VAX PL/I Installation Guide

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This document contains instructions for installing VAX PL/I on the VMS operating system. It also explains how to read the online release notes before or after installing the product. This document applies to VAX PL/I Version 3.3 and all maintenance updates throughout that version.

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Preface

This document describes how to install VAX PL/I on the VMS operating system.

This document is intended for system managers and applies to VAX PL/I Version 3.3 and all maintenance updates in that version. A major version number is represented by the digits to the left of the decimal point, and the maintenance update version number is indicated by the digits to the right of the decimal point.

Keep this document with your distribution kit. You will need it to install maintenance updates or to reinstall VAX PL/I for any other reason.

At the back of this document are two Reader's Comments forms. If you have any comments about this document, fill out one form and mail it; your comments will be considered for the next revision of the installation guide.

For more information about installing VAX PL/I on VMS systems, see your processor-specific installation/operations guide.

The installation procedure is described step-by-step and is, for the most part, self-explanatory. The system prompts you to answer questions and to change volumes, and waits for you to tell it to continue.

Defaults appear in brackets ([ ]) throughout the installation procedure. Text you type is indicated in red.

1 Preparing to Install VAX PL/I

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

Distribution media must be mounted in numerical order. The installation procedure prompts you to mount the volumes. For more information on how to mount distribution media, see your processor-specific installation/operations guide, which also details several options to the installation procedure.

1.1 Prerequisite Software

To install VAX PL/I V3.3, you must have VMS Version 5.0 already installed on your system.

1.2 Accessing the Online Release Notes

VAX PL/I provides online release notes. The prompt to display or print the release notes during the installation appears in step 4 of the installation procedure, when you invoke VMSINSTAL with the OPTIONS N parameter.

To obtain the release notes after the installation, type or print the file SYS$HELP:PLI$033.RELEASE_NOTES. Online help also directs you to the release notes file. After the installation, type the following command:

```
$ HELP PLI RELEASE_NOTES RETURN
```

1.3 Installation Procedure Requirements

The installation takes approximately 5 to 30 minutes, depending on the type of media and your system configuration. Before installing VAX PL/I, you must have the following privileges and resources:

- SETPRV privileges, or CMKRNL, WORLD, and SYSPRV privileges
- A minimum of 6800 blocks of free disk space during VAX PL/I installation; 5000 blocks are used after installation
- A minimum of 512K bytes of physical memory

- 1 free global section and 400 free global pages if the compiler is not currently installed as a known image
- 7 free global sections and 1500 free global pages if the compiler is currently installed as a known image, or if you plan to install it as a known image following the installation.

CAUTION

You must ensure that your system has the necessary global page and global section SYSGEN quotas for the installation. Failure to do so could cause the DCL tables to be corrupted in some situations.

To determine the number of available global pages on your system, invoke the VMS Install Utility by typing the following command:

```
$ INSTALL RETURN
```

Then type the following command:

```
INSTALL> LIST/GLOBAL/SUMMARY RETURN

        Summary of Local Memory Global Sections

309 Global Sections Used,  28866/13134 Global Pages Used/Unused

INSTALL> EXIT RETURN
```

When you issue these commands, the system displays a summary of the number of global sections used, the number of global pages used, and the number of global pages unused. To exit from the VMS Install Utility, type the EXIT command.

VAX PL/I requires approximately 900 contiguous global pages. If there are fewer than 900 pages available, you can delete an existing known image with the VMS Install Utility, or you can increase the GBLPAGES system parameter with the VMS System Generation Utility (SYSGEN) by editing the file SYS$SYSTEM:MODPARAMS.DAT and then invoking the AUTOGEN command procedure, SYS$UPDATE:AUTOGEN.COM. For more information on the AUTOGEN command procedure, see your processor-specific installation/operations guide.

You can determine the number of available global sections by invoking SYSGEN as follows:

```
$ RUN SYS$SYSTEM:SYSGEN RETURN
SYSGEN> USE CURRENT RETURN
SYSGEN> SHOW GBLSECTIONS RETURN

 Parameter name     Current  Default  Minimum Maximum  Unit  Dynamic
 --------------     -------  -------  ------- -------  ----  -------
 GBLSECTIONS            512      250       20    4095  Sections

SYSGEN> EXIT RETURN
```

The last number displayed is the maximum number of global sections. Compare this number to the number of global sections in use displayed by the VMS Install Utility. VAX PL/I requires 5 global sections. Therefore, if the number of global sections used plus 5 exceeds the maximum number of global sections, you must increase the number of available global sections before you can install VAX PL/I. To increase the number, you must increase the GBLSECTIONS system parameter with SYSGEN by editing the file SYS$SYSTEM:MODPARAMS.DAT and then invoking the SYS$UPDATE:AUTOGEN.COM procedure. For more information on the AUTOGEN.COM procedure, see your processor-specific installation/operations guide.

If the number of global sections used plus 5 is less than the maximum number of global sections, you can exit from SYSGEN and continue.

Section 1.3.1 describes the procedures for increasing these values as well as those of other system parameters. Refer to the VMS documentation on system management and operations for more information.

1.3.1 Changing System Parameter Values with AUTOGEN

Use the AUTOGEN command procedure to change system parameters. AUTOGEN automatically adjusts values for parameters that are associated with the ones you reset manually. To change system parameters with AUTOGEN, you must edit the the following file:

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

For example, to change the setting for the WSMAX system parameter, add the following line to the file:

```
WSMAX = 1024
```

Or, to change the setting for incremental SYSGEN parameters:

```
ADD_GBLPAGES = 2000
```

Next run the AUTOGEN procedure to recalculate your system parameters. Enter the following command at the DCL prompt:

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

AUTOGEN performs an automatic system shutdown and reboots when it has finished. Rebooting your system makes the new parameter values active. Also on VMS Version 5.x systems you may wish to add the [NO]FEEDBACK parameter to the AUTOGEN command line. For more information about using AUTOGEN, see the instructions on modifying system parameters in the VMS documentation on System Management and Operations.

1.4 User Account Quotas and Privileges

To use VAX PL/I, each account must have TMPMBX and NETMBX privileges and the following requirements:

- AST limit (ASTLM) 24 (minimum)
- Buffered I/O quota (BIOLM) 18 (minimum)
- Buffered I/O byte count quota (BYTLM) 18000 (minimum)
- Direct I/O quota (DIOLM) 18 (minimum)
- Enqueue quota (ENQLM) 30 (minimum)
- Open file limit (FILLM) 20 (minimum)
- Paging file quota (PGFLQUOTA) 4096 pages (minimum)
- Subprocess creation quota (PRCLM) by user requirement (minimum)
- Working set size (WSDEF) 500 pages (minimum) 1024 to 2048 pages (optimum)

NOTE

The quotas listed (the paging file in particular) are only the minimum requited to compile small programs. Compiling larger modules can require larger values for BYTLM and PGFLQUO—approximately 20480 to 40960 for each. When compiling large modules you should also set working sets to at least 2048 pages to prevent excessive page faulting.

Use the VMS Authorize Utility (AUTHORIZE) to compare the current values of these quotas with the requirements for VAX PL/I. For example, the account used in the following example is the SYSTEM account:

```
$ SET DEFAULT SYS$SYSTEM [RETURN]
$ RUN AUTHORIZE [RETURN]
UAF> SHOW SYSTEM [RETURN]
```

To change the values of these quotas, use the VMS Authorize Utility's MODIFY command. For more information, see the utility's manual.

1.5 VMS License Management Facility

The VMS License Management Facility (LMF) is available with Version 5.0 of the VMS operating system. Since you are installing VAX PL/I on a system running VMS Version 5.0 or higher, you must register your VAX PL/I software license.

The license registration information you need is contained in the Product Authorization Key (PAK) that is shipped with VAX PL/I. The PAK is a paper certificate that contains information about the license you have to run a particular piece of software.

During the installation, you are asked if you have registered the VAX PL/I license and loaded the appropriate authorization key. You must register and load your license for VAX PL/I *before* you start the installation in order to run the Installation Verification Procedure (IVP) and use the software.

To register a license under VMS Version 5.0, first log in to the system manager's account, SYSTEM. You then have a choice of two ways to perform the registration:

- Invoke the SYS$UPDATE:VMSLICENSE.COM procedure. When it prompts you for information, respond with data from your Product Authorization Key (PAK).
- Issue the LICENSE REGISTER command, on the DCL command line, with the appropriate qualifiers that correspond to information on the PAK.

For complete information on using LMF, see the manual on the License Management Utility in the VMS documentation set.

1.6 Using VMSINSTAL

After you log in to a privileged account to install VAX PL/I, invoke VMSINSTAL, the command procedure that installs this product. An example of this procedure is shown in steps 1 and 2 of the Installing VAX PL/I section.

The VMSINSTAL command procedure has the following syntax:

$ @SYS$UPDATE:VMSINSTAL PLI03*n ddcu*: [OPTIONS N]

n
Represents the maintenance update of VAX PL/I. Refer to the label on the VAX PL/I distribution kit or the VAX PL/I BOM or BIL for the maintenance update number of your kit.

You can also type an asterisk (*) in place of PLI03n. (If you are installing from magnetic tape, you can use the asterisk to save installation time; the asterisk causes VAX PL/I to be installed with a minimum of tape passes.)

ddcu:
Represents a device name where the distribution volumes will be mounted for the VAX PL/I installation media, where *dd* is the device code, *c* is the controller code, and *u* is the unit number. It is not necessary to use the console drive to install VAX PL/I. If you do use the console drive, you should replace any media you removed from the drive. MUA0: is the device name used in examples in this document.

OPTIONS N
Is an optional parameter you should provide if you want to be prompted to display or print the release notes. If you do not include the OPTIONS N parameter, VMSINSTAL does not prompt you to display or print the release notes. VMSINSTAL permits the use of several other options. For more information on the other options, see your processor-specific installation/operations guide.

If you do not supply the first two parameters, VMSINSTAL prompts you for the product and device names. If you wish to be prompted for the product and device names and to display or print the release notes, type the following:

```
$ @SYS$UPDATE:VMSINSTAL RETURN
```

When you invoke VMSINSTAL, it checks the following:

- If you are logged in to a privileged account. Digital recommends that you install software from the system manager's account with your default device and directory set to SYS$UPDATE.
- If you have adequate quotas for installation. VMSINSTAL checks for the following quota values:
  - ASTLM = 24
  - BIOLM = 18
  - BYTLM = 18000

- DIOLM = 18
- ENQLM = 30
- FILLM = 20

At this point in the installation, VMSINSTAL checks the following conditions:

- If DECnet is up and running
- If any users are logged in to the system

If VMSINSTAL detects that DECnet is up and running or that there are users logged in to the system, you are asked if you want to continue the installation. If you want to continue, type YES. If you want to stop the installation, press RETURN.

2 Installing VAX PL/I

This section contains excerpts from the installation procedure and explains each step. Defaults appear in brackets throughout the installation procedure.

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 then returns you to DCL level. If you want to retry the installation procedure after pressing CTRL/Y, you must proceed from step 2.

Step 1: Log in to a privileged account and set your default device and directory to SYS$UPDATE.

```
RETURN
Username: SYSTEM   RETURN
Password:          RETURN
$ SET DEFAULT SYS$UPDATE  RETURN
```

Step 2: Invoke VMSINSTAL.

```
$ @VMSINSTAL PLI03n MUA0: OPTIONS N RETURN

      VAX/VMS Software Product Installation Procedure V5.0


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

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

If you are satisfied with the backup of your system disk, press RETURN. Otherwise, type NO and press RETURN to discontinue the installation.

Step 3: Insert the first installation kit volume.

```
Please mount the first volume of the set on MUA0:.
* Are you ready? YES RETURN
The following products will be processed:

  PLI V3.n


    Beginning installation of PLI V3.n at hh:mm

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

Step 4: Select a release notes option.

This step applies only if you specified OPTIONS N in step 2.

```
Release Notes Options:

    1. Display release notes
    2. Print release notes
    3. Both 1 and 2
    4. Copy release notes to SYS$HELP
    5. Do not display, print, or copy release notes

* Select option [2]: RETURN
```

If you select option 1, VMSINSTAL displays the release notes online immediately. You can terminate the display at any time by pressing CTRL/C. After you view them, VMSINSTAL copies the release notes to SYS$HELP.

If you select option 2, VMSINSTAL prompts you for a queue name. Either type a queue name or press RETURN to send the file to the default output print device. After you print them, VMSINSTAL copies the release notes to SYS$HELP.

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

If you select option 3, VMSINSTAL displays the release notes online immediately. You can terminate the display at any time by pressing CTRL/C. VMSINSTAL then prompts you for a queue name. Either type a queue name or press RETURN to send the file to the default output print device. The VAX PL/I release notes are then copied to SYS$HELP.

If you select option 4, VMSINSTAL copies the release notes to SYS$HELP immediately.

If you select option 5, VMSINSTAL does not display, print, or copy the release notes; typically this option is selected when the user wants to terminate the installation.

NOTE

This version of the release notes file installed by VMSINSTAL is labeled with the current product name and version number (for example, PLI$033.RELEASE_NOTES). Take care not to delete release notes for previous versions of VAX PL/I.

Next, VMSINSTAL displays the following prompt:

```
* Do you want to continue the installation [N]?: Y RETURN

%VMSINSTAL-I-RELMOVED, The product's release notes have been successfully
    moved to SYS$HELP.
        VAX PL/I Installation is commencing ...
```

If you want to continue the installation, type YES and press RETURN. If you type NO or press RETURN, VMSINSTAL discontinues the installation. As long as you did not choose option 5, VMSINSTAL still moves the release notes to SYS$HELP; otherwise, you need to repeat the installation procedure to obtain a copy of the release notes.

Step 5: Insert the subsequent installation kit volumes.

```
%BACKUP-I-READYREAD, mount volume 2 on _MUA0: for reading

Enter "YES" when ready: YES RETURN
```

VMSINSTAL prompts you to insert the next volume and waits for you to type YES after inserting it. If you type NO, VMSINSTAL displays the prompt again. This prompt is displayed only if your installation kit contains more than one volume.

Step 6: Respond to License Registration Queries.

VAX PL/I supports the VMS License Management Facility (LMF). The installation procedure displays license information about your product and then asks if you have registered and loaded your authorization key for VAX PL/I. The following is an example of such information:

```
Product:       VAX PLI
Producer:      DEC
Version:       3.n
Release Date:  dd-mmm-yyyy

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

If you have not registered and loaded your authorization key, you must answer NO to this question. You have to register and load your Product Authorization Key to successfully complete the installation. If you have not done so, you should stop the installation, register and load your Product Authorization Key, and restart the installation.

Step 7: Select installation options.

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

The directories SYS$HELP, SYS$MESSAGE, SYS$LIBRARY and SYS$SYSTEM may contain previous versions of VAX PL/I 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 type NO to keep them.

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

The Installation Verification Procedure (IVP) checks if the installation procedure was successful. Press RETURN to run the IVP after the installation. If you do not want to run the IVP, type NO in response to the prompt.

```
Do you want to decompress PLI$STARLET? [YES]? RETURN
```

You can install the VAX PL/I system library in either a compressed or decompressed form.

If you install a compressed system library, the library uses about 1500 blocks less disk space than in its uncompressed form. During compilations that include modules from the library, however, the system uses more CPU time.

If you install an uncompressed system library, the installation requires more time because the library is uncompressed during the install. Also, the decompressed form requires that about 3000 additional blocks are available during the installation procedure.

Step 8: Read informational messages.

The VAX PL/I installation procedure produces a number of informational messages that report on the progress of the installation.

```
Your VMS system will now be modified to include the
following new and modified files:

[SYSEXE]PLI$COMPILER.EXE            [new]
[SYSHLP]HELPLIB.HLB                 [modified]
[SYSHLP]PLI$03n.RELEASE_NOTES       [new]
[SYSHLP.EXAMPLES.PLI]*.*            [new]
[SYSLIB]DCLTABLES.EXE               [modified]
[SYSLIB]PLI$STARLET.TLB             [new]
[SYSMGR]PLI$STARTUP.COM             [new]
[SYSMSG]PLI$COMPILER_MSG.EXE        [new]
[SYSTEST]PLI$IVP.COM                [new]
[SYSTEST.PLI]*.*                    [new]

  The file SYS$MANAGER:PLI$STARTUP.COM contains commands to be
  executed at system 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 VAX PL/I.
```

If you typed YES in response to the prompt that requests a file purge at step 7, previous versions of the VAX PL/I files are now purged.

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

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

If the installation procedure is successful, the new or modified files are moved to their target directories.

The SYS$HELP:HELPLIB.HLB and SYS$LIBRARY:DCLTABLES.EXE files are updated to include the new versions of the VAX PL/I HELP text and the command line definition, respectively.

Step 9: Observe the Installation Verification Procedure.

If you choose to run the IVP in step 7, VMSINSTAL now calls the IVP to verify that VAX PL/I was successfully installed.

```
 IVP test ASSIGN...
 IVP test CONV...
 IVP test BIF...
 IVP test IO...
 IVP test SYSERV...
 IVP test LANG...

 VAX PL/I V3.n-nnn Installation Verification Procedure completed successfully.
 *** VAX PL/I Installation Verification Procedure ***
           ***** Ending at dd-mmm-yyyy hh:mm:ss.ss *****
 Installation of PLI V3.n completed at hh:mm
```

If you entered Y to the "purge files" request, previous versions of VAX PL/I are now purged.

Step 10: End the installation procedure.

```
   Installation of VAX PL/I 3.3 completed at hh:mm

   VMSINSTAL procedure done at hh:mm

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

When the product installation procedure is complete, you can choose to install more products or to log out (as shown here.) If you removed any media from the console drive before beginning the installation, you should replace it now.

VMSINSTAL deletes or changes entries in the process symbol tables during the installation. Therefore, 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.

2.1 Installing VAX PL/I on a VAXcluster

If you want to run VAX PL/I on multiple nodes of a VAXcluster, first check to see that you have the appropriate software license. Then, follow these steps after installing VAX PL/I:

1. Issue the LICENSE LOAD command to activate the license on each node in the VAXcluster on which VAX PL/I is to be executed as described in the license manual.

2. To use the product on other nodes in the VAXcluster, you must replace the version of the DCL tables that is installed on the other VAXcluster nodes. To do this, perform the following steps:

   a. Log in to a node on the cluster.

   b. Run INSTALL and enter the following command at the INSTALL> prompt:

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

   c. Repeat steps a and b for each node of the cluster.

3 After the Installation

VAX PL/I is now installed and can be invoked by all users with the PLI DCL command.

The installation procedure modifies the DCL command table so that the PLI 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 PLI command for the newly installed product must log out of the system and log in again.

If VAX PL/I will be used extensively on your system, you can reduce system overhead requirements by installing it as a shareable image using the VMS Install Utility. For more information, read the section installing VAX PL/I as a Shareable Image.

4 Running the Installation Verification Procedure Separately

The Installation Verification Procedure (IVP) is usually run at installation. If you want to run the IVP separately to ensure the integrity of installed files if system problems occur, execute the following command procedure:

```
$ @SYS$SYSROOT:[SYSTEST]PLI$IVP.COM RETURN
```

If the IVP fails for any reason, the following messages are displayed:

```
*** VAX PL/I Installation Verification Procedure ***
   **** Beginning at  dd-mmm-yyyy hh:mm:ss.ss ****

    IVP test ASSIGN...

******** VAX PL/I Installation Verification FAILED ********


*** VAX PL/I Installation Verification Procedure ***
    ***** Ending at  dd-mmm-yyyy hh:mm:ss.ss ****
```

5 Error Conditions

If the installation procedure fails for any reason, a message like the following is displayed:

```
%VMSINSTAL-E-INSFAIL, The installation of VAX PL/I
V3.n has failed.
```

An error during the installation can occur if one or more of the following conditions exist:

- Operating system version is incorrect
- Prerequisite software version is incorrect
- Quotas necessary for successful installation are insufficient (see the Installation Procedure Requirements section)
- Process quotas required by VMSINSTAL are incorrect (see the Using VMSINSTAL section)
- The VMS HELP library is currently in use
- The PAK for VAX PL/I was registered incorrectly, not registered, or unloaded.

For descriptions of the error messages generated by these conditions, see the *VMS System Messages* manual or your processor-specific installation/operations guide.

If you are notified that any of these conditions exist, you should take the appropriate action as described in the message. You may need to change a system parameter or increase an authorized quota value.

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.

6 Installing VAX PL/I as a Shared Image

If VAX PL/I will be used extensively on your system, you can reduce the system overhead and memory requirements by installing it as a shared image. To perform the installation on a system that is currently running, use the VMS Install Utility while you are logged in to a privileged account. If errors occur, see the *VMS System Messages* manual.

First, determine the number of available global pages and global sections on your system. See the Installation Procedure Requirements section for information on how to do this.

If you have enough available global pages and global sections, install VAX PL/I as a shared image using the supplied VAX PL/I startup procedure.

```
SYS$MANAGER:PLI$STARTUP.COM
```

This procedure installs the compiler and PLI run-time library as shared images.

Update the system startup file to install VAX PL/I.

To ensure that VAX PL/I is installed as a shared image each time the system is bootstrapped, include the following line in SYS$MANAGER:SYSTARTUP_V5.COM (the site-specific startup file):

```
$ @SYS$MANAGER:PLI$STARTUP
```

7 Maintenance Updates

Digital may periodically issue maintenance updates of VAX PL/I. Each update consists of an installation kit. You should install this kit as described in this document or in any documentation that may accompany the maintenance update.

Each time a maintenance update is released, the version number changes. For example, if the current version is 3.0, the version number of the first maintenance update will be 3.1. In addition, the maintenance update includes new release notes. The release notes describe the changes that have been made to VAX PL/I since the previous release.

The update release notes are provided online. You should read the release notes when you first install VAX PL/I; they are also accessible at any time after the product is installed. For information on reading the release notes at the time that you install VAX PL/I, follow the installation procedure through step 5. To locate the release notes after VAX PL/I is installed, display or print the file SYS$HELP:PLI$03*n*.RELEASE_NOTES, or type the following:

```
$ HELP PLI RELEASE_NOTES RETURN
```

8 Determining and Reporting Problems

If an error occurs while you are using VAX PL/I and you believe that the error is caused by a problem with VAX PL/I, take one of the following actions:

- If you purchased VAX PL/I within the past 90 days and you think the problem is caused by a software error, you can submit a Software Performance Report (SPR).
- If you have a Basic or DECsupport Software Agreement, call your Customer Support Center. With these services, you receive telephone support that provides high-level advisory and remedial assistance. For more information, contact your local Digital representative.
- If you have a Self-Maintenance Software Agreement, you can submit a Software Performance Report (SPR).

If you find an error in the VAX PL/I documentation, fill out and submit a Reader's Comments form from the back of the document in which the error was found. Include the section and page number where the error was found.

9 Sample Installation

This section contains a sample installation of VAX PL/I. Note that this is only a sample. Sometimes the installation procedure is modified in maintenance updates of this product. Because this installation guide is not usually revised for maintenance updates, be sure to read the *Read Before Installing or Using VAX PL/I* letter before you install this product. This letter notes any significant changes in the installation that vary from this sample.

```
        Welcome to VAX/VMS V5.1

Username: SYSTEM
Password:
        Welcome to VAX/VMS version V5.1 on node GULCH
    Last interactive login on Tuesday, 14-FEB-1989 10:11
    Last non-interactive login on Friday, 10-FEB-1989 14:07

$ @SYS$UPDATE:VMSINSTAL PLI033 MUA0: OPTIONS N

        VAX/VMS Software Product Installation Procedure V5.1


It is 14-FEB-1989 at 13:31.
Enter a question mark (?) at any time for help.

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

```
The following products will be processed:

  PLI V3.3

        Beginning installation of PLI V3.3 at 13:32

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

    Release Notes Options:

 1.  Display release notes
 2.  Print release notes
 3.  Both 1 and 2
 4.  Copy release notes to SYS$HELP
 5.  Do not display, print of copy release notes

* Select option [2]:
* Queue name [SYS$PRINT]:
Job PLI$033.RELEASE_NOTES (queue SYS_PRINT, entry 312) started on GULCH_LPA0
* Do you want to continue the installation? Y
%VMSINSTAL-I-RELMOVED , The product's release notes have been successfully moved to SYS$HELP.


        Product:      PLI
        Producer:     DEC
        Version:      3.3
        Release Date: 01-DEC-1988


* Does this product have an authorization key registered and loaded? Y
* Do you want to purge files replaced by this installation [YES]?

    This kit contains an Installation Verification Procedure (IVP)
    to verify the correct installation of VAX PL/I.  The IVP will
    be left in:

        SYS$COMMON:[SYSTEST]PLI$IVP.COM

    After the installation is complete, you can invoke the command
    file at any time to verify that VAX PL/I is installed and
    working correctly.

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

    This kit contains a file summarizing the new features, changes,
    restrictions, and compatibility issues in this release of VAX PL/I.
    This file is named PLI$033.RELEASE_NOTES and has been placed in
    SYS$HELP:.

    This file contains information valuable to VAX PL/I programmers.
    Please inform your user community of this file's existence.


    The VAX PL/I system interface library PLI$STARLET.TLB can be installed
    either in compressed form or in decompressed form.  The compressed form
    of the library requires approximately 1500 blocks less disk space, but
    requires more CPU time during compilations of programs that include
    modules from the library.  Installing the decompressed form of the
    library will require more time for this installation to complete,
    because the library decompression is performed by the installation;
    also, the decompressed form will require approximately 3000 additional
    blocks to be available during the installation procedure.

* Do you want to decompress PLI$STARLET [YES]?
```

```
    You have answered all of the questions for this installation.  The
    installation will now execute in 5 to 30 minutes without further
    intervention, depending on your configuration, installation media,
    and so forth.

%VMSINSTAL-I-RESTORE, Restoring product saveset B ...
Decompressing PLI$STARLET...

%VMSINSTAL-I-SYSDIR, This product creates system disk directory  VMI$ROOT:[SYSTEST.PLI].
%VMSINSTAL-I-SYSDIR, This product creates system disk directory  VMI$ROOT:[SYSHLP.EXAMPLES.PLI].

    Your VMS system will now be modified to include the
    following new and modified files:

    [SYSEXE]PLI$COMPILER.EXE        [new]
    [SYSHLP]HELPLIB.HLB             [modified]
    [SYSHLP]PLI$033.RELEASE_NOTES   [new]
    [SYSHLP.EXAMPLES.PLI]*.*        [new]
    [SYSLIB]DCLTABLES.EXE           [modified]
    [SYSLIB]PLI$STARLET.TLB         [new]
    [SYSMGR]PLI$STARTUP.COM         [new]
    [SYSMSG]PLI$COMPILER_MSG.EXE    [new]
    [SYSTEST]PLI$IVP.COM            [new]
    [SYSTEST.PLI]*.*                [new]

    The file SYS$MANAGER:PLI$STARTUP.COM contains commands to be
    executed at system 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 VAX PL/I.

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

*** VAX PL/I Installation Verification Procedure ***
   **** Beginning at 14-FEB-1989 13:51:50.06 ****

    IVP test ASSIGN...
    IVP test CONV...
    IVP test BIF...
    IVP test IO...
    IVP test SYSERV...
    IVP test LANG...

****** VAX PL/I V3.3-063 Installation Verification Successful ******


*** VAX PL/I Installation Verification Procedure ***
    ***** Ending at 14-FEB-1989 13:55:41.14 *****
        Installation of PLI V3.3 completed at 13:55
```