# Digital Fortran

# Installation Guide for OpenVMS VAX Systems

Order Number: AA–PUYRB–TE

**February 1996**

This guide describes how to install Digital Fortran (formerly DEC Fortran) on a VAX processor running the OpenVMS operating system. It also describes how to read the online release notes.

| | |
|---|---|
| **Revision/Update Information:** | This revised guide supersedes all previous DEC Fortran installation guides for OpenVMS VAX Systems. |
| **Operating System:** | OpenVMS VAX Version 5.4 (or higher; see Section 1.1) |
| **Software Version:** | Digital Fortran Version 6.4 (or higher) |

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# Preface

This guide describes how to install Digital Fortran on VAX processors that are running the OpenVMS VAX operating system.

Keep this document with your distribution kit. You will need it to install maintenance updates or to reinstall Digital Fortran for any other reason.

This manual applies to Version 6.4 of Digital Fortran and all subsequent minor releases until a revised installation guide is issued. (The major version number is the digit to the left of the decimal point, and the minor version number is the digit to the right of the decimal point.)

## Intended Audience

This guide is intended for system managers who install Digital Fortran.

## Structure of this Document

This guide contains the following chapters:

- Chapter 1 describes the hardware and software requirements for Digital Fortran installation. It also lists related procedures that you must complete before installing Digital Fortran.
- Chapter 2 describes how to install Digital Fortran and includes example installations.
- Chapter 3 describes post-installation procedures and considerations.

## Associated Documents

In addition to this guide, the Digital Fortran documentation set includes the following books:

- *DEC Fortran Language Reference Manual*
- *DEC Fortran User Manual for OpenVMS VAX Systems*
- *DEC Fortran Performance Guide for OpenVMS VAX Systems*

- A letter titled *Read Before Installing or Using Digital Fortran Version n.n for OpenVMS VAX Systems* (''read first'' cover letter)
- Digital Fortran online release notes

For the location of the Digital Fortran ''read first'' cover letter and the release notes, see Section 1.1.

Once installed, you can use Digital Fortran online HELP, which describes the FORTRAN command qualifiers, explains run-time messages, and provides a quick-reference summary of language topics. To use online HELP, enter the command:

```
$ HELP FORTRAN
```

The following manuals in the OpenVMS VAX documentation set contain information relevant to installing software:

- *OpenVMS System Manager's Manual*, which includes:
  - *OpenVMS System Manager's Manual: Essentials*
  - *OpenVMS System Manager's Manual: Tuning, Monitoring, and Complex Systems*
- *OpenVMS License Management Utility Manual*
- *Guide to OpenVMS Performance Management*
- *POLYCENTER Software Installation Utility User's Guide*

For help understanding OpenVMS system error messages, see the *OpenVMS System Messages and Recovery Procedures Reference Manual* or the online HELP/MESSAGE facility.

## Sending Digital Your Comments on This Manual

We welcome your comments on this or any other Digital (or DEC) Fortran manual. You can send comments in the following ways:

- Internet electronic mail: fortran_docs@zko.mts.dec.com
- FAX: 603-881-0120 Attn: Languages Documentation, ZKO2-3/K35
- A completed Reader's Comments card (postage paid, if mailed in the United States) located at the back of each printed Digital (or DEC) Fortran manual.

- A letter addressed to:

```
Digital Equipment Corporation
Languages Documentation, ZK02-3/K35
110 Spit Brook Road
Nashua, NH  03062-2698
USA
```

- The online questionnaire form. Send the form located near the end of the online release notes to our Internet address or send it by Internet mail, FAX, or through the postal service.

If you have suggestions for improving a particular section or find any errors, please indicate the title, order number, and section (if available). Digital also welcomes general comments.

## Getting Help from Digital

If you have a customer support contract and have comments or questions about Digital Fortran software, you can contact Digital's Customer Support Center (CSC), preferably using electronic means such as DSNlink. In the United States, customers can call the CSC at 1-800-354-9000 (see Section 3.11).

You can also send questions by Internet electronic mail to `fortran@digital.com`.

## Conventions

Table 1 lists the conventions used in this document.

**Table 1 Conventions Used in This Document**

| Convention | Meaning |
|---|---|
| UPPERCASE_TEXT | Uppercase letters indicate the name of a command, a file, a parameter, a procedure, or utility. |
| $ **RUN SYS$SYSTEM:SYSMAN** | In interactive examples, prompts and displayed text appear in a monospaced font. User input appears in bold. |
| $ | The dollar sign indicates the DCL prompt. This prompt may be different on your system. |
| Ctrl/x | In interactive examples, a sequence such as Ctrl/x indicates that you must hold down the key labeled Ctrl while you press another key or a pointing device button; for example, Ctrl/C or Ctrl/Z. |

(continued on next page)

**Table 1 (Cont.) Conventions Used in This Document**

| Convention | Meaning |
|---|---|
| Return | In code examples, a boxed key name indicates that you press a key on a keyboard. |
| [YES] | Square brackets indicate that the enclosed item is a default value in an installation prompt. Also, square brackets serve as delimiters for a directory name in a file specification. |
| VMS, OpenVMS | These terms refer to the OpenVMS VAX operating system unless otherwise specified. |

In this manual, some version numbers are given as ''V*n.n*''. When you install Digital Fortran, the actual version numbers appear on your screen.

# 1
# Preparing for Digital Fortran Installation

This chapter contains information that should be read, and procedures that should be performed *before* starting the installation (described in Chapter 2). This chapter contains the following topics:

- Files that are on the installation CD-ROM (Section 1.1)
- Files that are on the installation tape media (Section 1.2)
- Required operating system version and components (Section 1.3)
- Optional software (Section 1.4)
- License registration (Section 1.5)
- Installation procedure requirements; such as account privileges, disk space, and so forth (Section 1.6)
- Creating coexisting versions of Digital Fortran (Section 1.7)
- Backing up your system disk (Section 1.8)

## 1.1 The Software Product Library CD-ROM and Installation-Related Documentation Files

The OpenVMS Alpha Software Product Library CD-ROM (media CD-ROM) set provides the following files:

- Digital Fortran installation kit files
- Digital Fortran documentation files, including a ‘‘read first’’ cover letter, this installation guide, and other files
- Online CD-ROM documentation files in the [README] directory on the first media CD-ROM, including a CD-ROM user guide and master list of CD-ROM products
- A CDMENU utility

To determine whether the appropriate media CD-ROM is already mounted on your system, contact the appropriate system manager.

Digital Fortran provides online release notes and an online ‘‘read first’’ cover letter:

- You can read the online ‘‘read first’’ cover letter provided on the media CD-ROM set or read the published hardcopy letter.
- You can extract the Digital Fortran release notes to a file and type or print them before starting Digital Fortran installation. The Digital Fortran release notes are also installed on your system *after* installation.

The media CD-ROM user guide and CD-ROM master index file are provided as online files in the [README] directory on the first media CD-ROM in the distribution kit. The index file will show the location of the Digital Fortran cover letter.

Once the appropriate media CD-ROM has been mounted and the appropriate Digital Fortran documentation directory located, do one of the following:

- Use a TYPE command to display the ASCII version of the Digital Fortran cover letter (on your screen).
- Use a PRINT command to print the ASCII or PostScript version of the Digital Fortran cover letter to a printer.

For information about reading the online release notes *before* installation, see step 6 in Section 2.1 if you are using POLYCENTER (PCSI), or step 5 in Section 2.2 if you are using VMSINSTAL.

Digital strongly recommends that you read the release notes and the cover letter before installing Digital Fortran. They contain information about changes to the installation and use of Digital Fortran, such as the minimum version of the OpenVMS VAX operating system required for this release of Digital Fortran.

After installation, the release notes are installed in:

```
SYS$HELP:FORT06n.RELEASE_NOTES
```

Other forms of the release notes (PostScript and Bookreader) are also provided after installation in the following files:

```
SYS$HELP:FORT06n_RELEASE_NOTES.PS
SYS$HELP:FORT06n_RELEASE_NOTES.DECW$BOOK
```

## 1.2 The Tape Media and Installation-Related Documentation Files

Digital Fortran tape media includes the following files:

- Digital Fortran installation kit files
- The following Digital Fortran documentation files, which are provided in both PostScript form (file type .PS) and ASCII form (file type .TXT):
  - The Digital Fortran installation guide, file name FORT*nnn*_IGUIDE
  - The ''read first'' letter, file name FORT*nnn*_COVER
  - The Digital Fortran SPD, file name FORT*nnn*_SPD

  For example, you might use the following commands to copy the Digital Fortran SPD from the Digital Fortran Version 6.4 media tape physically loaded on drive MUA0:

```
$ MOUNT MUA0: FORT
$ COPY/LOG MUA0:FORT064_SPD.TXT *.*
```

## 1.3 Required Operating System Components

Digital Fortran Version 6.4 requires OpenVMS VAX Version 5.4 or higher.

Future Digital Fortran releases may require higher versions of the operating system, as described in the online release notes or the *Read Before Installing or Using Digital Fortran Version n.n for OpenVMS VAX Systems* (cover) letter.

The OpenVMS VAX (formerly VAX VMS) operating system comes with a variety of support options, or components. Components include features such as networking. To use Digital Fortran, your system should be running a version of OpenVMS that includes the base component and the following components:

- Programming support
- Utilities

For a complete list of the required components, see the Digital Fortran Software Product Description (SPD) on the media CD-ROM or tape.

## 1.4 Optional Software

Table 1–1 shows information about optional software that you can use with Digital Fortran. The media CD-ROM and tape contain a complete list of prerequisite and optional software and their required version numbers.

**Table 1–1 Optional Software**

| Product Name and Minimum Version Number | Provided FORTRAN Feature |
|---|---|
| Common Data Dictionary (CDD) Version 3.4, CDD/Plus Version 4.0, or CDD/Repository Version 5.0 | DICTIONARY statement support |
| Digital Extended Math Library (DXML) Version 1.0 | High-performance mathematical routines |
| Language-Sensitive Editor/Source Code Analyzer (LSE/SCA) Version 3.1[1] | Display of data dependence diagnostics, program design and analysis |
| Performance Coverage Analyzer (PCA) Version 3.0[1] | Program performance analysis |

[1]LSE, SCA, and PCA are components of DECset

## 1.5 License Registration

Before you install and run Digital Fortran Version 6.4 on a newly-licensed node or cluster, you must first register a License Product Authorization Key (License PAK) using the License Management Facility (LMF).

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 Digital Fortran as an update on a node or cluster already licensed for this software, you have already completed the License PAK registration requirements.

If you are installing prerequisite or optional software along with Digital Fortran, review the PAK status and install the PAKs for any prerequisite or optional software *before* you install Digital Fortran.

You must register and load your license for Digital Fortran *before* you start the installation in order to run the Installation Verification Procedure (IVP) and use the software.

Log in to a privileged account, such as the system manager's account, SYSTEM. You now have a choice of two ways to register a license:

- Invoke the SYS$UPDATE:VMSLICENSE.COM procedure. When it prompts you for information, respond with data from your License 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 Digital Fortran on more than one node in a cluster, you need to perform a license load on the other nodes after you complete this installation (see Section 3.2).

For complete information on using LMF, see the *OpenVMS License Management Utility Manual*.

## 1.6 Installation Procedure Requirements

The installation takes approximately 5 to 40 minutes, depending on your type of media, your system configuration, and the kit components chosen.

Installing Digital Fortran and running the Installation Verification Procedure (IVP) on a standalone VAXstation 4000-60 system takes approximately 15 minutes.

### 1.6.1 System Parameters

Digital Fortran installation requires certain system parameter settings. Table 1–2 lists the minimum values for these parameters:

**Table 1–2 Required System Parameter Values**

| System Parameter | Minimum Value |
|---|---|
| Contiguous free GBLPAGES | 1,800, plus the size in blocks for the file SYS$LIBRARY:DCLTABLES.EXE (see Section 1.6.1.1) |
| Free GBLSECTIONS | 6 |

These values represent the number of free global pagelets and global sections required for the installation, *not* the total number you need to run your system and other software.

**Note**

If you do not ensure your system has the necessary global pagelet and global section parameters for installation, the DCL tables may become corrupted under certain conditions.

#### 1.6.1.1 Calculating Values for GBLPAGES and GBLSECTIONS

To install and run Digital Fortran, you must have sufficient contiguous free global pagelets and free global sections.

To determine the number of global pagelets required by SYS$LIBRARY:DCLTABLES.EXE, enter the following DCL command:

```
$ DIRECTORY/SIZE SYS$LIBRARY:DCLTABLES.EXE
```

This command returns the size (in blocks) of SYS$LIBRARY:DCLTABLES.EXE. As an approximation, use this figure as the number of global pagelets for the file (and add it to the number shown in Table 1–2).

You can use the WRITE command with the F$GETSYI lexical function to find the current number of contiguous free global pagelets and free global sections. The following example shows how to get this information at your terminal (the default for SYS$OUTPUT):

```
$ WRITE SYS$OUTPUT F$GETSYI("CONTIG_GBLPAGES")
15848
$ WRITE SYS$OUTPUT F$GETSYI("FREE_GBLSECTS")
24
```

If the value of free global pagelets or free global sections is less than the required value (see Table 1–2), you must increase the system parameter setting.

Section 1.6.1.2 describes how to increase these values.

#### 1.6.1.2 Changing System Parameter Values with AUTOGEN

If you do not have enough free global pagelets or free global sections to install Digital Fortran, you can do either of the following:

- Delete an existing known image by using the VMSINSTAL Utility
- Use the AUTOGEN command procedure to increase the GBLPAGES or GBLSECTIONS 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 change a parameter value listed in this file, delete the current value associated with that parameter and enter the new value.

To add a new parameter, add a line to the file that includes both the name of the parameter and its value. For example:

```
WSMAX = 8096
```

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

```
ADD_GBLPAGES = 2000
```

After you make all your changes, exit from the editor. Then execute the AUTOGEN procedure at the DCL prompt to recalculate your system parameters, as follows:

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

When you specify REBOOT, AUTOGEN does 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 and its command-line parameters, see the *OpenVMS System Manager's Manual: Tuning, Monitoring, and Complex Systems*.

### 1.6.2 POLYCENTER (PCSI) Requirements

The POLYCENTER Software Installation (PCSI) Utility can only be used on systems running OpenVMS VAX Version 6.1 or higher. PCSI has the following advantages:

- It has a shorter installation time than VMSINSTAL.
- It keeps track of what software versions are installed on the system.
- Digital Fortran is easily removed by using the PRODUCT REMOVE command.

The compiler, command line, and help text are identical between the PCSI and VMSINSTAL versions of the kit. However, the PCSI kit differs in the following areas:

- The Math Run-Time Library is not provided (since it is included in OpenVMS VAX Version 6.1).

- The PCSI kit includes a prebuilt FORSYSDEF.TLB that is based on OpenVMS VAX Version 7.0; the VMSINSTAL kit builds FORSYSDEF.TLB during installation, from definitions provided by OpenVMS VAX.
- The PCSI kit does not offer the choice of installing the compiler or FORSYSDEF.TLB separately.
- The PCSI kit does not provide the option of preserving the previous version of the compiler. If you wish to do this, make a copy of SYS$SYSTEM:FORTRAN$MAIN.EXE using a new name before installing the new version.

To install Digital Fortran using PCSI, you must be logged in to an account that has either the SETPRV privilege or the following privileges enabled:

- BYPASS
- CMKRNL
- SYSLCK

Digital Fortran requires 9,000 blocks of free disk storage both during and after installation. Disk space requirements may vary depending on the size of your system's DCLTABLES.EXE, and which OpenVMS VAX version is running on your system.

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

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

For information on installing Digital Fortran using PCSI, see Section 2.1.

### 1.6.3 VMSINSTAL Requirements

To install Digital Fortran using VMSINSTAL, you must be logged in to an account that has either the SETPRV privilege or the following privileges enabled:

- CMKRNL
- WORLD
- SYSPRV

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

Digital Fortran requires 16,000 blocks of free disk storage during installation, and 11,000 blocks after installation. Disk space requirements may vary depending on the size of your system's DCLTABLES.EXE, and which OpenVMS VAX version is running on your system.

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

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

When you invoke VMSINSTAL, it checks the following:

- Whether you are logged in as SYSTEM
- Whether you have adequate privileges and quotas for installation
- Whether any other users are logged in to the system

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

| | |
|---|---|
| ASTLM = 24 | DIOLM = 18 |
| BIOLM = 18 | ENQLM = 200 |
| BYTLM = 32,768 | FILLM = 100 |

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.

For information on installing Digital Fortran using VMSINSTAL, see Section 2.2.

### 1.6.4 Digital Fortran Requirements

The VAX Vector Instruction Emulation Facility (VVIEF) is a programming development tool that lets you execute vectorized applications on VAX systems that do not have vector hardware.

Vector instructions in a vectorized application are automatically executed either in vector hardware or by the VVIEF, depending on the vector processing capabilities of the VAX system being used.

For information on how to enable VVIEF on your system, see the *OpenVMS System Manager's Manual: Tuning, Monitoring, and Complex Systems*; for systems running OpenVMS Version 5, consult the *New and Changed Features* manual for OpenVMS Version 5.4.

## 1.7 Creating Coexisting Versions of Digital Fortran

If you install Digital Fortran using VMSINSTAL, you will be offered an option of preserving the previously installed version of Digital Fortran. If this option is selected, the earlier version is renamed to FORTRAN$MAIN-Vnn.EXE, where *Vnn* is the previous version number with the period removed.

If you install Digital Fortran using POLYCENTER (PCSI), you will *not* be offered an option of preserving the previous version of the compiler. If you wish to preserve a previous version, make a copy of SYS$SYSTEM:FORTRAN$MAIN.EXE using a new name *before* installing the new version.

In either case, to use the saved version of the compiler, define the logical name FORTRAN$MAIN to point to the saved version. For example, the following command defines FORTRAN$MAIN to point to the Digital Fortran Version 6.4 compiler:

```
$ DEFINE FORTRAN$MAIN FORTRAN$MAIN-V64
```

For more information, see the online release notes.

## 1.8 Backing Up Your System Disk

Digital recommends that you do a system disk backup before installing any software.

Use the backup procedures that are established at your site. For details on performing a system disk backup, see the *Using VMS BACKUP* manual.

# 2
# Installing Digital Fortran

Before you start the installation, read Chapter 1, which describes the general options and requirements for installing Digital Fortran.

The installation procedure loads Digital Fortran files on to the system disk on the system where you perform 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.

Defaults appear in brackets ([ ]) throughout the installation procedure.

This chapter contains the following topics:

- How to use POLYCENTER (PCSI) to install Digital Fortran (Section 2.1)
- How to use VMSINSTAL to install Digital Fortran (Section 2.2)
- How to recover from installation errors (Section 2.3)

## 2.1 Using POLYCENTER (PCSI) to Install Digital Fortran

PCSI software is bundled with the OpenVMS operating system and can only be used on OpenVMS VAX Version 6.1 or higher.

For general information on required system parameters and disk space for installation, see Section 1.6. For specific POLYCENTER installation requirements, see Section 1.6.2.

For information on saving a previous version of Digital Fortran before installing the newest version, see Section 1.7.

To install Digital Fortran using PCSI, follow these steps:

1. Log in to a privileged account, such as SYSTEM. You can use a different privileged account if it has the necessary privileges and quotas.

You *must* have BYPASS, CMKRNL, and SYSLCK privileges enabled to install using PCSI. To check whether you have these privileges, enter the following command:

```
$ SHOW PROCESS/PRIVILEGES
```

If you do not have these privileges, but you have the SETPRV privilege, you can enable the BYPASS, CMKRNL, and SYSLCK privileges by entering the following command:

```
$ SET PROCESS/PRIVILEGE=(BYPASS,CMKRNL,SYSLCK)
```

2. If your version of OpenVMS VAX is later than Version 6.1, you can skip this step and proceed to step 3.

   Verify that the current OpenVMS product version is registered with PCSI by entering the following command:

```
$ PRODUCT SHOW PRODUCT VMS
PRODUCT
-------
DEC VAXVMS VMS V6.n

1 item found
```

   If the OpenVMS product is not found, then register the OpenVMS product with PCSI; for example:

```
$ PRODUCT REGISTER PRODUCT VMS /VERSION=V6.n -
$_ /SOURCE=SYS$UPDATE:
The following product has been selected:
DEC VAXVMS VMS V6.n     [Available]

Do you want to continue? [YES] Return
The following product will be registered:
DEC VAXVMS VMS V6.n
Portion Done: 0%...10%...20%...30%...40%...50%...60%...
                  70%...100%
The following product has been registered:
DEC VAXVMS VMS V6.n
```

3. Determine whether the appropriate distribution media is already mounted on your system. For example, if the appropriate media CD-ROM is mounted at device DKA400, enter the following command:

```
$ SHOW DEVICE DKA400
```

If the media CD-ROM containing the Digital Fortran installation files is not mounted, insert (load) the appropriate media (CD-ROM or tape) in the CD-ROM or tape drive. Enter the following command to mount the media device (do not use the /FOREIGN qualifier):

```
$ MOUNT DKA400 label
```

The *label* is the volume label of the media CD-ROM or tape drive in the device named.

For information about using the CDMENU utility and the CD-ROM files on the media CD-ROM set, see the *Software Product Library CD-ROM User's Guide* (media CD-ROM user guide), which accompanies the media CD-ROM distribution kit. The media CD-ROM user guide and CD-ROM master index file are provided as online files in the [README] directory on the first media CD-ROM.

4. Set your process default disk and directory to the device and directory where the Digital Fortran product installation files are located. For example:

```
$ SET DEFAULT DKA400:[dir.subdir]
```

5. To check that you have located the correct CD-ROM device and directory, enter the following DIRECTORY command:

```
$ DIRECTORY
Directory DKA400:[dir.subdir]
DEC-VAXVMS-FORTRAN-Vnnnn-x-1.PCSI
Total of 1 file.
```

6. To extract the Digital Fortran online release notes before you install Digital Fortran, enter the following command:

```
$ PRODUCT EXTRACT RELEASE_NOTES FORTRAN/FILE=SYS$LOGIN:FORT.RELNOTES
```

You should view or print the file FORT.RELNOTES *before* you continue with the installation. For example:

```
$ TYPE/PAGE SYS$LOGIN:FORT.RELNOTES
```

You can also read the release notes after installation (see Section 3.8).

7. To install Digital Fortran, enter the following command:

```
$ PRODUCT INSTALL FORTRAN
```

A prompt asks you to verify that the correct product was selected:

```
The following product has been selected:

  DEC VAXVMS Fortran Vv.v-nnn

Do you want to continue? [YES] Return
```

Press Return (default value YES) to continue installing Digital Fortran.

```
*** DEC VAXVMS FORTRAN Vv.v-nnn: Digital Fortran for
     OpenVMS VAX Systems

    Copyright © Digital Equipment Corporation yyyy,yyyy -
     All rights reserved.

    This software product is sold by Digital Equipment
     Corporation

    This product uses the PAKs: FORTRAN, FORTRAN-USER or
     FORTRAN-G

    Do you want all the default values for this product?
      [YES] Return
```

Press Return (default value YES) to accept the product defaults. (There are no options that you can select for this product).

```
    Please ignore any PCSI-E-FILNOTPUR messages

    Do you want to view the values? [NO] Return
```

Press Return (default value NO) to skip displaying of the values and continue installation.

```
Execution phase starting ...
The following product will be installed:
    DEC VAXVMS FORTRAN Vv.v-nnn
%PCSI-I-VOLINFO, estimated space information for
  volume DISK$xxxxxxx
-PCSI-I-VOLSPC, nnnn required; nnnnnn available; nnnnnn net
Portion Done: 0%...10%...20%...30%...40%...50%...90%...100%
The following product has been installed:
    DEC VAXVMS FORTRAN Vv.v-nnn
%PCSI-I-EXETSTSTART, start of test procedure
%PCSI-I-EXETSTOK, end of test procedure; completed with
  no errors

*** DEC VAXVMS FORTRAN Vv.v-nnn: Digital Fortran for OpenVMS VAX Systems

    Type HELP FORTRAN Release_Notes for release notes
      location
```

```
    Be sure to @SYS$UPDATE:FORTRAN$POST_INSTALL on other
      cluster nodes

$
```

8. If this installation was performed on a VMScluster, enter the following command on all other cluster nodes:

   ```
   $ @SYS$UPDATE:FORTRAN$POST_INSTALL
   ```

For information on other PCSI utility features, see the *POLYCENTER Software Installation Utility User's Guide*.

## 2.2 Using VMSINSTAL to Install Digital Fortran

For general information on required system parameters and disk space for installation, see Section 1.6. For specific VMSINSTAL installation requirements, see Section 1.6.3 .

For information on saving a previous version of Digital Fortran before installing the newest version, see Section 1.7.

To install Digital Fortran using VMSINSTAL, follow these steps:

1. Log in to a privileged account, such as SYSTEM. You can use a different privileged account if it has the necessary privileges and quotas.

   You *must* have CMKRNL, SYSPRV, and WORLD privileges enabled to install using VMSINSTAL. To check whether you have these privileges, enter the following command:

   ```
   $ SHOW PROCESS/PRIVILEGES
   ```

   If you do not have these privileges, but you have the SETPRV privilege, you can enable the CMKRNL, SYSPRV, and WORLD privileges by entering the following command:

   ```
   $ SET PROCESS/PRIVILEGE=(CMKRNL,SYSPRV,WORLD)
   ```

2. To start the installation, invoke VMSINSTAL as follows:

   ```
   @SYS$UPDATE:VMSINSTAL saveset-name device-name options-list
   ```

   **saveset_name**
   Is the installation name for the component. For Digital Fortran, use the following installation name:

   ```
   FORT06n
   ```

Where n represents the maintenance update of Digital Fortran. Refer to the label on the Digital Fortran distribution kit or the Digital Fortran BOM or BIL for the maintenance update number of your kit.

**device-name**
Is the name of the device on which you plan to mount the media. For example, MUA0: is the device name used in examples in this document.

If you are installing Digital Fortran from a CD-ROM, specify the device of the CD device and also the directory that contains the Digital Fortran save set.

**options-list**
Is the word OPTIONS followed by one or more of the following options designators: G, L, N, R.

- Get save set option (G)

  Lets you store product save sets temporarily on a magnetic tape or in a disk directory.

- File log option (L)

  Logs all activity to the terminal during installation.

- Display or print release notes (N)

  Indicates you want to see the installation question on release notes. If you do not include the OPTIONS N parameter, VMSINSTAL *does not* ask you about the release notes. You should review the release notes before proceeding with the installation in case they contain additional information about the installation.

  If you are restarting the installation and have already reviewed the release notes, you do not need to specify OPTIONS N.

- Alternate root option (R)

  Lets you install the product to a system root other than that of the running system.

To specify more than one option, separate the options with commas; for example OPTIONS L,R.

For detailed information on these options, see the OpenVMS documentation on software installation.

The following example invokes VMSINSTAL to install Digital Fortran and shows the system response. This example uses the OPTIONS N release note parameter.

```
$ @SYS$UPDATE:VMSINSTAL FORT06n MUA0: OPTIONS N

      OpenVMS VAX Software Product Installation Procedure Vn.n


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

If you do not supply either the product name or the device name, VMSINSTAL prompts you for this information later in the installation procedure. VMSINSTAL does not prompt you for any options, so be sure to include OPTIONS N on the VMSINSTAL command line to access the release notes during the installation.

When you invoke VMSINSTAL, it checks to see whether you have adequate privileges and quotas for installation (see Section 1.6.3).

VMSINSTAL then checks to determine whether any users are logged in to the system. If users are logged in, you will be asked whether you want to continue the installation. If you want to continue, enter Yes. If you want to stop the installation, press Return.

3. VMSINSTAL asks if you are satisfied with your system backup, as follows:

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

You should always back up your system disk before performing an installation. If you are satisfied with the backup of your system disk, press Return. Otherwise, enter No to discontinue the installation. After you back up your system disk, you can restart the installation.

4. You are now asked to mount the first distribution volume on the device you specified when you invoked VMSINSTAL:

```
Please mount the first volume of the set on MUA0:.
* Are you ready? YES
%MOUNT-I-MOUNTED, FORT MOUNTED ON MUA0:
The following products will be processed:
  FORT V6.n

    Beginning installation of FORT V6.n at 20:01

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

The device name appears in the line preceding the question. VMSINSTAL then asks you if you are ready to continue with the installation.

If you respond Yes to indicate that you are ready, VMSINSTAL displays a message that the media containing Digital Fortran has been mounted on the specified device and that the installation has begun.

If you entered the wrong device name when you invoked VMSINSTAL and need to restart the installation, enter No in response to the ''Are you ready?'' question. To abort the installation for other reasons, press Ctrl/Y.

5. If you specified OPTIONS N when you invoked VMSINSTAL, you are now asked to choose one of the following options for reviewing the release notes:

```
Release Notes Options:

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

* Select option [2]:
```

If you press Return (select option 2), VMSINSTAL sends the file to the default output print device unless you enter a different queue name:

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

If you choose another option, the following occurs:

- Option 1 causes VMSINSTAL to immediately display the release notes on the console terminal. You can terminate the display at any time by pressing Ctrl/C.
- Option 3 causes VMSINSTAL to immediately display the release notes on the console terminal and then prompts you for a queue name for the printed version.
- Option 4 prevents VMSINSTAL from displaying or printing the release notes. This option should be selected if you have already reviewed the release notes and are restarting the installation.

You are now asked the following question:

```
* Do you want to continue the installation [N]?: YES
%VMSINSTAL-I-RELMOVED, The product's release notes have been
                       successfully moved to SYS$HELP.
```

To continue the installation, enter Yes. Otherwise, press Return. In either case, the text form of the release notes is copied to a file in the SYS$HELP directory. After installation, you can read these release notes (see Section 3.8).

6. You are asked if you want to purge files replaced by the installation, as follows:

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

   The directories SYS$HELP, SYS$LIBRARY, SYS$MESSAGE, SYS$SYSTEM, SYS$TEST and SYS$UPDATE may contain previous versions of Digital Fortran files. These files are replaced during the installation with new files, but the old files are not automatically purged. Purging is recommended. In response to the purging prompt, press Return to purge the files or enter No to keep them.

7. Select the components of the kit that you want to install. The choices are as follows:

   - Compiler (includes help text, command definition, and IVP)
   - Enhanced Run-Time Libraries (required if Compiler is selected)
   - FORSYSDEF.TLB (OpenVMS system symbol definition library)

   Select the components you want to install by answering Yes or No to the prompts. If you want a more detailed description of any component, enter a question mark (?). After the explanation is displayed, you will be prompted again for a response.

   ```
   * Do you want to install the compiler [YES]?
   ```

   The compiler component includes the Digital Fortran compiler, compiler message files, help text, installation verification procedure, post-installation procedure, deinstallation procedure, and command line definition.

   If this is a new installation, you should select installation of the compiler component by pressing Return (or entering Yes). Choosing the compiler component automatically selects the Run-Time Library component as well; this is indicated by the message:

   ```
   %FORT06n-I-RTLREQ, The Run-Time Library support will also be
                      installed
   ```

   If you do not want to install the compiler component, enter No. The the installation procedure will then ask:

   ```
   * Do you want to install the Run-Time Library support [YES]?
   ```

   If you have installed a new version of OpenVMS since the last time you installed Digital Fortran, or if you want to install the Run-Time Library support on a system where Digital Fortran programs will be run, press Return. If you do not wish to install the Run-Time Library support, enter No.

You are now asked the following:

```
* Do you want to create a new FORSYSDEF.TLB [YES]?
```

SYS$LIBRARY:FORSYSDEF.TLB is a library of OpenVMS system interface definitions that can be used by FORTRAN programs. FORSYSDEF.TLB is built from a master set of definitions that is provided with OpenVMS; it contains declarations of OpenVMS system services, Run-Time Library routines, structures, and constants.

Because FORSYSDEF.TLB is generated from OpenVMS definitions, you do not need to rebuild it unless this is a new installation or you have installed a new version of OpenVMS since the last time you installed Digital Fortran. (The installation procedure will make a recommendation on whether FORSYSDEF.TLB should be rebuilt.)

If you press Return, the installation procedure builds a new system definition file, FORSYSDEF.TLB, based on the system definitions for the version of OpenVMS installed on your system.

The installation procedure then displays the components you selected and displays the following prompt:

```
* Is this correct [YES]?
```

If you enter No, the installation procedure reissues the prompts for selecting components.

**Note**

If you answered No to the first prompt in this step (''Do you want to install the compiler?''), steps 8 and 9 are omitted. If you also answered No to the prompt ''Do you want to install the Run-Time Library Support?'', step 10 is omitted.

8. Digital Fortran supports the OpenVMS License Management Facility (LMF). The installation procedure displays license information about Digital Fortran. It asks whether you have registered and loaded your authorization key for the product. The following is an example of the information and the queries presented by the installation procedure:

```
      Product:      FORTRAN
      Producer:     Digital
      Version:      6.n
      Release Date: dd-mmm-yyyy

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

If you have not registered and loaded your PAK, you must answer No to this question; the installation will continue but the Installation Verification Procedure (IVP) will not run. To successfully complete the IVP, you must first register and load your PAK (see Section 1.5).

9. Unless you answered No to the license registration question, the installation procedure now asks if you want to run the IVP:

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

   The IVP for Digital Fortran checks that the installation is successful. It is recommended that you run the IVP.

   After Digital Fortran is installed, you can run the IVP independently to verify that the software is available on your system (see Section 3.1). You might need to run the IVP after a system failure to make sure that users can access Digital Fortran.

10. You can now respond to Run-Time Library queries.

    The Digital Fortran kit includes enhancements that may not exist in your current version of the OpenVMS operating system. (See the release notes for information on these enhancements.)

    If the installation procedure determines that the installing system's version of OpenVMS does not include the enhanced support, the existing Run-Time Library images are replaced with the new versions (equivalent to those provided by OpenVMS VAX Version 7.0).

**Warning**

Programs linked against the new Math Library images will *not* run on OpenVMS systems (earlier than Version 6.1) where the new versions of these images are not installed. The existing versions supplied by OpenVMS will be saved as FORTRAN$MTHRTL-VMS, FORTRAN$UVMTHRTL-VMS, and FORTRAN$VMTHRTL-VMS in SYS$LIBRARY:.

Fortran programs that do not use the Math library will run on older OpenVMS system versions V5.0-1 or higher as long as they do not use the nonnative data in I/O feature or the /ASSUME=BYTERECL command line qualifier. Please make sure that all users, even those not using Digital Fortran, read the explanatory text in the release notes.

In addition, if you update the system version of OpenVMS, the enhanced versions of the Math and Fortran Run-Time Library images may be overwritten with versions that lack the enhanced support. Be sure to reinstall the Digital Fortran kit after each OpenVMS system

update. Please also read Chapter 3 for important post-installation tasks.

---

The installation procedure displays informational text describing these changes; press Return when prompted, to view the next screen of text. After the information related to run-time library support has been displayed, the installation procedure asks if you want to continue the installation:

```
Do you want to continue with the installation (N)? YES
```

To continue with the installation, enter Yes.

11. Read informational messages.

    At this point, the installation procedure displays a number of informational messages that report on the progress of the installation. There are no further questions. If the installation procedure has been successful up to this point, VMSINSTAL moves the new or modified files to their target directories, updates help files, and updates DCL tables, if necessary. The new and modified files consist of the following:

```
SYS$HELP:FORT06n.RELEASE_NOTES                  [new]
SYS$HELP:FORT06n_RELEASE_NOTES.DECW$BOOK        [new]
SYS$HELP:FORT06n_RELEASE_NOTES.PS               [new]
SYS$HELP:FORTRAN$MSGHLP.MSGHLP$DATA             [new]
SYS$HELP:HELPLIB.HLB                            [modified]
SYS$LIBRARY:DCLTABLES.EXE                       [modified]
SYS$LIBRARY:FORDEF.FOR                          [new]
SYS$LIBRARY:FORIOSDEF.FOR                       [new]
SYS$LIBRARY:FORRTL.EXE                          [new]
SYS$LIBRARY:FORSYSDEF.TLB                       [new]
SYS$LIBRARY:FORTRAN$FORRTL-VMS.EXE              [saved old file]
SYS$LIBRARY:FORTRAN$MTHRTL-VMS.EXE              [saved old file]
SYS$LIBRARY:FORTRAN$UVMTHRTL-VMS.EXE            [saved old file]
SYS$LIBRARY:FORTRAN$VMTHRTL-VMS.EXE             [saved old file]
SYS$LIBRARY:MTHRTL.EXE                          [new]
SYS$LIBRARY:STARLET.OLB                         [modified]
SYS$LIBRARY:STARLETSD.TLB                       [modified]
SYS$LIBRARY:UVMTHRTL.EXE                        [new]
SYS$LIBRARY:VMSRTL.EXE                          [new]
SYS$LIBRARY:VMTHRTL.EXE                         [new]
SYS$MESSAGE:FORTRAN$COMPILER_MSG.EXE            [new]
SYS$MESSAGE:FORTRAN$DICTIONARY_MSG.EXE          [new]
SYS$SYSTEM:FORTRAN$MAIN.EXE                     [new]
SYS$TEST:FORTRAN$IVP.COM                        [new]
SYS$UPDATE:FORTRAN$DEINSTALL.COM                [new]
SYS$UPDATE:FORTRAN$POST_INSTALL.COM             [new]
```

The SYS$HELP:HELPLIB.HLB and SYS$LIBRARY:DCLTABLES.EXE files are updated to include the new versions of the Digital Fortran help text and the FORTRAN command line definition.

Also, if you answered Yes in response to the prompt that requests a file purge at step 6, previous versions of the Digital Fortran files are now purged.

The end of the installation is indicated by the following message:

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

12. If you chose to run the IVP (step 8), VMSINSTAL now invokes the IVP to verify that Digital Fortran was installed successfully.

```
Beginning Digital Fortran Installation Verification Procedure

Compiler image identification is FORT V6.n-eee

Test compiler operation and error messages...
Compile, link, and run program with parallel processing features...
Test FORSYSDEF.TLB system definitions...
Test I/O and Run-Time Library operation...
```

If Digital Fortran was installed successfully, the IVP displays the following:

```
Digital Fortran V6.n-eee IVP PASSED

End of Digital Fortran Installation Verification Procedure
```

13. The installation procedure ends as follows:

```
   Installation of FORT V6.n completed at hh:mm

   VMSINSTAL procedure done at hh:mm

$
```

If you installed the compiler component, proceed to Chapter 3 to perform necessary post-installation tasks. Otherwise, you can choose to install more products or to log out.

VMSINSTAL deletes or changes entries in the process symbol tables during the installation. So, if you are going to continue using the system manager's account and you want to restore these symbols, you should log out and log in again.

If the installation fails, you see the following message:

```
%VMSINSTAL-E-INSFAIL, The installation of Digital Fortran V6.n has failed.
```

If the IVP fails, you see these messages:

```
The FORT V6.n Installation Verification Procedure failed.

%VMSINSTAL-E-IVPFAIL, The IVP for FORT V6.n has failed.
```

If the installation fails, you must restart the installation procedure from step 2. If the installation fails due to an IVP failure, contact a Digital field service representative.

## 2.3 Recovering from Installation Errors

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

- The operating system version is incorrect.
- The product license has not been registered and loaded.
- A prerequisite software version is incorrect.
- Privileges and quotas for successful installation are insufficient.
- The OpenVMS help library is currently in use.

For descriptions of the error messages generated by these conditions, see the OpenVMS documentation on system messages, recovery procedures, and OpenVMS software installation; or use the online HELP/MESSAGE command. Take the appropriate action described in the message.

For information on system requirements for installing Digital Fortran, see Section 1.6.

To report a problem to Digital, see Section 3.11.

# 3
# After Installing Digital Fortran

This chapter discusses the following post-installation tasks and considerations:

- How to run the Installation Verification Procedure separately (Section 3.1)
- How to make the product usable on a VMScluster (Section 3.2)
- How to make the newly installed FORTRAN compiler available to users who are currently logged in (Section 3.3)
- Which older files may now be obsolete (Section 3.4)
- How to set user account quotas (Section 3.5)
- How to enhance performance by tuning your system and installing Digital Fortran as a shared image (Section 3.6)
- Issues concerning OpenVMS upgrades (Section 3.7)
- How to read the release notes after installation (Section 3.8)
- How to remove Digital Fortran from your system (Section 3.9)
- Troubleshooting tips (Section 3.10)
- How to get help and report problems (Section 3.11)

## 3.1 Running the Installation Verification Procedure Separately

The Digital Fortran Installation Verification Procedure (IVP) runs automatically *during* Digital Fortran installation.

If system problems occur, you should run the IVP *separately* to ensure the integrity of the installed files. To run the IVP, enter the following command:

```
$ @SYS$TEST:FORTRAN$IVP.COM
```

If any problems are encountered, a message such as the following appears:

```
Digital Fortran Installation Verification Procedure Failed
```

## 3.2 VMScluster Considerations

If you want to run Digital Fortran on multiple nodes of a VMScluster, first check to see that you have the appropriate software license (see Section 1.5). Then perform the following steps *after* you install Digital Fortran:

1. Issue the LICENSE LOAD command, as described in the *OpenVMS License Management Utility Manual*, to activate the license on each node in the VMScluster on which Digital Fortran is to be executed.

2. The commands in this step should be executed on all cluster nodes, whether or not they are licensed to use Digital Fortran; failure to do so may cause unexpected errors for users.

**Note**

If you are using a dual-architecture (VAX and Alpha systems) heterogeneous cluster, before executing these commands, make sure the appropriate logical names have been set to define the scope of the SYSMAN DO commands. For more information, see the *OpenVMS System Manager's Manual*.

While logged in as SYSTEM, or as another username that has the CMKRNL and SYSPRV privileges enabled, use the OpenVMS SYSMAN utility to set your environment, as follows:

```
$ RUN SYS$SYSTEM:SYSMAN
SYSMAN> SET ENVIRONMENT/CLUSTER
%SYSMAN-I-ENV, current command environment:
        Clusterwide on local cluster
        Username SYSTEM       will be used on nonlocal nodes
```

3. Update the active DCL command tables (DCLTABLES.EXE) and Run-Time Library (DEC$FORRTL.EXE), as follows:

```
SYSMAN> DO @SYS$UPDATE:FORTRAN$POST_INSTALL.COM
%SYSMAN-I-OUTPUT, command execution on node NODE1
%SYSMAN-I-OUTPUT, command execution on node NODE2
```

**Warning**

If you do *not* execute the SYS$UPDATE:FORTRAN$POST_INSTALL procedure on all nodes of the cluster immediately after installation, run-time errors can occur (such as SHRIDMISMAT: "ident mismatch with shareable image").

4. Then EXIT from SYSMAN, as follows:

```
SYSMAN> EXIT
$
```

The SYSMAN utility will cause the post-installation procedure to be executed on each node of the local cluster.

## 3.3 Making the FORTRAN Command Available After Installation

The installation procedure modifies the DCL command table so that the FORTRAN command is recognized and processed.

After the new Digital Fortran compiler is installed, this command table is available to all users who log in after installation. However, the previous command table is still in effect for those users who are currently logged in.

All logged-in users who want to use the FORTRAN command and the new command table must log out and log in again, or use the DCL command:

```
$ SET COMMAND /TABLES=SYS$LIBRARY:DCLTABLES
```

## 3.4 Removing Obsolete Files

If you have installed previous versions of VAX FORTRAN or VAX FORTRAN-HPO, there may be some obsolete files remaining on your system that are no longer used by the current version of Digital Fortran.

Table 3–1 lists these obsolete files:

**Table 3–1 Obsolete Files**

| File Specification | Description |
|---|---|
| SYS$SYSTEM:FORTRAN.EXE | VAX FORTRAN Version 5.n compiler |
| SYS$SYSTEM:FORTRAN-HPO.EXE | VAX FORTRAN-HPO compiler |
| SYS$HELP:FORTRAN$DWCI.HLB | DECwindows Compiler Interface |
| SYS$LIBRARY:FORTV5CLD.CLD | VAX FORTRAN Version 5 command definition |
| SYS$MESSAGE:FORTERR1.EXE | VAX FORTRAN Version 5 message file |
| SYS$MESSAGE:FORTERR2.EXE | VAX FORTRAN Version 5 message file |

(continued on next page)

**Table 3–1 (Cont.) Obsolete Files**

| File Specification | Description |
|---|---|
| VUE$LIBRARY:FORTRAN$DWCI.EXE | DECwindows Compiler Interface |
| VUE$LIBRARY:FORTRAN$DWCI.UID | DECwindows Compiler Interface |

You can delete these files if you are certain that they are no longer needed and you do not need a previous version of the compiler to coexist with the new compiler.

## 3.5 User Account Requirements

No special privileges are needed to use Digital Fortran. There is no benefit from installing the compiler with privileges.

To use Digital Fortran, a user account does not need to meet any special quota requirements. However, for parallel-processing applications or very large programs (many program units compiled together), consider adjusting the working set (WSDEF, WSQUOTA, WSEXTENT) and page file (PGFLQUOTA) account quotas to improve performance.

Use the OpenVMS Authorize Utility from a suitably privileged account to change the process quotas in the user authorization file (UAF). Some sites may restrict the use of the Authorize Utility to certain accounts or people.

After the quotas for the account have been changed, the user should log out of the account and log in again for the new quotas to take effect.

For information on using the Authorize Utility, see the *OpenVMS System Manager's Manual: Essentials*.

## 3.6 Enhancing Digital Fortran Performance

This section contains information on system tuning and explains how to install Digital Fortran as a shared image.

### 3.6.1 Tuning Your System

After installing Digital Fortran, you can adjust your system to enhance performance and lower the use of some system resources.

If users will be compiling parallel-processing applications or very large programs (many program units compiled together), consider the following:

- Adequate page file space must exist. Large programs (such as those using parallel processing) need more virtual memory during compilation and

execution than small programs. Use the INSTALL command to extend an existing page file or create one or more new page files.

- The SYSGEN parameter virtual page count is related to the total amount of page file space. If you create more page file space, be sure to review the virtual page count parameter and increase it if necessary.
- The SYSGEN parameter working set maximum (WSMAX) can also be checked if a larger process working set is needed.

For more information about tuning your system, see the *DEC Fortran Performance Guide for OpenVMS VAX Systems* and the *Guide to OpenVMS Performance Management*.

### 3.6.2 Installing the Digital Fortran Compiler as a Shared Image

If you expect the Digital Fortran compiler to be used extensively on your system, you can reduce the system overhead and memory requirements by installing it as a shared image. This is done by using the OpenVMS Install Utility (INSTALL).

To install the compiler as a shared image on a system that is currently running, use a system that has been rebooted recently, because the available space in the global page table is less likely to be fragmented.

Before installing the compiler as a shared image, you must first determine the number of available global pagelets and global sections on your system. See Section 1.6.1.1 for information on how to verify and modify the number of global pagelets and global sections. Section 1.6.1 contains the guidelines for setting these parameters.

Once you reset the system parameter values, invoke the Install Utility from a privileged account and then install Digital Fortran as a shared image, as follows:

```
$ INSTALL
INSTALL> ADD SYS$SYSTEM:FORTRAN$MAIN.EXE/OPEN/SHARED/HEADER_RESIDENT
INSTALL> EXIT
```

Add the following lines to the appropriate system startup command file so that the Digital Fortran compiler is available as a shared image each time the system is started:

```
$ INSTALL
ADD SYS$SYSTEM:FORTRAN$MAIN.EXE/OPEN/SHARED/HEADER_RESIDENT
EXIT
```

If your site has modularized its startup procedures, be sure you add the lines to the correct file. The default startup command file for OpenVMS is SYS$MANAGER:SYSTARTUP_V5.COM.

When you install Digital Fortran as a shared image, you may need to increase the global pagelets and global sections parameters (see Section 1.6.1).

## 3.7 OpenVMS Upgrade Issues

You should always use the most recent version of the Digital Fortran Run-Time Library available.

When you are preparing for an upgrade of the OpenVMS operating system, be aware that the Digital Fortran Run-Time Library ships with the OpenVMS operating system. This means that an OpenVMS upgrade may install an older version of the Digital Fortran Run-Time Library.

The Run-Time Library provided with the most recent version of Digital Fortran contains changes that are not included in the version provided with OpenVMS VAX Version 5.4 and earlier; these changes will be included in a future version of OpenVMS VAX.

If you install a new version of OpenVMS (earlier than Version 7.0), it may overwrite the existing Digital Fortran Run-Time Library, replacing it with an earlier version. So, after every OpenVMS installation, reinstall Digital Fortran to keep the Run-Time Library current.

## 3.8 Reading the Release Notes After Installation

During installation, the text form of the release notes is copied to the following file in the SYS$HELP directory:

SYS$HELP:FORT06*n*.RELEASE_NOTES

The *n* is replaced by the minor version of Digital Fortran, such as 4 (for Version 6.4).

After installation, you can enter the following command to review the release notes:

```
$ TYPE/PAGE SYS$HELP:FORT06n.RELEASE_NOTES
```

The Digital Fortran kit also provides the release notes in PostScript and DECwindows Bookreader forms. These forms of the release notes can be accessed after the installation has completed by using the following file names:

```
SYS$HELP:FORT06n_RELEASE_NOTES.PS
SYS$HELP:FORT06n_RELEASE_NOTES.DECW$BOOK
```

**Note**

Note that the name of the newly installed release notes file consists of the *current* product name and version number. Do not delete release notes for previous versions of Digital Fortran (if any).

## 3.9 Removing Digital Fortran

From a process that has SYSPRV and CMKRNL or SETPRV privileges, use one of the following methods to remove Digital Fortran from the system:

- If POLYCENTER (PCSI) was used to install Digital Fortran

  You can use PCSI to remove Digital Fortran by entering the following command:

  ```
  $ PRODUCT REMOVE FORTRAN
  ```

- If VMSINSTAL was used to install Digital Fortran

  You can use a SYS$UPDATE command procedure to remove Digital Fortran, by entering the following command:

  ```
  $ @SYS$UPDATE:FORTRAN$DEINSTALL
  ```

  This procedure removes all compiler-related files, modules, images and DCL commands from the system.

  The procedure also provides an option to remove the Digital Fortran-provided Run-Time Library images and replace them with those provided by OpenVMS. Digital does not recommend selecting this option, because any images linked against the newer Run-Time Library images may fail. Do not select this option unless you are willing to relink any applications that have been linked since Digital Fortran was installed.

If your system is a member of a VMScluster, you must then execute the following command on all other cluster members:

```
$ INSTALL REPLACE SYS$LIBRARY:DCLTABLES
```

The OpenVMS utility SYSMAN can be used for this purpose; see Section 3.2 for an example of using SYSMAN.

## 3.10 Troubleshooting Tips

If your installation is not successful, check for the following possible problems:

- The appropriate PAK must be available to the user performing the installation. The PAK must be registered and loaded *before* you can install Digital Fortran; for information about registering a PAK, see Section 1.5. Then reinstall Digital Fortran.
- The DCLTABLES.EXE file should be in the SYS$COMMON:[SYSLIB] directory. There should *not* be a copy of DCLTABLES.EXE in SYS$SPECIFIC:[SYSLIB].

  If a copy of DCLTABLES.EXE is found in a SYS$SPECIFIC root, rename it to DCLTABLES.OLD, do an INSTALL REPLACE SYS$LIBRARY:DCLTABLES, then reinstall Digital Fortran.
- The system logical name SYS$SYSROOT should not be modified from the preset definition provided by the OpenVMS VAX operating system.

## 3.11 Getting Help and Reporting Problems

If you encounter a problem while using Digital Fortran, report it to Digital.

If an error occurs while Digital Fortran is in use and you believe the error is caused by a problem with Digital Fortran, take one of the following actions:

- If you have a Software Product Services Support Agreement, consider contacting your Customer Support Center (CSC) by telephone (in the United States, 1-800-354-9000) or by using the electronic means provided with your support agreement. You can use DSNlink or other electronic means to report the problem to the CSC.
- If you do not have a service contract, you can arrange for per-call CSC support.

When you initially contact the CSC, please indicate the following:

- The name and version number of the operating system (OpenVMS VAX) you are using
- The name (Digital Fortran) and version number of Digital Fortran you are using
- The hardware system you are using (such as a model number)
- How critical the problem is
- A very brief description of the problem (one sentence if possible)

When you submit information electronically or are speaking on the phone to the appropriate support specialist, you can provide more detailed information, such as:

- The specific commands used to compile and link the program
- The error messages displayed
- Relevant detailed information (possibly including source program listings)

Please try to narrow the cause of the problem to a specific source module or lines of code.

CSC personnel may ask for additional information, such as:

- Listings of any command files
- INCLUDE files
- Relevant data files

If the program is longer than 50 lines, submit a copy of it electronically or provide machine-readable media (floppy diskette or magnetic tape).

Experience shows that problem reports sometimes do not contain enough information to duplicate or identify the problem. Concise, complete information helps Digital give accurate and timely service to software problems.

To obtain information about purchasing Digital support services, please contact your local Digital sales representative.

You can also send comments and questions about Digital Fortran to the following Internet mail address: fortran@digital.com.