HP C

Installation Guide for OpenVMS Industry Standard 64 Systems

June 2007

This guide describes how to install HP C on an Intel Itanium processor running the OpenVMS Industry Standard 64 operating system.

This guide applies to HP C Version 7.3 for I64, and all subsequent point releases for Version 7.0.

Revision/Update Information:	This is a new manual.
Operating System:	OpenVMS Industry Standard 64 Version 8.2-1 or higher
Software Version:	HP C Version 7.3

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Preface

This guide explains how to install HP C on an OpenVMS Industry Standard 64 (I64) system.

Keep this guide with your distribution kit. You will need it to install maintenance updates or to reinstall HP C for any other reason.

This manual applies to 7.3 of HP C and all subsequent releases until a revised installation guide is issued.

Intended Audience

This guide is intended for system managers who install HP C.

Structure of This Document

This guide contains the following chapters and appendixes:

- Chapter 1 describes procedures that you must complete before installing HP C.
- Chapter 2 describes how to install HP C.
- Chapter 3 describes post-installation considerations.
- Appendix A lists the files installed.
- Appendix B lists the installation messages.

Associated Documentation

In addition to this guide, the HP C documentation set includes the following:

- The *HP C Language Reference Manual*
- The *HP C User's Guide for OpenVMS Systems*
- A cover letter titled *Read Before Installing or Using HP C Version 7.n for OpenVMS Industry Standard 64 Systems*

- HP C online release notes

For the location of the cover letter and HP C release notes, see Section 1.2.

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

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

Once installed, you can use HP C online HELP, which describes the command qualifiers, explains compiler messages, and provides a quick-reference summary of language topics. To use online HELP for HP C, enter the following:

```
$ HELP CC
```

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

Reader's Comments

HP welcomes your comments on this manual. You can send comments by email to:

```
c_docs@hp.com
```

HP C Web Page

For additional product information, you can view the HP C for OpenVMS home page at the following URL:

```
http://h71000.www7.hp.com/commercial/c/c_index.html
```

Conventions

The following product names may appear in this manual:

- HP OpenVMS Industry Standard 64 for Integrity Servers
- OpenVMS I64
- I64

All three names (the longer form and the two abbreviated forms) refer to the version of the OpenVMS operating system that runs on the Intel® Itanium® architecture.

Table 1 lists the typographic conventions used in this document.

Table 1 Conventions Used in This Document

Convention	Meaning
UPPERCASE TEXT	Uppercase letters indicate the name of a command, file, parameter, procedure, or utility.
`$ `**`PRODUCT INSTALL`**	In interactive examples, prompts and displayed text appear in a monospace font. User input appears in bold monospace font.
italic type	Italic type indicates important information, complete titles of manuals, or variables. Variables include information that varies in system output (Internal error *number*), in command lines (/PRODUCER=*name*), and in command parameters in text (where *dd* represents the predefined code for the device type).
Return	In interactive examples, a key name is shown enclosed to indicate that you press a key on the keyboard.
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; for example, Ctrl/C or Ctrl/Z.
[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.

In this manual, some version numbers are given as V*n.n*. When you install HP C, the actual version number appears on your screen.

1
Preparing for HP C Installation

This chapter describes:

- Section 1.1, What You Need to Know First
- Section 1.2, Reading the Release Notes and Cover Letter
- Section 1.3, Hardware Requirements
- Section 1.4, Required Operating System Components
- Section 1.5, Optional Software
- Section 1.6, License Registration
- Section 1.7, Installation Procedure Requirements
- Section 1.8, Backing Up Your System Disk

This guide applies to Version 7.3 of HP C for OpenVMS I64 Systems and all subsequent maintenance releases up to the next release of the product that includes an updated installation guide.

1.1 What You Need to Know First

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

- HP C installation kit files
- HP C documentation files, including a 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.

1.2 Reading the Release Notes and Cover Letter

HP C provides release notes and a cover letter called *Read Before Installing or Using HP C Version 7.n for OpenVMS Industry Standard 64 Systems*.

You can extract the HP C release notes to a file and type or print them before starting HP C installation. The HP C release notes are also installed on your system after installation.

You can read the online cover letter provided on the media CD-ROM set or read the printed hardcopy cover letter.

For information about using the CDMENU utility and locating the appropriate media CD-ROM and directory that contains the HP C cover letter, see the first few steps in Section 2.2.

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

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

For information about reading the online release notes before installation, use the PRODUCT EXTRACT RELEASE_NOTES command described in Section 2.2 (step 6).

HP strongly recommends that you read the release notes and the cover letter before installing HP C. They contain information about changes to the installation and use of HP C, such as the minimum version of the OpenVMS I64 operating system required for this release of HP C.

After installation, the release notes are installed as text and PostScript form in:

```
SYS$HELP:CC.RELEASE_NOTES
SYS$HELP:CC_RELEASE_NOTES.PS
```

1.3 Hardware Requirements

You can install HP C on any Itanium processor capable of running OpenVMS I64 Version 8.2-1 or higher. See the OpenVMS Operating System's Software Product Description (SPD 25.01.*nn*) for details.

1.4 Required Operating System Components

HP C 7.3 requires the OpenVMS I64 operating system Version 8.2-1 or higher.

Future HP C releases may require higher versions of the OpenVMS operating system, as described in the release notes or the cover letter.

The OpenVMS I64 operating system comes with a variety of support options (or components). Components include such features as networking and RMS journaling. To use HP C, your system should be running a version of the OpenVMS I64 operating system that includes the base component and the following other components:

- Programming support
- Utilities

For a complete list of the required components, see the HP C Software Product Description (SPD) on the media CD-ROM.

1.5 Optional Software

You can use the following optional OpenVMS software with HP C:

- HP Language-Sensitive Editor/Source Code Analyzer (LSE/SCA). Support for C requires that LSE be installed before the compiler is installed.
- HP Test Manager (DTM)
- HP Performance and Coverage Analyzer (PCA)
- HP Code Management System (CMS)
- HP Module Management System (MMS)

1.6 License Registration

Before you install and run HP C 7.3 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 specific LMF product name used by HP C is:

- C-USER: Concurrent-Use License

The HP C compiler accepts a C-USER PAK. 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 HP C 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 HP C, review the PAK status and install the PAKs for any prerequisite or optional software before you install HP C.

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

To register a license under OpenVMS, log in to a privileged account, such as the system manager's account, SYSTEM. You 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 HP C on more than one node in a cluster, you will need to perform a license load on the other nodes after you complete this installation. See Section 3.3.

For complete information on using LMF, see the *VMS License Management Utility Manual* or the online HELP LICENSE utility.

1.7 Installation Procedure Requirements

After you have registered and loaded the license PAK and read the appropriate parts of this installation guide, the installation takes approximately 5 to 15 minutes, depending on your type of media, your system configuration, and the kit components chosen.

1.7.1 Installation Account Privileges and Disk Space

To install HP C, you must be logged in to an account that has the SETPRV privilege or at least the following privileges enabled:

- BYPASS
- CMKRNL
- SYSLCK
- SYSPRV

Table 1–1 lists the HP C requirements for free disk storage space to install the compiler and the documentation (in .ps, .txt, and .html formats).

Table 1–1 Disk Space Requirements

Blocks During Installation	Blocks After Installation
150,000	75,000

These counts refer to the disk space required on the system disk. The sizes are approximate; actual sizes may vary depending on the user's system environment, configuration, and software options.

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

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

1.7.2 System Parameters

Installing HP C requires certain system parameter settings.

The minimum number of free global pagelets (512-byte subpage unit) and global sections needed for the installation depends on whether SYS$SYSTEM:DECC$COMPILER.EXE was previously installed as a shared known image:

- If not previously installed as shared, 1 global section and a sufficient number of contiguous free global pagelets to contain the file SYS$LIBRARY:DCLTABLES.EXE
- If previously installed as shared, 2 global sections and approximately 10,000 contiguous free global pagelets plus a sufficient number of contiguous free global pagelets to contain the file SYS$LIBRARY:DCLTABLES.EXE

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 that your system has the necessary global pagelets and global section SYSGEN parameters for the installation, the DCL tables can become corrupted in some situations.

1.7.2.1 Calculating Values for GBLPAGES and GBLSECTIONS

To install and run HP C, you must have sufficient free global pagelets and global sections.

Enter the following DCL command to determine the number of global pagelets required by SYS$LIBRARY:DCLTABLES.EXE:

```
$ DIR/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.

You can use the WRITE command with the F$GETSYI lexical function to find the number of free contiguous global pagelets and free global sections. The following example shows how to get this information at your terminal (the default for SYS$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 global sections is less than the required value (see Section 1.7.2), you must increase the system parameter setting.

Section 1.7.2.2 describes the procedures for increasing these values using AUTOGEN.

1.7.2.2 Changing System Parameter Values with AUTOGEN

If you do not have enough free global pages or free global sections to install HP C, you can do either of the following:

- Delete an existing known image using the OpenVMS INSTALL 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
```

Use an editor to access the file.

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 specifies 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. The following example increases the global page setting by 2000:

```
ADD_GBLPAGES = 2000
```

After you make all your changes, exit from the editor, then execute the AUTOGEN procedure to recalculate your system parameters and reboot the system:

```
$ @SYS$UPDATE:AUTOGEN GETDATA 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 information about using AUTOGEN and its command-line parameters, see the *OpenVMS System Manager's Manual: Tuning, Monitoring, and Complex Systems*.

1.8 Backing Up Your System Disk

HP 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 HP C

This chapter explains how to install HP C:

- Section 2.1 describes multiple version support.
- Section 2.2 contains a step-by-step description of the installation procedure.
- Section 2.3 shows a sample installation with an alternate compiler.
- Section 2.4 covers error recovery considerations.

2.1 Installing and Using Multiple Compiler Versions

HP C I64 Version 7.3 and higher provides support for installing and using multiple versions of the compiler on the same node.

During installation of Version 7.3, if a previous version of the compiler is already installed, you have the opportunity to preserve that compiler rather than overwrite it. If you do choose to preserve the currently installed compiler, the new compiler version will become the system default, and the previous version will remain as an alternate.

Users can make the choice to use an alternate compiler instead of the installed default system compiler by running a command procedure that changes the behavior of the `cc` command for the process that invokes it.

2.1.1 Displaying and Selecting the Compiler Version

This kit provides two command procedures to display and control which HP C compiler is used by a process:

- SYS$SYSTEM:DECC$SHOW_VERSIONS.COM

  This procedure displays the HP C compilers available on the system, along with their version numbers. It also displays which compiler is the default for the current process. The procedure takes an optional version-number argument. Examples:

```
$ @SYS$SYSTEM:DECC$SHOW_VERSIONS

The following  HP C compiler(s) are available in
SYS$COMMON:[SYSEXE]:

Filename                       Version     Defaults
---------------------------------------------------------
DECC$COMPILER.EXE              T7.3-018    System Default
DECC$COMPILER_S07_01-013.EXE   S7.1-013
DECC$COMPILER_T07_03-017.EXE   T7.3-018
DECC$COMPILER_V07_01-011.EXE   V7.1-011
DECC$COMPILER_V07_02-001.EXE   V7.2-001
DECC$COMPILER_V07_02-022.EXE   V7.2-022    Process Default

$ @SYS$SYSTEM:DECC$SHOW_VERSIONS.COM V7.2

The following HP C compiler(s) are available in
SYS$COMMON:[SYSEXE]:

Filename                      Version
---------------------------------------
DECC$COMPILER_V07_02-001.EXE   V7.2-001
DECC$COMPILER_V07_02-022.EXE   V7.2-022    Process Default
```

- SYS$SYSTEM:DECC$SET_VERSION.COM

  This procedure sets up process logicals that point to an alternate HP C compiler in SYS$SYSTEM, or it removes the process logicals to revert to using the default system compiler. The procedure takes one optional argument: a version number or the keyword SYSTEM. If no argument is specified, all compiler versions are displayed, as with @sys$system:decc$show_versions.com, and you are then prompted to enter a version number or the keyword SYSTEM.

  The SYSTEM argument selects the installed system compiler, which is the one displayed with the filename DECC$COMPILER.EXE in the output of decc$show_versions.com. Alternate compilers are shown in that output with their version number appended to the simple filename; for example, the version 7.2-001 compiler is shown as DECC$COMPILER_V07_02-001.EXE.

  To select a compiler, pass a full ident string or enough of the ident string to be unique. For example: to select the V7.2-001 compiler from the previous list, pass V7.2-001 or V7.2 to the decc$set_version.com routine.

  When this procedure is run in a process, subsequent `cc` commands invoke the selected compiler version (until the procedure is run again). The process-level logicals used do not affect other processes or users on the system.

The decc$set_version.com sets up logicals DECC$COMPILER and DECC$COMPILER_MSG to point to the location of the target compiler and its message file. In addition it issues a "set command" to select the appropriate CDL file to select the correct set of qualifiers for the given compiler version. Please remember that Set commands are not inherited by subprocesses. Make sure that all subprocesses reissue the necessary decc$set_version.com command.

2.1.2 Installation Procedure Changes

When you install HP C I64 Version 7.3 or higher on a system that already has a previous version of the compiler installed, you are given the chance to preserve that currently installed system compiler. To do this, during installation, your system administrator needs to answer NO to the question about default options:

```
Do you want the defaults for all options? [YES] NO <RET>
```

And then answer YES to the question about making alternate compilers available:

```
Would you like to set up your system for running alternate versions of C? [NO] YES <RET>
```

If you answer YES to the first question above (about the default options), you will not receive the second prompt (to set up your system for running alternate versions of C), and the installation proceeds in the traditional manner, overwriting the currently installed system compiler.

If you answer YES to the second prompt, the new compiler is installed as the system default compiler, and the previously installed compiler is set up as an alternate compiler with a name based on its ident.

2.2 How to Install HP C

The installation procedure loads HP C product distribution files onto the system disk on the system where you perform the installation.

Follow these steps to install HP C from the OpenVMS I64 Software Products Library CD-ROM set:

1. Log in to a privileged account on the system (or cluster) where you will install HP C. This account must have the following privileges enabled:
   - BYPASS
   - CMKRNL
   - SYSLCK
   - SYSPRV

If your process has the SETPRV privilege, you can enable these privileges by entering the following command:

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

To check whether your process has these privileges enabled, enter the following command:

```
$ SHOW PROCESS/PRIVILEGES
```

2. To obtain the kit directory location of the HP C product distribution files on the appropriate OpenVMS I64 Software Product Library CD-ROM (media CD-ROM), do one of the following:

   - Use the CDMENU utility provided on the media CD-ROM.
   - View the CD-ROM master index file on the media CD-ROM.
   - Contact the appropriate system manager.

   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.

3. To determine whether the appropriate media CD-ROM is already mounted on your system, enter the following command:

```
$ SHOW DEVICE DKA400
```

Note

DKA400 is the device name used in examples in this document to show where the appropriate media CD-ROM has been mounted.

4. If the media CD-ROM containing the HP C installation files is not mounted, either contact the appropriate system manager or insert the appropriate media CD-ROM (write down the volume label) into an available CD-ROM drive. Enter the appropriate MOUNT command to mount the media CD-ROM (omit the /FOREIGN qualifier), such as the following:

```
$ MOUNT DKA400 label
```

   Where *label* is the volume label of that media CD-ROM.

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

```
$ DIRECTORY *.PCSI

Directory DKA400:[dir.subdir]
HP-I64VMS-C-V0701-nnnn-1.PCSI
Total of 2 files.
```

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

```
$ PRODUCT EXTRACT RELEASE_NOTES C /SOURCE=disk:[dir]
```

In this command, *disk:[dir]* is the specification of the disk and directory containing the product installation files. If your process default directory is the directory on the CD-ROM that contains the HP C product distribution files, you can specify the /SOURCE directory as /SOURCE=[ ].

You can view or print the file CC.RELEASE_NOTES before you continue with the installation (next command). For example:

```
$ TYPE/PAGE CC.RELEASE_NOTES
```

7. To install the HP C compiler, enter the following PRODUCT INSTALL command:

```
$ PRODUCT INSTALL C /SOURCE=node::disk:[kit_dir]
```

Where *disk:[kit_dir]* is the specification of the disk and directory containing the product installation files.

The following text appears:

```
   1 - HP I64VMS C V7.1-002            Layered Product
   2 - All products listed above
   ? - Help
   E - Exit

Choose one or more items from the menu: 1

The following product has been selected:
    HP I64VMS C V7.1-002            Layered Product

Do you want to continue? [YES] Return

Configuration phase starting ...

You will be asked to choose options, if any, for each selected product and for
any products that may be installed to satisfy software dependency requirements.

HP I64VMS C V7.1-002: HP C for OpenVMS Industry Standard

   Copyright 2004 Hewlett-Packard Development Company, L.P.

   This software product is sold by Hewlett-Packard Company
```

```
   PAKs used: C-USER

Do you want the defaults for all options? [YES]

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   FAR 12.211 and 12.212, Commercial Computer Software, Computer
   Software Documentation, and Technical Date for Commercial
   Items are licensed to the U.S. Government under vendor's
   standard commercial license.

Do you want to review the options? [NO] Return

Execution phase starting . . .

The following product will be installed to destination:
   HP I64VMS C V7.1-002                  DISK$ICCSYS:[VMS$COMMON.]

Portion done: 0%...90%...100%

The following product has been installed:
   HP I64VMS C V7.1-002                  Layered Product

%PCSI-I-IVPEXECUTE, executing test procedure for HP I64VMS C V7.1-002 ...
%PCSI-I-IVPSUCCESS, test procedure completed successfully

HP I64VMS C V7.1-002: HP C for OpenVMS Industry Standard 64 for
Integrity Servers

The compiler is now available from the command line of newly created processes.

    To enable access to the compiler from the command line of a currently
    running process (such as this one), execute:
    SET COMMAND/TABLE=SYS$COMMON:[SYSLIB]DCLTABLES

 The release notes are located in the file SYS$HELP:CC.RELEASE_NOTES
 for the text form and SYS$HELP:CC_RELEASE_NOTES.PS for the postscript form.
$
```

8. Installation takes about 2-5 minutes (depending on your system. When installation has been completed, the DCL $ prompt reappears.
9. To obtain a list of files installed, enter the following command:

```
$ PRODUCT SHOW OBJECT /PRODUCT=C
```

To use other features of the PCSI utility, see the *POLYCENTER Software Installation Utility User's Guide*.

2.3 Sample Installation with Alternate Compiler

The following is a sample installation run on a system that had a previous version of HP C installed. In this sample, the new version of the compiler is installed as the default compiler, but a previous version of the compiler is kept as an alternate compiler. See Section 2.1 for more information on installing and using multiple compiler versions.

```
$ product install c /source=C$:[disk1.cpri.bvbv.bl50.saveset]

The following product has been selected:

    HP I64VMS C V7.3-18                   Layered Product [Installed]

Do you want to continue? [YES]

Configuration phase starting ...

You will be asked to choose options, if any, for each selected product and for
any products that may be installed to satisfy software dependency requirements.

HP I64VMS C V7.3-18: HP C for OpenVMS Industry Standard

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   PAKs used: C or C-USER

Do you want the defaults for all options? [YES] no

   HP I64VMS VMS V8.3 [Installed]

   * Configuration options for this referenced product cannot
   * be changed now because the product is already installed.
   * (You can use PRODUCT RECONFIGURE later to change options.)

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     FAR 12.211 and 12.212, Commercial Computer Software, Computer
     Software Documentation, and Technical Data for Commercial
     Items are licensed to the U.S. Government under vendor's
     standard commercial license.

     Multi_Version Support:
```

```
    If you would like to set up your system to be able to run different
    versions of the compiler then answer yes. The installation procedure will
    then copy the previously installed C compiler and associated files along
    side the new compiler in this kit with a suffix appended to the name that
    corresponds to the version number.  Users may then execute
    DECC$SET_VERSION.COM to run an alternate version of the compiler
    and DECC$SHOW_VERSIONS.COM to show available versions at anytime
    after this installation.

 Would you like to set up your system for running alternate versions of C? [NO] yes

Do you want to review the options? [NO]

Execution phase starting ...

The following product will be installed to destination:
  HP I64VMS C V7.3-18                   DISK$ICXXSYS:[VMS$COMMON.]

Portion done: 0%...40%...50%...60%...70%...80%...90%...100%

The following product has been installed:
  HP I64VMS C V7.3-18                   Layered Product

%PCSI-I-IVPEXECUTE, executing test procedure for HP I64VMS C V7.3-18 ...
%PCSI-I-IVPSUCCESS, test procedure completed successfully

HP I64VMS C V7.3-18: HP C for OpenVMS Industry Standard

   The release notes are located in the file SYS$HELP:CC.RELEASE_NOTES

     for the text form and SYS$HELP:CC_RELEASE_NOTES.PS for the postscript form.

   A startup file SYS$STARTUP:DECC$STARTUP.COM has been provided.

      It contains commands which can be executed after the product install
      procedure has been run and at startup to allow for the best compilation
      performance. You may want to invoke this command file from your
      system's site-specific start up file.  This command file does not
      have to be invoked for correct operation of HP C.
```

2.4 Recovering from Installation Errors

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

- The operating system version is incorrect.
- The privileges or disk space for successful installation are insufficient.

For descriptions of error messages generated by these and related conditions, see the OpenVMS I64 documentation on system messages and software installation or the online HELP/MESSAGE command. Take the appropriate action described in the message.

For information on system requirements for installing HP C, see Section 1.4.

To report a problem to HP, see Section 3.7.

3

After Installing HP C

You can perform the following tasks after HP C is installed:

- Section 3.1, Running the Installation Verification Procedure Separately
- Section 3.2, Modifying the System-Wide Startup Command Procedure
- Section 3.3, Making the Product Usable on a VMScluster
- Section 3.4, Making the CC Command Available After Installation
- Section 3.5, User Account Requirements
- Section 3.6, Enhancing HP C Performance
- Section 3.7, Getting Help and Reporting Problems

3.1 Running the Installation Verification Procedure Separately

The HP C Installation Verification Procedure (IVP) runs automatically during HP C installation.

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

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

If any problems are encountered, a message like one of the following appears:

```
HP C VERSION 7.n Installation Verification FAILED
HP C VERSION 7.n Installation Verification did not run
HP C VERSION 7.n Installation Verification ABORTED
```

3.2 Modifying the System-Wide Startup Command Procedure

You must edit the system-wide startup file to provide for automatic startup of HP C when your system is rebooted.

Add the command line that starts HP C to the system startup file, SYS$MANAGER:SYSTARTUP_VMS.COM. HP C cannot start until after the network has started, so you must position this new command line after the line that invokes the network startup command procedure. The following example shows the network startup command line:

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

3.3 Making the Product Usable on a VMScluster

If you want to run HP C on multiple nodes of an OpenVMS cluster, first check to see that you have the appropriate software license (see Section 1.6). Then perform the following steps after you install HP C:

1. Enter the LICENSE LOAD command, as described in the *HP OpenVMS License Management Utility Manual*, to activate the license on each node in the cluster on which HP C is to be executed.
2. Log in to the installation node and use the OpenVMS INSTALL Utility to determine whether DECC$COMPILER.EXE is a known image:

   ```
   $ INSTALL
   INSTALL> LIST SYS$SYSTEM:DECC$COMPILER.EXE
   ```

   If the output of the preceding LIST command shows DECC$COMPILER.EXE to be a known image, perform all of the following steps. Otherwise, perform all of the following steps except step 4b.
3. Log in to a node on the cluster.
4. Run the OpenVMS INSTALL utility as described in Section 3.6.2, with the following exceptions:
   a. After invoking the OpenVMS INSTALL utility, enter the following command:

      ```
      INSTALL> REPLACE SYS$LIBRARY:DCLTABLES.EXE
      ```

      This command updates the DCL tables. It should be entered on each node in the cluster, regardless of whether you activated the HP C license (step 1) on all of the nodes.

b. If DECC$COMPILER.EXE was established as a known image using the INSTALL utility, enter the following command:

```
INSTALL> REPLACE SYS$SYSTEM:DECC$COMPILER.EXE
```

This command replaces the INSTALL entry for DECC$COMPILER.EXE. It should be entered only on those nodes on which you activated the HP C license in step 1. (In most cases, all of the nodes will be licensed.)

5. Repeat steps 3 and 4 for each node of the cluster.

3.4 Making the CC Command Available After Installation

HP C is now installed and can be invoked by all users with the CC command.

The installation procedure modifies the DCL command table so that the CC command is recognized and processed. 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 CC command must log out and log in again, or use the following DCL command:

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

3.5 User Account Requirements

Some products cannot be used unless certain privilege and quota requirements are met by user accounts. The following sections describe the privilege and quota requirements needed to work with HP C.

3.5.1 User Privileges

To use HP C, each account must have TMPMBX and NETMBX privileges. Use the OpenVMS AUTHORIZE utility to determine whether users have the privileges they require.

3.5.2 User Account Quotas

To use HP C, a user account does not need to meet any special quota requirements. However, for users who will be compiling very large programs (many program units compiled together), consider adjusting working set (WSDEF, WSQUOTA, WSEXTENT) and pagefile (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 HP C Performance

The following sections include information on system tuning and explain how to install HP C as a shared image.

3.6.1 Tuning Your System

After you install HP C, you might want to adjust your system to enhance performance or lower the use of some system resources. General information about tuning an OpenVMS system is included in the *Guide to OpenVMS Performance Management*.

3.6.2 Installing HP C as a Shared Image

If you expect HP C to be used extensively on your system, you can reduce the system overhead and memory requirements by installing it as a shared image. To install HP C as a shared image on a system that is currently running, use the OpenVMS INSTALL utility. It is recommended that you install HP C as shared on a system that has been rebooted recently, because the available space in the global page table is less likely to be fragmented.

To install HP C as a shared image, determine the number of available global pagelets and global sections on your system. You will need to increase them. Section 1.7.2 contains guidelines for showing and setting these parameters.

3.7 Getting Help and Reporting Problems

If you encounter a problem while using HP C, see the release notes. If the problem is unresolved, report it to HP. Depending on the type of support you have and the nature of the problem, take one of the following actions:

- If you have a Software Product Services Support Agreement, contact 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 (such as DSNlink). The CSC provides telephone support for high-level advisory and remedial assistance. When you initially contact the CSC, indicate the following:
  - The name and version number of the operating system you are using
  - The product name (HP C) and the version number of HP C you are using

- The hardware system you are using (such as a model number)
- A brief description of the problem (one sentence if possible)
- How critical the problem is

When you submit information electronically or are speaking on the phone to the appropriate HP C support specialist, you can provide more detailed information. The information should include the specific commands used to compile and link the program, the error messages displayed, and relevant detailed information (possibly including source program listings). Please attempt to narrow the cause of the problem to a specific module or lines of code.

CSC personnel might ask for additional information, such as listings of any command files, INCLUDE and COPY files, relevant data files, and so forth. If the program is longer than 50 lines, submit a copy of it electronically or provide machine-readable media (floppy diskette or magnetic tape).

• If the problem is related to HP C documentation, you can report the problem to the CSC (if you have a Software Product Services Support Agreement and the problem is severe); otherwise, send your comments about HP C documentation to the following Internet address:

  c_docs@hp.com

  To obtain information about purchasing a HP Software Product Services Support Agreement or other support services, please contact your local HP sales representative.

A

Files Added or Updated During Installation

This appendix lists the files that are added to or updated on your OpenVMS system during installation. Note that some files may not be installed depending on selected options or your system's configuration or operating system version.

```
[SYS$SYSTEM]DECC$COMPILER.EXE          [new]
[SYS$MESSAGE]DECC$COMPILER_MSG.EXE     [new]
[SYS$LIBRARY]DECC$CLD.CLD              [new]
[SYS$HELP]HELPLIB.HLB                  [modified]
[SYS$SYSTEM]CXX$DEMANGLE.EXE           [new]
[SYS$LIBRARY]DCLTABLES.EXE             [modified]
[SYS$HELP.CC$HELP]*.*                  [new]
[SYS$HELP]CC.RELEASE_NOTES             [new]
[SYS$HELP]CC_RELEASE_NOTES.PS          [new]
[SYSTEST]DECC$IVP.COM                  [new]
```

B

Installation Messages

This appendix lists the more common diagnostic messages you might see during product installation. If you encounter a message not shown here, use the HELP/MESSAGE command to display information about it. If you add the /LOG qualifier to the PRODUCT INSTALL command, many additional informational messages will be displayed, which can be ignored.

```
FAILCONF, failed to resolve conflicting requirements for 'object-type'
'object-name'
```

```
Explanation:  More than one product supplies a managed object of the same
              name, type, and scope. They cannot coexist because of a
              conflict in the objects' properties. Files, directories, and
              library modules are examples of managed objects.

User Action:  Report the problem to HP.
```

```
INSTALLERR,  error executing DCL INSTALL command
```

```
Explanation:  The POLYCENTER Software Installation utility installs a file
              as a known image by having the DCL command INSTALL execute in
              a subprocess. The INSTALL command failed.

User Action:  Take action based on the accompanying messages. If you specify
              the /TRACE qualifier when you retry the operation, you can
              view the command sent to the subprocess.
```

```
IVPFAILURE,  test procedure completed with an error status
```

```
Explanation:  The installation verification test procedure for the product
              completed with an exit status that indicates a failure. If you
              were executing a PRODUCT INSTALL command, the product has been
              completely installed, but its test procedure failed.

User Action:  Take action based on the accompanying messages. If you specify
              the /TRACE qualifier when you retry the operation, you can
              view the commands sent to the subprocess and the output
              generated when these commands are executed.
```

```
RETAIN,  'object' 'object-name' was not replaced because 'object'
from kit does not have higher generation number
```

Explanation: During installation of a software product (or a patch to a software product), the specified object (either a file or a library module) was not copied from the kit to the destination disk. The installation utility found an object with the same name already installed on the destination disk and that object's generation (sequencing) number was the same or greater than the generation number of the object from the kit. Therefore, the object with the latest generation number (the previously installed item) was left on your destination disk.

This condition typically occurs when you install multiple patches or updates to the same product. The installation utility performs conflict detection and resolution so that your system will always retain the most current files even if updates are not installed in chronological order.

User Action: None.