VAX Message Router Programmer's Kit

Installation Guide

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Preface

This book describes how to install the Message Router Programmer's Kit.

The Message Router Programmer's Kit has the following components:

- A set of Interface Routines that enable you to assemble and disassemble messages and connect Applications to the Transfer Service
- A definition file for each of the following languages:
  - VAX PASCAL™
  - VAX C™
  - VAX MACRO™
  - VAX FORTRAN™
  - VAX BLISS-32
- Three example programs

Intended Audience

This book is intended for the person who is installing the Message Router Programmer's Kit.

The installer needs to be familiar with VMSINSTAL.

Structure of this Book

This book contains three chapters and an appendix:

- Chapter 1 gives an overview of the installation procedure.
- Chapter 2 lists the tasks that the installer must complete before installing the Programmer's Kit.
- Chapter 3 describes the installation and installation verification procedures.
- Appendix A contains an example log from an installation on OpenVMS™ VAX Version 5.5-2.

How to Use this Book

Read Chapter 1 and Chapter 2 to prepare for installing the Programmer's Kit.

Read Chapter 3 to install the Programmer's Kit.

Associated Documents

Refer to the *VMS License Management Utility Manual*, which explains how to register the Product Authorization Key for the Programmer's Kit. You cannot use the Programmer's Kit until its license has been registered.

You may need to refer to the *Guide to Setting Up a VMS System* for details of VMSTAILOR.

The *VAX Message Router Programmer's Kit Programming Guide* describes how to write an Application program for use with the Transfer Service component of Message Router.

You may also need to refer to the following Message Router books:

- *Introduction to Message Router*, which explains what Message Router is and how it works with User Agents and Gateways
- *VAX Message Router Installation Guide*, which describes how to install Message Router
- *VAX Message Router Configuration Guide*, which describes how to configure Message Router.

Conventions

The following conventions are used in this book:

`this typeface`	Indicates commands or responses that you type. Unless otherwise stated, press Return after each command or response.
`this typeface`	Indicates prompts and messages from the computer Indicates examples of commands.
`variable`	Represents a variable.
`$`	A dollar sign ($) is the default user prompt.

[ ]	Brackets are used after questions to enclose the default answer. Press Return to accept the default. Brackets also denote a directory specification.
...	Horizontal ellipses indicate that additional text can be entered.
Press	Indicates that you make one keystroke with an editing or command key, for example, press Return.
Type	Indicates characters that you type at the keyboard.
Ctrl/Z	Indicates that you hold down the Ctrl key while pressing the other key (Z).

1
Introduction

1.1 The Message Router Programmer's Kit

The Message Router Programmer's Kit provides a set of tools that a programmer must use when writing an Application for Message Router.

The kit contains:

- A set of Interface Routines. These routines assemble and disassemble messages and enable the Application to communicate with the Transfer Service component of Message Router. The routines are provided as a shareable image. The Interface Routines run on OpenVMS VAX 5.5-2 and OpenVMS AXP™ Version 6.2 & 7.1.
- Five definition files, one for each of the following programming languages:
  - VAX PASCAL
  - VAX C
  - VAX MACRO
  - VAX FORTRAN
  - VAX BLISS-32

  These files contain constants and mask values that are used with the Interface Routines.
- Example programs that show you some of the ways in which you can use the Interface Routines.

1.2 Installing the Programmer's Kit

Install the Programmer's Kit on the node where the programmer is developing the Application.

Use the VMSINSTAL procedure to install the Programmer's Kit. This procedure is interactive and takes you through the installation step by step. Chapter 3 describes how to install the Programmer's Kit on OpenVMS VAX.

The following files are copied during the installation procedure:

- The Interface Routines and definition files, which are copied into SYS$COMMON:[SYSLIB]:
  - MRIFSHARE.EXE
  - MRIFDEFS.FOR
  - MRIFDEFS.H
  - MRIFDEFS.MAR
  - MRIFDEFS.PAS
  - MRIFDEFS.R32
- The message file, MRIFSHRMSG.EXE, which is copied into SYS$COMMON:[SYSMSG].
- The installation verification procedure (IVP) file, MRIF$IVP.EXE, which is copied into SYS$COMMON:[SYSTEST.MB].
- MRAXPMSG.EXE, which is copied to SYS$COMMON:[SYSMSG], MRAXPSHAR.EXE and MRAXPSHAR.IIF, which are copied to SYS$COMMON:[SYSLIB].

  Use these files when connecting your Application to Message Router from an OpenVMS AXP system.
- The files containing the example programs, which are copied into the SYS$COMMON:[SYSHLP.EXAMPLES] directory:
  - MRIF$EXAMPLE_ASSEMBLE.PAS, which contains a program, written in VAX PASCAL, that assembles a message using the V3.0 level of service.
  - MRIF$EXAMPLE_DISASSEMBLE.PAS, which contains a program, written in VAX PASCAL, that disassembles a message using the V3.1 level of service.

- MRIF$EXAMPLE_FIND.C, which contains a program, written in VAX C, that shows different ways of using the FIND routine using the V3.0 level of service.
- MRIF$EXAMPLE_FULL_ASSEMBLY.C, which contains a program, written in VAX C, that assembles a message using the V3.1 level of service.

These files are all owned by the SYSTEM account.

The IVP, if requested, runs immediately after the installation and is described fully in Section 3.2.

You can also run the IVP separately, after the Programmer's Kit is installed, as described in Section 3.5.

1.3 Installing Message Router

You can install Message Router before or after you install the Programmer's Kit. If you have already installed Message Router, you do not need to re-install it. The installation procedure for Message Router is described in the *VAX Message Router Installation Guide*.

You must configure Message Router before you can use it and before you can use your Application. The configuration procedure is described in the *VAX Message Router Configuration Guide*. You do not need to configure the Programmer's Kit.

Message Router does not need to be installed on the same node as the Programmer's Kit and the Application.

2
Preparing for Installation

2.1 Pre-installation Checklist

Complete the following checklist to prepare your system for the installation:

1. Check that your Programmer's Kit distribution kit contains everything listed on the bill of materials included with the kit.
2. Check that OpenVMS VAX Version 5.5-2 or later is installed.
3. Check that DECnet is installed. If Message Router is installed on the node where you are installing the Programmer's Kit, DECnet is already installed there. If Message Router is not installed on the node where you are installing the Programmer's Kit, install DECnet before you install the Programmer's Kit.

   The Programmer's Kit requires either OpenVMS DECnet or OpenVMS DECnet/OSI. Note that you cannot use node names longer than six characters with the Programmers's Kit. Therefore, on DECnet/OSI systems, the node name synonym database must be accessible on the node where the Programmer's Kit is installed.
4. Check that you have 2000 blocks of free space available on the system disk for installation.
5. Check that you have a recent backup copy of your system disk.
6. Check that the Programmer's Kit license is registered and active by typing the following command:

   ```
   $ LICENSE LIST/FULL MR-PROGRAMMER-KIT
   ```

   Details of the MR-PROGRAMMER-KIT license are displayed. Check that the license is active and if it is not, you must load and register the Product Authorization Key (PAK) for the Programmer's Kit as described in the *VMS License Management Utility Manual*.

7. Ask other users on the system to log out of the system by typing:

   ```
   $ REPLY /BELL /USERNAME "PLEASE LOG OUT"
   ```

8. If you are upgrading from a previous version of the Programmer's Kit, shut down any Applications that use the Programmer's Kit.
9. If you are installing the Programmer's Kit on a VAXcluster, read Section 2.2 and decide which nodes to install the Programmer's Kit on.
10. Check that the Object and Shareable Image Libraries are installed (SYS$SHARE:IMAGELIB.OLB). If the libraries are installed, the file IMAGELIB.OLB is in SYS$SHARE.

    If the libraries are missing, use the VMSTAILOR Utility to install them as described in the *Guide to Setting Up a VMS System*.

2.2 VAXcluster Installation

The Programmer's Kit can connect to the Transfer Service on the local node or cluster, through the shareable image or a DECnet connection, or it can connect to a Transfer Service on a remote node or cluster. See the *VAX Message Router Programmer's Kit Programming Guide* for details on how to connect to the Transfer Service.

If your Application is going to connect to the Transfer Service locally, install the Programmer's Kit as follows:

- In a common-environment cluster, install the Programmer's Kit on every system disk.
- In a multiple-environment cluster, find out which nodes have the Transfer Service installed. Decide which of these nodes you want to install the Programmer's Kit on.

If your Application is going to use a remote Transfer Service, install the Programmer's Kit as follows:

- In a common-environment cluster, install the Programmer's Kit on every system disk.
- In a multiple-environment cluster, install the Programmer's Kit on every node which you want your Application to run on.

2.3 Time Required for Installation

Installing the Programmer's Kit and running the IVP should take about 5 minutes. If you are using diskettes, the procedure may take slightly longer. The installation procedure is the same, whatever the distribution medium.

2.4 Error Handling

If you receive an unexpected error message during the installation, check that you have responded to the prompts correctly. If you make a mistake and are re-prompted, enter the correct information. If that fails, restart the installation. If the installation fails again at the same point, stop the installation and contact:

- Your Customer Support Center if you have a service contract with Digital
- Your local Digital office to arrange for a service contract

Make sure that you take a log of the installation in case of failure.

2.5 Prerequisite Software

VAX Message Router Programmer's Kit V3.5 requires:

- Version 5.5-2, 6.2 and 7.1 Year 2000 ECO patches installed
- OpenVMS™ for VAX™ Version 5.5-2, Version 6.2, or Version 7.1.
- OpenVMS™/VAX Version 5.5-2 either DECnet VAX Version 5.5-2 or DECnet/OSI ® Version 5.6B.
- OpenVMS™/VAX Version 6.2 either DECnet VAX Version 6.2 or DECnet /OSI ® Version 6.3.
- OpenVMS™/VAX Version 7.1 either DECnet VAX or DECnet/OSI ® Version 7.1.

Note that you cannot use node names longer than six characters with the Programmer's Kit. Therefore, on DECnet/OSI systems, the node name synonym database must be accessible on the node where the Programmer's Kit is installed.

3
Installing the Programmer's Kit

3.1 The Installation Procedure

Complete the following steps:

1. Log in to the SYSTEM account and type in the following command:

   ```
   $ SYS$UPDATE:VMSINSTAL MRIF035 device OPTIONS N
   ```

   where ***device*** is the device where the distribution volume is mounted.

2. VMSINSTAL starts up and displays the following:

   ```
       VAX/VMS Software Product Installation Procedure V5.5-2

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

3. If you see any warning messages, you are advised to press Ctrl/Y to exit from the installation procedure and to make sure that you followed all the instructions in the pre-installation checklist.

4. If there are any active system processes, VMSINSTAL lists them and asks:

   ```
   * Do you want to continue anyway [NO]?
   ```

   Press RETURN to exit from the installation, and then shut down the active processes.

5. VMSINSTAL asks:

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

   If the system disk has not recently been backed up, you should answer NO to abort the installation, and then make a backup copy. Otherwise, press RETURN to accept the default answer of YES.

6. VMSINSTAL instructs you to mount the distribution volume:

```
Please mount the first volume of the set on device
* Are you ready?
```

where *device* is the device name you supplied on the command line.

When you have mounted the distribution volume, type **YES**.

7. VMSINSTAL confirms that the volume has been successfully mounted and displays:

```
%MOUNT-I-MOUNTED, MRIF mounted on device
The following products will be processed:
  MRIF V3.5

        Beginning installation of MRIF V3.5 at hh:mm
%VMSINSTAL-I-RESTORE, Restoring product save set A...
```

If you have not specified OPTIONS N, the installation continues at Step 10. Otherwise, the procedure displays a menu of options relating to the release notes. If you are installing the Programmer's Kit for the first time, you should print the release notes and read them before you proceed. If you have performed this installation before, display the release notes and continue the installation.

8. If you chose to print the release notes, VMSINSTAL displays:

```
* Queue name [SYS$PRINT]:
```

Type the name of the printer on which you want to print the release notes, or press RETURN to accept the default printer, SYS$PRINT.

9. If you chose to display the release notes, VMSINSTAL displays them and then asks:

```
* Do you want to continue the installation [NO]?
```

If you are installing the Programmer's Kit for the first time, press RETURN to halt the installation and read the release notes. When you have read the release notes, restart the installation as described in Step 1, but omit OPTIONS N from the command. If you have already read the release notes, type **YES** to continue the installation.

10. VMSINSTAL displays details of the product that you want to install:

```
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subject to restrictions as set forth in subparagraph (c) (1) (ii) of
DFARS 252.227-7013, or in FAR 52.227-19, or in FAR 52.227-14 Alt. III,
as applicable.

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and media is authorized only pursuant to a valid written license from Digital
or an authorized sublicensor.

       Product:         MR-PROGRAMMER-KIT
       Producer:        DEC
       Version:         3.5
       Release Date:    dd-mmm-yyyy
```

VMSINSTAL then displays:

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

If you have not registered and loaded the Product Authorization Key (PAK) for the Programmer's Kit, type **NO** to abort the installation. Refer to the *VMS License Management Utility Manual* for details of how to register the PAK for the Programmer's Kit. When you have registered and loaded the PAK, restart the installation.

If the Product Authorization Key for the Programmer's Kit is registered and loaded, type **YES**.

11. VMSINSTAL asks:

```
* Do you want to run the IVP after the installation [YES]?
```

To ensure that the installation is successful, you are advised to run the installation verification procedure (IVP). Press RETURN to accept the default answer of YES. Otherwise, type **NO**.

12. VMSINSTAL asks:

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

Press RETURN to accept the default answer of YES. However, if you wish to keep the original files, type **NO**.

13. VMSINSTAL displays:

```
        The Message Router Programmer's Kit is being installed.
           This installation takes approximately 5 minutes.

    %MRIF-I-LINKIMG, Linking the IVP
    %MRIF-I-SETMRFILES, Setting MRIF file ownership and protection
    %MRIF-I-ASGNMRFILES, Assigning MRIF files to target directories
    %VMSINSTAL-I-MOVEFILES, Files will now be moved to their target
    directories...
```

3.2 Running the IVP

The IVP runs automatically after the installation is complete, if you requested it.

The IVP assembles a message and then disassembles it. If the disassembled message elements match the elements used to assemble the message, the verification is successful.

The IVP displays the following messages:

```
Running the IVP

        © Digital Equipment Corporation 1985, 1998. All rights reserved.
Verifying Message Router Programmer's Kit Version V3.5-118
        Starting Message Assembly
        Writing FROM name
        Writing TEXT bodypart
        Ending Message Assembly
        Starting Message Disassembly
        Reading FROM name
                FROM: IVPTEST
        Reading TEXT bodypart
                TEXT: Hello World
        Ending Message Disassembly
Message Router Programmer's Kit Version V3.5-118 verification is SUCCESSFUL
```

This verifies that the installation is successful.

If you see the following message, the IVP was not successful:

```
Message Router Programmer's Kit Version 3.5 verification FAILED
```

This message is displayed at the point at which the IVP failed. Attempt the installation again. If you cannot install the Programmer's Kit and run the IVP successfully, contact Digital as described in Section 2.4.

3.3 Completing the Installation

VMSINSTAL displays:

```
$ VMSINSTAL procedure done at hh:mm
```

The installation procedure is now complete.

Restart Message Router (if installed), and any Applications that you stopped.

Table 3–1 shows the location, and protection of the files left on your system after you install the Programmer's Kit.

Table 3–1 Programmer's Kit Files

Name	Protection (S,O,G,W)
SYS$LIBRARY	
MRIFSHARE.EXE	(RWED,RED,RE,RE)
MRAXPSHAR.EXE	(RWED,RED,RE,RE)
MRAXPSHAR.IIF	(RWED,RED,RE,RE)
MRIFDEFS.FOR	(RWED,RED,R,R)
MRIFDEFS.H	(RWED,RED,R,R)
MRIFDEFS.MAR	(RWED,RED,R,R)
MRIFDEFS.PAS	(RWED,RED,R,R)
MRIFDEFS.R32	(RWED,RED,R,R)
SYS$MESSAGE	
MRIFSHRMSG.EXE	(RWED,RED,RE,RE)
MRAXPMSG.EXE	(RWED,RED,RE,RE)
SYS$EXAMPLES	
MRIF$EXAMPLE_ASSEMBLE.PAS	(RWED,RED,R,R)
MRIF$EXAMPLE_DISASSEMBLE.PAS	(RWED,RED,R,R)
MRIF$EXAMPLE_FIND.C	(RWED,RED,R,R)
MRIF$EXAMPLE_FULL_ASSEMBLY.C	(RWED,RED,R,R)

(continued on next page)

Table 3–1 (Cont.) Programmer's Kit Files

Name	Protection (S,O,G,W)
SYS$HELP	
MRIF035.RELEASE_NOTES	(RWED,RWED,RWED,RE)
SYS$COMMON:[SYSTEST.MB]	
MRIF$IVP.EXE	(RWED,RED,RE,RE)

3.4 Removing Unwanted Definition Files

After installation you may want to delete any definition or example files that you are not going to use. Table 3–2 identifies these files.

Table 3–2 Definition Files

File Name	Definition
SYS$LIBRARY	
MRIFDEFS.FOR	VAX FORTRAN
MRIFDEFS.H	VAX C
MRIFDEFS.MAR	VAX MACRO
MRIFDEFS.PAS	VAX PASCAL
MRIFDEFS.R32	VAX BLISS-32
SYS$EXAMPLES	
MRIF$EXAMPLE_ASSEMBLE.PAS	VAX PASCAL Assembly example
MRIF$EXAMPLE_DISASSEMBLE.PAS	VAX PASCAL Disassembly example
MRIF$EXAMPLE_FIND.C	VAX C Find example
MRIF$EXAMPLE_FULL_ASSEMBLY.C	VAX C Assemble example

3.5 Verifying the Installation

You can run the IVP independently of the installation procedure. To do this, type:

```
$ RUN SYS$COMMON:[SYSTEST.MB]MRIF$IVP
```

The IVP runs and displays the messages shown in Section 3.2.

3.6 Porting Your VAX Application to an OpenVMS Alpha System

If you intend to translate an Application that was linked to run on an OpenVMS VAX system to run on an OpenVMS Alpha system, you need to copy the following files to the OpenVMS Alpha system:

- SYS$COMMON:[SYSLIB]MRAXPSHAR.EXE, which is copied to SYS$COMMON:[SYSLIB]MRAXPSHAR.EXE on the OpenVMS Alpha system
- SYS$COMMON:[SYSMSG]MRAXPMSG.EXE, which is copied to SYS$COMMON:[SYSMSG]MRAXPMSG.EXE on the OpenVMS Alpha system

Note

These files might already exist on the OpenVMS Alpha system, in which case, you must ensure that you use the latest versions. You can do this by checking the image identification of the files as follows:

```
$ ANALYZE /IMAGE /HEADER /INTERACTIVE filename
```

Use the most recent version of the files, that is, the files with the most recent date.

You will also need to copy the following file to the VEST$INCLUDE directory on the OpenVMS Alpha AXP system, in addition to those described above:

SYS$COMMON:[SYSLIB]MRAXPSHAR.IIF

If your application was linked against MRIFSHARE, give this file the name MRIFSHARE.IIF; if your application was linked against MRAPPSHAR give this file the name MRAPPSHAR.IIF.

You can then translate your application on the OpenVMS Alpha system as follows:

```
$ VEST program
```

In order to run your translated program, you will also need to define a logical name to allow the image activator to locate the correct image. The logical that you define depends on whether your Application is linked against MRIFSHARE or MRAPPSHAR.

If your Application is linked against MRIFSHARE define the following logical name:

```
$ DEFINE MRIFSHARE_TV   SYS$SHARE:MRAXPSHAR.EXE
```

If your Application is linked against MRAPPSHAR define the following logical name:

```
$ DEFINE MRAPPSHAR_TV   SYS$SHARE:MRAXPSHAR.EXE
```

3.7 Interworking

The following sections describe how to interwork with earlier versions of VAX Message Router and with the VAX Message Router X.400 Gateway.

3.7.1 Interworking with Earlier Versions of VAX Message Router

Applications written using V3.5 of the Programmer's Kit work with previous versions of Message Router. However, DIGITAL recommends that applications using V3.5 of the Programmer's Kit connect to V3.5 of Message Router.

3.7.2 Interworking with the VAX Message Router X.400 Gateway

If you want to send forwarded IP messages (FWDIPMSG) from an Application through the VAX Message Router X.400 Gateway using the Version 3.1 level of service, you must include ENCODEDTYPES and PERMSGFLG, as well as the other required elements, in the delivery information for the forwarded body. If you do not, only the forwarded bodypart (FORWARDED) is sent; the delivery information contained in the forwarded IP message is lost.

A

Sample of an Installation on OpenVMS VAX Version 5.5-2

The following is an example of the log from an installation of the Message Router Programmer's Kit.

```
$ sys$update:vmsinstal mrif035 mua0: options n

        OpenVMS VAX Software Product Installation Procedure V7.1

It is 30-JUN-1998 at 11:42.

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

%VMSINSTAL-W-ACTIVE, The following processes are still active:
        SERVER_00B6
        SERVER_00B2
        SERVER_00B1
* Do you want to continue anyway [NO]? y

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

The following products will be processed:

  MRIF V3.5

        Beginning installation of MRIF V3.5 at 11:43

%VMSINSTAL-I-RESTORE, Restoring product save set A ...
%VMSINSTAL-I-RELMOVED, Product's release notes have been moved to SYS$HELP.

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as applicable.

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Digital Equipment Corporation. Possession, use, or copying of this software
and media is authorized only pursuant to a valid written license from Digital
or an authorized sublicensor.

        Product:      MR-PROGRAMMER-KIT
```

```
        Producer:     DEC
        Version:      3.5
        Release Date: 26-JUN-1998
* Does this product have an authorization key registered and loaded? y
* Do you want to run the IVP after the installation [YES]?
* Do you want to purge files replaced by this installation [YES]?

    The Message Router Programmer's Kit is being installed.
       This installation takes approximately 5 minutes.

%MRIF-I-LINKIMG, Linking the IVP
%MRIF-I-SETMRFILES, Setting MRIF file ownership and protection
%MRIF-I-ASGNMRFILES, Assigning MRIF files to target directories
%VMSINSTAL-I-MOVEFILES, Files will now be moved to their target directories...
Running the IVP
        © Digital Equipment Corporation 1985, 1998. All rights reserved.
Verifying Message Router Programmer's Kit Version V3.5-118
        Starting Message Assembly
        Writing FROM name
        Writing TEXT bodypart
        Ending Message Assembly
        Starting Message Disassembly
        Reading FROM name
                FROM: IVPTEST
        Reading TEXT bodypart
                TEXT: Hello World
        Ending Message Disassembly
Message Router Programmer's Kit Version V3.5-118 verification is SUCCESSFUL
        Installation of MRIF V3.5 completed at 11:44
        VMSINSTAL procedure done at 11:44

$
```

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