VAX LISP/VMS Installation Guide

Order Number: AA–Y922F–TE

This document contains instructions for installing VAX LISP 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 LISP Version 3.1.

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Preface

This document is intended for system managers. It describes how to install VAX LISP on the VMS operating system. This document applies to VAX LISP Version 3.1. The major version number is represented by the digit to the left of the decimal point, and the maintenance update version number is indicated by the digit 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 LISP for any other reason.

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

For more information about installing VAX LISP 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.

Chapter 1

Preparing to Install VAX LISP

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

VAX LISP Version 3.1 requires VMS Version 5.2 or 5.3 or higher.

1.2 Accessing the Online Release Notes

VAX LISP provides online release notes. The prompt to display or print the release notes during the installation appears in step 3 of the installation procedure when you invoke VMSINSTAL with the OPTIONS N parameter (the OPTIONS N parameter is available only with VMS Version 4.4 or higher).

To obtain the release notes after the installation, type or print the file SYS$HELP:LISP031.RELEASE_NOTES.

Online help also directs you to the release notes file. After the installation, type the following command:

```
$ HELP LISP RELEASE_NOTES Return
```

1.3 Installation Procedure Requirements

The installation takes approximately two hours and forty-five minutes to three hours depending on the type of media and your system configuration. Before installing VAX LISP, you must have the following privileges and resources:

- CMKRNL, WORLD, and SYSNAM privileges.
- The following minimum blocks of free disk space during and after installation based on which parts of the LISP kit you install:

Installation Option	Blocks of Disk Space During Installation	Blocks of Disk Space After Installation
Only the VAX LISP/VMS image including support for DECwindows	19,226	18,804
Only the VAX LISP/VMS image including support for VWS	13,746	13,296
The entire VAX LISP/VMS kit including support for DECwindows	93,627	92,985

  - Saveset A occupies 350 blocks.
  - Saveset B occupies 20,000 blocks.
  - Saveset C occupies 14,300 blocks.
  - Saveset D occupies 22,500 blocks.
  - Saveset E occupies 4,400 blocks.
  - Saveset F occupies 4,400 blocks.
  - Saveset G occupies 2,100 blocks.
  - Saveset H occupies 26,400 blocks.
  - Saveset I occupies 4,400 blocks.
  - Saveset J occupies 2,000 blocks.
  - Saveset K occupies 16,000 blocks.
- Eight megabytes of address space.
- A minimum of 16,000 virtual pages (VIRTUALPAGECNT) at installation.
- Eight megabytes of memory to run in a standalone terminal or VWS environment.
- Fourteen megabytes of memory to run in a standalone DECwindows environment with both the client and server executing on the same system.

Using VAX LISP in conjunction with increased memory capability improves performance. The memory size for most typical configurations is at least 16 megabytes.

NOTE

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

1.3.1 Calculating the Values for WSMAX, PQL_DWSDEFAULT, and PROSECTCNT

To run VAX LISP, you must have appropriate values for the WSMAX, PQL_DWSDEFAULT, and PROSECTCNT system parameters. Inappropriate values result in the user's getting SECTBLFUL (Section table is full) error messages when trying to activate a LISP image. There is no hard and fast rule for appropriate values for these system parameters, but large images or processes that activate many images require more PSTE space.

You can find further information about these SYSGEN parameters in *VAX/VMS Internals and Data Structures* and *Introduction to VMS System Services*.

Section 1.3.2 describes the procedures for increasing these values.

1.3.2 Changing System Parameter Values with AUTOGEN

You 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 following file:

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

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

```
WSMAX = 1024
```

Or for incremental system parameters:

```
ADD_GBLPAGES = 2000
```

(Digital recommends using the ADD_x form of system parameter modifier. Avoid entering absolute values.)

Now, 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. The /[NO]FEEDBACK qualifier on the AUTOGEN command line could be appropriate for your system. See the *Guide to Setting Up a VMS System* for more information.

1.4 User Account Quotas and Privileges

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

- Paging file quota (PGFLQUOTA) 10,500 pages (minimum)
- Working set size (WSDEF) 200 pages (minimum)

Use the VMS Authorize Utility (AUTHORIZE) to compare the current values of these quotas with the requirements for VAX LISP. 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 *VMS Authorize Utility Manual*.

1.5 VMS Tailoring Classes

For Version 5.0 or later systems, the following VMS classes are required for full functionality for VAX LISP:

- Programming Support
- Utilities

For more information on VMS classes and tailoring, see the VAX/VMS Operating System Software Product Description (SPD 25.01.xx).

1.6 DECwindows Tailoring Classes

You can run VAX LISP with a DECwindows interface. DECwindows must be installed separately from VAX LISP and from the VMS operating system. VAX LISP can use DECwindows in two modes:

- Standalone execution, running the X11 display server and the client application on the same machine
- Remote execution, running the X11 display server and the client application on different machines

To run VAX LISP with DECwindows in the standalone execution mode, the following DECwindows components must be installed:

- VMS DECwindows Compute Server
- VMS DECwindows Device Support
- VMS DECwindows Programming Support

To run VAX LISP with DECwindows in the remote execution mode, the following DECwindows components must be installed:

- On the server machine:
  - VMS DECwindows Device Support
- On the client machine:
  - VMS DECwindows Compute Server
  - VMS DECwindows Programming Support

1.7 VMS License Management Facility

The VMS License Management Facility (LMF) became available with Version 5.0 of the VMS operating system. If you are installing VAX LISP on a VMS Version 5.1 or later system, you must register your VAX LISP software license. Normally, you register your VAX LISP license *before* beginning the installation. This permits you to run the Installation Verification Procedure (IVP) during the installation, and to use the software immediately afterwards.

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

During the installation, you are asked if you have registered the VAX LISP license and loaded the appropriate authorization key. You must register and load your license for VAX LISP *before* you start the installation in order to run the IVP and use the software.

To register a license under VMS Version 5.0, first log in to the system manager's account, SYSTEM. Choose *only one* of the following two ways to perform the registration:

1. Set default to SYS$UPDATE and invoke the VMSLICENSE.COM procedure.

   ```
   $  SET DEFAULT SYS$UPDATE Return
   $  @VMSLICENSE Return
   ```

   When the procedure prompts you for information, respond with data from your PAK. When the procedure asks if you want to load the license, respond YES. When the procedure completes successfully, you see the following message:

   ```
   DEC VAX LISP has been registered.
   ```

2. Issue the LICENSE REGISTER command at the DCL level with the appropriate qualifiers that correspond to information on the PAK. (See the *VMS License Management Utility Manual* for instructions.) Then activate the license with the LICENSE LOAD command.

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

1.8 Using VMSINSTAL

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

The VMSINSTAL command procedure has the following syntax:

```
$ @SYS$UPDATE:VMSINSTAL LISP ddcu: [OPTIONS N]
```

You can also type an asterisk (*) in place of LISP. If you are installing from magnetic tape, you can use the asterisk to save installation time; the asterisk causes VAX LISP to be installed with a minimum of tape passes. For example, the first parameter to VMSINSTAL for VAX LISP Version 3.1 could be either LISP or *.

ddcu:
The symbol `:ddcu` represents the name of the device on which the distribution volumes will be mounted for the VAX LISP 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 LISP. 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
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:

- Whether you 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.
- Whether 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

VMSINSTAL then checks whether the following conditions exist. If so, discontinue the conditions before resuming the installation procedure.

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

If VMSINSTAL detects either of these conditions, you will be asked whether you want to continue the installation. If you want to continue, type YES. If you want to stop the installation, press Return.

Chapter 2

Installing VAX LISP

This chapter explains how to use the VMSINSTAL procedure to install VAX LISP and to verify the installation. The chapter 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 the DCL level. If you want to retry the installation procedure after pressing Ctrl/Y, you must proceed from step 2.

2.1 Installation Procedure

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

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

Step 2: Invoke VMSINSTAL.

REMINDER

If you have not yet registered and loaded a license for VAX LISP, be sure to read Section 1.7 before you start the installation.

```
$  @VMSINSTAL LISP MUA0: OPTIONS N  Return

      VAX/VMS Software Product Installation Procedure V5.3

It is 07-FEB-1990 at 18:02.
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.

VMSINSTAL begins installing the kit.

```
The following products will be processed:

 VAX LISP V3.1

     Beginning installation of

 VAX LISP V3.1 at 18:13

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

Step 3: 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 [3]:  Return
```

If you select option 1, VMSINSTAL displays the release notes on line immediately. You can terminate the display at any time by pressing Ctrl/C.

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.

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

If you select option 3, VMSINSTAL displays the release notes on line 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 LISP release notes are then copied to SYS$HELP:LISP031.RELEASE_NOTES.

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. Take care not to delete release notes for previous versions of VAX LISP.

Next, VMSINSTAL displays the following prompt:

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

If you want to continue the installation, type YES and press Return. If you type NO or press Return, VMSINSTAL discontinues the installation. In either case, VMSINSTAL moves the release notes to SYS$HELP.

Step 4: Respond to purging previous versions of VAX LISP check.

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

The directories SYS$HELP, SYS$MANAGER, and SYS$SYSROOT may contain previous versions of VAX LISP files. These files are replaced during the installation with new files, but the old files are not automatically purged. Purging is recommended, unless it is necessary to save a LISP ‘‘suspended system’’ built with a previous version of VAX LISP. In response to the purging prompt, press Return to purge the files or type NO to keep them.

Step 5: Respond to license registration queries.

VAX LISP 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 LISP. The following is an example of such information:

```
Product:       LISP
Producer:      DEC
Version:       3.1
Release Date:  23-MAR-1990

* 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 (PAK) to successfully complete the installation. If you have not done so, you should stop the installation, register and load your PAK, and then restart the installation.

Step 6: Install the VAX LISP product files.

```
Do you wish to install the VAX LISP product files (20000 blocks)
[YES]? Return
```

The procedure now asks whether you want to install the product files saveset on the tape, and displays the size of the saveset. The product files contain everything you need to run VAX LISP: the LISP executable image, online documentation library, the CLD file, and Installation Verification Procedure (IVP). Press the Return key if you want to install the saveset. Type NO if you do not.

Step 7: Respond to DECwindows check.

```
Do you want the DECwindows version of VAX LISP [YES]? Return
```

The procedure now asks whether you want to install the DECwindows version of VAX LISP. Press the Return key to install the DECwindows version. If you do not want the DECwindows version, type NO in response to the prompt. Typing NO gives you the UIS version of VAX LISP. When you press the Return key, the procedure asks you for the directory where the VAX LISP product files are to be installed:

```
In which directory are the VAX LISP product files to be installed
[SYS$COMMON:[VAXLISP]]? Return
```

You must now tell VMSINSTAL the desired location of the saveset you selected to install. Press the Return key if you are satisfied with the default directory, or enter a different location. If the directory you specify does not already exist, the procedure asks:

```
Directory SYS$COMMON:[VAXLISP] does not exist.  Should it be created
[YES]? Return
```

Step 8: Install the VAX LISP system-building library files.

```
Do you wish to install the VAX LISP system-building library files
(22500 blocks) [NO]? Return
```

The VAX LISP System-Building Utility enables you to create a LISP system that is a single executable image. This user-built system can serve as a customized VAX LISP development environment that can be shared efficiently by multiple users at the same time or as a delivery vehicle for applications based on VAX LISP. The system-building library files are not required to run VAX LISP.

Type YES to install the system-building library files at this time. Type NO or press the Return key to skip installing the files. If you choose to install the system-building library files, the procedure asks you for a directory.

Step 9: Install the VAX LISP example files.

```
Do you wish to install the VAX LISP examples (4400 blocks) [NO]? Return
```

The procedure now asks whether you want to install the VAX LISP example files. The VAX LISP example files contain some useful VAX LISP utilities that serve as examples of LISP programming style. The VAX LISP example files are not required in order to run VAX LISP.

Type YES to install the VAX LISP example files at this time. Type NO or press the Return key to skip installing the example files. If you choose to install the example files, the procedure asks you for the name of the directory where the files are to be installed.

Step 10: Install the Portable Common Loops (PCL) example files.

```
Do you wish to install the PCL examples (4400 blocks) [NO]? Return
```

The procedure now asks whether you want to install the PCL example files. The kit contains the 05/23/89 (Victoria Day) version of Portable Common Loops, the publicly available version of the Common LISP Object System (CLOS). The PCL example files are not required to run VAX LISP.

Type YES to install the PCL files at this time. Type NO or press the Return key to skip installing the files. If you choose to install the PCL files, the procedure asks you for a directory. PCL is normally installed in its own subdirectory.

Step 11: Install the RdbLISP example files.

```
Do you wish to install the RdbLISP examples (2100 blocks)
[NO]? Return
```

The procedure now asks whether you want to install the RdbLISP example files. The RdbLISP software provides an interface layer between Digital's relational database (Rdb) and VAX LISP. The RdbLISP example files are not required to run VAX LISP.

Type YES to install the RdbLISP files at this time. Type NO or press the Return key to skip installing the files. If you choose to install the RdbLISP files, the procedure asks you for a directory.

Step 12: Install the Foxglove example files.

```
Do you wish to install the Foxglove examples (26400 blocks)
[NO]? Return
```

The procedure now asks whether you want to install the Foxglove example files. Foxglove is a rapid-prototyping language for developing rule-based application systems. The Foxglove example files are not required to run VAX LISP.

Type YES to install the Foxglove files at this time. Type NO or press the Return key to skip installing the files. If you choose to install the Foxglove files, the procedure asks you for a directory.

Step 13: Install the GKS and GKS3D LISP bindings.

```
Do you wish to install the GKS and GKS3D bindings
(4400 blocks) [NO]? Return
```

The procedure now asks whether you want to install the LISP bindings for GKS and GKS3D. GKS is the Graphics Kernel System; GKS3D is its three-dimensional version. The GKS and GKS3D bindings are not required to run VAX LISP.

Type YES to install the GKS and GKS3D bindings at this time. Type NO or press the Return key to skip installing the files. If you choose to install the GKS and GKS3D files, the procedure asks you for a directory.

Step 14: Install the VAXFlavors example files.

```
Do you wish to install the VAXFlavors examples (2000 blocks)
[NO]? Return
```

The procedure now asks whether you want to install the VAXFlavors example files. VAXFlavors is an implementation of Flavors under VAX LISP. It implements an object-oriented programming system under Common LISP. The VAXFlavors example files are not required to run VAX LISP.

Type YES to install the VAXFlavors example files at this time. Type NO or press the Return key to skip installing the files. If you choose to install the VAXFlavors files, the procedure asks you for a directory.

Step 15: Install the VMS Starlet example files.

```
Do you wish to install the Starlet examples (16000 blocks)
[NO]? Return
```

The procedure now asks whether you want to install the VMS Starlet example files. Starlet is an interface to VMS system services routines. The Starlet example files are not required to run VAX LISP.

Type YES to install the Starlet example files at this time. Type NO or press the Return key to skip installing the files. If you choose to install the Starlet files, the procedure asks you for a directory.

Step 16: Respond to previous version save check.

```
Do you want to save the previous version of VAX LISP (95380 blocks)
[NO]? Return
```

This question does not appear unless a previous version of VAX LISP is already installed in the default directory.

VAX LISP users can create ‘‘suspended systems’’ that contain LISP programs and data. A suspended system depends on the version of VAX LISP used to create it. Since the installation procedure overwrites any previous version of VAX LISP in the default directory, installing the new version makes user-created suspended systems unusable. You may want to save your previous versions of VAX LISP so that users can resume their suspended systems.

To save the previous version of VAX LISP, you can allow the procedure to move it to another directory before you install the new version in SYS$COMMON:[VAXLISP].

If you do not want to save your previous version, type NO or press the Return key. If you want to save it, type YES. The procedure now asks for a new location for the previous version of VAX LISP:

```
In which directory should the previous version be saved
[SYS$COMMON:[VAXLISP.V030]]? Return
```

Press the Return key if you are satisfied with the default directory, or enter a different location. (The default directory automatically includes the correct version number.) Again, if the directory you specify does not already exist, the procedure asks you if it should be created.

See Chapter 4 of this manual for directions on using the old version of VAX LISP after you have moved it out of SYS$COMMON:[VAXLISP].

Step 17: Respond to IVP check.

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

The IVP runs tests to check whether the installation procedure was successful. Press Return to run the IVP after the installation only if you have properly configured your system. Because VAX LISP will not run until you have properly configured your system, you cannot run the IVP if you have not already configured your system. If you do not want to run the IVP, type NO in response to the prompt.

Step 18: Read informational messages.

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

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

```
%LISP-I-QUESDONE, There are no more installation questions to be
answered

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

%VMSINSTAL-I-MOVEFILES, files will now be moved to their target
directories...
Executing VAX LISP startup procedure...
```

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

The SYS$HELP:HELPLIB.HLB file is updated to include the new version of the VAX LISP HELP text.

See Appendix A for a complete list of the files added to the system.

If you typed YES in response to the prompt that requests a file purge at step 4, previous versions of the VAX LISP files are now purged.

NOTICE TO 9-TRACK TAPE CUSTOMERS

For 9-Track Tape installations only, if you are installing one or more of the examples files, there is an additional step in the middle of Step 18. The installation procedure asks you to mount the next distribution volume.

```
Please mount the next distribution volume on HSC001$MUA16:.
(If no more volumes, answer NO.)
Are you ready?  yes
%MOUNT-I-MOUNTED, LSP031 mounted on _HSC001$MUA16:.
%VMSISNTAL-I-RESTORE, Restoring product saveset F ...
```

Step 19: Observe the Installation Verification Procedure.

If you chose to run the IVP in step 17, VMSINSTAL now calls the IVP to verify that VAX LISP was installed successfully.

```
VAX LISP Installation Verification Procedure (IVP)
Starting compilation of file
  VMI$ROOT:[SYSUPD.LISP031]LISPIVP.LSP;1
```

```
FIBONACCI compiled.
PRINT-FIBONACCI-TABLE compiled.
   .
   .
   .
Finished compilation of file
 VMI$ROOT:[SYSUPD.LISP031]LISPIVP.LSP;1
0 Errors, 0 Warnings

VAX LISP [TM]
V3.1

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A table of the first 20 Fibonacci numbers
   .
   .
   .
VAX LISP V3.1 IVP Completed Successfully
```

Step 20: End the installation procedure.

```
   Installation of
 VAX LISP V3.1 completed at 18:51

   VMSINSTAL procedure done at 18:54

$  LOGOUT  Return
SYSTEM     logged out at 07-FEB-1990 18:56:42.19
```

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.

2.2 Installing VAX LISP on a VAXcluster

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

1. Issue the LICENSE LOAD command to activate the license on each node in the VAXcluster on which VAX LISP is to be executed as described in the *VMS License Management Utility Manual*.
2. Run SYS$MANAGER:LISPSTART.COM on each node of the cluster that has a software license.

3. 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.

Chapter 3

Completing the Installation

To complete a new installation of VAX LISP, you must modify the site-specific system startup file, SYS$MANAGER:SYS$STARTUP_V5.COM. You should also modify the default site-specific startup file for VAX LISP, SYS$STARTUP:LISP$SITE.COM. If you are installing VAX LISP on an AI VAXstation, read Chapter 9 on recommended system parameters and authorization quotas. Chapter 4 explains how to use a previous version of VAX LISP that has been moved out of the main directory.

3.1 Modifying the System Startup File

After the installation procedure is concluded, add the following line to your site-specific system startup file, SYS$MANAGER:SYS$STARTUP_V5.COM:

```
$  @SYS$COMMON:[SYS$STARTUP]LISP$STARTUP.COM
```

This command line invokes the VAX LISP system startup procedure every time you boot your system. The startup procedure defines:

- The system logical name LISP$SYSTEM to mean the VAX LISP product directory
- The logical name LISP$LIBRARY to mean the library files directory

You must add the following line to the site-specific system startup file if you are installing the UIS version of VAX LISP.

```
$  @SYS$COMMON:[SYS$STARTUP]LISP$UIS_STARTUP.COM
```

You must also add a line to the site-specific system startup file for each of the example files that you have installed. For example, to invoke the PCL example files, you must add the following line in the system startup file:

```
$  @SYS$COMMON:[SYS$STARTUP]LISP$PCL_STARTUP.COM
```

Each command line defines a logical that points to the directory containing the example files. Table 3–1 gives the name of the .COM file to add to the system startup file for each of the example files.

Table 3–1: .COM File Names for the System Startup File

File	.COM File
LISP Example	LISP$EXAMPLE_STARTUP.COM
PCL Example	LISP$PCL_STARTUP.COM
RdbLISP Example	LISP$RDBLISP_STARTUP.COM
Foxglove Example	LISP$FOXGLOVE_STARTUP.COM
GKS/GKS3D Bindings	LISP$GKS_STARTUP.COM
VAXFlavors Example	LISP$VAXFLAVORS_STARTUP.COM
Starlet Example	LISP$STARLET_STARTUP.COM
UIS	LISP$UIS_STARTUP.COM

3.2 Modifying the VAX LISP Startup File

The file SYS$MANAGER:SYS$STARTUP_V5.COM invokes the LISP command file LISP$STARTUP.COM when you boot your VMS system. This, in turn, invokes the file SYS$STARTUP:LISP$SITE.COM. This last command file is a default site-specific startup procedure for VAX LISP.

This file includes default LISP system logical names and default commands for installing shareable sections. You should modify the logical name definitions to make them appropriate for your site.

If your VAX LISP system has only one user or if enough global pages are not available, you may not want to install LISP shareable. The benefit of installing shareable sections is that multiple users running VAX LISP use only one copy of the LISP system rather than a separate copy for each user, thereby saving valuable system resources.

This skeleton LISPSITE.COM file will be installed in SYS$STARTUP, provided such a file is not already there:

```
$!      VAX LISP site-specific startup procedure.
$!      This procedure is invoked by the lispstart procedure.
$!      Remove comments and alter this file to suit your site.
$
$       DEFINE/SYSTEM/EXECUTIVE LISP$TIME_ZONE 0
$       DEFINE/SYSTEM/EXECUTIVE LISP$DAYLIGHT_SAVING_TIME_P NO
$!      DEFINE/SYSTEM/EXECUTIVE LISP$SHORT_SITE_NAME "?"
$!      DEFINE/SYSTEM/EXECUTIVE LISP$LONG_SITE_NAME "?"
$!      DEFINE/SYSTEM/EXECUTIVE LISP$MACHINE_INSTANCE "?"
$
$       SET NOON
$!      INSTALL :=$SYS$SYSTEM:INSTALL/COMMAND_MODE
$!      INSTALL CREATE LISP$SYSTEM:LISP/OPEN/HEADER_RESIDENT/SHARED
$       SET ON
$       EXIT
```

You can add to this file any other site-specific commands for starting VAX LISP.

To install your system shareable, delete the comment character (!) from the beginning of each command between SET NOON and SET ON in the default LISPSITE.COM file.

3.3 Defining the LISP System Logical Names

The following list describes the LISP system logical names and shows how to define them.

- LISP$TIME_ZONE

  Define LISP$TIME_ZONE to indicate your local time zone relative to Greenwich Mean Time (GMT). The value can be an integer or a floating-point number in the range 0 (inclusive) to 24 (exclusive). Floating-point numbers are used when an area is not in a full hour time zone and are specified by format ‘‘hour.fraction’’. To determine your local time zone, consult an atlas.

  Examples:

```
$DEFINE/SYSTEM LISP$TIME_ZONE 4.5   !Newfoundland
$DEFINE/SYSTEM LISP$TIME_ZONE 5     !Boston
$DEFINE/SYSTEM LISP$TIME_ZONE 8     !San Francisco
$DEFINE/SYSTEM LISP$TIME_ZONE 12.75 !Chatham Island
$DEFINE/SYSTEM LISP$TIME_ZONE 23    !Munich
```

  NOTE

  This logical name is required.

- LISP$DAYLIGHT_SAVING_TIME_P

  Define LISP$DAYLIGHT_SAVING_TIME_P to specify whether you are on daylight saving time. The values T, TRUE, YES, and 1 mean YES; the values F, FALSE, NO and 0 mean NO. You should update this logical name each time daylight saving time changes.

  In the following example, the NO after the logical name means it is not daylight saving time.

  Example:

```
$  DEFINE/SYSTEM-
          LISP$DAYLIGHT_SAVING_TIME_P NO
```

- LISP$SHORT_SITE_NAME

  Define LISP_SHORT_SITE_NAME to specify a short string that describes your site. This string is returned by the LISP `SHORT-SITE-NAME` function. An example is "Widget Group".

  Example:

```
$  DEFINE/SYSTEM/-
          LISP$SHORT_SITE_NAME "Widget Group"
```

- LISP$LONG_SITE_NAME

  Define LISP$LONG_SITE_NAME to specify a long string that describes your site. This string is returned by the LISP `LONG-SITE-NAME` function. An example is "Super Widget Development Group, Widget Corp".

  Example:

```
$  DEFINE/SYSTEM LISP$LONG_SITE_NAME-
          "Super Widget Development Group, Widget Corp"
```

If you would like the long site name to occupy several lines, you can create a text file for it. Then, refer to the text file with the logical name. Suppose, for example, that the file SYS$MANAGER:LISPSITE.TXT contained the following text:

```
Super Widget Development Group
Intelligent Widget Corporation
One First Street
Any Town, Massachusetts 01001
```

You can define LISP$LONG_SITE_NAME by placing an at sign (@) in front of the name of the text file you created.

Example:

```
$  DEFINE/SYSTEM LISP$LONG_SITE_NAME-
          "@SYS$STARTUP:LISPSITE.TXT"
```

- LISP$MACHINE_INSTANCE

  Define LISP$MACHINE_INSTANCE as a string that identifies the specific computer on which VAX LISP is running. This string is returned by the `LISP-MACHINE-INSTANCE` function. An example is "Super Widget VAX-6240".

  Example:

```
$  DEFINE/SYSTEM LISP$MACHINE_INSTANCE-
         "Super Widget VAX-6240"
```

  If this logical name is not defined and you are running DECnet, your computer's node name is used as the machine instance.

In the preceding list of system logical names, the two logical names LISP$TIME_ZONE and LISP$DAYLIGHT_SAVING_TIME_P are used by the LISP function `GET-DECODED-TIME`, which is described in *Common LISP: The Language*. The VAX LISP functions `SHORT-SITE-NAME`, `LONG-SITE-NAME`, and `MACHINE-INSTANCE` are described in the *VAX LISP/VMS Object Reference Manual*.

Chapter 4

Using Previous Versions of VAX LISP

By default, the files comprising a saved version of VAX LISP are put in a subdirectory under the main VAX LISP directory (referred to by the logical name LISP$SYSTEM). The subdirectory name uses the VAX LISP version number in the format V*vvu*, with *vv* representing the 2-digit version and *u* representing the 1-digit update. For example, Version 3.0 would be saved in the subdirectory V030.

To run a saved version of VAX LISP, you must define the logical name LISP$SYSTEM to refer to the subdirectory containing the files of that saved version. Then you use the standard LISP command to invoke the old version of the LISP system.

Chapter 5

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$TEST:LISP$IVP
```

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

```
The VAX LISP V3.1 Installation Verification Procedure failed.
%VMSINSTAL-E-IVPFAIL, The IVP for VAX LISP V3.1 has failed.
```

Chapter 6

Error Conditions

If the installation procedure fails for any reason, a message such as the one following is displayed:

```
%VMSINSTAL-E-INSFAIL, The installation of VAX LISP V3.1 has failed.
```

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

- Operating system version is incorrect.
- Quotas necessary for successful installation are insufficient (see Section 1.3).
- Process quotas required by VMSINSTAL are incorrect (see Section 1.8).
- The VMS HELP library is currently in use.
- The product was registered incorrectly or not registered.

For descriptions of the error messages generated by these conditions, see the *VMS System Messages and Recovery Procedures Reference Volume*, your processor-specific installation/operations guide, or the *VMS License Management Utility Manual*.

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.

Chapter 7

Installing VAX LISP as a Shared Image

If VAX LISP 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 *VMS System Messages and Recovery Procedures Reference Volume*.

First, determine the number of available global pages and global sections on your system. See Section 1.3 for information on how to do this. Installing VAX LISP as a shared image requires:

- A minimum of 11,000 free global pages plus the size (in number of disk blocks) of the file SYS$LIBRARY:DCLTABLES.EXE at installation.
- A minimum of 4 free global sections at installation. Three global sections are used after installation.

Then, invoke the VMS Install Utility and install VAX LISP as a shared image by typing the following commands:

```
$  INSTALL:= $SYS$SYSTEM:INSTALL/COMMAND_MODE Return

INSTALL>  CREATE LISP$SYSTEM:LISP.EXE/OPEN/SHARED/HEADER_RESIDENT  Return
INSTALL>  EXIT Return
```

Finally, update the system startup file to install VAX LISP. Modify SYS$STARTUP:LISPSITE.COM by removing the commented lines (see Section 3.2).

Chapter 8

Maintenance Updates

Digital may periodically issue maintenance updates of VAX LISP. Each update consists of an installation kit. You should install this kit as described in this document or in any documentation accompanying 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, each maintenance update includes new release notes. The release notes describe the changes that have been made to VAX LISP since the previous release.

The update release notes are provided on line. You should read the release notes when you first install VAX LISP; 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 LISP, follow the installation procedure through step 5. To locate the release notes after VAX LISP is installed, display or print the file SYS$HELP:LISP031.RELEASE_NOTES, or type the following command:

```
$ HELP LISP RELEASE_NOTES Return
```

Chapter 9

Tuning the VAXstation

You can tune your VAXstation in one of two ways:

- By adjusting parameter values in your system parameters file
- By adjusting authorization quotas in your user accounts

9.1 Recommended System Parameters

The following sample MODPARAMS.DAT file is for a typical monochrome VAXstation. The values of these AUTOGEN parameters are recommended for optimal performance of VAX LISP on a VAXstation with 9 megabytes of memory.

SAMPLE SYS$SYSTEM:MODPARAMS.DAT FILE

```
!Site specific AUTOGEN data file.  In a VAXcluster where a
!common system disk is being used, this file should reside
!in SYS$SPECIFIC:[SYSEXE], not a common system directory.
!
!Add modifications that you wish to make to AUTOGEN's hardware
!configuration data, system parameter calculations, and page,
!swap, and dump file sizes to the bottom of this file.
!
CHANNELCNT=2048       !Number of allowed channels
CTLPAGES=500          !Used with workstation windows
SPTREQ=2000           !Required number of system page table
                      !  entries
MPW_HILIMIT=2500      !Modified page-list size at which writing
                      !  to free-list page occurs
MPW_WAITLIMIT=2500    !Wait-limit number of pages on the
                      !  modified page list; this number must
                      !  be greater than or equal to the
                      !  MPW_HILIMIT number or a system
                      !  deadlock will occur
MPW_LOLIMIT=500       !Writing of the modified page list stops
                      !  when it is less than or equal to the
                      !  MPW_LOLIMIT number
NPAGEDYN=330000       !Size of the non-paged dynamic pool in
                      !  bytes
PAGFILCNT=1           !1 page file; the maximum number of
                      !  page files that can be installed
PAGEFILE=30000        !Size of a page file in bytes
PAGEDYN=4000000       !Size of the paged dynamic pool in bytes
PHYSICALPAGES=18432   !9 megabytes of physical memory
SWPFILCNT=1           !1 swap file; the maximum number of
```

```
                          !  swapping that can be installed
SWAPFILE=8000             !Size of a swap file in pages
WSMAX=12000               !Maximum working set size
WSINC=350                 !Amount by which the working set of a
                          !  process is increased by AWSA
                          !  (Automatic Working Set Adjustment)
WSDEC=0                   !Amount by which the working set of a
                          !  process is decreased by AWSA
VIRTUALPAGECNT=30000      !Maximum amount of virtual pages
                          !  a process can map
```

The following three values are recommended for a VAXstation II/GPX:

```
CTLPAGES=850              !Used with workstation windows
SPTREQ=2300               !Required number of system page table
                          !  entries
NPAGEDYN=450000           !Size of the non-paged dynamic pool in
                          !  bytes
```

NOTE

These values are recommended only for a 9-megabyte system and should not be used on systems with less than 9 megabytes of memory. Using these values on systems with less than 9 megabytes could prevent your workstation from booting.

The values are valid only for a system that can be characterized as a single-use system running primarily VAX LISP. Although running only VAX LISP is not a requirement, these values tune the system to run VAX LISP efficiently and may have an adverse effect on systems that heavily use other products concurrently with VAX LISP.

Therefore, you should review the requirements of other products and evaluate these recommended values in that context.

To adjust your system's parameter values:

1. Add the preceding values to the file SYS$SYSTEM:MODPARAMS.DAT
2. Reconfigure your system, using the AUTOGEN Utility by executing the command:

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

For details on using the AUTOGEN Utility, see your processor-specific installation/operations guide.

Since these parameters are not dynamic, your system will need to be rebooted. AUTOGEN will perform an automatic shutdown and reboot when it has finished.

9.2 Recommended Authorization Quotas

The following are recommended authorization quotas for VAX LISP accounts on a VAXstation:

```
WSDEFAULT:       1024      ! Default working set size
WSQUOTA:         8000      ! Limit for the amount of physical
                           !   memory a user process may lock
                           !   into its working set
WSEXTENT:        18000     ! Absolute limit on physical
                           !   memory the system allows the
                           !   process
PGFLQUOTA:       30000     ! Maximum number of pages a user's
                           !   process can use in the system
                           !   paging file
```

To adjust these quotas, invoke the Authorize Utility, as shown in Section 1.4.

Chapter 10

Determining and Reporting Problems

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

- If you purchased VAX LISP 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, you should 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 an SPR.

If you find an error in the VAX LISP documentation, you should 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.

Chapter 11

Sample Installation

This section contains a sample installation of VAX LISP. 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 LISP* letter before you install this product. This letter notes any significant changes in the installation that vary from this sample.

```
 Welcome to VAX/VMS V5.3

Username:  SYSTEM
Password:
 Welcome to VAX/VMS version V5.3 on node HBA
    Last interactive login on Wednesday, 07-FEB-1990 17:59
    Last non-interactive login on Wednesday, 07-FEB-1990 17:59
SYSTEM>  @SYS$UPDATE:VMSINSTAL LISP MUA0
 VAX/VMS Software Product Installation Procedure V5.3
 It is 07-FEB-1990 at 18:02.
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:
  LISP V3.1
 Beginning installation of LISP V3.1 at 18:13

%VMSINSTAL-I-RESTORE, Restoring product saveset A ...
%VMSINSTAL-I-RELMOVED , The product's release notes have been
successfully moved to SYS$HELP.
* Do you want to purge files replaced by this installation [YES]?  no
        Product:      LISP
        Producer:     DEC
        Version:      3.1
        Release Date: 23-MAR-1990
* Does this product have an authorization key registered and loaded?
 yes


The LISP installation kit contains the VAX LISP product files
(i.e., the files which are needed to run VAX LISP), some example
files, and some special library files for building customized
LISP systems.  It is possible to install just VAX LISP, and
nothing else.  It is also possible to install just the examples,
or just the library files, or any combination of these.

Enter YES to this question if you wish to install VAX LISP at
this time.  Enter NO to this question if you only wish to install
the examples and/or library files at this time.

* Do you wish to install the VAX LISP product files (20000 blocks)
[YES]?
```

```
VAX LISP can be installed with built-in code either for
DECwindows or for the UIS windowing system.  (The choice of
windowing system for the installed VAX LISP product does not
limit the choice of windowing system for custom-built VAX LISP
systems.)  You should select the windowing system which is
preferred at your site.

Answer YES to this question to select DECwindows as your
windowing system.  Answer NO to this question to select UIS as
your windowing system.

* Do you want the DECwindows version of VAX LISP [YES]?
* In which directory are the VAX LISP product files to be installed
[SYS$COMMON:[VAXLISP]]:)  mua0:[vaxlisp]

* Do you wish to install the VAX LISP system-building library files
(22500 blocks) [NO]?  yes
* In which directory are the VAX LISP system-building library files
to be installed [MUA0:[VAXLISP.LIBRARY]]:
* Directory MUA0:[VAXLISP.LIBRARY] does not exist.  Should it be
created [YES]?

The installation kit contains some unsupported example Lisp
files, which contain some useful VAX LISP utilities, and which
additionally serve as examples of LISP programming style.  They
are not required in order to run VAX LISP.

Additional unsupported utilities and examples are included in separate
savesets.  These include PCL, RdbLISP, Foxglove, GKS, and GKS3D
bindings, VAXFlavors, and Starlet routines.

You can install all the examples or just some of them.  You will be
asked separately which ones you wish to install.  Enter YES to the
questions for those examples you wish to install and NO for those you
wish to skip at this time.
* Do you wish to install the VAX LISP examples (4400 blocks)
[NO]? yes
In which directory are the VAX LISP examples to be installed
[MUA0:[VAXLISP.EXAMPLE]]:
* Directory MUA0:[VAXLISP.EXAMPLES] does not exist.  Should it be
created [YES]?

Included in the examples are the 05/23/89 (Victoria Day) version of
Portable Common Loops (PCL), the publicly-available implementation of
the Common Lisp Object System (CLOS).  PCL is normally installed in
its own sub-directory.

Do you wish to install the PCL examples (4400 blocks) [NO]?  yes
* In which directory are the PCL examples to be installed
[MUA0:[VAXLISP.EXAMPLES.PCL]]:
* Directory MUA0:[VAXLISP.EXAMPLES.PCL] does not exist. Should it be
created [YES]?

* The RdbLISP software provides an interface layer between Digital's
relational database (Rdb) and VAX LISP/VMS.

* Do you wish to install the RdbLISP examples (2100 blocks) [NO]?
yes
In which directory are the RdbLISP examples to be installed
[MUA0:[VAXLISP.EXAMPLES.RDBLISP]]:
* Directory MUA0:[VAXLISP.EXAMPLES.RDBLISP] does not exist.  Should
it be created [YES]?

Foxglove is a rapid-prototyping language for developing rule-based
expert system applications.
```

```
* Do you wish to install the Foxglove examples (26400 blocks) [NO]?
yes
In which directory are the Foxglove examples to be installed
[MUA0:[VAXLISP.EXAMPLES.FOXGLOVE]]:
* Directory [MUA0:[VAXLISP.EXAMPLES.FOXGLOVE] does not exist. Should
it be created [YES]?

Both GKS and GKS3D LISP bindings are included in this saveset.
* Do you wish to install the GKS and GKS3D bindings (4400 blocks)
[NO]?  yes
In which directory are the GKS and GKS3D bindings to be installed
[MUA0:VAXLISP.EXAMPLES.GKS]]:
* Directory MUA0:[VAXLISP.EXAMPLES.GKS] does not exist.  Should it be
created [YES]?

VAXFlavors is an implementation of Flavors under VAX LISP.  It
implements an object-oriented programming system under Common LISP.
* Do you wish to install the VAXFlavors examples (2000 blocks) [NO]?
 yes
*In which directory are the VAXFlavors examples to be installed
[MUA0:[VAXLISP.EXAMPLES.VAXFLAVORS]]:
* Directory MUA0:[VAXLISP.EXAMPLES.VAXFLAVORS] does not exist.  Should
it be created [YES]?

The VAX LISP interface to VMS Starlet routines are included in this
saveset.
* Do you wish to install the Starlet examples (16000 blocks) [NO]?
yes
In which directory are the Starlet examples to be installed
[MUA0:[VAXLISP.EXAMPLES.STARLET]]:
* Directory MUA0:[VAXLISP.EXAMPLES.STARLET] does not exist.  Should it be
created [YES]?
HBA::_RTA1: 00:15:52   (DCL) CPU=00:02:23.53 PF=7892 IO=1542 MEM=312
* Do you want to run the IVP after the installation [YES]?
%LISP-I-QUESDONE, There are no more installation questions to be answered
%VMSINSTAL-I-RESTORE, Restoring product saveset B ...
%VMSINSTAL-I-RESTORE, Restoring product saveset D ...
%VMSINSTAL-I-RESTORE, Restoring product saveset E ...
HBA::_RTA1: 00:41:59   (DCL) CPU=00:09:29.81 PF=48883 IO=13819 MEM=337
%VMSINSTAL-I-RESTORE, Restoring product saveset F ...
%VMSINSTAL-I-RESTORE, Restoring product saveset G ...
HBA::_RTA1: 01:26:02   (DCL) CUP=00:34:26.96 PF=263302 IO=39961 MEM=303
%VMSINSTAL-I-RESTORE, Restoring product saveset H ...
%VMSINSTAL-I-RESTORE, Restoring product saveset I ...
%VMSINSTAL-I-RESTORE, Restoring product saveset J ...
%VMSINSTAL-I-RESTORE, Restoring product saveset K ...
Executing VAX LISP startup procedure...

        VAX LISP Installation Verification Procedure (IVP)

Starting compilation of file
MUA0:[SYS0.SYSUPD.LISP031]LISPIVP.LSP;1

FIBONACCI compiled.
PRINT-FIBONACCI-TABLE  compiled.
Finished compilation of file MUA0:[SYS0.SYSUPD.LISP031]LISPIVP.LSP;1

0 Errors, 0 Warnings


VAX LISP [TM], version V3.1

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A table of the first 20 Fibonacci numbers:
```

```
n   Fibonacci(n)
--   ------------


0         0
1         1
2         1
3         2
4         3
5         5
6         8
7         13
8         21
9         34
10        55
11        89
12        144
13        233
14        377
15        610
16        987
17        1,597
18        2,584
19        4,181

        VAX LISP V3.1 IVP Completed Successfully

 Installation of LISP V3.1 completed at 18:51

 VMSINSTAL procedure done at 15:54
SYSTEM>  dir sys$startup:lispstart.com

Directory SYS$STARTUP:[SYSMGR]

LISPSTART.COM;2

Total of 1 file.
SYSTEM>  lo
  SYSTEM       logged out at 07-FEB-1990 18:56:42.19
```

Appendix A

Files Added to the System

As a result of the installation procedure, several files are added to your system.

A.1 LISP$SYSTEM: Directory

- EXAMPLES.DIR
- LIBRARY.DIR
- LISP$DECWINDOWS-V1.UID
- LISP$DECWINDOWS-V2.UID
- LISP$DECWINDOWS.HLB
- LISP$DECWINDOWS.UID
- LISP.CLD
- LISP.EXE
- LISPDOC.TLB
- SYS$TEST:LISP$IVP.COM

A.2 LISP$EXAMPLES: Directory

- ANIMATE.FAS
- ANIMATE.LSP
- BLACKBOARD.FAS
- BLACKBOARD.LSP
- CHAOS.FAS
- CHAOS.LSP
- CLX-COLORMAP-EXAMPLE.FAS
- CLX-COLORMAP-EXAMPLE.LSP
- CLX-EXAMPLES.FAS
- CLX-EXAMPLES.LSP
- CLX-HELLOJUNK.FAS
- CLX-HELLOJUNK.LSP
- CLX-HELLOWORLD.FAS

- CLX-HELLOWORLD.LSP
- CLX-PUBLIC.FAS
- CLX-PUBLIC.LSP
- COLOR-IMAGE-ARRAYS.FAS
- COLOR-IMAGE-ARRAYS.LSP
- COLOR-SYMBOLS.FAS
- COLOR-SYMBOLS.LSP
- CURSORFONT.FAS
- CURSORFONT.LSP
- CURSORS.FAS
- CURSORS.LSP
- DECBURGER.FAS
- DECBURGER.LSP
- DECW$CURSOR.FAS
- DECW$CURSOR.LSP
- DECW-CALLBACK-STRUCTURES.FAS
- DECW-CALLBACK-STRUCTURES.LSP
- DECW-PUBLIC.FAS
- DECW-PUBLIC.LSP
- DECW-README.TXT
- DISPLAY-BITMAP.FAS
- DISPLAY-BITMAP.LSP
- DRAGON.FAS
- DRAGON.LSP
- DWTAPPL.FAS
- DWTAPPL.LSP
- EDINIT.FAS
- EDINIT.LSP
- FAS-HEADER.COM
- FOXGLOVE.DIR
- GKS.DIR
- GRAPH.FAS
- GRAPH.LSP
- HELLOWORLD.COM
- HELLOWORLD.FAS
- HELLOWORLD.LSP
- HELLOWORLD.UID
- HELLOWORLD.UIL

- ISAM-DEMO.FAS
- ISAM-DEMO.LSP
- ISAM-RMSBLOCKS.FAS
- ISAM-RMSBLOCKS.LSP
- ISAM-RMSUTIL.FAS
- ISAM-RMSUTIL.LSP
- ISAM-RUN-DEMO.COM
- ISAM-STARLET.FAS
- ISAM-STARLET.LSP
- ISAM-TEST.FDL
- ISAM.FAS
- ISAM.LSP
- LK201.FAS
- LK201.LSP
- MENU.FAS
- MENU.LSP
- PARSE-DISPLAY.FAS
- PARSE-DISPLAY.LSP
- PROFILE.FAS
- PROFILE.LSP
- PSEUDOSCHEME.FAS
- PSEUDOSCHEME.LSP
- RADAR.FAS
- RADAR.LSP
- REBOUND.FAS
- REBOUND.LSP
- RECIPE.COM
- RECIPE.FAS
- RECIPE.LSP
- RECIPE_RUN.LSP
- RECIPE.UID
- RECIPE.UIL
- SET-BACKGROUND.FAS
- SET-BACKGROUND.LSP
- SIEVE.FAS
- SIEVE.LSP
- STARLET.DIR
- VAXFLAVORS.DIR

- WATCH.FAS
- WATCH.LSP
- XREF.FAS
- XREF.LSP
- XREFANALYZERS.FAS
- XREFANALYZERS.LSP
- XREFBUILD.FAS
- XREFBUILD.LSP
- XREFCATALOG.FAS
- XREFCATALOG.LSP
- XREFCROSSREF.FAS
- XREFCROSSREF.LSP
- XREFDUMPER.FAS
- XREFDUMPER.LSP
- XREFEXAMPLE.FAS
- XREFEXAMPLE.LSP
- XREFGRAPH.FAS
- XREFGRAPH.LSP
- XREFQUERY.FAS
- XREFQUERY.LSP
- XREFRELATIONS.FAS
- XREFRELATIONS.LSP
- XREFREPORT.FAS
- XREFREPORT.LSP
- XREFSYSTEM.FAS
- XREFSYSTEM.LSP
- XREFTOOLS.FAS
- XREFTOOLS.LSP
- XREFUSERGUIDE.MEM
- XREF_READ_ME_1ST.TXT
- XREF_READ_ME_VU_1ST.TXT

A.3 LISP$GKS: Directory

- GKS3D.FAS
- GKS3D.LSP
- GKSDEFS.FAS
- GKSDEFS.LSP

A.4 LISP$LIBRARY: Directory

- LISP$FASLIB.TLB
- LISP$OBJLIB.OLB
- LISP$BUILD-VAXLISP.CLD
- LISP$BUILD-VAXLISP.EXE

A.5 LISP$PCL: Directory

- 3-17-88-NOTES.TXT
- 3-19-87-NOTES.TXT
- 4-21-87-NOTES.TXT
- 4-29-87-NOTES.TXT
- 5-22-87-NOTES.TXT
- 8-28-88-NOTES.TXT
- BOOT.FAS
- BOOT.LSP
- BRAID1.FAS
- BRAID1.LSP
- COMBIN-TEST.LSP
- COMBIN.FAS
- COMBIN.LSP
- COMPAT.FAS
- COMPAT.LSP
- COMPILE-PCL.LOG
- CONSTRUCT.FAS
- CONSTRUCT.LSP
- DCODE-PRE1.FAS
- DCODE-PRE1.LSP
- DCODE-PRE2.FAS
- DCODE-PRE2.LSP
- DCODE-PRE3.FAS
- DCODE-PRE3.LSP
- DCODE-PRE4.FAS
- DCODE-PRE4.LSP
- DCODE.FAS
- DCODE.LSP
- DEFCLASS.FAS

- DEFCLASS.LSP
- DEFS.FAS
- DEFS.LSP
- DEFSYS.LSP
- ENV.FAS
- ENV.LSP
- FIN-V2.LSP
- FIN.FAS
- FIN.LSP
- FIXUP.FAS
- FIXUP.LSP
- FSC.FAS
- FSC.LSP
- GET-PCL.TXT
- HIGH.FAS
- HIGH.LSP
- INIT.FAS
- INIT.LSP
- ITERATE.FAS
- ITERATE.LSP
- LAP.LSP
- LOW.FAS
- LOW.LSP
- MACROS.FAS
- MACROS.LSP
- METHODS.FAS
- METHODS.LSP
- MKI.FAS
- MKI.LSP
- NOTES.TXT
- PCL-ENV.LSP
- PKG.FAS
- PKG.LSP
- POINTS.FAS
- POINTS.LSP
- PRECOM1.FAS
- PRECOM1.LSP
- PRECOM2.FAS

- PRECOM2.LSP
- PRECOM3.FAS
- PRECOM3.LSP
- PRECOM4.LSP
- PRECOM4.FAS
- README.TXT
- REL-7-2-PATCHES.LSP
- SLOTS.FAS
- SLOTS.LSP
- STD-CLASS.FAS
- STD-CLASS.LSP
- TEST.FAS
- TEST.LSP
- VAXL-LOW-V2.LSP
- VAXL-LOW.FAS
- VAXL-LOW.LSP
- VECTOR.FAS
- VECTOR.LSP
- WALK-V2.LSP
- WALK.FAS
- WALK.LSP

A.6 LISP$STARLET: Directory

- BASMSG.FAS
- BASMSG.LSP
- COBMSG.FAS
- COBMSG.LSP
- CRF.FAS
- CRF.LSP
- CRFERRMSG.FAS
- CRFERRMSG.LSP
- DSTDEF.FAS
- DSTDEF.LSP
- DTK$ROUTINES.FAS
- DTK$ROUTINES.LSP
- DTKDEF.FAS
- DTKDEF.LSP

- DTKMSG.FAS
- DTKMSG.LSP
- FORMSG.FAS
- FORMSG.LSP
- JBCMSG.FAS
- JBCMSG.LSP
- LATMSG.FAS
- LATMSG.LSP
- LBRUSR.FAS
- LBRUSR.LSP
- LIB$ROUTINES.FAS
- LIB$ROUTINES.LSP
- LIBCLIDEF.FAS
- LIBCLIDEF.LSP
- LIBCQDEF.FAS
- LIBCQDEF.LSP
- LIBDCFDEF.FAS
- LIBDCFDEF.LSP
- LIBDTDEF.FAS
- LIBDTDEF.LSP
- LIBMSG.FAS
- LIBMSG.LSP
- LIBVMDEF.FAS
- LIBVMDEF.LSP
- MTH$ROUTINES.FAS
- MTH$ROUTINES.LSP
- MTHMSG.FAS
- MTHMSG.LSP
- NCS$ROUTINES.FAS
- NCS$ROUTINES.LSP
- NCSMSG.FAS
- NCSMSG.LSP
- OBJFMT.FAS
- OBJFMT.LSP
- OPCDEF.FAS
- OPCDEF.LSP
- OPCMSG.FAS
- OPCMSG.LSP

- OPDEF.FAS
- OPDEF.LSP
- OTS$ROUTINES.FAS
- OTS$ROUTINES.LSP
- OTSMSG.FAS
- OTSMSG.LSP
- PPL$DEF.FAS
- PPL$DEF.LSP
- PPL$ROUTINES.FAS
- PPL$ROUTINES.LSP
- PPLMSG.FAS
- PPLMSG.LSP
- PSMMSG.FAS
- PSMMSG.LSP
- RMSDEF.FAS
- RMSDEF.LSP
- RMSFALMSG.FAS
- RMSFALMSG.LSP
- RMSUSR.LSP
- SCRDEF.FAS
- SCRDEF.LSP
- SHRMSG.FAS
- SHRMSG.LSP
- SMBMSG.FAS
- SMBMSG.LSP
- SMG$ROUTINES.FAS
- SMG$ROUTINES.LSP
- SMGDEF.FAS
- SMGDEF.LSP
- SMGMSG.FAS
- SMGMSG.LSP
- SMGTRMPTR.FAS
- SMGTRMPTR.LSP
- SOR$ROUTINES.FAS
- SOR$ROUTINES.LSP
- SORMSG.FAS
- SORMSG.LSP
- SRMDEF.FAS

- SRMDEF.LSP
- SSMSG.FAS
- SSMSG.LSP
- STARDEFAE.FAS
- STARDEFAE.LSP
- STARDEFFL.FAS
- STARDEFFL.LSP
- STARDEFMP.FAS
- STARDEFMP.LSP
- STARDEFQZ.FAS
- STARDEFQZ.LSP
- STARLET.FAS
- STARLET.LSP
- STR$ROUTINES.FAS
- STR$ROUTINES.LSP
- STRMSG.FAS
- STRMSG.LSP

A.7 LISP$VAXFLAVORS: Directory

- FLAVORS.FAS
- FLAVORS.LSP
- FLVBUILD.FAS
- FLVBUILD.LSP
- FLVCOMPILE.FAS
- FLVCOMPILE.LSP
- FLVDEFFLAVOR.FAS
- FLVDEFFLAVOR.LSP
- FLVDEFMETHOD.FAS
- FLVDEFMETHOD.LSP
- FLVDESCRIBE.FAS
- FLVDESCRIBE.LSP
- FLVINIT.FAS
- FLVINIT.LSP
- FLVMAKE.FAS
- FLVMAKE.LSP
- FLVSEND.FAS
- FLVSEND.LSP

- FLVTRACE.FAS
- FLVTRACE.LSP
- FLVVANILLA.FAS
- FLVVANILLA.LSP
- VAXFLAVORS_UG.LN3

A.8 RDBLISP$EXAMPLES: Directory

- BUILD-RDBLISP.COM
- DB-HANDLE.LSP
- DEMO-DATE.LSP
- DEMO-RDBKEY.LSP
- DEMO-RESUME.TXT
- DEMO-SEGMENTED-STRING.LSP
- DEMO.LSP
- DSRI.FAS
- RDBBLR.FAS
- RDBBLR.LSP
- RDBCONSTANTS.FAS
- RDBCONSTANTS.LSP
- RDBDDL.FAS
- RDBDDL.LSP
- RDBDML.FAS
- RDBDML.LSP
- RDBERRORS.FAS
- RDBERRORS.LSP
- RDBLISP-COMPILE.COM
- RDBLISP-LOAD.LSP
- RDBLISP-V11-RN.DVI
- RDBLISP-V11-RN.MEM
- RDBLISP-V11-RN.TEX
- RDBLISP-V11.DVI
- RDBLISP-V11.MEM
- RDBLISP-V11.TEX
- RDBLISP.MMS
- RDBLISP_EXAMPLES.LSP
- RDBLOAD.LSP
- RDBMETA.FAS

- RDBMETA.LSP
- RDBSUBS.FAS
- RDBSUBS.LSP
- RDBUTILITIES.FAS
- RDBUTILITIES.LSP
- RDBVARIABLES.FAS
- RDBVARIABLES.LSP

A.9 FOXGLOVE$SYSTEM: Directory

- APPLICATION.UID
- APPLICATION_V2.UID
- CAR.FOX
- FACTORIAL.FOX
- FOXGLOVE.CLD
- FOXGLOVE.EXE
- FOXGLOVE.FAS
- FOXGLOVE.UID
- FOXGLOVE_V2.UID
- FOXGLOVE.HLP
- 1READ.ME
- REFERENCE_MANUAL.LN03
- REFERENCE_MANUAL.POST
- REFERENCE_MANUAL.TXT
- TUTORIAL_LESSON_3.FOX
- TUTORIAL_LESSION_4.FOX
- USERS_GUIDE.LN03
- USERS_GUIDE.POST
- USERS_GUIDE.TXT
- WINES.FOX

A.10 SYS$STARTUP: Directory

- LISP$EXAMPLES_STARTUP.COM
- LISP$FOXGLOVE_STARTUP.COM
- LISP$GKS_STARTUP.COM
- LISP$LIBRARY_STARTUP.COM
- LISP$PCL_STARTUP.COM
- LISP$RDBLISP_STARTUP.COM
- LISP$SITE.COM
- LISP$STARLET_STARTUP.COM
- LISP$STARTUP.COM
- LISP$UIS_STARTUP.COM
- LISP$VAXFLAVORS_STARTUP.COM