL now asks you if this is a European installation. If you are not installing in Europe, press Return. If you are installing DEC RT Integrator in Europe, enter Yes at the prompt.

```
* Is this a European installation [NO]?
```

If you answer yes and you are installing on a Q-bus based VAX, VMSINSTAL asks you to select the European boards installed on your system. These questions are necessary because some European boards are not autoconfigured.

```
* Does your DEC RT Integrator system have an IEQ11 board installed [NO]?
* Does your DEC RT Integrator system have an IXV11 board installed [NO]?
* Does your DEC RT Integrator system have a DRQ11C board installed [NO]?
```

NOTE

For non-European installations, if you install DEC RT Integrator with an IEQ11 device already in the system, DEC RT Integrator automatically installs the IEQ11 device driver.

VMSINSTAL now prompts you to install the optional software: the Scientific Subroutines Package (SSP) and the Peak Processing Package (PEAK). (Note that SSP and PEAK are unsupported products.) If you want to install these products, enter Yes after the following prompt:

```
* Do you want to install the DEC RT Integrator V2.0 Optional Software [NO]?
```

Next, VMSINSTAL asks if you want to install the LIO example programs in executable form. If you enter Yes, VMSINSTAL loads executable images of the LIO example programs into the LIO$EXAMPLES directory.

```
* Do you want to install the LIO examples in executable form? [NO]?
```

7. **Answer questions about the IEZ11 device driver.**

   The next prompt asks if you want to install the IEZ11 device driver.

   ```
   * Does your DEC Realtime Test Integrator system have an
   * IEZ11 SCSI to IEEE-488 converter [NO]? yes
   ```

   If you enter No, the installation procedure skips to the questions about the IVP.

   If you answer Yes, the procedure tests to see if your system is known to have a SCSI bus at the time DEC RT Integrator was released. If the system is known to have a SCSI bus, the procedure continues.

   If the system does not have a SCSI bus, the following information appears on the screen:

   ```
   WARNING - The IEZ11 driver can only be installed on a system
   that has a SCSI bus.  At the time that this kit was built, this
   system was not a known SCSI system.  If this system DOES have
   a SCSI bus, then the installation will succeed.  If this system
   does not have a SCSI bus, then the installation will fail.

   * Do you still want to install the IEZ11 driver [NO]?
   ```

If you enter No, the installation procedure skips to the questions about the IVP.

If you enter Yes, and your system does not have a SCSI bus, but the system is part of a cluster, the installation procedure assumes that another node on your cluster has a SCSI bus. The following information is displayed:

```
%SYSTEM-W-NOSUCHDEV, no such device available
%RTI-W-UNSUPCPU, the IEZ11 class driver is not supported on this CPU.
-RTI-W-UNSUPCPU, installation continues.
    You must create a system specific startup command procedure for each
    node in your VAXcluster which will use the IEZ11 IEEE488 Bus Converter.

    You create this startup procedure for a specific node by running the
    IEZ11$CONFIG.COM procedure interactively on the SPECIFIC node.
    The required DCL command is:

       $ @SYS$MANAGER:IEZ11$CONFIG
```

The installation continues to the questions about the IVP.

If you enter Yes, and your system does have a SCSI bus, then the installation continues as follows:

```
Your current SCSI device configuration, as known to VMS, contains:
             (Pure internal SCSI buses not shown)

   2 disks

The current SCSI ID assignment is:

   0        1        2        3        4        5        6        7
unused   unused   DKA200   DKA300   unused   unused    *CPU*   unused
                  >disk<   >disk<

You may connect up to 5 IEZ11 SCSI488/D bus converters to the
external SCSI connector of your VAXstation or MicroVAX.

WARNING: Connecting more than two IEZ11 SCSI488/D bus converters
         may conflict with future system hardware extensions.

* How many IEZ11 bus converters will you connect to the SCSI port? [1]:
* Use device EKA0:, SCSI ID 0 (currently unused)? [Y]:

    The current SCSI ID assignment is:

       0        1        2        3        4        5        6        7
     EKA0     unused   DKA200   DKA300   unused   unused    *CPU*   unused
     IEZ11             >disk<   >disk<

A new version of SYS$SPECIFIC:[SYS$STARTUP]IEZ11$STARTUP.COM has been created.
You may wish to purge this file.
```

If an IEZ11 driver is already installed (that is, if there is an EKDRIVER.EXE in SYS$LOADABLE_IMAGES), then the following information appears on the screen:

```
The IEZ11 Class Driver (EKDRIVER) is already installed on your
system. Replacement of this driver requires a system reboot.

You can defer this reboot to some later time without any problem,
however, the newly installed EKDRIVER will not be usable until
after the system reboot.

Do *not* try to simply reload the driver manually, the driver
data structures of the active and the newly installed driver
may not be compatible, which will cause a SYSTEM CRASH.
```

8. **Answer questions about the IVP.**

   VMSINSTAL prompts you about installing and executing the Installation Verification Procedure (IVP). The IVP confirms that DEC RT Integrator is properly installed and operational. If you choose to install and execute the IVP, press Return after the prompt.

```
* Do you want to install and execute the DEC RT Integrator V2.0 IVP [YES]?
```

   The next prompt asks if you want to run the DECwindows version of the IVP:

```
* Do you want to run the DECwindows version of the IVP [YES]?
```

   If you enter Yes, a plot will be displayed on your screen when you run the IVP.

   If you enter No, your terminal bell will ring seven times and a message will be displayed on your screen when you run the IVP.

   The next prompt lets you review your answers and change them if necessary.

```
* Your selections are complete, do you want to proceed [YES]?
```

   If your selections are correct, press Return and the installation procedure continues.

9. **Answer additional questions for European devices.**

   If you have European devices installed on your system, VMSINSTAL prompts you for information about these devices.

```
The next question establishes the device name for the OPTIONAL
board(s). Please do one of the following:

(1) Enter an asterisk (*) to display a list of devices currently
    known to your system.

(2) Enter a carriage return to select the default generic device
    name for your board.
```

```
(3) Enter a unique, two-letter, generic device name.  This device
    name must be different from the two-letter device name of
    all other devices known to your system.

* Enter the two-letter device name for your IXV11 board(s) [IV]:

    ------------------------------------------------------------
    Configuring a driver for IXV11 board number 1 (device IVA0).
    ------------------------------------------------------------

    The system treats each IXV11 board you install
    as a separate controller within the same driver.
    However, each board must be configured for a different
    base address within the VAX I/O space, as well as
    for a unique interrupt vector.  These two parameters are
    set by DIP switches or jumpers on the interface board.
    Please use the XCON sheet delivered with your system or
    the SYSGEN/CONFIGURE option to determine the correct base
    address and interrupt vector for your system.
    The installation procedure asks you to supply these
    parameters for each IXV11 board.

* Do you want to see a current system configuration list [YES]?

                  System Device Information

          Name: PUB  ) CSR: 760334  Vector1: 774  Vector2: 0
          Name: PUA  ) CSR: 772150  Vector1: 154  Vector2: 0
          Name: PTA  ) CSR: 774500  Vector1: 260  Vector2: 0
          Name: XQA  ) CSR: 774440  Vector1: 120  Vector2: 0
          Name: TXA  ) CSR: 760500  Vector1: 310  Vector2: 3
          Name: AZA  ) CSR: 776410  Vector1: 330  Vector2: 3
          Name: AYA  ) CSR: 776420  Vector1: 340  Vector2: 3
          Name: KZA  ) CSR: 770420  Vector1: 320  Vector2: 3
```

The next two prompts request base and vector addresses for the IXV11 board. The addresses you enter must be valid octal numbers that are word-aligned on an even octal boundary. The valid range for the base address is 760000 to 777776. The valid range for the vector address is 100 to 776. Use the XCON sheet delivered with your system or the SYSGEN/CONFIGURE option to determine the correct CSR and vector settings for your board.

```
* Enter the octal base address for your IXV11 board [771400]:
* Enter the octal vector address for your IXV11 board [400]:

      IXV11 board number 1 is now fully specified (device IVA0).

* Do you want to specify additional IXV11 boards [NO]?
```

When your configuration is complete, VMSINSTAL asks if you want to proceed with the installation. If you want to proceed with the installation, press Return.

```
* Your configuration is complete, do you want to proceed [YES]?
```

10. **Read informational messages.**

    VMSINSTAL displays the following message:

```
No further questions will be asked.
The installation takes approximately 60 minutes on a MicroVAX II.
%VMSINSTAL-I-RESTORE, Restoring product saveset B . . .
```

    VMSINSTAL continues displaying messages as it restores product savesets C to L.

    If you chose to install the DEC RT Integrator Optional Software, VMSINSTAL displays brief messages about the unsupported software: the Scientific Subroutines Package (SSP) and the Peak Processing Package (PEAK).

    Online documentation for SSP is located in SYS$SYSROOT: [UNSUPPORTED.SSP]SSP_GUIDE.MEM.

    DEC RT Integrator displays a message recommending that you read the DEC RT Integrator Release Notes located in SYS$HELP:RTIRT020.RELEASE_NOTES. Review the Release Notes now if you have not done so already.

    After the installation procedure is complete, see Section 6.2, Editing the System Files, for instructions on editing the startup command file, SYSTARTUP_V5.COM, the DEC RT Integrator startup command file, RTI_STARTUP.COM, and the system login command file, SYLOGIN.COM.

    VMSINSTAL now displays the following message:

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

    VMSINSTAL now moves all the DEC RT Integrator files for the standard DEC RT Integrator software and selected options from the VMSINSTAL working directory to their target directories.

11. **Observe the Installation Verification Procedure (IVP).**

    VMSINSTAL begins executing the IVP:

```
+------------------------------------------------------------------+
|                                                                  |
|        DEC Realtime Test Integrator  for VMS V2.0                |
|                                                                  |
|           Installation Verification Procedure                    |
|                                                                  |
+------------------------------------------------------------------+
```

If you said that you did not want to run the DECwindows version of the IVP, the following message is displayed:

```
                              NOTE:

You have either indicated that you are not on a DECwindows display
or GKS is not  installed.  Therefore  the  graphics section of the
Installation Verification Procedure will not be attempted.

Your terminal bell should ring seven times and the message

   'DEC RT Integrator Installation Verification Program'

Should be printed on your terminal.
```

When the IVP has completed, the following message is displayed:

```
DEC RT Integrator Installation Verification Program

+---------------------------------------------------------------------+
|                                                                     |
|      DEC RT Integrator Installation Verification Procedure          |
|            successfully completed                                   |
|                                                                     |
+---------------------------------------------------------------------+
```

If you said that you did want to run the DECwindows version of the IVP, a plot similar to Figure 7–1 is displayed on your screen for about 60 seconds and the following message appears:

```
+---------------------------------------------------------------------+
|                                                                     |
|      DEC RT Integrator Installation Verification Procedure          |
|            successfully completed                                   |
|                                                                     |
+---------------------------------------------------------------------+
```

12. **End the installation procedure.**

```
Installation of DEC RT Integrator V2.0 completed at hh:mm


VMSINSTAL procedure done at hh:mm

$ LOGOUT
  SYSTEM       logged out at dd-mmm-yyyy hh:mm:ss
```

Section C.2 contains a sample installation from a tape cartridge. The dialogue for a magnetic tape installation is similar.

When you complete the installation, see Chapter 6 for postinstallation tasks.

5.4 Error Recovery

If errors occur during the installation itself or when the IVP is running, VMSINSTAL displays failure messages. If the installation fails, you see the following message:

```
%VMSINSTAL-E-INSFAIL, The installation of DEC RT Integrator V2.0 has failed.
```

If the IVP fails, you see these messages:

```
The DEC RT Integrator V2.0 Installation Verification Procedure failed.
%VMSINSTAL-E-IVPFAIL, The IVP for DEC RT Integrator V2.0 has failed.
```

Errors can occur during the installation if any of the following conditions exist:

- The operating system version is incorrect.
- A prerequisite software version is incorrect.
- Quotas necessary for successful installation are insufficient.
- System parameter values for successful installation are insufficient.
- The VMS help library is currently in use.
- The product license has not been registered and loaded.

For descriptions of the error messages generated by these conditions, see the VMS documentation on system messages, recovery procedures, and VMS software installation. For information on installation requirements, see Section 4.5.

Chapter 6

Postinstallation Tasks Under VMS

Chapter 6 describes the tasks you need to perform after successfully installing DEC RT Integrator. The tasks, in the order in which you should perform them, are:

1. If you have not already done so, print a copy of the online DEC RT Integrator Release Notes (see Section 6.1).
2. Edit the system startup command files to include the DEC RT Integrator startup command procedures (see Section 6.2).
3. Check the file SYS$SYSTEM:MODPARAMS.DAT and change parameter settings if necessary (see Section 6.3).
4. If you are using DEC RT Integrator in a VAXcluster, load the license for the satellite nodes (see Section 6.4).
5. If you are using DEC RT Integrator in a VAXcluster and you plan to use the IEZ11 device, load the IEZ11 device driver onto each node that has a SCSI bus (see Section 6.5).
6. When you create user accounts, set the user account quotas (see Section 6.6).
7. For European installations, modify the system configuration command file, SYCONFIG.COM, located in SYS$MANAGER, by adding device-specific startup procedures for the IEQ11, IXV11, or DRQ11-C. Modify the system configuration command file only if you installed one or more of these devices (see Section 6.7).
8. Shut down and reboot the system so that the system automatically loads the device drivers (see Section 6.8).
9. If you plan to use use the subroutine libraries to develop Pascal programs, compile the symbolic definition files into environment files (see Section 6.9).

For information on reporting problems, see Section 6.10, Reporting Problems.

For instructions on running the IVP any time after installation, see Chapter 7.

6.1 Accessing the DEC RT Integrator Release Notes

The DEC RT Integrator Release Notes provide information about software and documentation errors found late in the development cycle.

When you select release notes option 1, 2, 3, or 4 during the installation procedure, VMSINSTAL copies the release notes to the directory SYS$HELP. You can access the release notes at any time by entering the following command for the Development Kit Release Notes:

```
$  TYPE SYS$HELP::RTI020.RELEASE_NOTES
```

You can access the release notes at any time by entering the following command for the Runtime Kit Release Notes:

```
$  TYPE SYS$HELP::RTIRT020.RELEASE_NOTES
```

This example displays the release notes on your terminal screen. You can substitute the PRINT command for the TYPE command to print a copy of the release notes.

6.2 Editing the System Files

You need to edit the startup command files to include command lines that initialize the DEC RT Integrator software properly. Do this by following these instructions:

- Edit SYS$STARTUP:SYSTARTUP_V5.COM to include the following line to execute the DEC RT Integrator-specific startup command file, RTI_STARTUP.COM:

  ```
  $  @SYS$STARTUP:RTI_STARTUP.COM
  ```

  If there is a call to the VAXLAB startup command file VSLSTARTUP.COM or VSL$STARTUP.COM, it should be deleted. RTI_STARTUP.COM replaces these files.

- Edit your LOGIN.COM file, a groupwide LOGIN.COM file, or the system logical names table to include the definitions of two logical names used by the GKS software, GKS$WSTYPE and GKS$CONID. These logical names define the terminal type and the serial port for printed LGP plots. See the *DEC RT Integrator Laboratory Graphics Package (LGP) Reference Manual* for the information you need to include.
- Edit the files specified in the layered product guides included with the layered products you installed on your system. See the appropriate layered product installation guides for the layered products you installed.

6.3 Modifying System Parameters

The file SYS$SYSTEM:MODPARAMS.DAT contains site-specific system parameter settings. After DEC RT Integrator is installed, display this file. If it does not contain the following lines, add them to the file:

```
MAXBUF =8192
REALTIME_SPTS = 128
TTY_ALTYPAHD = 4096
TTY_TYPAHDSZ = 4096
```

MAXBUF is the parameter that sets the maximum size of a buffered I/O transfer.

REALTIME_SPTS is the parameter that reserves a number of system page table entries for mapping connect-to-interrupt processes into system space. When DEC RT Integrator is installed, the REALTIME_SPTS parameter is set by default to 128, which is the appropriate value for one AXV11-C device. If your system has more than one device, reset this parameter to 128 times the number of AXV11-C devices your system has.

TTY_ALTYPAHD is the parameter that sets the size of the alternate type-ahead buffer. TTY_TYPAHDSZ is the parameter that sets the size of the terminal type-ahead buffer. These parameters have been set to arbitrarily high values for improved performance of the serial line device. For normal operation, the default values are sufficient.

For information on the procedure for making the modified parameters take effect, see Section 4.5.2.2. In order to conserve disk space, you should use the PURGE command to delete some of the old system data files.

6.4 Loading the DEC RT Integrator License for the Other Nodes

If you are installing DEC RT Integrator in a VAXcluster, you must load the license for each of the satellite nodes. If you are installing the Runtime Kit, enter the following command for each node:

```
$ LICENSE LOAD VAXLAB-SW-LIB
```

If you are installing the Development Kit, enter the following command for each node:

```
$ LICENSE LOAD RTI-V
```

You can also run the IVP on the other nodes in the VAXcluster, although running the IVP on the boot node should be sufficient.

6.5 Loading the IEZ11 Device Driver in a Cluster

If you want to use the IEZ11 bus converter device in a VAXcluster, you must create a system-specific startup command procedure for each node in the cluster that will use the IEZ11 device (in other words, for each node that has a SCSI bus).

NOTE

This procedure is not necessary if you have only one node with a SCSI bus and you installed DEC RT Integrator on that node.

You create this startup procedure for a specific node by running the IEZ11$CONFIG.COM procedure interactively on each specific node.

To do this, set host to each node that has the SCSI bus:

```
$ SET HOST scsi_sys
```

Then run the procedure:

```
$ @SYS$MANAGER:IEZ11$CONFIG
```

The following information is displayed for each node:

```
Your current SCSI device configuration, as known to VMS, contains:
             (Pure internal SCSI buses not shown)

   2 disks
```

```
The current SCSI ID assignment is:

   0        1        2        3        4        5        6        7
unused   unused   DKA200   DKA300   unused   unused    *CPU*   unused
                  >disk<   >disk<

You may connect up to 5 IEZ11 SCSI488/D bus converters to the
external SCSI connector of your VAXstation or MicroVAX.

WARNING: Connecting more than two IEZ11 SCSI488/D bus converters
         may conflict with future system hardware extensions.

* How many IEZ11 bus converters will you connect to the SCSI port? [1]:
* Use device EKA0:, SCSI ID 0 (currently unused)? [Y]:

    The current SCSI ID assignment is:

       0        1        2        3        4        5        6        7
     EKA0     unused   DKA200   DKA300   unused   unused    *CPU*   unused
     IEZ11             >disk<   >disk<

A new version of SYS$SPECIFIC:[SYS$STARTUP]IEZ11$STARTUP.COM has been created.
You may wish to purge this file.
```

6.6 Setting Quotas for User Accounts

Use the SHOW WORKING_SET command at the DCL prompt to see the working set quotas. The /Limit number refers to the working set default value.

You can create accounts and make changes to them by using the VMS Authorize Utility, as shown below:

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

When you create user accounts, see that the following minimum quotas are in effect for each account:

- AST limit (ASTLM): 64
- Buffered I/O count limit (BIOLM): 64
- Buffered I/O byte limit (BYTLM): 8192
- Direct I/O count limit (DIOLM): 64
- Working set default (WSDEF): 512
- Working set quota (WSQUO): 512
- Working set extent (WSEXTENT): 1024

For information on the Authorize Utility, see the *VMS Authorize Utility Manual*.

6.7 Modifying the System Configuration Command File

For European installations, VMSINSTAL generates command procedures for loading the IEQ11, IXV11, and DRQ11-C device drivers. To load any of these device drivers, modify SYS$MANAGER:SYCONFIG.COM by adding the following line to the file for each of the devices you are using:

```
$  @SYS$MANAGER:xxLOAD.COM
```

where xx is the two-letter symbol for the device you are using.

The following table lists the device names and their two-letter symbols.

Device Name	Symbol
IEQ11	IX
IXV11	IV
DRQ11-C	UU

During system startup, VMS executes this command procedure from the SYCONFIG.COM file located in the SYS$MANAGER directory.

6.8 Loading Device Drivers

The device drivers load automatically when you shut down and reboot your system.

NOTE

If you do not plan to use the Laboratory I/O (LIO) routines, you do not need to shut down and reboot the system.

Use SYS$SYSTEM:SHUTDOWN.COM. to shut the system down. Then halt the system to cause a system reboot.

To halt the system, follow the instructions in the CPU owner's guide accompanying your processor.

The system reexecutes the startup files you edited and recognizes the changes you made to these files. When you see the job-terminated message, press Return. The system displays the ''Username:'' prompt. To log in to the new system, enter the SYSTEM account name after the ''Username:'' prompt.

6.9 Creating Pascal Environment Files

If you plan to use use the subroutine libraries to develop Pascal programs, you must compile the symbolic definition files into environment files.

To create the appropriate environment files, take the following steps:

1. Log in to a privileged account, such as the system manager's account.
2. Set default to SYS$LIBRARY.
3. Enter the following command lines:

```
$ PASCAL/ENVIRONMENT/NOOBJECT LIO_DEF, LIO_SET
$ PASCAL/ENVIRONMENT/NOOBJECT LSP_DEF, LSP_SET
$ PASCAL/ENVIRONMENT/NOOBJECT LGP_DEF, LGP_ATTDEF
$ PASCAL/ENVIRONMENT/NOOBJECT RTI
$ SET PROT=(W:RE) *.PEN
```

   The Pascal compiler creates an environment file, called <filename>.PEN, for each symbolic definition file.

When you code an application program using Pascal, use the following line to include a symbolic definition (environment) file in a user program:

```
[INHERIT ('SYS$LIBRARY:filename')]
```

where <filename> is one of the symbolic definition files.

The following line contains the VAX PASCAL interface construct that defines entry points for the DEC RT Integrator routines. You must use it in every VAX PASCAL DEC RT Integrator program:

```
[INHERIT ('SYS$LIBRARY:RTI')]
```

6.10 Reporting Problems

If you encounter a problem while using DEC RT Integrator, do one of the following:

- Call Digital if your software contract or warranty agreement entitles you to telephone support.
- Submit a Software Performance Report (SPR).
- Fill out and submit a Reader's Comments form if the problem has to do with the documentation. Use the form from the back of the manual in which you found the error. Include the section and page number.

Chapter 7

Running the IVP for VMS

Chapter 7 explains how to run the Installation Verification Procedure (IVP).

You can run the IVP at any time after installation. Set your default directory to SYS$TEST and then to the subdirectory [.RTI_IVP]:

```
$  SET DEF SYS$TEST
$  SET DEF [.RTI_IVP]
```

To run the DECwindows IVP, use the following command:

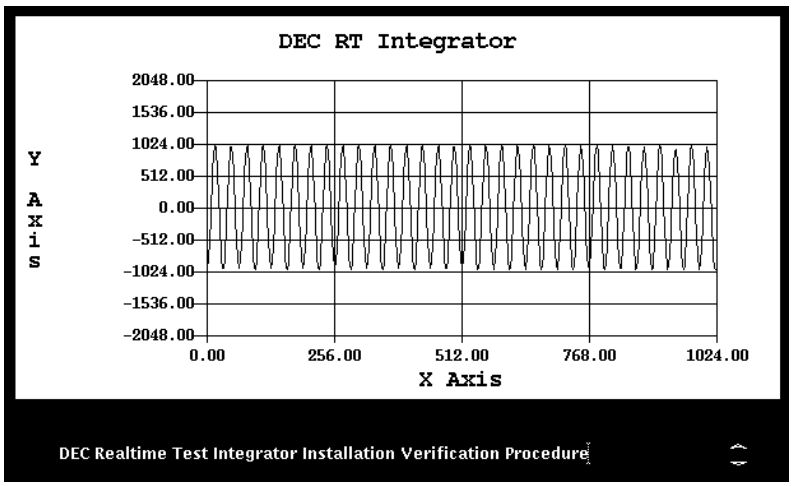
```
$  RT_INTEGRATOR RTI_IVP
```

The following information is displayed on your terminal screen:

```
        +-----------------------------------------------------+
        |                                                     |
        |       DEC Realtime Test Integrator for VMS V2.0     |
        |          Installation Verification Procedure        |
        |                                                     |
        +-----------------------------------------------------+

      +---------------------------------------------------------------+
      |                                                               |
      | The  DEC  Realtime  Test  Integrator  Installation  Verification |
      | Procedure will now draw an example plot on your screen.  See the |
      | IVP  chapter  in  the  DEC Realtime Test Integrator Installation |
      | Guide for a  sample  IVP plot.  The  plot  on  the screen should |
      | be  similar to  the illustration  in the  installation guide and |
      | remains  on  the  screen   for  approximately  one  (1)  minute. |
      |                                                               |
      +---------------------------------------------------------------+
```

Figure 7–1 shows an IVP plot similar to the one that is displayed on your screen if you run the DECwindows IVP.

Figure 7–1: IVP Plot for DEC RT Integrator



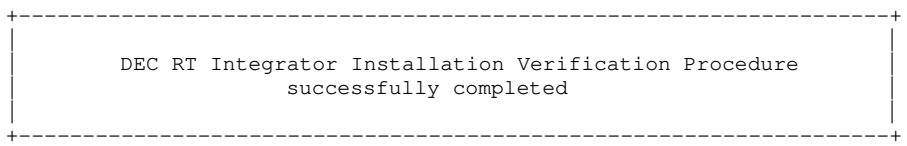
If you do not have GKS installed on your system or you are not on a DECwindows terminal, use the following command:

```
$  RUN RTI_IVP_NO_GKS
```

The following information is displayed on your terminal screen:

```
+-----------------------------------------------------------+
|                                                           |
|       DEC Realtime Test Integrator for VMS V2.0           |
|          Installation Verification Procedure              |
|                                                           |
+-----------------------------------------------------------+

                              NOTE:

       You have either indicated that you are not on a DECwindows display
       or GKS is not  installed.  Therefore  the  graphics section of the
       Installation Verification Procedure will not be attempted.

       Your terminal bell should ring seven times and the message

          'DEC RT Integrator Installation Verification Program'

       Should be printed on your terminal.

DEC RT Integrator Installation Verification Program
```

After the IVP has finished, the following message appears:



Appendix A

ULTRIX Files Installed on Your System

The following subsets of files are installed when you install DEC RT Integrator:

RTILGP100, Laboratory Graphics Package (LGP)

/usr/kits/RTI100/include/lgp_attdef.f
/usr/kits/RTI100/include/lgp_attdef.h
/usr/kits/RTI100/include/lgp_def.f
/usr/kits/RTI100/include/lgp_def.h
/usr/kits/RTI100/include/lgp_def_arg.f
/usr/kits/RTI100/include/lgp_def_arg.h
/usr/kits/RTI100/lib/liblgp.a
/usr/kits/RTI100/lib/liblgpgks.a
/usr/kits/RTI100/lib/liblgpgksbnd.a
/usr/kits/RTI100/lib/librticbnd.a

RTILIO100, Laboratory Input/Output (LIO)

/usr/kits/RTI100/include/lio_def.f
/usr/kits/RTI100/include/lio_def.h
/usr/kits/RTI100/include/lio_set.f
/usr/kits/RTI100/include/lio_set.h
/usr/kits/RTI100/lib/liblio.a

RTILSP100, Laboratory Signal Processing (LSP)

/usr/kits/RTI100/include/lsp_def.f
/usr/kits/RTI100/include/lsp_def.h
/usr/kits/RTI100/include/lsp_set.f
/usr/kits/RTI100/include/lsp_set.h
/usr/kits/RTI100/lib/liblsp.a
/usr/kits/RTI100/lib/librticbnd.a

RTIBASE100, DEC RT Integrator (Development)

/usr/kits/RTI100/bin/rti
/usr/kits/RTI100/ivp/rti_ivp.rti
/usr/kits/RTI100/ivp/rti_nodecw_ivp.rti
/usr/lib/X11/help/rti/about
/usr/lib/X11/help/rti/csh_devs
/usr/lib/X11/help/rti/csh_menus
/usr/lib/X11/help/rti/csh_oso
/usr/lib/X11/help/rti/overview
/usr/lib/X11/help/rti/rti100.release_notes
/usr/lib/X11/help/rti/table_of_contents
/usr/lib/X11/help/rti/to_get_start
/usr/lib/X11/help/rti/to_work_em
/usr/lib/X11/uid/rti_library.uid
/usr/lib/X11/uid/rti_worksurface.uid

RTIRTBASE100, DEC RT Integrator (Runtime)

/usr/kits/RTI100/bin/rti_rt
/usr/kits/RTI100/ivp/rti_ivp.rti
/usr/kits/RTI100/ivp/rti_nodecw_ivp.rti
/usr/lib/X11/uid/rti_library.uid
/usr/lib/X11/uid/rti_worksurface.uid

RTI488100, ULTRIX ek device driver

/usr/sys/MIPS/BINARY/ekdriver.o.V40
/usr/sys/MIPS/BINARY/ekdriver.o.V41
/usr/sys/MIPS/BINARY/scsi.o.V40
/usr/sys/MIPS/BINARY/scsi.o.V41
/usr/sys/MIPS/BINARY/scsi_asc.o.V40
/usr/sys/MIPS/BINARY/scsi_asc.o.V41
/usr/sys/MIPS/BINARY/scsi_proc.o.V40
/usr/sys/MIPS/BINARY/scsi_proc.o.V41
/usr/sys/MIPS/BINARY/scsi_sii.o.V40
/usr/sys/MIPS/BINARY/scsi_sii.o.V41
/usr/sys/io/scsi/mips/ekioctl.h
/usr/sys/io/scsi/mips/ekvar.h

RTIMAN100, DEC RT Integrator Development Kit Manual Pages
RTIRTMAN100, DEC RT Integrator Runtime Kit Manual Pages

NOTE

The files in these two subsets are the same except that `/usr/man/man1/rti.1` is in the Development Kit only.

/usr/man/man1/rti.1
/usr/man/man1/rti_rt.1
/usr/man/man3/lgp.3
/usr/man/man3/lgp_3d_simple.3
/usr/man/man3/lgp_change_plotting_logicals.3
/usr/man/man3/lgp_contour.3
/usr/man/man3/lgp_contour_shade.3
/usr/man/man3/lgp_contourm.3
/usr/man/man3/lgp_erase.3
/usr/man/man3/lgp_get_choice.3
/usr/man/man3/lgp_get_locator.3
/usr/man/man3/lgp_get_string.3
/usr/man/man3/lgp_get_stroke.3
/usr/man/man3/lgp_get_value.3
/usr/man/man3/lgp_hist.3
/usr/man/man3/lgp_info.3
/usr/man/man3/lgp_map_pen.3
/usr/man/man3/lgp_plot.3
/usr/man/man3/lgp_plot_3d.3
/usr/man/man3/lgp_plot_log.3
/usr/man/man3/lgp_plot_metafile.3
/usr/man/man3/lgp_plotc.3
/usr/man/man3/lgp_plotm.3
/usr/man/man3/lgp_point.3
/usr/man/man3/lgp_print_screen.3
/usr/man/man3/lgp_put_text.3
/usr/man/man3/lgp_scale.3
/usr/man/man3/lgp_scale_log.3
/usr/man/man3/lgp_set_3d_graph.3
/usr/man/man3/lgp_set_graph.3
/usr/man/man3/lgp_spline_qhc.3
/usr/man/man3/lgp_stndev.3
/usr/man/man3/lgp_table_modify.3
/usr/man/man3/lgp_table_read_value.3
/usr/man/man3/lgp_table_reset.3
/usr/man/man3/lgp_terminate_plot.3
/usr/man/man3/lio.3

/usr/man/man3/lio_attach.3
/usr/man/man3/lio_dequeue.3
/usr/man/man3/lio_detach.3
/usr/man/man3/lio_enqueue.3
/usr/man/man3/lio_read.3
/usr/man/man3/lio_set_i.3
/usr/man/man3/lio_set_r.3
/usr/man/man3/lio_set_s.3
/usr/man/man3/lio_show.3
/usr/man/man3/lio_write.3
/usr/man/man3/lsp.3
/usr/man/man3/lsp_apply_window_table.3
/usr/man/man3/lsp_build_window_table.3
/usr/man/man3/lsp_correlation.3
/usr/man/man3/lsp_fft_complex.3
/usr/man/man3/lsp_fft_complex_2d.3
/usr/man/man3/lsp_fft_real.3
/usr/man/man3/lsp_filter_nonrec.3
/usr/man/man3/lsp_filter_poly.3
/usr/man/man3/lsp_filter_poly_1st_deriv.3
/usr/man/man3/lsp_filter_poly_2nd_deriv.3
/usr/man/man3/lsp_filter_poly_3rd_deriv.3
/usr/man/man3/lsp_format_translate_adc.3
/usr/man/man3/lsp_format_translate_dac.3
/usr/man/man3/lsp_hist_f.3
/usr/man/man3/lsp_hist_i.3
/usr/man/man3/lsp_phase_angle.3
/usr/man/man3/lsp_phase_angle_2d.3
/usr/man/man3/lsp_power_spectrum.3
/usr/man/man3/lsp_spectral_windows.3
/usr/man/man3/lsp_thermocouple_x.3

RTIEXA100, DEC RT Integrator Examples

/usr/kits/RTI100/examples/lgp/lgp_ex_3d.f
/usr/kits/RTI100/examples/lgp/lgp_ex_autoscale.f
/usr/kits/RTI100/examples/lgp/lgp_ex_contourm.f
/usr/kits/RTI100/examples/lgp/lgp_ex_erase.c
/usr/kits/RTI100/examples/lgp/lgp_ex_get_routines.f
/usr/kits/RTI100/examples/lgp/lgp_ex_plot_3d.f
/usr/kits/RTI100/examples/lgp/lgp_ex_plot_contour.f
/usr/kits/RTI100/examples/lgp/lgp_ex_plot_hist.f
/usr/kits/RTI100/examples/lgp/lgp_ex_plot_log.c
/usr/kits/RTI100/examples/lgp/lgp_ex_plot_points.c
/usr/kits/RTI100/examples/lgp/lgp_ex_plot_sine.f

/usr/kits/RTI100/examples/lgp/lgp_ex_plotc.f
/usr/kits/RTI100/examples/lgp/lgp_ex_plotm_sine.f
/usr/kits/RTI100/examples/lgp/lgp_ex_scale_log.c
/usr/kits/RTI100/examples/lgp/lgp_ex_shade_contour.f
/usr/kits/RTI100/examples/lgp/lgp_ex_simple.c
/usr/kits/RTI100/examples/lgp/lgp_ex_stndev.f
/usr/kits/RTI100/examples/lgp/lgp_ex_write_text.f
/usr/kits/RTI100/examples/lio/lio_file_read.c
/usr/kits/RTI100/examples/lio/lio_file_write.c
/usr/kits/RTI100/examples/lio/lio_iez_example.c
/usr/kits/RTI100/examples/lio/lio_iez_srq_example.c
/usr/kits/RTI100/examples/lio/lio_mq_interproc_a.c
/usr/kits/RTI100/examples/lio/lio_mq_interproc_b.c
/usr/kits/RTI100/examples/lio/lio_serial_example.c
/usr/kits/RTI100/examples/lio/lio_serial_example.h
/usr/kits/RTI100/examples/lsp/lsp_autocor_rand_seq.f
/usr/kits/RTI100/examples/lsp/lsp_calc_comp_phse.f
/usr/kits/RTI100/examples/lsp/lsp_calc_phase_spec.f
/usr/kits/RTI100/examples/lsp/lsp_crosscor_sine_cosine.f
/usr/kits/RTI100/examples/lsp/lsp_fft_comp_forw.f
/usr/kits/RTI100/examples/lsp/lsp_fft_comp_inver.f
/usr/kits/RTI100/examples/lsp/lsp_fft_func.f
/usr/kits/RTI100/examples/lsp/lsp_fft_rand_dat.f
/usr/kits/RTI100/examples/lsp/lsp_filt_nonrec.f
/usr/kits/RTI100/examples/lsp/lsp_filt_poly.f
/usr/kits/RTI100/examples/lsp/lsp_filt_poly_1st_deriv.f
/usr/kits/RTI100/examples/lsp/lsp_form_trans_adc.f
/usr/kits/RTI100/examples/lsp/lsp_form_trans_dac.f
/usr/kits/RTI100/examples/lsp/lsp_histo_f.f
/usr/kits/RTI100/examples/lsp/lsp_histo_i.f
/usr/kits/RTI100/examples/lsp/lsp_phase_ang.f
/usr/kits/RTI100/examples/lsp/lsp_pow_spec_sine.f
/usr/kits/RTI100/examples/lsp/lsp_thermoc_b.f
/usr/kits/RTI100/examples/lsp/lsp_window_1.f
/usr/kits/RTI100/examples/lsp/lsp_window_2.f
/usr/kits/RTI100/examples/rti/fft_example.rti
/usr/kits/RTI100/examples/rti/loop_example.rti

Icon Development, RTIICON100

/usr/kits/RTI100/examples/rti/edl.h
/usr/kits/RTI100/examples/rti/linkrti.sh
/usr/kits/RTI100/examples/rti/linkrti_rt.sh
/usr/kits/RTI100/examples/rti/mrld_def.h
/usr/kits/RTI100/examples/rti/mrld_filo.c
/usr/kits/RTI100/examples/rti/mrld_filo.h
/usr/kits/RTI100/examples/rti/mrld_filo_mods.h
/usr/kits/RTI100/examples/rti/mrld_filo_off.bit
/usr/kits/RTI100/examples/rti/mrld_filo_on.bit
/usr/kits/RTI100/examples/rti/mrld_hdr.h
/usr/kits/RTI100/examples/rti/mrld_sql.c
/usr/kits/RTI100/examples/rti/mrld_sql.h
/usr/kits/RTI100/examples/rti/mrld_sql_mods.h
/usr/kits/RTI100/examples/rti/mrld_sql_off.bit
/usr/kits/RTI100/examples/rti/mrld_sql_on.bit
/usr/kits/RTI100/examples/rti/mrld_rand.c
/usr/kits/RTI100/examples/rti/mrld_rand.h
/usr/kits/RTI100/examples/rti/mrld_rand_mods.h
/usr/kits/RTI100/examples/rti/mrld_rand_off.bit
/usr/kits/RTI100/examples/rti/mrld_rand_on.bit
/usr/kits/RTI100/examples/rti/mrld_rso.c
/usr/kits/RTI100/examples/rti/mrld_rso.h
/usr/kits/RTI100/examples/rti/mrld_rso_mods.h
/usr/kits/RTI100/examples/rti/mrld_rso_on.bit
/usr/kits/RTI100/examples/rti/mrld_rso_off.bit
/usr/kits/RTI100/examples/rti/mrld_rt_hdr.h
/usr/kits/RTI100/examples/rti/mrld_rt_shared.h
/usr/kits/RTI100/examples/rti/mrld_std_data_buff.h
/usr/kits/RTI100/examples/rti/mrld_tpl.c
/usr/kits/RTI100/examples/rti/mrld_tpl.h
/usr/kits/RTI100/examples/rti/mrld_tpl_mods.h
/usr/kits/RTI100/examples/rti/mrld_tpl_off.bit
/usr/kits/RTI100/examples/rti/mrld_tpl_on.bit
/usr/kits/RTI100/examples/rti/mrld_ui_shared.h
/usr/kits/RTI100/examples/rti/mrld_user_lib.c
/usr/kits/RTI100/examples/rti/replace.c
/usr/kits/RTI100/lib/liblgpgks.a
/usr/kits/RTI100/lib/liblgpgksbnd.a
/usr/kits/RTI100/lib/librti.a

/usr/kits/RTI100/lib/librticbnd.a
/usr/kits/RTI100/lib/librtirt.a
/usr/lib/X11/uid/rti_library.uid
/usr/lib/X11/uid/rti_worksurface.uid

RTIRUN100, DEC RT Integrator (Runtime)

/usr/kits/RTI100/bin/rti_rt
/usr/kits/RTI100/ivp/rti_ivp.rti
/usr/kits/RTI100/ivp/rti_nodecw_ivp.rti
/usr/lib/X11/uid/rti_library.uid
/usr/lib/X11/uid/rti_worksurface.uid

Appendix B

Sample ULTRIX Installation

Appendix B provides the following:

- An installation of DEC RT Integrator Development Kit on a RISC system using tape media (see Example B–1)
- An installation of DEC RT Integrator Runtime Kit on a RISC system using tape media (see Example B–2)

B.1 Sample Installation for RISC ULTRIX Development Kit

Example B–1 is a sample installation of the DEC RT Integrator Development Kit. It assumes that DECnet has been shut down and no users are logged in to your system.

Example B–1: Sample Installation for RISC ULTRIX Development Kit

```
# setld -l  /dev/rmt0h

*** Enter Subset Selections ***

The subsets listed below are optional:
 1) DEC RT Integrator (Development)      2) ULTRIX ek device driver
 3) Laboratory Graphic Package (LGP)     4) Laboratory IO (LIO)
 5) Laboratory Signal Processing (LSP)   6) Icon Development
 7) DEC RT Integrator (Runtime)          8) DEC RT Integrator Manual Pages
 9) DEC RT Integrator Examples

10) All of the Above
11) None of the Above
12) Exit without installing subsets

Enter your choice(s): 10

You are installing the following subsets:
   DEC RT Integrator (Development)         ULTRIX ek device driver
   Laboratory Graphic Package (LGP)        Laboratory IO (LIO)
   Laboratory Signal Processing (LSP)      Icon Development
   DEC RT Integrator (Runtime)             DEC RT Integrator Manual Pages
   DEC RT Integrator Examples

Is this correct? (y/n): y

Copying DEC RT Integrator (Development) (RTIBASE100) from disk
Verifying DEC RT Integrator (Development) (RTIBASE100)

Copying ULTRIX ek device driver (RTI488100) from disk
Verifying ULTRIX ek device driver (RTI488100)

Copying Laboratory Graphic Package (LGP) (RTILGP100) from disk
Verifying Laboratory Graphic Package (LGP) (RTILGP100)

Copying Laboratory IO (LIO) (RTILIO100) from disk
Verifying Laboratory IO (LIO) (RTILIO100)

Copying Laboratory Signal Processing (LSP) (RTILSP100) from disk
Verifying Laboratory Signal Processing (LSP) (RTILSP100)

Copying Icon Development (RTIICON100) from disk
Verifying Icon Development (RTIICON100)

Copying DEC RT Integrator (Runtime) (RTIRTBASE100) from disk
Verifying DEC RT Integrator (Runtime) (RTIRTBASE100)

Copying DEC RT Integrator Manual Pages (RTIMAN100) from disk
Verifying DEC RT Integrator Manual Pages (RTIMAN100)

Copying DEC RT Integrator Examples (RTIEXA100) from disk
Verifying DEC RT Integrator Examples (RTIEXA100)
```

(continued on next page)

Example B–1 (Cont.): Sample Installation for RISC ULTRIX Development Kit

```
************************************************************
* Installation of DEC RT Integrator V1.0 complete.         *
*                                                          *
* The IVP for DEC RT Integrator for ULTRIX can be run after *
* the installation has completed.                          *
*                                                          *
* To run the IVP, enter the following command:             *
*        setld -v RTIBASE100                               *
************************************************************


Creating/Modifying necessary files for the ULTRIX ek Driver V1.0
For ULTRIX V40

Creating links to V40 objects...
Created scsi_asc.o...
Created scsi_sii.o...
Created scsi.o...
Created scsi_proc.o...
Created ekdriver.o...

Modifying appropriate driver files...
Modifying /sys/data/scsi_data.c

Modifying /sys/io/scsi/mips/scsireg.h

Modifying /sys/conf/mips/files.mips

Modifying /sys/machine/common/conf.c


Configuring the system to run the ULTRIX ek Driver V1.0
For ULTRIX V40


Creating /dev/ek0
Creating /dev/ek1
Creating /dev/ek2
Creating /dev/ek3
Creating /dev/ek4
Creating /dev/ek5
Creating /dev/ek6
Creating /dev/ek7
Creating /dev/ek8
Creating /dev/ek9
Creating /dev/ek10
Creating /dev/ek11
Creating /dev/ek12
Creating /dev/ek13
Creating /dev/ek14
Creating /dev/ek15
```

(continued on next page)

Example B–1 (Cont.): Sample Installation for RISC ULTRIX Development Kit

```
After verifying that the system is operating properly with the
ek  Driver installed you may wish to remove the following
saved files:
- /sys/conf/mips/files.mips.sav[n]
- /sys/machine/common/conf.c.sav[n]
- /sys/data/scsi_data.c.sav[n]
- /sys/conf/mips/MUNCHY.sav[n]

Reminder:
   - Edit /sys/conf/mips/MUNCHY
   - Rebuild your kernel
   - Move the new kernel to /.
   - Reboot your system.

Installation of the ULTRIX ek Driver V1.0 complete
```

B.2 Sample Installation for RISC ULTRIX Runtime Kit

Example B–1 is a sample installation of the DEC RT Integrator Runtime Kit. It assumes that DECnet has been shut down and no users are logged in to your system.

Example B–2: Sample Installation for RISC ULTRIX Runtime Kit

```
# setld -l  /dev/rmt0h

*** Enter Subset Selections ***

The subsets listed below are optional:
 1) DEC RT Integrator (Runtime)          2) ULTRIX ek device driver
 3) Laboratory Graphic Package (LGP)     4) Laboratory IO (LIO)
 5) Laboratory Signal Processing (LSP)   6) DEC RT Integrator Manual Pages
 7) DEC RT Integrator Examples

 8) All of the Above
 9) None of the Above
10) Exit without installing subsets

Enter your choice(s): 8
```

(continued on next page)

Example B–2 (Cont.): Sample Installation for RISC ULTRIX Runtime Kit

```
You are installing the following subsets:
   DEC RT Integrator (Runtime)             ULTRIX ek device driver
   Laboratory Graphic Package (LGP)        Laboratory IO (LIO)
   Laboratory Signal Processing (LSP)      DEC RT Integrator Manual Pages
   DEC RT Integrator Examples

Is this correct? (y/n): y

Copying DEC RT Integrator (Runtime) (RTIRUN100) from disk
Verifying DEC RT Integrator (Runtime) (RTIRUN100)

Copying ULTRIX ek device driver (RTI488100) from disk
Verifying ULTRIX ek device driver (RTI488100)

Copying Laboratory Graphic Package (LGP) (RTILGP100) from disk
Verifying Laboratory Graphic Package (LGP) (RTILGP100)

Copying Laboratory IO (LIO) (RTILIO100) from disk
Verifying Laboratory IO (LIO) (RTILIO100)

Copying Laboratory Signal Processing (LSP) (RTILSP100) from disk
Verifying Laboratory Signal Processing (LSP) (RTILSP100)

Copying DEC RT Integrator Manual Pages (RTIRTMAN100) from disk
Verifying DEC RT Integrator Manual Pages (RTIRTMAN100)

Copying DEC RT Integrator Examples (RTIEXA100) from disk
Verifying DEC RT Integrator Examples (RTIEXA100)

************************************************************
* Installation of DEC RT Integrator V1.0 complete.         *
*                                                          *
* The IVP for DEC RT Integrator for ULTRIX can be run after *
* the installation has completed.                          *
*                                                          *
* To run the IVP, enter the following command:             *
*        setld -v RTIRUN100                                *
************************************************************


Creating/Modifying necessary files for the ULTRIX ek Driver V1.0
For ULTRIX V40


Creating links to V40 objects...
Created scsi_asc.o...
Created scsi_sii.o...
Created scsi.o...
Created scsi_proc.o...
Created ekdriver.o...

Modifying appropriate driver files...
Modifying /sys/data/scsi_data.c

Modifying /sys/io/scsi/mips/scsireg.h
```

(continued on next page)

Example B–2 (Cont.): Sample Installation for RISC ULTRIX Runtime Kit

```
Modifying /sys/conf/mips/files.mips

Modifying /sys/machine/common/conf.c

Configuring the system to run the ULTRIX ek Driver V1.0
For ULTRIX V40


Creating /dev/ek0
Creating /dev/ek1
Creating /dev/ek2
Creating /dev/ek3
Creating /dev/ek4
Creating /dev/ek5
Creating /dev/ek6
Creating /dev/ek7
Creating /dev/ek8
Creating /dev/ek9
Creating /dev/ek10
Creating /dev/ek11
Creating /dev/ek12
Creating /dev/ek13
Creating /dev/ek14
Creating /dev/ek15

After verifying that the system is operating properly with the
ek  Driver installed you may wish to remove the following
saved files:
- /sys/conf/mips/files.mips.sav[n]
- /sys/machine/common/conf.c.sav[n]
- /sys/data/scsi_data.c.sav[n]
- /sys/conf/mips/MUNCHY.sav[n]

Reminder:
   - Edit /sys/conf/mips/MUNCHY
   - Rebuild your kernel
   - Move the new kernel to /.
   - Reboot your system.

Installation of the ULTRIX ek Driver V1.0 complete
```

Appendix C

Sample VMS Installation

Appendix C provides the following:

- An installation of DEC RT Integrator Development Kit on a VMS system (see Section C.1)
- An installation of DEC RT Integrator Runtime Kit on a VMS system (see Section C.2)

C.1 Sample Installation for VMS Development Kit

Example C–1 is a sample installation of the DEC RT Integrator VMS Development Kit. It assumes that DECnet has been shut down and no users are logged in to your system.

Example C–1: Sample Installation for VMS Development Kit

```
$ @vmsinstal

        VAX/VMS Software Product Installation Procedure V5.3

It is 10-FEB-1991 at 16:53.

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

* Are you satisfied with the backup of your system disk [YES]?
* Where will the distribution volumes be mounted: dka200:

Enter the products to be processed from the first distribution volume set.
* Products: rti
* Enter installation options you wish to use (none):

The following products will be processed:

  RTI V2.0

        Beginning installation of RTI V2.0 at 16:53

%VMSINSTAL-I-RESTORE, Restoring product save set A ...
%VMSINSTAL-I-RELMOVED , The product's release notes have been successfully
moved
 to SYS$HELP.
%RTI-I-VMSOK, Installing DEC RT Integrator V2.0 on VMS Version V5.3, continuing
...

        Product:      RTI-V
        Producer:     DEC
        Version:      V2.0
        Release Date: 20-JAN-91


* Does this product have an authorization key registered and loaded? yes
* Do you want to purge files replaced by this installation [YES]?

* Do you want to install the DEC RT Integrator V2.0 Standard Software [YES]?
* Is this a European installation [NO]?
* Do you want to install the DEC RT Integrator V2.0 Optional Software [NO]?
* Do you want to install the LIO examples in executable form? [NO]?
* Does your DEC Realtime Test Integrator system have an
* IEZ11 SCSI to IEEE-488 converter [NO]? yes

    Your current SCSI device configuration, as known to VMS, contains:
                 (Pure internal SCSI buses not shown)

       2 disks

    The current SCSI ID assignment is:

        0        1        2        3        4        5        6        7
     unused   unused   DKA200   DKA300   unused   unused    *CPU*   unused
                       >disk<   >disk<
```

(continued on next page)

Example C–1 (Cont.): Sample Installation for VMS Development Kit

```
    You may connect up to 5 IEZ11 SCSI488/D bus converters to the
    external SCSI connector of your VAXstation or MicroVAX.

    WARNING: Connecting more than two IEZ11 SCSI488/D bus converters
             may conflict with future system hardware extensions.

* How many IEZ11 bus converters will you connect to the SCSI port [1]:
* Use device EKA0:, SCSI ID 0 (currently unused) [Y]?

    The current SCSI ID assignment is:

        0        1        2        3        4        5        6        7
      EKA0     unused   DKA200   DKA300   unused   unused    *CPU*   unused
      IEZ11             >disk<   >disk<


    The system specific IEZ11 driver startup commands are placed in:

    SYS$SPECIFIC:[SYS$STARTUP]IEZ11$STARTUP.COM

* Do you want to install and execute the DEC RT Integrator V2.0 IVP [YES]?
* Do you want to run the DECwindows version of the IVP [YES]? no

* Your selections are complete, do you want to proceed [YES]?

No further questions will be asked.
This installation takes approximately 60 minutes on a MicroVAX II.
%VMSINSTAL-I-RESTORE, Restoring product save set B ...
%VMSINSTAL-I-RESTORE, Restoring product save set C ...
%VMSINSTAL-I-RESTORE, Restoring product save set D ...
%VMSINSTAL-I-RESTORE, Restoring product save set E ...
%VMSINSTAL-I-RESTORE, Restoring product save set F ...
%VMSINSTAL-I-RESTORE, Restoring product save set G ...
%VMSINSTAL-I-RESTORE, Restoring product save set H ...
%VMSINSTAL-I-RESTORE, Restoring product save set I ...
%VMSINSTAL-I-RESTORE, Restoring product save set L ...

         +------------------------------------------------------------+
         |                                                            |
         |                                                            |
         |     Please read the Release Notes for this release of      |
         |                                                            |
         |                 DEC Realtime Test Integrator               |
         |                                                            |
         |                which which are located in the file:        |
         |               SYS$HELP:RTI020.RELEASE_NOTES                |
         |                                                            |
         |          Please add the following line to the file         |
         |                SYS$STARTUP:SYSTARTUP_V5.COM                |
         |                                                            |
         |              $ @SYS$STARTUP:RTI_STARTUP.COM                |
         |                                                            |
         +------------------------------------------------------------+

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

(continued on next page)

Example C–1 (Cont.): Sample Installation for VMS Development Kit

```
          +-----------------------------------------------------+
          |                                                     |
          |       DEC Realtime Test Integrator for VMS V2.0     |
          |          Installation Verification Procedure        |
          |                                                     |
          +-----------------------------------------------------+

                                NOTE:

        You have either indicated that you are not on a DECwindows display
        or GKS is not  installed.  Therefore  the  graphics section of the
        Installation Verification Procedure will not be attempted.

        Your terminal bell should ring seven times and the message

           'DEC RT Integrator Installation Verification Program'

        Should be printed on your terminal.

DEC RT Integrator Installation Verification Program

     +---------------------------------------------------------------------+
     |                                                                     |
     |        DEC RT Integrator Installation Verification Procedure        |
     |                      successfully completed                         |
     |                                                                     |
     +---------------------------------------------------------------------+

        Installation of RTI V2.0 completed at 17:18

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

C.2 Sample Installation for VMS Runtime Kit

Example C–2 is a sample installation of the DEC RT Integrator VMS Runtime Kit. It assumes that DECnet has been shut down and no users are logged in to your system.

Example C–2: Sample Installation for VMS Runtime Kit

```
$ @vmsinstal

        VAX/VMS Software Product Installation Procedure V5.3

It is 10-FEB-1991 at 16:53.

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

* Are you satisfied with the backup of your system disk [YES]? yes
* Where will the distribution volumes be mounted: dua1:

Enter the products to be processed from the first distribution volume set.
* Products: rtirt
* Enter installation options you wish to use (none):

The following products will be processed:

  RTIRT V2.0

        Beginning installation of RTIRT V2.0 at 12:31

%VMSINSTAL-I-RESTORE, Restoring product save set A ...
%VMSINSTAL-I-RELMOVED, Product's release notes have been moved to SYS$HELP.

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

* Do you want to install the DEC RT Integrator V2.0 Standard Software [YES]?
* Is this a European installation [NO]?
* Do you want to install the DEC RT Integrator V2.0 Optional Software [NO]?
* Do you want to install the LIO examples in executable form? [NO]?
* Does your DEC Realtime Test Integrator system have an
* IEZ11 SCSI to IEEE-488 converter [NO]?
* Do you want to install and execute the DEC RT Integrator V2.0 IVP [YES]?
* Do you want to run the DECwindows version of the IVP [YES]? no

* Your selections are complete, do you want to proceed [YES]?
```

(continued on next page)

Example C–2 (Cont.): Sample Installation for VMS Runtime Kit

```
No further questions will be asked.
This installation takes approximately 60 minutes on a MicroVAX II.
%VMSINSTAL-I-RESTORE, Restoring product save set B ...
%VMSINSTAL-I-RESTORE, Restoring product save set C ...
%VMSINSTAL-I-RESTORE, Restoring product save set D ...
%VMSINSTAL-I-RESTORE, Restoring product save set E ...
%VMSINSTAL-I-RESTORE, Restoring product save set F ...
%VMSINSTAL-I-RESTORE, Restoring product save set G ...
%VMSINSTAL-I-RESTORE, Restoring product save set H ...
%VMSINSTAL-I-RESTORE, Restoring product save set I ...
%VMSINSTAL-I-RESTORE, Restoring product save set L ...

          +------------------------------------------------------------+
          |                                                            |
          |                                                            |
          |     Please read the Release Notes for this release of      |
          |                                                            |
          |                 DEC Realtime Test Integrator               |
          |                                                            |
          |                which are located in the file:              |
          |               SYS$HELP:RTIRT020.RELEASE_NOTES              |
          |                                                            |
          |          Please add the following line to the file         |
          |                SYS$STARTUP:SYSTARTUP_V5.COM                |
          |                                                            |
          |              $ @SYS$STARTUP:RTI_STARTUP.COM                |
          |                                                            |
          +------------------------------------------------------------+

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

            +----------------------------------------------------+
            |                                                    |
            |       DEC Realtime Test Integrator for VMS V2.0    |
            |          Installation Verification Procedure       |
            |                                                    |
            +----------------------------------------------------+

                                  NOTE:

        You have either indicated that you are not on a DECwindows display
        or GKS is not  installed.  Therefore  the  graphics section of the
        Installation Verification Procedure will not be attempted.

        Your terminal bell should ring seven times and the message

           'DEC RT Intregrator Installation Verification Program'

        Should be printed on your terminal.

DEC RT Integrator Installation Verification Program
```

(continued on next page)

Example C–2 (Cont.): Sample Installation for VMS Runtime Kit

```
     +------------------------------------------------------------------------+
     |                                                                        |
     |        DEC RT Integrator Installation Verification Procedure           |
     |                      successfully completed                            |
     |                                                                        |
     +------------------------------------------------------------------------+

        Installation of RTI V2.0 completed at 17:23

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

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