VAX C Installation Guide

Order Number: AA–L491G–TE

December 1989

This document contains instructions for installing VAX C and the VMS Debugger for multiprocess debugging (DEBUG MP) 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 C Version 3.1.

Revision/Update Information:	This revised manual supersedes the *VAX C Installation Guide* (Order Number AA-L491F-TE).
Operating System and Version:	VMS Version 5.0 or higher. Future maintenance releases may require higher versions.
Software Version:	VAX C Version 3.1

digital equipment corporation
maynard, massachusetts

First Printing, February 1982
Revised, October 1984
Revised, April 1985
Revised, April 1986
Revised, March 1987
Revised, February 1989
Revised, December 1989

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ZK5346

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Preface

This document describes how to install VAX C Version 3.1 on the VMS operating system. It is intended for system managers.

For users of VMS versions prior to Version 5.2, this document also describes how to install the VMS Debugger for multiprocess debugging (DEBUG MP). Installing DEBUG MP is optional; if you do not install it, multiprocess debugging is not available.

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

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

For more information about installing VAX C 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.

Preparing to Install VAX C

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.

Prerequisite Software

If the optional software package VAX Common Data Dictionary (CDD) is on your system and you plan to run the Installation Verification Procedure (IVP), you need to execute the SYS$COMMON:[SYSMGR]CDDSTRTUP.COM file (which installs protected images that the IVP needs) before you begin the installation of VAX C.

Accessing the Online Release Notes

VAX C provides online release notes. The prompt to display or print the release notes during the installation appears in step 5 of the installation procedure when you invoke VMSINSTAL with the OPTIONS N parameter. Digital recommends that you do not choose option 5 if you wish to display, print, or copy the release notes.

To obtain the release notes after the installation, type or print the file SYS$HELP:VAXC031.RELEASE_NOTES. Online help also directs you to the release notes file. After the installation, type the following command:

```
$ HELP CC RELEASE_NOTES RETURN
```

Installation Procedure Requirements

The installation takes approximately 20 to 60 minutes, depending on the type of media and your system configuration. Before installing VAX C, you must have the following privileges and resources:

- SETPRV privileges, or CMKRNL, WORLD, and SYSPRV privileges

- A minimum of 11500 blocks of free disk space during VAX C installation; 9200 blocks are used after installation
- A minimum of 4000 blocks of free disk space during DEBUG MP installation; 3000 blocks are used after installation
- A minimum of 512K bytes of physical memory
- A minimum of 900 free global pages plus the size (in number of disk blocks) of the file SYS$LIBRARY:DCLTABLES.EXE at installation
- A minimum of 8 free global sections at installation

NOTE

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

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

```
$ INSTALL :== $INSTALL/COMMAND_MODE RETURN
$ INSTALL RETURN
```

Then type the following command:

```
INSTALL> LIST/GLOBAL/SUMMARY RETURN

        Summary of Local Memory Global Sections

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

INSTALL> EXIT RETURN
```

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

VAX C requires approximately 900 contiguous global pages, and the debugger requires approximately 210 contiguous global pages. If there are fewer than 1110 pages available, you can delete an existing known image with the VMS Install Utility, or you can increase the GBLPAGES system parameter with the VMS System Generation Utility (SYSGEN) by editing the file SYS$SYSTEM:MODPARAMS.DAT and then invoking the AUTOGEN command procedure, SYS$UPDATE:AUTOGEN.COM. For more information on the AUTOGEN command procedure, see your processor-specific installation/operations guide.

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

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

SYSGEN> EXIT RETURN
```

The last number displayed is the maximum number of global sections. Compare this number to the number of global sections in use displayed by the VMS Install Utility. VAX C requires 8 global sections and the debugger requires 5 global sections. Therefore, if the number of global sections used plus 13 exceeds the maximum number of global sections, you must increase the number of available global sections before you can install VAX C. To increase the number, you must increase the GBLSECTIONS system parameter with SYSGEN by editing the file SYS$SYSTEM:MODPARAMS.DAT and then invoking the SYS$UPDATE:AUTOGEN.COM procedure. For more information on the AUTOGEN.COM procedure, see your processor-specific installation/operations guide.

If the number of global sections used plus 13 is less than the maximum number of global sections, you can exit from SYSGEN and continue.

User Account Quotas and Privileges

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

- AST limit (ASTLM) 20 (minimum)
- Buffered I/O quota (BIOLM) 20 (minimum)
- Buffered I/O byte count quota (BYTLM) 20480 (minimum)
- Direct I/O quota (DIOLM) 12 (minimum)
- Enqueue quota (ENQLM) 20 (minimum)
- Open file limit (FILLM) 16 (minimum)
- Paging file quota (PGFLQUOTA) 1500 pages (minimum)
- Subprocess creation quota (PRCLM) by user requirement (minimum)
- Working set size (WSDEF) 300 pages (minimum) 500 to 700 pages (optimum)

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

VMS License Management Facility

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

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

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

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

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

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

Using VMSINSTAL

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

The VMSINSTAL command procedure has the following syntax:

```
$ @SYS$UPDATE:VMSINSTAL VAXC03n ddcu: [OPTIONS N]
```

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

You can also type an asterisk (*) in place of VAXC03n. If you are installing from magnetic tape, you can use the asterisk to save installation time; the asterisk causes VAX C to be installed with a minimum of tape passes.

ddcu:
Represents a device name where the distribution volumes will be mounted for the VAX C 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 C. If you do use the console drive, you should replace any media you removed from the drive. CSA1: is the device name used in examples in this document.

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

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

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

When you invoke VMSINSTAL, it checks the following:

- 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:
  - 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.

Installing VAX C

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

To abort the installation procedure at any time, press CTRL/Y. When you press CTRL/Y, the installation procedure deletes all files it has created up to that point and then returns you to DCL level. If you want to retry the installation procedure after pressing CTRL/Y, you must proceed from step 2.

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

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

Step 2: Invoke VMSINSTAL.

```
$ @VMSINSTAL VAXC031 CSA1: OPTIONS N RETURN

      VAX/VMS Software Product Installation Procedure V5.0


It is 11-OCT-1988 at 17:00.
Enter a question mark (?) at any time for help.

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

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

Step 3: Insert the first installation kit volume.

```
Please mount the first volume of the set on CSA1:.
* Are you ready? YES RETURN
The following products will be processed:

  VAX C 3.1


    Beginning installation of VAX C 3.1 at 17:03

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

To indicate that you want to continue the installation, mount volume 1, type YES, and press RETURN.

Step 4: Insert the subsequent installation kit volumes.

```
%BACKUP-I-READYREAD, mount volume 2 on _CSA1: for reading

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

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

Step 5: Select a release notes option.

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

```
Release Notes Options:

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

* Select option [2]: RETURN
```

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

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

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

If you select option 3, VMSINSTAL displays the release notes 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 C release notes are then copied to SYS$HELP.

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

If you select option 5, VMSINSTAL does not display, print, or copy the release notes.

If you are installing on VMS Version 5.2 or higher, the release notes menu is slightly different, and the release notes are automatically copied to SYS$HELP.

NOTE

This version of the release notes file installed by VMSINSTAL is labeled with the current product name and version number. For example, VAXC031.RELEASE_NOTES. Take care not to delete release notes for previous versions of VAX C.

Next, VMSINSTAL displays the following prompt:

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

%VMSINSTAL-I-RELMOVED, The product's release notes have been successfully
                       moved to SYS$HELP.
        VAX C V3.1-001 Installation is commencing ...
```

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

Step 6: Respond to License Registration Queries.

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

```
Product:       C
Producer:      DEC
Version:       3.1
Release Date:  dd-mmm-yyyy

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

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

Step 7: Select installation options.

```
 This kit contains an Installation Verification Procedure
 (IVP) to verify the  correct  installation of the VAX  C
 compiler.

 After the  installation is  complete, you can invoke the
 IVP at any time to reverify that VAX C is installed
 and working correctly by executing the command:

     @SYS$TEST:VAXC$IVP

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

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

NOTE

If the Common Data Dictionary (CDD) is installed on your system, then the CDD startup procedure must be executed before you run the IVP. Otherwise, the IVP will fail. See the Prerequisite Software section for more information.

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

The directories SYS$HELP, SYS$MESSAGE, SYS$LIBRARY, and SYS$SYSTEM may contain previous versions of VAX C files. These files are replaced during the installation with new files, but the old files are not automatically purged. Purging is recommended. In response to the purging prompt, press RETURN to purge the files or type NO to keep them.

```
* Do you want to extract the .H files from the text library [YES] ?RETURN
```

The VAX C definition files (commonly referred to as .H files) are distributed as library modules. This saves space both on the distribution kit and on your system. However, you may want to extract the modules and place them in .H files in order to use **#include** control lines of the following form:

```
#include <filename.H>
```

If the programs on your system use this form of the **#include** directive, you can either change the source files to refer to the library module (as in **#include** module_name), or you can request that the installation procedure extract the .H files after installing VAX C.

If you want the installation procedure to extract these files, press RETURN; otherwise, type NO in response to the prompt.

NOTE

If you do *not* extract the .H files during the installation, old versions of the .H files in the SYS$LIBRARY area may still remain. To avoid possible programming errors, you may want to delete old versions of these files.

```
* Do you want to install the DECwindows Compiler Interface for C [YES]?RETURN
```

If anyone on your system wishes to be able to compile C programs using the DECwindows FileView interface, you should press RETURN in response to this prompt. If your system does not have the DECwindows FileView application installed, you will not receive this prompt. Instead, the following message will be issued:

```
The DECwindows FileView application files are not present and
therefore the DECwindows Compiler Interface cannot be installed.
```

NOTE

You are no longer prompted to install PPLRTL.EXE in SYS$SHARE. If you are installing on a version of VMS prior to Version 5.2, a new version of PPLRTL.EXE is moved to SYS$SHARE and is put into IMAGELIB.OLB. The old version of PPLRTL.EXE is not purged from the system.

If you are installing on VMS Version 5.2, PPLRTL.EXE is included with your system and VAXCPAR.OLB is not required.

Step 8: Read informational messages.

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

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

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

SYS$SYSTEM:VAXC.EXE                    [new]
SYS$LIBRARY:VAXCDEF.TLB                [new]
SYS$LIBRARY:VAXCSPR.DAT                [new]
SYS$MESSAGE:VAXCERR.EXE                [new]
SYS$HELP:VAXC031.RELEASE_NOTES         [new]
SYS$HELP:HELPLIB.HLB                   [modified]
SYS$LIBRARY:DCLTABLES.EXE              [modified]
SYS$COMMON:[SYSTEST]VAXC$IVP.COM       [new]
SYS$COMMON:[SYSTEST.VAXC]VAXCIVPP.C    [new]
SYS$COMMON:[SYSTEST.VAXC]VAXCIVPC.C    [new]
VUE$LIBRARY:CC$DWCI.EXE                [new]
VUE$LIBRARY:CC$DWCI.UID                [new]
SYS$HELP:CC$DWCI.HLB                   [new]
VUE$LIBRARY:VUE$COMPILE.COM            [new]
```

If you typed YES in response to the prompt that requests a file purge at step 7, previous versions of the VAX C files are now purged except for PPLRTL.EXE.

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

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

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

Step 9: Observe the Installation Verification Procedure.

If you chose to run the IVP in step 7, VMSINSTAL now calls the IVP to verify that VAX C was successfully installed.

```
   VAX C V3.1-001 Installation Verification Procedure  ...


****** VAX C Installation Certification Procedure SUCCESSFUL ******


   VAX C V3.1-001 Installation Verification Procedure completed successfully.
```

Step 10: End the installation procedure.

```
   Installation of VAX C 3.1 completed at 17:32

   VMSINSTAL procedure done at 17:33

$ LOGOUT [RETURN]
SYSTEM     logged out at 11-OCT-1988 17:34:00.00
```

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.

Installing VAX C on a VAXcluster

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

1. Issue the LICENSE LOAD command to activate the license on each node in the VAXcluster on which VAX C is to be executed as described in the *VMS License Management Utility Manual*.
2. To use the product on other nodes in the VAXcluster, you must replace the version of the DCL tables that is installed on the other VAXcluster nodes. To do this, perform the following steps:
   a. Log in to a node on the cluster.
   b. Run INSTALL and enter the following command at the INSTALL> prompt:

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

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

Installing VAX DEBUG MP

This section contains excerpts from the installation procedure for the VMS Debugger for multiprocess debugging (DEBUG MP) provided with VAX C Version 3.1 and explains each step. Defaults appear in brackets throughout the installation procedure.

NOTE

VAX C will install on Version 5.0 and higher. VAX DEBUG MP only installs on Version 5.0-001 and higher. However, VAX DEBUG MP will not install on Version 5.2 and higher because those versions of VMS already contain a debugger with this functionality.

To abort the installation procedure at any time, press CTRL/Y. When you press CTRL/Y, the installation procedure deletes all files it has created up to that point and then returns you to DCL level. If you want to retry the installation procedure after pressing CTRL/Y, you must proceed from step 2.

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

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

Step 2: Invoke VMSINSTAL.

```
$ @VMSINSTAL DEBUGMP050 CSA1: OPTIONS N  RETURN

      VAX/VMS Software Product Installation Procedure V5.0


It is 17-AUG-1988 at 17:35.
Enter a question mark (?) at any time for help.

%VMSINSTAL-W-DECNET, Your DECnet network is up and running.

* Do you want to continue anyway [NO]? YES  RETURN

* 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, enter NO and press RETURN to discontinue the installation.

Step 3: Insert the first installation kit volume.

```
Please mount the first volume of the set on CSA1:.
* Are you ready? YES RETURN
The following products will be processed:

  DEBUGMP V5.0


    Beginning installation of DEBUGMP V5.0 at 17:37

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

To indicate that you want to continue the installation, mount volume 1, type YES, and press RETURN.

Step 4: Insert the subsequent installation kit volumes.

```
%BACKUP-I-READYREAD, mount volume 2 on _CSA1: for reading

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

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

Step 5: Select a release notes option.

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

```
Release Notes Options:

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

* Select option [2]: RETURN
```

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

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

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

If you select option 3, VMSINSTAL displays the release notes 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 DEBUG MP release notes are then copied to SYS$HELP.

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

If you select option 5, VMSINSTAL does not display, print, or copy the release notes.

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 the debugger.

Next, VMSINSTAL displays the following prompt:

```
Do you want to continue the installation [NO]?: YES RETURN
%VMSINSTAL-I-RELMOVED, The products release notes have been
                       successfully moved to SYS$HELP.
```

If you want to continue the installation, type YES and press the RETURN key. If you enter NO or press the RETURN key, VMSINSTAL discontinues the installation.

Step 6: Select installation options.

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

The directories SYS$HELP, SYS$LIBRARY, SYS$MESSAGE, and SYS$MANAGER may contain previous versions of debugger files. These files are replaced during the installation with new files, but the old files are not automatically purged. Purging is recommended. In response to the purging prompt, press RETURN to purge the files or type NO to keep them.

Step 7: Read informational messages.

The DEBUG MP installation procedure produces a number of informational messages that report on the progress of the installation.

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

 SYS$LIBRARY:DEBUG.EXE            [new]
 SYS$LIBRARY:DEBUGSHR.EXE         [new]
 SYS$LIBRARY:TRACE.EXE            [new]
 SYS$MESSAGE:DBGTBKMSG.EXE        [new]
 SYS$HELP:DBG$HELP.HLB            [new]
 SYS$MANAGER:DEBUGSTART.COM       [new]
 SYS$HELP:DEBUG050MP.RELEASE_NOTES[new]

 If your VAX is part of a VAXcluster, you *must* manually
 invoke the file SYS$MANAGER:DEBUGSTART.COM on all the member
 nodes of your VAXcluster, after this installation completes.

 It will use the INSTALL utility to make the new images known
 to the system on each node. This is automatically done by
 VMSINSTAL on your local VAX. If you fail to do this, DEBUG and
 TRACE will not operate properly. You should also add these
 commands to SYS$MANAGER:SYSTARTUP.COM if they are not already
 there.

 The file DEBUGSTART.COM contains the following commands:

 $ INSTALL:=$SYS$SYSTEM:INSTALL/COMMAND
 $ INSTALL
 REPLACE/OPEN/HEADER/SHARED   SYS$LIBRARY:DEBUG.EXE
 REPLACE/OPEN/HEADER/SHARED   SYS$LIBRARY:DEBUGSHR.EXE
 REPLACE/OPEN/HEADER/SHARED   SYS$LIBRARY:DBGTBKMSG.EXE
 REPLACE/OPEN/HEADER/SHARED   SYS$LIBRARY:TRACE.EXT
 EXIT
```

If you typed YES in response to the prompt that requests a file purge, previous versions of debugger files are now purged.

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

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

Step 8: Verify successful installation.

The installation procedure now invokes the Installation Verification Procedure (IVP) to verify that DEBUG MP was successfully installed. If DEBUG MP was successfully installed, the IVP displays the following message:

```
Beginning DEBUG IVP

     ************************************************************
     *                                                          *
     *    I N S T A L L A T I O N   V E R I F I C A T I O N     *
     *                                                          *
     *     P R O C E D U R E   h a s   S u c c e e d e d !      *
     *                                                          *
     ************************************************************
```

Step 9: End the installation procedure.

```
   Installation of DEBUGMP V5.0 completed at 17:50

   VMSINSTAL procedure done at 17:51

$ LOGOUT [RETURN]
SYSTEM     logged out at 17-AUG-1988 17:53:10
```

When the product installation is complete, you can choose to install more products or 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.

If you performed the installation on a cluster common system disk and you will not be rebooting the cluster after completing the installation, you must invoke the file SYS$MANAGER:DEBUGSTART.COM on each node of the cluster.

After the Installation

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

The installation procedure modifies the DCL command table so that the CC command is recognized and processed. However, the previous command table is still in effect for those users who are currently logged in. All logged-in users who want to use the CC command for the newly installed product must log out of the system and log in again.

To ensure that the debugger will operate properly, check that DEBUGSTART.COM is invoked by SYS$MANAGER:SYSTARTUP_V5.COM. If it is not already invoked by the site-specific startup procedure, edit SYS$MANAGER:SYSTARTUP_V5.COM to invoke DEBUGSTART.COM.

Running the Installation Verification Procedure Separately

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

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

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

```
The VAX C 3.1
Installation Verification Procedure failed.
Please consult the VAX C Installation Guide for further information.

%VMSINSTAL-E-IVPFAIL, The IVP for VAX C 3.1 has failed.
```

Error Conditions

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

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

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

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

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

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

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

Installing VAX C as a Shared Image

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

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

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

```
$ RUN SYS$SYSTEM:INSTALL RETURN

INSTALL> ADD SYS$SYSTEM:VAXC.EXE/OPEN/SHARED RETURN
INSTALL> ADD SYS$MESSAGE:VAXCERR.EXE/OPEN/SHARED RETURN
INSTALL> EXIT RETURN
```

Then, update the system startup file to install VAX C.

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

```
$ INSTALL :== $INSTALL/COMMAND_MODE
$ INSTALL
  ADD SYS$SYSTEM:VAXC.EXE/OPEN/SHARED
  ADD SYS$MESSAGE:VAXCERR.EXE/OPEN/SHARED
```

Maintenance Updates

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

Each time a maintenance update is released, the version number changes. For example, the previous version was 3.0. Therefore, the version number of this maintenance update is 3.1. In addition, the maintenance update includes new release notes. The release notes describe the changes that have been made to VAX C since the previous release.

The update release notes are provided on line. You should read the release notes when you first install VAX C; they are also accessible at any time after the product is installed (if option 5 was not selected). For information on reading the release notes at the time that you install VAX C, follow the installation procedure through step 5. To locate the release notes after VAX C is installed, display or print the file SYS$HELP:VAXC03n.RELEASE_NOTES, or type the following command:

```
$ HELP CC RELEASE_NOTES RETURN
```

Determining and Reporting Problems

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

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

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

Sample Installation

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

The sample installation shown here is divided into two segments:

- A sample VAX C installation
- A sample VMS Debugger for multiprocessing (DEBUG MP) installation

Sample VAX C Installation:

```
        Welcome to VAX/VMS V5.0-2

Username: SYSTEM  RETURN
Password:  RETURN
 Welcome to VAX/VMS version V5.0-2 on node XXXXX
    Last interactive login on Tuesday, 31-OCT-1989 19:09
    Last non-interactive login on Tuesday, 31-OCT-1989 13:27
$ set default sys$update
$ @vmsinstal vaxc031 Csa1: options n

        VAX/VMS Software Product Installation Procedure V5.0-2


It is 31-OCT-1989 at 19:12.
Enter a question mark (?) at any time for help.

%VMSINSTAL-W-DECNET, Your DECnet network is up and running.
* Do you want to continue anyway [NO]? yes  RETURN
* Are you satisfied with the backup of your system disk [YES]?  RETURN

The following products will be processed:

  VAXC V3.1

        Beginning installation of VAXC V3.1 at 19:13

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

    Release Notes Options:

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

* Select option [2]: 4
* Do you want to continue the installation?  RETURN
%VMSINSTAL-I-RELMOVED, The product's release notes have been successfully
                       moved to SYS$HELP.

        VAX C V3.1-001 Installation is commencing ...


        Product:      C
        Producer:     DEC
        Version:      3.1
        Release Date: 14-AUG-1989


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

This kit contains an Installation Verification Procedure
(IVP) to verify the  correct  installation of the VAX  C
compiler.

After the  installation is  complete, you can invoke the
IVP at any time to reverify that VAX C is installed
and working correctly by executing the command:

     @SYS$TEST:VAXC$IVP
```

```
* Do you want to run the IVP after the installation [YES]? RETURN
* Do you want to purge files replaced by this installation [YES]? RETURN
* Do you want to extract .H files from the text library [YES]? RETURN

 All the questions regarding the installation have
 now been asked.  The installation will now continue
 for between 20 and 60 minutes, depending on your
 CPU type and the installation options you have
 chosen.

%VMSINSTAL-I-RESTORE, Restoring product saveset B ...
        VAX C V3.1-001 : copying images, libraries and release notes.
        VAX C V3.1-001 : extracting .H files.

A summary of the Software Performance Reports (SPRs) for this release
can be found in the file SYS$LIBRARY:VAXCSPR.DAT.


         VAX C V3.1-001 Installation is completed.


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

        SYS$SYSTEM:VAXC.EXE                             [new]
        SYS$LIBRARY:VAXCDEF.TLB                         [new]
        SYS$LIBRARY:VAXCSPR.DAT                         [new]
        SYS$MESSAGE:VAXCERR.EXE                         [new]
        SYS$HELP:VAXC031.RELEASE_NOTES                  [new]
        SYS$HELP:HELPLIB.HLB                            [modified]
        SYS$LIBRARY:DCLTABLES.EXE                       [modified]
        SYS$COMMON:[SYSTEST]VAXC$IVP.COM                [new]
        SYS$COMMON:[SYSTEST.VAXC]VAXCIVPP.C             [new]
        SYS$COMMON:[SYSTEST.VAXC]VAXCIVPC.C             [new]
        SYS$LIBRARY:VAXCPAR.OLB                         [new]
        VUE$LIBRARY:CC$DWCI.EXE                         [new]
        VUE$LIBRARY:CC$DWCI.UID                         [new]
        SYS$HELP:CC$DWCI.HLB                            [new]
        VUE$LIBRARY:VUE$COMPILE.COM                     [new]
        SYS$LIBRARY:PPLRTL.EXE                          [new]
%VMSINSTAL-I-MOVEFILES, Files will now be moved to their target directories...

VAX C V3.1-001 Installation Verification Procedure commencing ...


****** VAX C Installation Certification Procedure SUCCESSFUL ******


VAX C V3.1-001 Installation Verification Procedure completed successfully.

Installation of VAXC V3.1 completed at 19:52

VMSINSTAL procedure done at 19:53
```

Sample DEBUG MP Installation:

```
$ SET DEFAULT SYS$UPDATE [RETURN]
$ @VMSINSTAL DEBUGMP050 SYS$UPDATE OPTIONS N [RETURN]

        VAX/VMS Software Product Installation Procedure V5.0

It is 17-AUG-1988 at 17:35.
Enter a question mark (?) at any time for help.

%VMSINSTAL-W-DECNET, Your DECnet network is up and running.
* Do you want to continue anyway [NO]? YES [RETURN]
* Are you satisfied with the backup of your system disk [YES]? [RETURN]

The following products will be processed:

  DEBUGMP V5.0

        Beginning installation of DEBUGMP V5.0 at 17:35

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

    Release Notes Options:

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

* Select option [2]: [RETURN]
* Queue name [SYS$PRINT]: [RETURN]
Job DEBUG050MP (queue SYS_PRINT, entry 316) started on node_LPA0

* Do you want to continue the installation? YES [RETURN]
%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]? [RETURN]

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

    SYS$LIBRARY:DEBUG.EXE             [new]
    SYS$LIBRARY:DEBUGSHR.EXE          [new]
    SYS$LIBRARY:TRACE.EXE             [new]
    SYS$MESSAGE:DBGTBKMSG.EXE         [new]
    SYS$HELP:DBG$HELP.HLB             [new]
    SYS$MANAGER:DEBUGSTART.COM        [new]
    SYS$HELP:DEBUG050MP.RELEASE_NOTES [new]


    If your VAX is part of a VAXcluster, you *must* manually
    invoke the file SYS$MANAGER:DEBUGSTART.COM on all the member
    nodes of your VAXcluster, after this installation completes.

    It will use the INSTALL utility to make the new images known
    to the system on each node. This is automatically done by
    VMSINSTAL on your local VAX. If you fail to do this, DEBUG and
    TRACE will not operate properly. You should also add these
    commands to SYS$MANAGER:SYSTARTUP.COM if they are not already
    there.

    The file DEBUGSTART.COM contains the following commands:
```

```
    $ INSTALL:=$SYS$SYSTEM:INSTALL/COMMAND
    $ INSTALL
    REPLACE/OPEN/HEADER/SHARED  SYS$LIBRARY:DEBUG.EXE
    REPLACE/OPEN/HEADER/SHARED  SYS$LIBRARY:DEBUGSHR.EXE
    REPLACE/OPEN/HEADER/SHARED  SYS$MESSAGE:DBGTBKMSG.EXE
    REPLACE/OPEN/HEADER/SHARED  SYS$LIBRARY:TRACE.EXE
    EXIT

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

     ************************************************************
     *                                                          *
     *    I N S T A L L A T I O N   V E R I F I C A T I O N     *
     *                                                          *
     *     P R O C E D U R E  h a s  S u c c e e d e d  !       *
     *                                                          *
     ************************************************************

        Installation of DEBUGMP V5.0 completed at 22:28

        VMSINSTAL procedure done at 22:29
```