DECvoice VOX V1.1 Installation Guide

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This book describes how to install DECvoice VOX V1.1 software on a VAX VMS V5.2 or later system.

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1 Preparing to Install DECvoice VOX

This document discusses the preparations and requirements necessary for the installation of DECvoice VOX version V1.1 on a VMS Version V5.2 system.

This document supercedes all previous installation information. This document also supercedes chapter one in the *DECvoice DTC04 Software Reference Manual*, Version V1.1 order number AA-LE86B-TE, and Version V1.0 order number AA-LE86A-TE.

[This manual applies to Version 1.1 of DECvoice and all subsequent maintenance releases up to the next major product release.]

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

DECvoice provides online release notes. DIGITAL strongly recommends that you read the Release Notes before proceeding with the installation. The information on a number of DECvoice routines is located only in the release notes document. The documentation for these routines will be incorporated into a future release of the *DECvoice DTC04 Software Reference Manual*

1.1 Required Operating System Components

DECvoice software requires a minimum of the BASE VMS tailoring class for support in a run-time environment. Development of software based on DECvoice requires a minimum of the BASE and PROGRAMMING tailoring classes of VMS.

1.2 Prerequisite and Optional Components

This section discusses the system hardware and the software you must have installed on your system prior to installing DECvoice. The section also includes information about software that you can use together with DECvoice. Please refer to the System Software Addendum (SSA) for the required versions of these prerequisites. The SSA is a component of the DECvoice Software Product Description, SPD 29.97.01.

1.2.1 Prerequisite Software

DECvoice VOX V1.1 requires a minimum of VMS Version V5.2. There are no other prerequisite software products.

1.2.2 Optional Software

The DECvoice software functions with the following optional software:

- DECvoice Continuous Word Recognizer, Version V1.1, SPD 31.69.00. The Continous Word Recognizer is a seperately licensed product integrated into DECvoice. The Continuous Word Recognizer eliminates the requirement for a pause seperation between spoken digits. The Continuous Word Recognizer, like the Isolated Word Recognizer, can be 'hotswapped' onto a DECvoice module as required. Contact your DIGITAL sales represenative for further information on this product.

1.2.3 Prerequisite Hardware

Note:

An incorrectly configured DECvoice hardware interrupt vector switch setting is the most common source of DECvoice problems.

The SYSGEN utility does *not* display the DECvoice DTC04 interrupt vector setting.

The only way to determine the current vector setting is to physically remove the DTC04 module from the Q-bus and decode the physical interrupt vector switch setting on the interrupt vector switch pack. The setting should then be compared to the proper setting, as displayed by SYSGEN. The switch setting must the same as, or must be reset to, the value of the vector that is displayed by SYSGEN. Consult the *DECvoice DTC04 Technical Manual* for information on switch location, configuration and settings. Contact DIGITAL Field Service for assistance.

DECvoice software can be installed on any valid VAX hardware configuration.

DECvoice software utilizes the DECvoice DTC04-AA Q-bus module hardware for most speech sythesis, all digitized voice input and output, all telephone handling and for all voice recognition capabilities.

1.2.4 Optional Hardware

A component of the DECvoice speech synthesizer, the Automatic Customer Name and Address (ACNA) routines, can be used in conjunction with a DTC01 or DTC03 DECtalk peripheral, as well as with the DECvoice module. See the information located in the DECvoice V1.1 release notes for documentation on the ACNA capabilities and the VOX$PRONOUNCE_NAME call.

1.3 VMS License Management Facility

The VMS License Management Facility (LMF) is available with Version V5.0 of the VMS operating system. When you install DECvoice on a VMS system, you must register your software license.

The license registration information you need is contained in the Product Authorization Key (PAK) that is shipped with DECvoice. The DECvoice VOX PAK is a paper certificate that contains information about the license; information you are required to have entered into the LMF database, and have loaded into the running VMS system, prior to running the DECvoice VOX software.

The license name used by DECvoice VOX is ''VOX''.

It is best to register your DECvoice license before you perform the installation. During the installation, you are asked if you have registered the DECvoice license and loaded the appropriate authorization key. If you have not already done so, you can complete the installation; however, you will not be able to run either the DECvoice software nor the Installation Verification Procedure (IVP, see Section 2.1.5). Once you have performed the license registration and have loaded the authorization key, you will be able to run the IVP and use DECvoice.

To register a licenses under VMS V5.0, first log in to the system manager's account, SYSTEM. You then have a choice of two ways to perform the registration:

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

To display a list of the currently loaded licenses, use the command:

```
$ SHOW LICENSE
```

The DECvoice VOX license, named VOX, will be listed near the end of the display, if the license is currently loaded. The DECvoice VOX V1.1 license release date is 1-SEP-1989. The PAK provided in your software kit will have this date, or a later date, as the software release date. The release date is NOT a license termination date.

For complete information on using LMF, see the *VMS License Management Utility Manual*, included in the VMS V5.0 documentation set. The booklet *A Practical Guide to Managing Software Licenses*, order number EJ-31899-76, contains an overview of DIGITAL's software licensing and LMF.

1.4 Installation Procedure Requirements

This following sections discuss various requirements for installing DECvoice.

1.4.1 Time

The installation should take approximately 20 to 60 minutes, depending on your type of media, chosen installation options, and your system configuration.

Running the IVP, SYS$TEST:VOX$IVP.COM, on a standalone microVAX-II system requires less than one minute. See Section 2.1.5.

1.4.2 Privileges

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

- ALTPRI
- CMEXEC
- CMKRNL
- DETACH
- SHARE
- SYSNAM
- SYSPRV

Note that VMSINSTAL turns off BYPASS privilege at the start of the installation.

1.4.3 Disk Space

Installing DECvoice requires a certain amount of free storage disk space during the installation. Once DECvoice is installed, less storage space is required. Table 1–1 summarizes the storage requirements for DECvoice.

Table 1–1 Disk Space Requirements

Kit	Blocks During Installation	Blocks After Installation
DECvoice V1.1	14,431	14,431

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

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

1.4.4 System Parameters

Table 1–3 describes the various core SYSGEN parameters commonly used by, and commonly modified for, DECvoice. Table 1–3 lists the minimum required system parameter values for the installation. Site-specific increases above the values shown here may be required. Proper sizes are determined on an application and site specific basis.

Table 1–2 System Parameter Descriptions

CLISYMTBL	Regulates the size of the command interpreter symbol tables. The required setting for this parameter is derived from the requirements of the DECvoice VMSINSTAL command procedures.
GBLPAGES	Regulates the number of global page table entries—the limit for the number of global pages that can be created. DECvoice uses zero or more 2048 page—one megabyte – global sections to store global messages.
GBLSECTIONS	This parameter limits the number of global section descriptors that can be created. This is the maximum number of seperate global sections that can be created. DECvoice uses zero or more global sections to store global messages.
GBLPAGFIL	This parameter is the number of global pages, as limited by GBLPAGES, that can have backing storage in the page file. DECvoice VOX backs shared messages in the page file. DECvoice allocates backing storage in units of 2048 pages. Unlike most other SYSGEN parameters, there is not a direct method of determining the amount of GBLPAGFIL that is currently unused.
SPTREQ	The SPTREQ parameter is the number of additional System Page Table Entries (SPTs) available for mapping various system components. The DECvoice driver uses SPTs to communicate with the DTC04 module. 128 SPTs are required for EACH DECvoice configured.
MAXBUF	This parameter controls the maximum size of a buffered I/O transfer. This is the maximum number of bytes that can be transfered in a buffered I/O request. All buffered I/O transfers, performed by any software anywhere on the VMS system, are limited by this parameter. The largest buffered I/O transfer performed by DECvoice is 8192.
VIRTUALPAGECNT	This is the amount of virtual address space available to a process. This number can be divided between the program region (P0) and the control region (P1) in any fashion. DECvoice uses virtual address space to buffer messages, either local or global, in memory. If you must increase GBLPAGES, you may need to increase VIRTUALPAGECNT.

Table 1–2 (Cont.) System Parameter Descriptions

STARTUP_P1	This parameter is used to control the system startup. Various keywords can be placed in this parameter. For the purpose of DECvoice, two keywords are important: a blank string, and the string "MIN".
WINDOW_SYSTEM	This parameter is used to select the windowing system to be used on a workstation. Zero selects no windowing. This is the default. A one selects the VMS DECwindows environment. A two selects the VMS UIS workstation environment.

Table 1–3 Required System Parameter Values

System Parameter	Requirement	Value
CLISYMTBL[1]	Minimum	250
GBLPAGES[2]	Addition	current + 3096
GBLSECTIONS[2]	Addition	current + 24
GBLPAGFIL[2]	Addition	current + 2048
SPTREQ[3]	Addition	current + 128 * modules
MAXBUF[4]	Minimum	8192
VIRTUALPAGECNT[5]	Minimum	8192
STARTUP_P1[6]	Requirement	" "
WINDOW_SYSTEM[7]	Maximum	1

[1]Minimum value of 250 during the installation procedure. The value can be reset once installation is complete.

[2]The current value refers to the system parameter values that are currently in use. To install DECvoice, you must raise these values by the number indicated.

[3]The current value refers to the system parameter values that are currently in use. To install DECvoice, you must raise these values by the number indicated for each DECvoice DTC04 module installed in the microVAX system. (See Section 1.4.4.3.)

[4]This dynamic system parameter must be set permanently to a value equal to or greater than the value listed. Do not lower this value after the installation.

[5]The VIRTUALPAGECNT system parameter may need to be set to a value of 30720 pages or more, depending on the application and the amount of global messages in use. Applications that buffer large amounts of voice data in local or global memory are particularly prone to consuming this resource, and the process account quota PGFLQUOTA. (See Section 3.5.4.)

[6]The STARTUP_P1 system parameter is typically left as a blank string during normal system operations.

[7]Requirements made by windowing system can interact with the performance of DECvoice.

The following sections show you how to check system parameter values, set the CLISYMTBL dynamic system parameter with the VMS System Generation Utility (SYSGEN), calculate values for the GBLPAGES and GBLSECTIONS system parameters, and change parameter values with the VMS AUTOGEN command procedure.

1.4.4.1 Checking System Parameter Values

To check the values of your system parameters, enter the following command at the DCL prompt to invoke the SYSGEN utility:

```
$  RUN SYS$SYSTEM:SYSGEN
SYSGEN>
```

At the SYSGEN> prompt, enter the SHOW command to display the value of each system parameter. The values displayed should equal or exceed the the value of each parameter listed in Table 1–3. The following command displays the value for the MAXBUF system parameter:

```
SYSGEN>  SHOW MAXBUF
```

After you finish checking the parameters with the SHOW command, you can enter the EXIT command at the SYSGEN> prompt to return to DCL level.

1.4.4.2 Setting the CLISYMTBL Dynamic System Parameter

If the CLISYMTBL system parameter value for your system is less than 250, change the setting by using the following series of privileged commands:

```
$  RUN SYS$SYSTEM:SYSGEN
SYSGEN>  USE ACTIVE
SYSGEN>  SET CLISYMTBL 250
SYSGEN>  WRITE ACTIVE
SYSGEN>  EXIT
```

Dynamic parameters changed with the SYSGEN utility become active immediately without any need to reboot your system. In fact, rebooting returns dynamic system parameter values to their previous settings, so you should complete the installation before rebooting the system.

Once the installation is complete, you can reset CLISYMTBL to its previous setting or let it be reset automatically when you reboot your system.

1.4.4.3 Calculating GBLPAGES, GBLPAGFIL and GBLSECTIONS

To install and run DECvoice, you must set the correct values for the GBLPAGES, GBLPAGFIL, GBLSECTIONS and VIRTUALPAGECNT system parameters.

The values for GBLPAGES, GBLPAGFILE, GBLSECTIONS and VIRTUALPAGECNT in Table 1–3 indicate that you must have at least the specified number of unused pages or sections available on your system for the installation to process successfully. To determine what the current settings of various parameters are, use the following DCL commands:

```
$  WRITE SYS$OUTPUT 'F$GETSYI("CONTIG_GBLPAGES")'
16384
$  WRITE SYS$OUTPUT 'F$GETSYI("FREE_GBLPAGES")'
16385
$  WRITE SYS$OUTPUT 'F$GETSYI("GBLPAGFIL")'
10240
$  WRITE SYS$OUTPUT 'F$GETSYI("FREE_GBLSECTS")'
64
$  WRITE SYS$OUTPUT 'F$GETSYI("VIRTUALPAGECNT")'
40768
```

The VMS system may be configured with excess GBLPAGES but may lack sufficient CONTIGUOUS space in the global page tables. If global page table fragmentation occurs, a reboot is required to realize enough contiguous space. Additionally, it may become necessary to increase the value of the GBLPAGES parameter (see Section 1.4.4.4 for the procedures used to increase this paramter), or to perform periodic system reboots, to reduce the incidence of global page table fragmentation.

There must be a sufficient number of GBLPAGFIL pages—the DECvoice VOX shared messages uses global pages backed by the pagefile – preconfigured into the system. The amount of GBLPAGFIL pages required varies depending on system configuration. There is no easy way to determine the quantity of GBLPAGFIL pages currently available.

The VIRTUALPAGECNT SYSGEN parameter places an upper limit on the amount of virtual address space available to a process. SS$_VASFULL errors are a symptom of an insufficient VIRTUALPAGECNT setting to support current activities. If SS$_VASFULL errors are encountered, you will need to increase the setting of VIRTUALPAGECNT. Section 1.4.4.4 describes the procedures for this.

The values for GBLPAGES, GBLPAGFILE and VIRTUALPAGECNT, when an increase is required by a DECvoice application, should all be increased in multiples of 2048 pages. For each 2048 page increment performed on GBLPAGES or GBLPAGFILE, GBLSECTIONS should be incremented by one.

If the total number of free global pages, or the number of contiguous free global pages, or the number of GBLPAGFIL, fall below 2048, you may need to reboot to defragment the available memory; if the condition persists, you will need to increase the GBLPAGES, GBLPAGFIL, VIRTUALPAGECNT and GBLSECTIONS parameters and reboot. Section 1.4.4.4 describes the procedures for increasing these values as well as those of other system parameters. Refer to the VMS documentation on system management and operations for more information.

Note that DECvoice may require additional increases to GBLPAGES, GBLPAGFIL, GBLSECTIONS and VIRTUALPAGECNT based on the number and size of global messages currently loaded. The DECvoice software will automatically, and dynamically, increase the utilization of GBLPAGES, GBLPAGFIL, GBLSECTIONS and VIRTUALPAGECNT based on the aggregate size of global messages required. Any attempt to expand beyond SYSGEN limits will fail. Each global message memory dynamic expansion requires an additional 2048 pages to each of GBLPAGFIL, GBLPAGES and VIRTUALPAGECNT, and an additional GBLSECTIONS entry.

1.4.4.4 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 the following file:

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

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

```
MIN_MAXBUF = 8192
```

Or for incremental SYSGEN parameters:

```
ADD_GBLPAGES = 3096
```

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. Also on VMS V5.x systems you may wish to add the [NO]FEEDBACK parameter to the AUTOGEN command line. For more information about using AUTOGEN, see the instructions on modifying system parameters in the VMS documentation on System Management and Operations.

DIGITAL recommends that any parameters included in MODPARAMS.DAT use the ADD_, MIN_ or MAX_ prefixes, as appropriate. This allows AUTOGEN to make any necessary, but compatible, changes to the specified parameters.

The spellings of all SYSGEN parameters included in the file SYS$SYSTEM:MODPARAMS.DAT must be correct and all parameters must be named in full. Spelling errors typically do not cause AUTOGEN to display any error messages.

1.4.5 VMSINSTAL Requirements

When you invoke VMSINSTAL, it checks the following:

- Whether you have set your default device and directory to SYS$UPDATE:
- Whether you are logged in to a privileged account
- Whether you have adequate quotas for installation
- Whether any users are logged in to the system

If VMSINSTAL detects any problems during the installation, it notifies you of the problem and asks if you want to continue the installation. In some instances, you can enter YES to continue. To stop the installation process and correct the situation, enter NO or press RETURN. Then correct the problem and restart the installation.

1.4.6 Backing Up Your System Disk

At the beginning of the installation, VMSINSTAL asks if you have backed up your system disk. DIGITAL recommends that you do a system disk backup before installing any software on top of the operating system.

Use the backup procedures that have been established at your site. For details on performing a system disk backup, see the section on the Backup Utility in the VMS documentation set.

1.4.7 License Management Utility Requirements

You will need to register and load your license for DECvoice before you start the installation in order to run the Installation Verification Procedure.

For more information on the VMS License Management Facility, see the *VMS License Management Utility Manual* in the VMS documentation set and the overview in the booklet *A Practical Guide to Managing Software Licenses*, order number EJ-31899-76.

2 Installing DECvoice

This chapter describes how to install DECvoice. Section 2.2 contains a step-by-step description of the installation procedure.

2.1 General Information

This section includes information about accessing Release Notes, determining the files and logical names added to your system, running the Installation Verification Procedure (IVP), and aborting the installation.

2.1.1 Accessing the Online Release Notes

DECvoice provides online Release Notes. If you specify OPTIONS N when you invoke VMSINSTAL, the installation procedure asks you if you want to display or print the Release Notes. The Release Notes question comes near the beginning of the installation. You should review the Release Notes in case they contain any information about changes in the installation procedures.

After DECvoice has been installed, the Release Notes are located in the file:

```
SYS$HELP:VOX$011.RELEASE_NOTES.
```

To print a copy of the release notes on the default printer, use the command:

```
$ PRINT SYS$HELP:VOX$011.RELEASE_NOTES
```

To display a copy of the release notes on your terminal, use the command:

```
$ TYPE/PAGE SYS$HELP:VOX$011.RELEASE_NOTES
```

2.1.2 VMSINSTAL Directory Creation Messages Can Be Ignored

The DECvoice VMSINSTAL installation procedure displays a number of messages concerning the creation of directories in VAXcluster environments. These messages can safely be ingored; all necessary system-specific directory creations are handled automatically by the DECvoice startup procedure.

2.1.3 New Files Added to the System

- SYS$SYSROOT:[SYSLIB]VOX$DEF.BAS
- SYS$SYSROOT:[SYSLIB]VOX$DEF.FOR
- SYS$SYSROOT:[SYSLIB]VOX$DEF.H

- SYS$SYSROOT:[SYSLIB]VOX$DEF.MAR
- SYS$SYSROOT:[SYSLIB]VOX$DEF.PAS
- SYS$SYSROOT:[SYSLIB]VOX$DEF.PLI
- SYS$SYSROOT:[SYSLIB]VOX$DEF.R32
- SYS$SYSROOT:[SYSLIB]VOX$DEF.LIB
- SYS$SYSROOT:[SYSLIB]VOX$MSG.BAS
- SYS$SYSROOT:[SYSLIB]VOX$MSG.FOR
- SYS$SYSROOT:[SYSLIB]VOX$MSG.H
- SYS$SYSROOT:[SYSLIB]VOX$MSG.MAR
- SYS$SYSROOT:[SYSLIB]VOX$MSG.PAS
- SYS$SYSROOT:[SYSLIB]VOX$MSG.PLI
- SYS$SYSROOT:[SYSLIB]VOX$MSG.R32
- SYS$SYSROOT:[SYSLIB]VOX$MSG.LIB
- SYS$SYSROOT:[SYSTEST]VOX$IVP.COM
- SYS$SYSROOT:[SYSTEST.VOX]VOX$IVP.EXE
- SYS$SYSROOT:[SYSEXE]VOX$ACP.EXE
- SYS$SYSROOT:[SYSEXE]VOX$CP.EXE
- SYS$SYSROOT:[SYSLIB]VOX$CPDBGDSHR.EXE
- SYS$SYSROOT:[SYSLIB]VOX$CPDBGUSHR.EXE
- SYS$SYSROOT:[SYSLIB]VOX$VMSSHR.EXE
- SYS$SYSROOT:[SYSLIB]VOX$RTL.EXE
- SYS$SYSROOT:[SYSMSG]VOX$MSG.EXE
- SYS$SYSROOT:[SYS$LDR]VXDRIVER.EXE
- SYS$SYSROOT:[SYSHLP]VOX$CP.HLB
- SYS$SYSROOT:[SYSHLP.EXAMPLES.VOX]VOX$DEMO.C
- SYS$SYSROOT:[SYSHLP.EXAMPLES.VOX]VOX$MAKE_PROMPT.C
- SYS$SYSROOT:[SYSHLP.EXAMPLES.VOX]VOX$MCU.C
- SYS$SYSROOT:[VOX$DTC.TEMPLATES]VOX$STD*.DAT
- SYS$SYSROOT:[VOX$DTC.MICROCODE]VOX$AUDIO.SYS
- SYS$SYSROOT:[VOX$DTC.MICROCODE]VOX$RECOG.SYS
- SYS$SYSROOT:[VOX$DTC.MICROCODE]VOX$STORE.SYS
- SYS$SYSROOT:[VOX$DTC.MICROCODE]VOX$STORE_ADPCM.SYS
- SYS$SYSROOT:[VOX$DTC.MICROCODE]VOX$STORE_SUBBAND.SYS
- SYS$SYSROOT:[VOX$DTC.MICROCODE]VOX$SYS.SYS
- SYS$SYSROOT:[VOX$DTC.MICROCODE]VOX$TEXT.SYS

- SYS$SYSROOT:[VOX$DTC.MICROCODE]VOX$CRECOG.SYS
- SYS$SYSROOT:[VOX$DTC.SYSTEM]VOX$MOUNT.COM
- SYS$SYSROOT:[VOX$DTC.SYSTEM]VOX$DISMOUNT.COM
- SYS$SYSROOT:[VOX$DTC.SYSTEM]VOX$ACNA_DICTIONARY.DAT
- SYS$SYSROOT:[VOX$DTC.SYSTEM]VOX$DELETE_GLOBAL.EXE
- SYS$SYSROOT:[VOX$DTC.SYSTEM]VOX$DIAG.EXE
- SYS$SYSROOT:[VOX$DTC.SYSTEM]VOX$DIAG_DIAL.EXE
- SYS$SYSROOT:[VOX$DTC.SYSTEM]VOX$DIAG_TEST.EXE
- SYS$SYSROOT:[VOX$DTC.SYSTEM]VOX$DIAL.EXE
- SYS$SYSROOT:[VOX$DTC.SYSTEM]VOX$TEST.EXE
- SYS$SYSROOT:[VOX$DTC.SYSTEM]VOX$DB86.EXE
- SYS$SYSROOT:[VOX$DTC.VOICE]VOX$K_*.DAT

2.1.4 Logical Names Added to the System

DECvoice also creates a small number of logical names. All logical names created by DECvoice software are prefixed by "VOX$".

- VOX$EXAMPLES
- VOX$MICROCODE
- VOX$SYSTEM
- VOX$TEMPLATES
- VOX$VOICE

Several other logical names, and logical name tables, are created for internal DECvoice use. Modifications or changes to these logical names and tables are not supported and may cause software failures.

2.1.5 Running the Installation Verification Procedure (IVP)

The Installation Verification Procedure (IVP) for DECvoice verifies the installation. During the installation, you are asked if you want to run the IVP as part of the installation. If you respond YES, VMSINSTAL runs the IVP. It is recommended that you run the IVP to be sure that DECvoice is installed correctly.

After DECvoice is installed, you can run the IVP independently to verify that the software is available on your system. You might also want to run the IVP after a system failure to be sure that users can access DECvoice. To run the IVP type the command:

```
$  @SYS$TEST:VOX$IVP
```

The DECvoice IVP is intended as a test of the DECvoice software. It is not intended as a test of the DECvoice DTC04 hardware and only performs a few operations with the module while testing the software. The IVP will complete successfully if the DECvoice software is functioning. If hardware is not present, or is malfunctioning, the IVP will function.

The IVP will, in addition to the software testing, search for all DECvoices installed in the system. The system software status will be checked for each module; thus the IVP can potentially detect, and report, problems with a DECvoice vector switch setting.

Note:

An incorrectly configured DECvoice hardware interrupt vector switch setting is the most common source of DECvoice problems.

The SYSGEN utility does *not* display the DECvoice DTC04 interrupt vector setting.

The only way to determine the current vector setting is to physically remove the DTC04 module from the Q-bus and decode the physical interrupt vector switch setting on the interrupt vector switch pack. The setting should then be compared to the proper setting, as displayed by SYSGEN. The switch setting must the same as, or must be reset to, the value of the vector that is displayed by SYSGEN. Consult the *DECvoice DTC04 Technical Manual* for information on switch location, configuration and settings. Contact DIGITAL Field Service for assistance.

2.1.6 Aborting the Installation

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 exits. You can then start the installation again.

2.2 The Installation Procedure

The DECvoice installation process consists of a series of questions and informational messages.

2.2.1 Invoking VMSINSTAL

To start the installation, invoke the VMSINSTAL command procedure from a privileged account, such as the SYSTEM account. Next, invoke VMSINSTAL. You use the following syntax to invoke VMSINSTAL:

```
@SYS$UPDATE:VMSINSTAL product-name device-name OPTIONS N
```

product-name

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

```
VOX011
```

device-name

The name of the device on which you plan to mount the media. For example, XDELTA$MUA0: is the device name for a TK70 cassette tape drive. It is not necessary to use the console drive for this installation. However, if you do use the console drive, you should replace any media you removed once the installation is completed.

OPTIONS N

An optional parameter that indicates 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. You are strongly recommended to read the Release Notes before proceeding with this installation.

VMSINSTAL has several other options; for information, see the VMS documentation on Software Installation.

The following example displays the command to invoke VMSINSTAL to install DECvoice from TK70 cassette tape drive XDELTA$MUA0: and the system response. This example uses the OPTIONS N parameter for printing or displaying Release Notes.

```
$  @SYS$UPDATE:VMSINSTAL VOX011 XDELTA$MUA0: OPTIONS N

       VAX/VMS Software Product Installation Procedure V5.2


It is 01-SEP-1989 at  5:09.
Enter a question mark (?) at any time for help.
```

If you do not supply either the product name or the device name, VMSINSTAL prompts you for this information later on in the installation procedure. VMSINSTAL does not prompt you for any options, so be sure to include OPTIONS N on the VMSINSTAL command line to access the Release Notes during the installation.

2.2.2 Installation Questions

This section discusses the questions that appear during the installation. See Appendix A for a sample installation procedure.

Each question in the installation is marked with an asterisk (*) at the beginning of the line. Some questions show the default response in brackets, for example [YES]. If you want to give the default response, press the RETURN key.

1 Process status

VMSINSTAL displays a list of all active processes. It then asks if you want to continue the installation. You should install DECvoice on a standalone system or cluster. NO is the default response to the question.

```
%VMSINSTAL-W-ACTIVE, The following processes are still active:
        HOFFMAN$WM_1
        HOFFMAN_001C
        SIMM_001F
        BATCH_0023
         .
         .
* Do you want to continue anyway [NO]?
```

2 System backup

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

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

3 Mounting the media

You should now mount the first distribution volume on the device you specified when you invoked VMSINSTAL. The device name appears in the line preceding the question. VMSINSTAL then asks you if you are ready to continue with the installation.

If you respond YES to indicate that you are ready, VMSINSTAL displays a message that the media containing DECvoice has been mounted on the specified device and that the installation has begun. For example:

```
Please mount the first volume of the set on XDELTA$MUA0:.
* Are you ready?  YES

%MOUNT-I-MOUNTED, VOX MOUNTED ON XDELTA$MUA0:

The following products will be processed:

  VOX V1.1

    Beginning installation of VOX V1.1 at  5:09

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

If you entered the wrong device name when you invoked VMSINSTAL and need to restart the installation, enter NO in response to the ‘‘Are you ready?’’ question. To abort the installation for other reasons, press CTRL/Y.

4 Additional media volumes

If your installation kit contains more than one volume, VMSINSTAL prompts you to insert the additional volumes and then asks you to indicate that you are ready for the installation to proceed.

```
%BACKUP-I-READYREAD, mount volume 2 on _XDELTA$MUA0: for reading

Enter "YES" when ready:
```

5 Release Notes

If you specified OPTIONS N when you invoked VMSINSTAL, you are now given three options for reviewing the Release Notes.

```
Release Notes Options:

    1. Display Release Notes
    2. Print Release Notes
    3. Both 1 and 2
    4. None of the Above

* Select option [3]:
```

If you select option 1, VMSINSTAL displays the Release Notes immediately on the console terminal. You can terminate the display at any time by pressing CTRL/C. Display of the release notes to the screen is probably not desirable; the file is large. Specification of option 2 is recommended.

If you select option 2, VMSINSTAL prompts you for the name of the print queue that you want to use:

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

You can enter a queue name or press RETURN to send the file to the default output print device. The DECvoice release notes file is a large file, thus the selection of option 2 is recommended.

If you select option 3, VMSINSTAL displays the Release Notes immediately on the console terminal and then prompts you for a queue name for the printed version. Display of the release notes to the screen is probably not desirable; the file is large. Specification of option 2 is recommended.

6 Continuing the installation

The installation procedure now asks if you want to continue the installation. To continue, enter YES. Otherwise, press RETURN. In either case, the Release Notes are copied to a file in the SYS$HELP directory. For example:

```
* Do you want to continue the installation [N]?:  YES
%VMSINSTAL-I-RELMOVED, The products Release Notes have been
successfully moved to SYS$HELP.
```

The Release Notes are located in the following file:.

```
SYS$HELP:VOX$011.RELEASE_NOTES.
```

Note: The name of the Release Notes file installed by VMSINSTAL consists of the current product name and version number. Do not delete Release Notes for previous versions of DECvoice.

7 Choosing to purge files

You have the option to purge files from previous versions of DECvoice that are superseded by this installation. Purging is recommended; however, if you need to keep files from the previous version, enter NO in response to the question.

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

8 License Registration

The installation procedure asks you if have registered and loaded your authorization key for DECvoice and prints out information specific to the particular license, for example:

```
Product:                        VOX
Producer:                       DEC
Version:                        1.1
Release Date:                   1-SEP-1989
```

The installation also inquires:

```
* 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. A successful installation of DECvoice depends upon an authorization key being registered and loaded. Please be certain that this has been completed before proceeding with the installation.

9 Prerecorded Voice Snippet Files

The voice files are a group of files that contain prerecorded English snippets. These files are used for the concatenation of numbers in prototype applications and are not necessary for the operation of the DECvoice software. The voice files comprise of 304 files that occupy 3917 blocks of disk space on a disk volume with a disk volume clustersize of three blocks.

```
* Do you wish to install the voice files [YES]?
```

If you do not plan to use these prerecorded voice files, or you have your own files, or if your system has little free space, answer this question NO.

10 Choosing to run the Installation Verification Procedure (IVP)

The installation procedure now asks if you want to run the Installation Verification Procedure. The IVP for DECvoice checks to be sure that the installation is successful. It is recommended that you run the IVP.

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

2.2.3 Informational Messages

At this point, the installation procedure displays a number of informational messages that report on the progress of the installation. There are no further questions. If the installation procedure has been successful up to this point, VMSINSTAL moves the new or modified files to their target directories. If you asked for files to be purged, that work is done now. The following messages are displayed:

```
%VOX-I-GOAWAY, no more questions will be asked.

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

The installation will now execute a number of CREATE /DIRECTORY commands. Informational messages resulting from these creations, and all messages requesting creation of directories under SYS$SPECIFIC by the user can be ignored. The DECvoice startup command procedure will automatically create the requisite system-specific directories in standalone and VAXcluster environments.

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

2.2.4 Running the Installation Verification Procedure

If you chose to run the IVP, VMSINSTAL will attempt to run the IVP now. If the current running VMS system is not properly configured, the IVP will not be run. The two most common problems with a failed IVP are an incorrect SYSGEN parameter, or a DECvoice device with an incorrectly set hardware vector.

See Section 2.1.5 for information on running the IVP manually. See Section 2.3 for information about errors that may be displayed by the IVP.

2.2.5 Completing the Installation Procedure

The following messages indicate that the entire installation procedure is complete:

```
   Installation of VOX V1.1 completed at  5:30

   VMSINSTAL procedure done at  5:30
```

You can now log out of the privileged account:

```
$  LOGOUT
SYSTEM     logged out at 30-AUG-1989 05:30:44.31
```

Note that 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.

2.3 Error Recovery

If errors occur during the installation itself or when the IVP is running, VMSINSTAL displays failure messages. If the installation fails, the following message is displayed:

```
%VMSINSTAL-E-INSFAIL, The installation of VOX V1.1 has failed.
```

If the IVP fails, the following messages are displayed:

```
The VOX V1.1 Installation Verification Procedure failed.

%VMSINSTAL-E-IVPFAIL, The IVP for VOX V1.1 has failed.
```

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

- The operating system version is incorrect. V1.1 requires VMS V5.2 or above.
- A DECvoice ACP is currently operating on the system.
- A DECvoice device is marked as mounted.
- Quotas necessary for successful installation are insufficient.
- System parameter values for successful installation are insufficient.

- The DECvoice hardware device vector is incorrectly set.

For descriptions of the error messages generated by these conditions, see Appendix B in this document, the VMS documentation on system messages and recovery procedures, and the documentation on the VMS software installation procedures.

DECvoice VOX V1.1 includes three new messages broadcast to the console by the VXDRIVER device driver. These messages are:

- %VXDRIVER, Unit init running on DECvoice: VXcu:

  This message indicates normal device initialization and does not indicate a problem.

- %VXDRIVER, DECvoice timeout– check vector on: VXcu:

  This indicates a hardware failure or, far more likely, an setting in the hardware vector switch pack. See the *DECvoice DTC04 Technical Manual* for DECvoice module configuration information and switch setting requirements. Contact your local DIGITAL Field Service office for assistance.

- %VXDRIVER, shared memory access failure on DECvoice: VXcu:

  This is typically a hardware problem. It indicates that the driver cannot access the DECvoice Q-bus shared memory. This condition can be caused by insufficient system page table entries. See Section 1.4.4 for information on increasing the SYSGEN parameter SPTREQ.

If you are notified that an error condition exists, you should take the appropriate action as described in the message. (You might need to change a system parameter or increase an authorized quota value.) For information on installation requirements, see Chapter 1. For information on problem reporting, see Section 3.7.

3 After Installing DECvoice

After installing DECvoice, you need to perform the following tasks:

- Edit the system startup and shutdown files.
- Reboot the system.
- Modify system parameters settings

This chapter also explains how to run the Installation Verification Procedure (IVP) after the software has been installed, and provides information on other, more general, manuals that you may find useful.

3.1 Editing the System Files

You must edit the system startup files to provide for automatic startup of DECvoice when your system is rebooted.

Add the command line that starts DECvoice to the site-specific system startup file, SYS$MANAGER:SYSTARTUP_V5.COM. The following example shows the command used DECvoice:

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

The site-specific system startup is executed from a privileged environment. The DECvoice startup requires the following privileges to execute:

- ALTPRI
- CMKRNL
- CMEXEC
- DETACH
- SHARE
- SYSNAM
- SYSPRV

Additional privileges, such as PRMGBL and SYSGBL, may be required by startup, and by user applications, depending on the requirements for DECvoice shared message global sections. All DECvoice user-written applications require a minimum of, and typically only, TMPMBX.

3.2 Rebooting the System

You can reboot your system after you have installed the DECvoice DTC04, the DECvoice software, have edited the system startup file to incorporate the DECvoice startup, and have reset the system parameters (if necessary).

A system reboot verifies that DECvoice is ready for use, and ensures that the edits to the system startup command file are correct. It also establishes any new parameter settings as the current settings. Note, however, that rebooting is optional except when a non-dynamic SYSGEN parameter must be altered.

3.3 Deleting VOX Version V1.0 Files

Note: DIGITAL strongly recommends that you have a satisfactory backup of your system disk before executing any of the commands listed in this section. DIGITAL also recommends all running DECvoice applications be shut down, and all DECvoice ACPs dismounted, prior to executing these commands.

If DECvoice VOX V1.0 was previously installed on the system, you can delete it before or after the installation of VOX V1.1 or above, using the SYSTEM account, with the following commands:

```
$  SET PROCESS/PRIVILEGE=SYSPRV
$  SET PROTECTION=(SYSTEM:RWED) -
SYS$SYSDEVICE:[VOX$DTC...]*.*;*
$  DELETE SYS$SYSDEVICE:[VOX$DTC...]*.*;*
$  DELETE SYS$SYSDEVICE:[VOX$DTC...]*.*;*
$  DELETE SYS$SYSDEVICE:[VOX$DTC...]*.*;*
$  SET PROTECTION=(SYSTEM:RWED) -
SYS$SYSDEVICE:[000000]VOX$DTC.DIR;*
$  DELETE SYS$SYSDEVICE:[000000]VOX$DTC.DIR;*
```

These commands delete all VOX V1.0 files from all VAXcluster nodes that are sharing this system disk. In VAXclusters with multiple system disks, you must install VOX V1.1 on each different system disk and you must perform this deletion on each disk that has V1.0 installed on it.

3.4 VAXcluster Considerations

DECvoice VOX software installs in subdirectories of the VAXcluster common root, SYS$COMMON:. Various subdirectories under SYS$COMMON:[VOX$DTC] are created by the installation. The DECvoice system startup procedure creates all necessary system-specific DECvoice directories if they are not found. These subdirectories are under SYS$SPECIFIC:[VOX$DTC].

You must make the specified SYSGEN adjustments and edit SYS$MANAGER:SYSTARTUP_V5.COM on all nodes in the VAXcluster that will be using DECvoice. All nodes in the VAXcluster that will be using DECvoice, or simply running the DECvoice startup, must be licensed for DECvoice. (See Section 1.3.)

In VAXclusters with multiple system disks, you must perform a complete VOX V1.1 installation on each system with a distinct system disk.

3.5 Enhancing DECvoice System Performance

This section includes information on general system tuning. It also includes information on installing the DECvoice RTL as a sharable image, sample account quotas for various applications and information on disk fragmentation.

3.5.1 VMS Guide To Performance Management

After you install DECvoice, you might want to adjust, or tune, your system to enhance performance or lower the use of certain system resources. Information about tuning your VMS system is included in the *VMS Guide To Performance Management* manual.

3.5.2 Installing DECvoice as a Shared Image

If the DECvoice Run-Time Library will be used extensively on your system, you can reduce the system overhead and memory requirements by installing it as a shared image. To install DECvoice as a shared image on a system that is currently running, use the VMS Install Utility (INSTALL). It is recommended that you perform the installation on a system that has just been bootstrapped because the available space in the global page table is less likely to be fragmented.

First, determine the number of available global pages and global sections on your system. See Section 1.4.4.3 for information on how to verify and modify the number of global pages and global sections. Table 1–3 contains the required values for these parameters.

Once you have reset the system parameter values, invoke the VMS Install Utility from a privileged account and then install DECvoice as a shared image:

```
$  INSTALL
INSTALL>  CREATE SYS$SHARE:VOX$RTL.EXE /OPEN /SHARED /HEADER
INSTALL>  EXIT
```

You must now add the following lines to the appropriate system startup command file, SYS$MANAGER:SYSTARTUP_V5.COM, so that each time the system is started, DECvoice is available as a shared image.

```
$ INSTALL CREATE SYS$SHARE:VOX$RTL.EXE /OPEN /SHARED /HEADER
```

Note that when you install DECvoice as a shared image you need to increase the global pages and global sections parameters. Increase global pages (GBLPAGES) by 674 pages and global sections (GBLSECTIONS) by 3 sections. Refer to Section 1.4.4 for information on changing these parameters.

3.5.3 Example Process Account Quotas

DECvoice digitized-voice applications typically require large amounts of memory for voice data buffers. An application can calculate an approximation of the amount of virtual memory required by multiplying the encoding rate times the number of seconds of data to be held in memory. If this amount is large, and the process working set or the amount of non-paged pool, is small, performance degradation can result.

Table 3–1 provides general guidelines for process quotas for common applications. The information in Table 3–1 should be taken as a starting point for tuning a typical application and adjusted as required.

Table 3–1 Process Account Quotas for Common Applications

Account Quota	Value
ASTLM	512
BIOLM	512
BYTLM[1]	20480
PGFLQUOTA[2]	20480
WSDEFAULT[3]	512
WSQUOTA[3]	2048
WSEXTENT[3]	4096

[1] Insufficient BYTLM quota has caused certain applications to spend noticable amounts of time in a mutex wait state. BYTLM is allocated from the VMS system non-paged memory pool. The amount of non-paged pool is set by the SYSGEN parameter NPAGEDYN. Use the DCL command "SHOW MEMORY/POOL" to show the current, and initial settings of non-paged pool. Insufficient non-paged pool can result in system-wide performance degradation—particularly on systems with a small amount of free physical memory.

[2] The address space available to a process is limited by both this parameter and by the SYSGEN parameter VIRTUALPAGECNT.

[3] The values for WSEXTENT and WSQUOTA must be equal to or greater than the WSDEFAULT value. Additionally, the largest working set possible is governed by the setting of the SYSGEN parameter WSMAX.

3.5.4 Process Account Quotas for Large Applications

Large applications may require increases to the user authorization quotas. The following table shows some general guidelines for process accounts used for very large applications. Deficiencies in these quotas can result in application performance degredation in large applications.

Table 3–2 provides general guidelines for process quotas for large applications. The information in Table 3–2 should be taken as a starting point for tuning a large application and adjusted as required.

Table 3–2 Process Account Quotas for Large Applications

Account Quota	Value
ASTLM	1024
BIOLM	1024
BYTLM[1]	524288
DIOLM	48
ENQLM	750
FILLM	100
PRCLM	10
JTQUOTA	8192
PGFLQUOTA[2]	40960
WSDEFAULT	1024[3]
WSQUOTA	2048[3]
WSEXTENT	4096[3]

[1]Insufficient BYTLM quota has caused some large applications to spend noticable amounts of time in a mutex wait state. BYTLM is allocated from the VMS system non-paged memory pool. The amount of non-paged pool is set by the SYSGEN parameter NPAGEDYN. Use the DCL command "SHOW MEMORY/POOL" to show the current, and initial settings of non-paged pool. Insufficient non-paged pool can result in system-wide performance degradation—particularly on systems with a small amount of free memory.

[2]The address space available to a process is limited by both this parameter and by the SYSGEN parameter VIRTUALPAGECNT.

[3]The values for WSEXTENT and WSQUOTA must be equal to or greater than the WSDEFAULT value. Additionally, the largest working set possible is governed by the setting of the SYSGEN parameter WSMAX.

User account quotas are stored in the file SYSUAF.DAT. You use the VMS Authorize Utility to verify and change user account quotas. First set your default directory to SYS$SYSTEM and then run AUTHORIZE:

```
$  SET DEFAULT SYS$SYSTEM
$  RUN AUTHORIZE
UAF>
```

At the AUTHORIZE prompt (UAF>), use the SHOW command with an account name to check a particular account. For example:

```
UAF>  SHOW HOFFMAN
```

To change a quota, use the MODIFY command at the UAF> prompt. MODIFY has the following format:

MODIFY account-name /quota-name=nnnn

This example changes the FILLM quota for the SMITH account and then exits from the Authorize Utility:

```
UAF>  MODIFY HOFFMAN /FILLM=50
UAF>  EXIT
```

After you exit from the utility, the VMS system displays messages indicating whether or not changes were made. Once the changes have been made, you must log out and log in again for the new quotas to take effect.

For more information on modifying account quotas, see the description of the AUTHORIZE utility in the VMS documentation on System Management and Operations.

3.5.5 Insufficient Pagefile

DECvoice applications can consume quantities of pagefile. To display the current amount of pagefile that is available and reservable, use the command:

```
$  SHOW MEMORY/FILES
```

A severly overcommitted pagefile can result in degraded DECvoice application performance. To alter the size of the pagefile, execute the following command from the SYSTEM account:

```
$  @SYS$UPDATE:SWAPFILES.COM
```

3.5.6 Disk Fragmentation

Performance of the DECvoice software and the VMS system can be reduced by excess disk fragmentation. Note that some disk fragmentation is normal and should be expected.

Consult the VMS documentation set for information on system disk disk defragmentation procedures and for information on the use of the standalone VMS BACKUP utility.

3.6 General VMS Programming References

The *Guide to Creating VMS Modular Procedures*, order number AA-LA58A-TE, included in the VMS documentation set and the *Introduction to VAXcluster Application Design*, order number AA-JP32B-TE, are good general starting points for information on writing modular applications in either standalone or distributed and VAXcluster environments.

The *DECvoice DTC04 Software Reference Manual*, mentioned in Chapter 1, contains the information necessary to program the DECvoice VOX Run-Time Library.

3.7 Determining and Reporting Problems

If an error occurs while DECvoice is being used and you believe that the error is caused by a problem with DECvoice, take one of the following actions:

- Confirm that the DECvoice hardware CSR and vector switches are set up correctly. This check can only be performed by removing

the DECvoice DTC04 module from the backplane and examining the physical CSR and vector switch settings. These settings must be identical to the desired CSR and vector settings displayed by the SYSGEN utility. See the *DECvoice DTC04 Technical Manual* for DECvoice module configuration information and switch setting requirements. Contact your local DIGITAL Field Service office for assistance.

- 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.)
- If you have a Self-Maintenance Software Agreement, you can submit a Software Performance Report (SPR).
- If you purchased DECvoice 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 find an error in the DECvoice documentation, you should fill out and submit the Reader's Comments form at the back of the document in which the error was found. Please include the section and page number where the error was found.

A Sample Installation

This appendix contains a sample installation of DECvoice. This sample was run on a system that had no previous version of DECvoice installed.

The sample installation assumes that DECnet has been shut down, that no users are logged on to your system, and that OPTIONS N is specified to print the Release Notes.

The Installation Verification Procedure (IVP) runs at the end of the installation. See Section 2.1.5 for information on running the IVP manually.

Note: This example installation displays an error during the IVP. The IVP encountered non-fatal hardware error accessing the DECvoice TLI. In this case the TLI was deliberately electrically disconnected, for the purpose of testing, from the DTC04 module in the VAXstation 3200 Q-bus. Typical runs of the IVP will not report this error.

```
        XDELTA::, Voice Products VAXstation 3200, VMS V5.2

Username: SYSTEM
Password:

        XDELTA::, Voice Products VAXstation 3200, VMS V5.2
        Digital Equipment Corporation
        Voice Products Group

    Last interactive login on Wednesday, 30-AUG-1989 13:58
    Last non-interactive login on Tuesday, 29-AUG-1989 09:32

$ @sys$update:vmsinstal VOX011 XDELTA$MUA0: OPTIONS N

        VAX/VMS Software Product Installation Procedure V5.2

        It is 30-AUG-1989 at 05:09.

        Enter a question mark (?) at any time for help.

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

The following products will be processed:

  VOX V1.1

 Beginning installation of VOX V1.1 at 05:09

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

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

    Additional Release Notes Options:

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

* Select option [2]: 4
* Do you want to continue the installation [NO]? YES
%VMSINSTAL-I-RELMOVED , The product's release notes have been
successfully moved to SYS$HELP.
```

Sample Installation

```
    ************************************************************
    *                                                          *
    *                    DECvoice DTC04-AA                     *
    *                         VOX V1.1                         *
    *                                                          *
    *                 Installation Procedure                   *
    *                                                          *
    *     Copyright. 1988, 1989. Digital Equipment Corporation *
    *                  All Rights Reserved.                    *
    *                                                          *
    ************************************************************

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

        Product:      VOX
        Producer:     DEC
        Version:      1.1
        Release Date: 1-SEP-1989


* Does this product have an authorization key registered and loaded? YES
* Do you wish to install the voice files [YES]? YES
* Do you want to run the IVP after the installation [YES]? YES
%VOX-I-GOAWAY, No more questions will be asked.

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

%VMSINSTAL-I-SYSDIR, This product creates system directory
[VOX$DTC.MICROCODE].

    If you intend to execute this layered product on other nodes in your
    VAXcluster, and you have the appropriate software license, you must
    prepare the system-specific roots on the other nodes by issuing the
    following command on each node (using a suitably privileged account):

 $ CREATE /DIRECTORY SYS$SPECIFIC:[VOX$DTC.MICROCODE]
/OWNER_UIC=[1,4]/PROTECTION=(S:RWE,O:RWE,G:RWE,W:RE)/VERSION_LIMIT=3

%VMSINSTAL-I-SYSDIR, This product creates system directory
[VOX$DTC.SYSTEM].

    If you intend to execute this layered product on other nodes in your
    VAXcluster, and you have the appropriate software license, you must
    prepare the system-specific roots on the other nodes by issuing the
    following command on each node (using a suitably privileged account):

 $ CREATE /DIRECTORY SYS$SPECIFIC:[VOX$DTC.SYSTEM]
/OWNER_UIC=[1,4]/PROTECTION=(S:RWE,O:RWE,G:RWE,W:RE)/VERSION_LIMIT=3

%VMSINSTAL-I-SYSDIR, This product creates system directory
[VOX$DTC.TEMPLATES].

    If you intend to execute this layered product on other nodes in your
    VAXcluster, and you have the appropriate software license, you must
    prepare the system-specific roots on the other nodes by issuing the
    following command on each node (using a suitably privileged account):

 $ CREATE /DIRECTORY SYS$SPECIFIC:[VOX$DTC.TEMPLATES]
/OWNER_UIC=[1,4]/PROTECTION=(S:RWE,O:RWE,G:RWE,W:RE)/VERSION_LIMIT=3

%VMSINSTAL-I-SYSDIR, This product creates system directory
[VOX$DTC.VOICE].

    If you intend to execute this layered product on other nodes in your
    VAXcluster, and you have the appropriate software license, you must
    prepare the system-specific roots on the other nodes by issuing the
    following command on each node (using a suitably privileged account):

 $ CREATE /DIRECTORY SYS$SPECIFIC:[VOX$DTC.VOICE]
/OWNER_UIC=[1,4]/PROTECTION=(S:RWE,O:RWE,G:RWE,W:RE)/VERSION_LIMIT=3

%VMSINSTAL-I-SYSDIR, This product creates system directory
[SYSHLP.EXAMPLES.VOX].
```

```
    If you intend to execute this layered product on other nodes in your
    VAXcluster, and you have the appropriate software license, you must
    prepare the system-specific roots on the other nodes by issuing the
    following command on each node (using a suitably privileged account):

 $ CREATE /DIRECTORY SYS$SPECIFIC:[SYSHLP.EXAMPLES.VOX]
/OWNER_UIC=[1,4]/PROTECTION=(S:RWE,O:RWE,G:RWE,W:RE)/VERSION_LIMIT=3

%VMSINSTAL-I-SYSDIR, This product creates system directory [SYSTEST.VOX].

    If you intend to execute this layered product on other nodes in your
    VAXcluster, and you have the appropriate software license, you must
    prepare the system-specific roots on the other nodes by issuing the
    following command on each node (using a suitably privileged account):

 $ CREATE /DIRECTORY SYS$SPECIFIC:[SYSTEST.VOX]/OWNER_UIC=[1,4]
/PROTECTION=(S:RWE,O:RWE,G:RWE,W:RE)/VERSION_LIMIT=3

    Upon completion of this installation, please be sure to perform
    the following steps:

        o   P L E A S E   R E A D   T H E   R E L E A S E   N O T E S

            Digital places important release notes and related
            information in file SYS$HELP:VOX$011.RELEASE_NOTES.

        o Edit the system startup files to include the command
          "@Sys$Startup:VOX$Startup.Com".

        o Edit the file SYS$SYSTEM:MODPARAMS.DAT to change the
          SYSGEN parameters listed in the DTC04 Software Reference
          Manual and in the release notes.  If these parameters are
          not currently set correctly the IVP will not be run.

%VMSINSTAL-I-MOVEFILES, Files will now be moved to their target
directories...
%VOX-I-STARTUP, the DECvoice "VOX" software startup is executing.
Copr. (c) Digital Equipment Corp. 1988, 1989. All Rights Reserved.

**** VOX V1.1-002 Installation Verification Procedure Starting ****

 This  IVP  is intended solely as a test of the DECvoice  software
 installed  on this system.  It is not a hardware  diagnostic  and
 performs no useful testing of the DECvoice hardware.  Consult the
 DECvoice DTC04 System Technical Manual for diagnostic information.

 Using SYS$DEVICE_SCAN to look for all DECvoices.
 _VXA0: is mounted.
 SYS$DEVICE_SCAN located 1 DECvoice.

 Using DECvoice: _VXA0:
 Limited testing using the hardware will be performed.


 VOX$_BADTLI:
 Check the DECvoice hardware configuration.
 The DECvoice TLI appears to be bad or is
 disconnected.

**** VOX V1.1-002 Installation Verification Procedure Successful ****

 Installation of VOX V1.1 completed at  5:30

 VMSINSTAL procedure done at  5:30

$ LO
  SYSTEM      logged out at 30-AUG-1989  5:30:44.02
```

B Troubleshooting Information

Table B–1 describes various problems that may be encountered with a DECvoice, describes potential causes of the problem, and gives corrective actions for each.

Note:

An incorrectly configured DECvoice hardware interrupt vector switch setting is the most common source of DECvoice problems.

The SYSGEN utility does *not* display the DECvoice DTC04 interrupt vector setting.

The only way to determine the current vector setting is to physically remove the DTC04 module from the Q-bus and decode the physical interrupt vector switch setting on the interrupt vector switch pack. The setting should then be compared to the proper setting, as displayed by SYSGEN. The switch setting must the same as, or must be reset to, the value of the vector that is displayed by SYSGEN. Consult the *DECvoice DTC04 Technical Manual* for information on switch location, configuration and settings. Contact DIGITAL Field Service for assistance.

Table B–1 Troubleshooting DECvoice Problems

Problem	Possible Cause	Corrective Action
The DECvoice is visible with a DCL "SHOW DEVICE _VXcu:[1]" command but is marked as offline and/or writelocked.[2]	The DECvoice vector is set incorrectly.	The SYSGEN utility CONFIGURE command is used to determine the correct vector setting. Note that SYSGEN does *not* display the actual vector setting on any display. SYSGEN does display the *desired* vector setting. See the *DECvoice DTC04 Technical Manual* for vector-related information. **An incorrectly set hardware vector is the single most common source of DECvoice problems.**
	The DECvoice driver is unable to allocate enough system page table entries.	Increase the number of system page table entries available by following the procedure in Section 1.4.4 to increase the SPTREQ SYSGEN parameter.

[1]The actual DECvoice name should be substituted for the template name "_VXcu:" shown here. If the third DECvoice installed in the system is the problem device, use the device name "_VXC0:". DECvoice devices are always sequentially named; the first DECvoice installed on a system will be always be named "_VXA0:"

[2]Check the system console, OPA0:, for messages generated by the VXDRIVER. All driver-generated messages are prefixed with "%VXDRIVER". These messages, if present, may provide additional clues to the nature of the problem.

Table B–1 (Cont.) Troubleshooting DECvoice Problems

Problem	Possible Cause	Corrective Action
	The DECvoice driver is unable to allocate enough system page table entries.	Increase the number of system page table entries available by following the procedure in Section 1.4.4 to increase the SPTREQ SYSGEN parameter. See Section 3.7 for information on problem reporting procedures.
	The DECvoice hardware, potentially the hardware that implements the Q-bus shared memory used for module communications, has failed.	Contact DIGITAL Field Service.
The DECvoice ACP is mounted and should not be.	This situation may occur during a reinstallation or upgrade.	Comment out the VOX$STARTUP.COM call in the SYS$MANAGER:SYSTARTUP_V5.COM and reboot the system.
The DECvoice ACP is not mounted on any DECvoice but is still present on the system.	This situation has been seen to occur occassionally during a DECvoice ACP dismount operation. Note that most sites will not never need to dismount the ACP.	Comment out the VOX$STARTUP.COM call in the SYS$MANAGER:SYSTARTUP_V5.COM and reboot the system.
The DECvoice ACP is not mounted and should be.	This situation may occur if the VOX$STARTUP is not run.	Manually execute the "@SYS$STARTUP:VOX$STARTUP.COM" call from a privileged username. Remember to add the call into the SYS$MANAGER:SYSTARTUP_V5.COM so that the DECvoice devices will automatically remount after the next reboot the system.
The startup procedure returns interlock errors.	A previously running ACP has failed.	To work around this problem, reboot the VMS system. If the problem persists, see Section 3.7 for information on how to report problems.
The DECvoice device (_VXcu:[1]) is not displayed when you issue the DCL command "SHOW DEVICE _VXcu:[1]"	The DECvoice software is not installed	Review the installation information provided in this document and perform the software installation.
	The SYSGEN parameter "STARTUP_P1" is non-blank.	Follow the procedures mentioned above for resetting various SYSGEN parameters and set this parameter to "". A system reboot will be required.
	The DECvoice CSR is set incorrectly.[2]	See the *DECvoice DTC04 Technical Manual* for information about setting the CSR. After setting the CSR always check to see if the physical vector switch setting is correct.

[1]The actual DECvoice name should be substituted for the template name "_VXcu:" shown here. If the third DECvoice installed in the system is the problem device, use the device name "_VXC0:". DECvoice devices are always sequentially named; the first DECvoice installed on a system will be always be named "_VXA0:"

[2]Check the system console, OPA0:, for messages generated by the VXDRIVER. All driver-generated messages are prefixed with "%VXDRIVER". These messages, if present, may provide additional clues to the nature of the problem.

Table B–1 (Cont.) Troubleshooting DECvoice Problems

Problem	Possible Cause	Corrective Action
	The DECvoice hardware has failed.	Contact DIGITAL Field Service.
The DECvoice device (_VXcu:[1]) is online but is not mounted.	The DECvoice software has not been started.	Make certain the "@SYS$STARTUP:VOX$STARTUP" line has been included in and executed by the site-specific startup procedure, "SYS$MANAGER:SYSTARTUP_V5.COM".
	The DECvoice startup detected a configuration problem and aborted the startup.	Check the console log for the system startup. The "@SYS$STARTUP:VOX$STARTUP" command will display a message indicating that the software is starting, and will subsequently produce one or more error messages pertaining to the problem that was detected.
	The DECvoice ancillary control process has failed to start up.	See Section 3.7 for information on problem reporting procedures.
The VMS system hangs when the VOX$STARTUP procedure is executed. If the system is in a VAXcluster, it exits the VAXcluster.	The Q-bus configuration is potentially invalid.	See the *DECvoice DTC04 Technical Manual* for information concerning Q-bus configuration. Check for unoccupied Q-bus slots between the DECvoice and the processor. *Do not place Q-bus grant cards in memory slots, nor in C/D slots.* Contact DIGITAL Field Service for assistance.
	The DECvoice hardware has failed.	Contact DIGITAL Field Service.
The DECvoice startup procedure, VOX$STARTUP, is displaying one or more error messages	The warnings are generated by the DECvoice software, that is, they have a "VOX" prefix.	Perform the action indicated by the messages.
	The warnings are not generated by the DECvoice software, that is, they do *not* have a "VOX" prefix.	Determine which commands or software is causing the problem and correct it. If unable to locate cause of the problem, see Section 3.7 for information on problem reporting procedures.
%VXDRIVER, Unit init running on DECvoice: VXcu:	This message indicates normal device initialization has occurred and does not indicate a problem.	This is an informational message that is displayed on the system console, OPA0:, during DECvoice device configuration.

[1]The actual DECvoice name should be substituted for the template name "_VXcu:" shown here. If the third DECvoice installed in the system is the problem device, use the device name "_VXC0:". DECvoice devices are always sequentially named; the first DECvoice installed on a system will be always be named "_VXA0:"

Table B–1 (Cont.) Troubleshooting DECvoice Problems

Problem	Possible Cause	Corrective Action
%VXDRIVER, DECvoice timeout—check vector on: VXcu:	This message is displayed only on the system console, OPA0:. This indicates a hardware problem or, more likely, an incorrect hardware vector switch setting.	This message is displayed on the console any time an attempt is made to initialize the specified DECvoice module. The SYSGEN utility CONFIGURE command is used to determine the correct vector setting. Note that SYSGEN does not, and cannot, display the actual vector setting on any display. See the *DECvoice DTC04 Technical Manual* for information about setting the vector. **An incorrectly set vector is a common source of problems.**
%VXDRIVER, shared memory access failure on DECvoice: VXcu:	This message is displayed on the system console, OPA0:, only. This is typically indicative of a hardware problem.	This error is displayed only on the system console, OPA0:. It indicates that the VXDRIVER, the DECvoice device driver, cannot access the DECvoice Q-bus shared memory. Contact DIGITAL Field Service.
Many processes are in states other than HIB or LEF in a DCL "SHOW SYSTEM" command. Possible other states include LEFO, COM, COMO, MUTEX and RWxxx states	VMS system performance tuning or application redesign may be required.	See Section 3.5 and the *VMS Guide To Performance Management* manual.
Return status calls of SS$_VASFULL, SS$_EXQUOTA	These codes typically indicate a dearth of a SYSGEN-controlled resource or a limitation induced by a quota-controlled process resource.	See Section 3.5, the *VMS Guide To Performance Management* manual and the *System Messages and Recovery Procedures* manual. Note that the SS$_EXQUOTA code is completely unrelated to any diskquota limitations.

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