

VSI Pascal Installation Guide

Operating System and Version: VSI OpenVMS IA-64 Version 8.4-1H1 or higher
VSI OpenVMS Alpha Version 8.4-2L1 or higher
VSI OpenVMS x86-64 Version 9.2-2 or higher

Software Version: VSI Pascal Version 6.2 for OpenVMS Alpha
VSI Pascal Version 6.2 for OpenVMS IA-64
VSI Pascal Version 6.5 for OpenVMS x86-64

VSI Pascal Installation Guide



VMS Software

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Preface

This guide describes how to install VSI Pascal on the OpenVMS operating system.

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

1. About VSI

VMS Software, Inc. (VSI) is an independent software company licensed by Hewlett Packard Enterprise to develop and support the OpenVMS operating system.

2. Intended Audience

This guide is intended for system managers who install VSI Pascal for OpenVMS.

3. Document Structure

This guide contains the following chapters:

- *Chapter 1, "Preparing for VSI Pascal Installation"* describes the hardware and software requirements for VSI Pascal and related procedures that you complete before the installation.
- *Chapter 2, "Installing VSI Pascal"* describes the VSI Pascal installation procedure.
- *Chapter 3, "After Installing VSI Pascal"* describes the VSI Pascal Installation Verification Procedure (IVP) and any postinstallation procedures you must complete to use VSI Pascal.

4. Related Documents

In addition to this guide, the VSI Pascal documentation set includes the following:

- *VSI Pascal User Manual* [<https://docs.vmssoftware.com/vsi-pascal-for-openvms-user-manual/>]
- *VSI Pascal Reference Manual* [<https://docs.vmssoftware.com/vsi-pascal-for-openvms-reference-manual/>]
- VSI Pascal release notes. For the location of the VSI Pascal release notes, see *Section 1.1, "Reading the Release Notes"*.

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

```
$ HELP PASCAL
```

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

5. OpenVMS Documentation

The full VSI OpenVMS documentation set can be found on the VMS Software Documentation webpage at <https://docs.vmssoftware.com>.

6. VSI Encourages Your Comments

You may send comments or suggestions regarding this manual or any VSI document by sending electronic mail to the following Internet address: <docinfo@vmssoftware.com>. Users who have VSI OpenVMS support contracts through VSI can contact <support@vmssoftware.com> for help with this product.

7. Conventions

The following product names may appear in this manual:

- OpenVMS Industry Standard 64 for Integrity Servers
- OpenVMS IA-64
- IA-64

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.

The following typographic conventions may be used in this manual:

Convention	Meaning
Ctrl/ <i>x</i>	A sequence such as Ctrl/ <i>x</i> indicates that you must hold down the key labeled Ctrl while you press another key or a pointing device button.
PF1 <i>x</i>	A sequence such as PF1 <i>x</i> indicates that you must first press and release the key labeled PF1 and then press and release another key or a pointing device button.
. . .	A horizontal ellipsis in examples indicates one of the following possibilities: • Additional optional arguments in a statement have been omitted. • The preceding item or items can be repeated one or more times. Additional parameters, values, or other information can be entered.
.	A vertical ellipsis indicates the omission of items from a code example or command format; the items are omitted because they are not important to the topic being discussed.
()	In command format descriptions, parentheses indicate that you must enclose choices in parentheses if you specify more than one.
[]	In command format descriptions, brackets indicate optional choices. You can choose one or more items or no items. Do not type the brackets on the command line. However, you must include the brackets in the syntax for OpenVMS directory specifications and for a substring specification in an assignment statement.
	In command format descriptions, vertical bars separate choices within brackets or braces. Within brackets, the choices are optional; within braces, at least one choice is required. Do not type the vertical bars on the command line.

Convention	Meaning
{ }	In command format descriptions, braces indicate required choices; you must choose at least one of the items listed. Do not type the braces on the command line.
bold type	Bold type represents the name of an argument, an attribute, or a reason.
<i>italic type</i>	Italic type indicates important information, complete titles of manuals, or variables. Variables include information that varies in system output (Internal error <i>number</i>), in command lines (/PRODUCER=name), and in command parameters in text (where <i>dd</i> represents the predefined code for the device type).
UPPERCASE TYPE	Uppercase type indicates a command, the name of a routine, the name of a file, or the abbreviation for a system privilege.
–	A hyphen at the end of a command format description, command line, or code line indicates that the command or statement continues on the following line.
numbers	All numbers in text are assumed to be decimal unless otherwise noted. Nondecimal radixes – binary, octal, or hexadecimal – are explicitly indicated.
<i>Vn.n</i>	In this guide, some version numbers are given as <i>Vn.n</i> . When you install VSI Pascal, the actual version number appears on your screen.

Chapter 1. Preparing for VSI Pascal Installation

This chapter discusses the preparations and requirements necessary for installing VSI Pascal.

VSI recommends that you read the release notes before proceeding with the installation. For information on accessing the release notes, see *Section 1.1, "Reading the Release Notes"*.

1.1. Reading the Release Notes

VSI strongly recommends that you read the release notes before installing VSI Pascal. They contain information about changes to the installation and use of VSI Pascal, such as the minimum version of the OpenVMS operating system required for the current release of VSI Pascal.

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

To read the online release notes before installation, use the appropriate instructions depending on the architecture.

- For x86-64, use `$ PRODUCT EXTRACT RELEASE_NOTES product-name`.

Refer to *Section 2.3, "How to Install VSI Pascal on x86-64"* ([Step 4](#)) for more detailed information on the command.

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

```
SYS$HELP:PASCAL $nnn$ .RELEASE_NOTES
```

Where *nnn* is the major/minor version. For example, for x86-64, the name of the file containing the release notes is PASCAL065.RELEASE_NOTES.

- If you are running OpenVMS on an Alpha or an IA-64 system, refer to *Section 2.1, "How to Install VSI Pascal on Alpha and IA-64"* and follow [Step 1](#) through [Step 8](#).

1.2. License Registration

During the installation, the system asks whether you have registered the VSI Pascal license and loaded the appropriate PAK. Before you start the installation, you must register and load your license for VSI Pascal to be able to run the Installation Verification Procedure (IVP), and for users to be able to run VSI Pascal.

The license registration information you need is contained in the Product Authorization Key (PAK) file. If you are installing VSI Pascal as an update on a node or cluster that is licensed for this software, you have already completed the License PAK registration requirements.

Note

On Alpha systems, the VSI Pascal compiler license is covered by the ALPHA-LP license PAK.

To determine whether the VSI Pascal license is registered on the current system, enter the **LICENSE LIST** command. If the license is not on the list, you must register it.

To register the PAK on your system, you have the following options:

- Copy the zipped license script (provided as part of the license distribution sent to you by a VMS Software manager) to your target system, unzip it there, rename its extension from .TXT to .COM, and execute it as a simple command procedure.
- Copy the script from the appropriate PDF file (provided as part of the license distribution sent to you by a VMS Software manager) directly into a .COM file on your target system. Execute the created command procedure.
- Run the `SY$UPDATE:VMSLICENSE.COM` command procedure and manually enter the PAK data¹ or load the PAK through the **LICENSE REGISTER** command. Refer to the *VSI OpenVMS License Management Utility Guide* for more information on how to do so.

Next, make sure the license is loaded into the license database using the **SHOW LICENSE** command.

```
$ SHOW LICENSE PASCAL
```

```
Active licenses on node NODE1:
```

Product	Producer	Units	PCL	Activ	Version	Release	Termination
PASCAL	VSI	0	0	1	0.0	(none)	10-MAY-2026

If the license is not found, you will need to load it using the **LICENSE LOAD** command.

```
$ LICENSE LOAD PASCAL
```

```
%LICENSE-I-LOADED, VSI PASCAL was successfully loaded with 0 units
```

```
$
```

For complete information on using LMF, see the *VSI OpenVMS License Management Utility Guide* or the online **HELP LICENSE** utility.

1.3. Multiple Version Support

VSI Pascal provides support for using multiple versions of the compiler on the same OpenVMS system.

During installation, you have the opportunity to save the current version of the compiler for later use. If chosen, the installation copies the current compiler before installing the new compiler.

The kit provides three command procedures to display and control which VSI Pascal compiler is used.

- `SY$SYSTEM:PASCAL$SHOW_VERSIONS.COM` is used to display all VSI Pascal compilers saved on the system and their version numbers. It also shows the current settings for process, job, group, and system-wide compiler settings. This command file has no parameters.
- `SY$SYSTEM:PASCAL$SET_VERSION.COM` is used to select a VSI Pascal compiler other than `SY$SYSTEM:PASCAL.EXE`.

If invoked without parameters, it displays the currently available compilers and asks for a file name to use for the process-wide compiler setting. It has 2 optional parameters. The first parameter can be `PROCESS`, `JOB`, `GROUP`, or `SYSTEM`. This selects the level of visibility for the selected compiler.

¹When you register a license with `VMSLICENSE.COM`, you can choose an option to load the license automatically to avoid loading the license manually.

The second parameter can be a file name to use instead of being prompted for a file. This allows you to place a compiler selection in a LOGIN.COM or some other command file. All saved compilers are located in SYS\$SYSTEM.

- SYS\$SYSTEM:PASCAL\$DEFAULT_VERSION.COM is used to select the default VSI Pascal compiler when SYS\$SYSTEM:PASCAL\$SET_VERSION.COM has not been used.

The installation always provides a new SYS\$SYSTEM:PASCAL.EXE and copies existing compilers. You can use this command file to select one of the saved compilers to be SYS\$SYSTEM:PASCAL.EXE and rename the existing SYS\$SYSTEM:PASCAL.EXE for later use through SYS\$SYSTEM:PASCAL\$SET_VERSION.COM.

1.4. Installation Procedure Requirements

The installation of VSI Pascal takes approximately 5 minutes, depending on your system configuration.

1.4.1. Installation Account Privileges and Disk Space

To install VSI Pascal, you must be logged in to an account that has the SETPRV privilege.

VSI Pascal requirements for free disk storage space are summarized in the following tables.

Table 1.1. Disk Space Requirements for OpenVMS IA-64 Systems

Kit	Blocks Required
VSI Pascal for OpenVMS IA-64 systems	45,000
VSI Pascal Run-Time Library for OpenVMS IA-64 systems ¹	1,100
VSI Pascal STARLET files	15,000
VSI Pascal examples	150

¹Only when that kit is newer than the installed version.

Table 1.2. Disk Space Requirements for OpenVMS Alpha Systems

Kit	Blocks Required
VSI Pascal for OpenVMS Alpha systems	25,000
VSI Pascal Run-Time Library for OpenVMS Alpha systems ¹	500
VSI Pascal STARLET files	15,000
VSI Pascal examples	150

¹Only when that kit is newer than the installed version.

Table 1.3. Disk Space Requirements for OpenVMS x86-64 Systems

Kit	Blocks Required
VSI Pascal for OpenVMS x86-64 systems	100,000
VSI Pascal STARLET files	15,000
VSI Pascal examples	150

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

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

1.4.2. System Parameters

Installing VSI Pascal 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:PASCAL.EXE was previously installed as a shared known image:

- If *not* previously installed as a shared image: 1 global section and a sufficient number of contiguous free global pagelets to contain the file SYS\$LIBRARY:DCLTABLES.EXE.
- If previously installed as a shared image or will be subsequently installed with the PASCAL\$STARTUP.COM command procedure (*Section 3.4.1, "Installing VSI Pascal as a Shared Image"*):
 - For x86-64, 3 global sections, approximately 65,000 contiguous free global pagelets, and a sufficient number of contiguous free global pagelets to contain the file SYS\$LIBRARY:DCLTABLES.EXE.
 - For IA-64, 6 global sections, approximately 32,000 contiguous free global pagelets, and a sufficient number of contiguous free global pagelets to contain the file SYS\$LIBRARY:DCLTABLES.EXE.
 - For Alpha, 3 global sections, approximately 10,000 contiguous free global pagelets, and 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.

1.4.2.1. Calculating Values for GBLPAGES and GBLSECTIONS

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

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

This command returns the size (in blocks) of SYS\$LIBRARY:DCLTABLES.EXE. As an approximation, use this value 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 number of free global pagelets or global sections is less than the required value (see *Section 1.4.2, "System Parameters"*), you must increase the system parameter setting. The following section describes the procedures for increasing these values using AUTOGEN.

1.4.2.2. Changing System Parameter Values with AUTOGEN

If you do not have enough free global pages or free global sections to install VSI BASIC, 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, insert a line in the file that includes both the name of the parameter and its value. For example:

```
WSMAX = 1024
```

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

```
ADD_GBLPAGES = 2000
```

Note

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

After you make all your changes, exit from the editor and 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 in to the system are immediately disconnected during the shutdown. The automatic reboot puts the new parameter values into effect.

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

For more information about using AUTOGEN, see the *VSI OpenVMS System Manager's Manual, Volume 1: Essentials* and *VSI OpenVMS System Manager's Manual, Volume 2: Tuning, Monitoring, and Complex Systems*.

1.4.3. VMSINSTAL Installation Requirements (Alpha and IA-64 only)

When you invoke VMSINSTAL, it checks the following:

- Whether you have set your default device and directory to SYSS\$UPDATE
- Whether you are logged in to a privileged account
- Whether you have adequate quotas for installation (see *Section 1.4.3.1, "Installation Account Quotas Requirements (Alpha and IA-64 only)"*)
- Whether DECnet is running
- Whether any users are logged in to the system

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, type NO or press **Enter**. Then, correct the problem and restart the installation.

1.4.3.1. Installation Account Quotas Requirements (Alpha and IA-64 only)

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

```
ASTLM = 100
BIOLM = 100
DIOLM = 100
ENQLM = 300
FILLM = 300
```

1.4.3.1.1. Modifying Process Quotas

Use the OpenVMS Authorize Utility to change the process quotas for the installation account in the user authorization file (UAF). (Some sites may restrict the use of the OpenVMS Authorize Utility to certain accounts or people.) For example, to change the BIOLM quota for the installation account, you might enter the following command sequence:

```
$ RUN SYSS$SYSTEM:AUTHORIZE
UAF> MODIFY account-name /BIOLM = 100
UAF> SHOW account-name
.
.
.
UAF> EXIT
$ LOGOUT
```

After the quotas for the installation account have been changed, log out of the installation account and log in again for the new quotas to take effect. You can then proceed with the installation.

For more information on modifying account quotas, see the description of the AUTHORIZE utility in the *VSI OpenVMS System Manager's Manual, Volume 1: Essentials*.

1.5. Backing Up Your System Disk

VSI 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 section on the Backup Utility in the *VSI OpenVMS System Manager's Manual, Volume 1: Essentials*.

Chapter 2. Installing VSI Pascal

This chapter explains how to install VSI Pascal on Alpha, IA-64, and x86-64 processor systems. It also contains the description of common errors and possible solutions.

2.1. How to Install VSI Pascal on Alpha and IA-64

The VSI Pascal installation procedure consists of a series of questions and informational messages.

To stop the installation procedure at any time, use **Ctrl/C**. However, files created up to that point are not deleted. You must then delete these files interactively.

When the system prompts you with a question during the installation procedure, the default answer, if any, is enclosed in brackets "[]".

The installation steps are as follows:

1. Make sure you have downloaded the latest kit file. For example, `AXPVMS-PASCAL-Xnnnn-nnn.ZIP`
2. Use the UNZIP utility to extract the installation files.

If you do not have a ZIP/UNZIP utility on your system, you can download it from the following webpage: <https://vmssoftware.com/community/freeware/>.

To be able to use the **UNZIP** command, create a foreign command that will run the UNZIP utility, for example:

```
$ UNZIP == "$SYS$COMMON:[SYSHLP.UNSUPPORTED.UNZIP]UNZIP.EXE"
```

For information on how to use this utility, execute **UNZIP**.

3. Make sure you have the SETPRV privilege enabled.

You can check what privileges are enabled for your process by entering the following command:

```
$ SHOW PROCESS/PRIVILEGES
```

4. Invoke the VMSINSTAL command procedure.

You should invoke the VMSINSTAL command procedure from a privileged account, such as the SYSTEM account. The VMSINSTAL procedure resides in the SYSS\$UPDATE directory. Set your default directory to SYSS\$UPDATE. For example:

```
Username: SYSTEM  
Password:
```

```
$ SET DEFAULT SYSS$UPDATE  
$ @SYSS$UPDATE:VMSINSTAL saveset-name device-name [OPTIONS option-list]
```

saveset-name

The installation name for the component. For VSI Pascal, use the following installation name:

```
PASCAL06n
```

device-name

The name of the device and the directory containing the VSI Pascal kit. In the following example, the device name is DKA400: and the directory is [PASCAL06n.KIT].

```
DKA400:[PASCAL06n.KIT]
```

OPTIONS option-list

The word `OPTIONS` followed by one or more of the following option designators: A, L, N, R.

If you specify multiple options, use commas to separate the options, for example: `OPTIONS A, N`.

The table below describes the meaning of the option designators.

Table 2.1. Options for the VMSINSTAL Procedure

Option	Meaning
A	Auto_answer option. Initially creates a file that contains your answers to VMSINSTAL questions and prompts. You can then use the option (and the answer file) to save time during a reinstallation (typically after upgrading your system).
L	File log option. Logs all activity to the terminal during installation.
N ¹	Display or print the release notes. Indicates that you want to see the installation question on release notes. If you do not include the <code>OPTIONS N</code> 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 <code>OPTIONS N</code> .
R	Alternate root option. Allows you to install the product to a system root other than that of the running system.

¹Even if you omit the N option when you invoke VMSINSTAL, the VSI Pascal release notes are copied automatically to the SY\$HELP directory.

For detailed information on these VMSINSTAL options, refer to the *VSI OpenVMS System Manager's Manual, Volume 1: Essentials*.

The following example invokes VMSINSTAL to install VSI Pascal and shows the system response. This example uses the `OPTIONS N` release note option.

```
$ @SYS$UPDATE:VMSINSTAL PASCAL06n DKA400:[PASCAL06n.kit] OPTIONS N
```

```
OpenVMS 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 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 whatever option you want on the VMSINSTAL command line.

5. Confirm system backup.

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

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

6. If you fail to include the device name of the **VMSINSTAL** command line, the following prompt is displayed:

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

If this prompt is displayed, type the name of the device and directory that contain the VSI Pascal installation files.

7. Verify the product being installed.

```
The following products will be processed:
```

```
PASCAL V6.n
```

```
Beginning installation of PASCAL V6.n at hh:mm
```

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

The product name and version are displayed. The first save set (A) is restored to a subdirectory of SYS\$UPDATE.

8. Select a release notes option.

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

```
Additional Release Notes Options:
```

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

```
* Select option [2]:
```

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

- If you select option 1, VMSINSTAL displays the release notes immediately on the console terminal. You can terminate the display at any time by pressing **Ctrl/C**.
- If you select option 2, VMSINSTAL prompts you for the name of the print queue that you want to use:

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

You can then enter a queue name or press Return to send the file to the default output print device.

- If you select option 3, VMSINSTAL displays the release notes immediately on the console terminal and then prompts you for a queue name for the printed version of the release notes.

- If you choose option 4, the release notes are not displayed or printed but are still copied to the following file in the SYS\$HELP directory:

```
SYS$HELP:PASCAL06n.RELEASE_NOTES
```

You can later use the **HELP** command to find the location of the release notes in the HELP facility:

```
$ HELP PASCAL RELEASE_NOTES
```

Whichever option you choose, VMSINSTAL asks the following question next:

```
* Do you want to continue the installation [NO]?: YES
%VMSINSTAL-I-REMOVED, 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 release notes are copied to a file in the SYS\$HELP directory:

```
SYS$HELP:PASCAL06n.RELEASE_NOTES
```

Note

The name of the release notes file installed by VMSINSTAL consists of the current product name (in this case, PASCAL) and version number. Do not delete release notes for previous versions of VSI Pascal.

9. Install the compiler.

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

The VSI Pascal kit contains the compiler, message files, command line definition, and help files.

10. Install STARLET.

```
* Do you want to install the VSI Pascal definition files [YES]?
```

The VSI Pascal kit contains definition files for OpenVMS System Services and several run-time library facility codes. These system definition files are built using information distributed with the OpenVMS operating system.

The installation procedure determines whether VSI Pascal definition files already exist. If the files do not exist, the installation procedure notifies you of this and advises you to create the definition files.

If the VSI Pascal definition files exist, but the system definitions supplied by OpenVMS (which are the basis for the VSI Pascal definition files) have been modified since the last time the VSI Pascal definition files were created, the installation procedure advises you to recreate the files.

If the VSI Pascal definition files exist and if the system definitions supplied by OpenVMS have *not* been modified since the last time the VSI Pascal definition files were created, the procedure tells you that it is not necessary to recreate the definition files.

11. Install the examples.

```
* Do you want to install the VSI Pascal example programs [YES]?
```

The VSI Pascal kit contains a set of example programs using many features of VSI Pascal and OpenVMS. The examples are installed in the directory `SY$COMMON:[SYSHLP.EXAMPLES.PASCAL]`. You can access them using the logical `PASCAL$EXAMPLES`, if you run the optional startup file `SY$STARTUP:PASCAL$STARTUP.COM` (see *Section 3.3, "Editing System Files"*).

12. Save previous compiler.

* Do you want to save your existing VSI Pascal compiler [NO]?

The VSI Pascal kit contains support to save your existing VSI Pascal compiler for access later. The installation provides various command files to display and select the saved VSI Pascal compilers. See *Section 1.3, "Multiple Version Support"* for more information.

13. Purge files.

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

You have the option to purge files from previous versions of VSI Pascal that are superseded by this installation. Purging is recommended. If you answered YES to the question in 12, you can answer YES to this question with no danger of deleting any saved compilers.

14. Choose the Installation Verification Procedure (IVP) option.

The installation procedure now asks if you want to run the IVP. The IVP for VSI Pascal checks that the installation is successful. VSI recommends that you run the IVP.

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

This kit contains an IVP that is used to verify the correct installation of the VSI Pascal compiler. The IVP is located in `SY$TEST:PASCAL$IVP.COM`.

After VSI Pascal is installed, you can run the IVP independently to verify that the software is available on your system. You might need to run the IVP after a system failure to make sure that users can access VSI Pascal.

15. Respond to license registration queries.

Product: PASCAL
Producer: VSI
Version: 6.n
Release Date: dd-mm-yyyy

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

The installation procedure displays license information about your product and then asks if you have registered and loaded your Product Authorization Key (PAK).

If you have not registered and loaded your PAK, you must answer NO to this question. You must register and load your PAK to successfully complete the installation. If you have not done so, you should stop the installation, register and load your PAK, and then start the installation procedure again.

16. 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. If you chose to have files purged, that work is done now. The following message is displayed:

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

17. Observe the Installation Verification Procedure (IVP). If you chose to run the IVP, VMSINSTAL runs it now. When the IVP runs successfully, you see the following messages displayed:

```
** Successful Installation of VSI Pascal V6.n on dd-mmm-yyyy at hh:mm **
      Compiler Version = VSI Pascal V6.n
*-----*
* Installation Verification Procedure for      *
* VSI Pascal STARLET libraries                *
*-----*
```

18. The installation procedure ends.

```
Installation of VSI Pascal Vn.n completed at hh:mm
VMSINSTAL procedure done at hh:mm
```

These messages indicate that the entire installation procedure is complete.

You can now log out of the privileged account:

```
$ LOGOUT
SYSTEM      logged out at dd-mmm-yyyy 20:20:02
```

Note

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.

2.2. Recovering from Installation Errors on Alpha and IA-64

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

```
%VMSINSTAL-E-INSFAIL, The installation of VSI Pascal Vn.n has failed.
```

If the IVP fails, you see these messages:

```
The VSI Pascal Vn.n Installation Verification Procedure failed.
%VMSINSTAL-E-IVPFAIL, The IVP for VSI Pascal Vn.n has failed.
```

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

- The operating system version is incorrect.
- Quotas necessary for successful installation are insufficient.
- System parameter values for successful installation are insufficient.

- The OpenVMS help library is currently in use.
- The product license has not been registered and loaded.

For descriptions of the error messages generated by these conditions, see the OpenVMS documentation on system messages, recovery procedures, and OpenVMS software installation. If you are notified that any of these conditions exist, you should take the appropriate action as described in the message. For information on installation requirements, see *Section 1.4, "Installation Procedure Requirements"*.

2.3. How to Install VSI Pascal on x86-64

The VSI Pascal installation procedure consists of a series of questions and informational messages.

To abort the installation procedure at any time, press **Ctrl/Y**.

When the system prompts you with a question during the installation procedure, the default answer, if any, is enclosed in brackets "[]".

The installation steps are as follows:

1. Make sure you have downloaded the latest kit file. For example, X86VMS-PASCAL-Xnnnn-nnn.ZIP
2. Use the UNZIP utility to extract the installation files.

The ZIP/UNZIP utility can be found on your system in the following directories:

```
SYS$COMMON: [SYSHLP.UNSUPPORTED.ZIP]
SYS$COMMON: [SYSHLP.UNSUPPORTED.UNZIP]
```

To be able to use the **UNZIP** command, create a foreign command that will run the UNZIP utility, for example:

```
$ UNZIP == "$SYS$COMMON:[SYSHLP.UNSUPPORTED.UNZIP]UNZIP.EXE"
```

For information on how to use this utility, execute UNZIP.

3. Log in to a privileged account on the system (or cluster) where you will install VSI PASCAL. This account must have the following privileges enabled:
 - BYPASS
 - CMKRNL
 - SYSLOCK
 - SYSPRV

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

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

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

```
$ SHOW PROCESS/PRIVILEGES
```

4. To extract the VSI Pascal online release notes before you install VSI Pascal, enter the following command:

```
$ PRODUCT EXTRACT RELEASE_NOTES PASCAL /SOURCE=disk:[directory]
```

In this command, *disk:[directory]* is the specification of the disk and directory containing the product installation files. If your process default directory is the same directory that contains the VSI Pascal product distribution files, you can specify the source directory as **/SOURCE= []**.

You can view or print the file `PASCALnnn.RELEASE_NOTES` before you continue with the installation. For example:

```
$ TYPE/PAGE PASCAL065.RELEASE_NOTES
```

5. Set the default directory to a writeable directory to allow the IVP to succeed. Then run the **PRODUCT INSTALL** command, pointing to the kit location. For example:

```
$ SET DEFAULT SYS$MANAGER
$ PRODUCT INSTALL PASCAL /SOURCE=kit-device:[kit-location]
```

Installation takes about 2-5 minutes, depending on your system. When installation has been completed, the DCL \$ prompt reappears.

6. To obtain a list of files installed, enter the following command:

```
$ PRODUCT SHOW OBJECT /PRODUCT=PASCAL
```

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

2.4. Recovering from Installation Errors on x86-64

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 System Messages and Recovery Procedures Reference Manual* or the online **HELP/MESSAGE** command. Take the appropriate action described in the message.

Chapter 3. After Installing VSI Pascal

VSI Pascal is now installed and can be invoked by all users with the **PASCAL** command. You can perform the following tasks after installing VSI Pascal:

- Running the Installation Verification Procedure (IVP) separately
- Making sure privilege and quota requirements are met
- Editing the system startup and shutdown files
- Enhancing performance

The following sections describe these tasks in detail.

3.1. Running the Installation Verification Procedure (IVP) Separately

You usually run the Installation Verification Procedure (IVP) during installation. If you want to run the IVP separately to ensure the integrity of installed files should system problems occur, enter the following command procedure:

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

If the IVP fails for any reason, the following message is displayed:

```
VSI Pascal VERSION V6.n TEST FAILED
```

3.2. User Account Requirements

Several products cannot be used unless certain privilege and quota requirements are met by user accounts.

VSI Pascal does not require any special privileges. There is no benefit from installing the VSI Pascal compiler with privileges.

3.3. Editing System Files

You can edit the system startup file to provide for automatic startup of VSI Pascal when your system is rebooted. Use the optional startup file to define the PASCAL\$EXAMPLES logical name and to install VSI Pascal as a shared image (see *Section 3.4.1, "Installing VSI Pascal as a Shared Image"*).

Edit the system startup file SYS\$STARTUP:SYSTARTUP_VMS.COM to include the following line:

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

3.4. Enhancing VSI Pascal Performance

This section includes information on system tuning and explains how to install VSI Pascal as a shared image.

3.4.1. Installing VSI Pascal as a Shared Image

If you expect VSI Pascal 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 VSI Pascal as a shared image on a system that is currently running, use the optional VSI Pascal startup file:

```
SYS$STARTUP:PASCAL$STARTUP.COM
```

VSI recommends that you install VSI Pascal 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.

The requirements for additional global pages and global sections are listed in *Section 1.4.2, "System Parameters"*.