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**OpenVMS User's Manual**

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Note the following about this directory structure:

1. Assume that you are user JONES. When you log in, the system places you in [JONES], your default directory.
2. [JONES] contains the following four nondirectory files:
   * LOGIN.COM;3
   * LOGIN.COM;4
   * STAFF.DIS;3
   * STAFF\_VACATIONS.TXT;2
3. [JONES] also contains the following two directory files:
   * LICENSES.DIR;1
   * TAXES.DIR;1
4. The directory file LICENSES.DIR;1 points to the [JONES.LICENSES] subdirectory.
5. TAXES.DIR;1 points to the [JONES.TAXES] subdirectory.
6. The [JONES.LICENSES] subdirectory contains three nondirectory files and two directory files.
7. The directory file DOG.DIR;1 points to the [JONES.LICENSES.DOG] subdirectory.
8. MARRIAGE.DIR points to the [JONES.LICENSES.MARRIAGE] subdirectory.

**5.3 Understanding Directories**

The following sections describe how to specify and manage directories.

**5.3.1 Directory Specifications**

Use a directory specification to refer to a directory. A directory specification consists of a top-level directory name that can be followed by a maximum of seven subdirectory names. Subdirectory names are always preceded by a period (.).

**5.3.2 Directory Specification Format**

A directory specification has the following format:

[directory.subdirectory]

To add one or more levels of subdirectories, add a period and another subdirectory name for each subdirectory (up to seven levels). (Subdirectories are specified by concatenating the subdirectory name to the name of the directory one level above it.)

[directory.subdirectory.subdirectory]

A directory or subdirectory name can contain up to 39 alphanumeric characters. Any characters valid for file names are also valid for directory names. Enclose the directory name in either square brackets ([ ]) or angle brackets (< >).

**5.3.3 Creating Directories**

To create a directory, enter the CREATE/DIRECTORY command. If you want to create a subdirectory under your current directory, you do not have to specify the current directory name; you can enter the subdirectory name preceded by a period.

**5.3.4 Examples**

* + In the following example, the directory [JONES.LICENSES] is created:
  + $ CREATE/DIRECTORY [JONES.LICENSES]
  + In the following example, the current default directory is [JONES], and the subdirectory [JONES.LICENSES] is created:
  + $ CREATE/DIRECTORY [.LICENSES]

**5.3.5 Displaying Directories**

To display the names of files in a directory, enter DIRECTORY at the DCL prompt. To list the files in a subdirectory, enter the DIRECTORY command and the subdirectory name preceded by a period.

When you include certain command qualifiers along with the DIRECTORY command, you can retrieve information in addition to the names of the files. For more information on DIRECTORY command qualifiers, refer to the *OpenVMS DCL Dictionary* or online help.

**5.3.6 Examples**

* + In the following example, the files in the directory [JONES] are listed. The example shows that [JONES] contains two subdirectories, [JONES.LICENSES] and [JONES.TAXES], four nondirectory files, STAFF.DIS, STAFF\_VACATIONS.TXT, and two versions of LOGIN.COM:
  + $ DIRECTORY
  + Directory DISK1:[JONES]
  + LICENSES.DIR;1
  + LOGIN.COM;3
  + LOGIN.COM;4
  + STAFF.DIS;3
  + STAFF\_VACATIONS.TXT;2
  + TAXES.DIR;1
  + Total of 6 files.
  + In the following example, the default directory remains [JONES] and the contents of the subdirectory [JONES.LICENSES] are displayed:
  + $ DIRECTORY [.LICENSES]
  + Directory DISK1:[JONES.LICENSES]
  + DEPT.DAT;3
  + DOG.DIR;1
  + MAILING.LIS;6
  + MARRIAGE.DIR;1
  + TOTAL.DAT;2
  + Total of 5 files.

**5.3.7 Deleting Directories**

To delete a directory, use the following procedure:

|  |  |
| --- | --- |
| **Step** | **Task** |
| 1 | Make sure that the directory contains no files. To find out if the directory contains files, enter the DIRECTORY command.  When there are no files in the directory, the system displays the following message:  %DIRECT-W-NOFILES, no files found |
| 2 | If the directory contains files, copy them to another directory to save them or delete them if you do not want to save them. If the directory contains subdirectories, examine those subdirectories, copy or delete their files, and delete the subdirectories. |
| 3 | Move to the directory one level above the directory you want to delete. Remember that subdirectories exist as files in directories. When you delete a directory, you delete the file that points to that directory. |
| 4 | Change the file protection of a directory to allow delete access to the file. Directory files in master file directories require SYSPRV privilege to delete. (See [Chapter 4](http://www0.mi.infn.it/~calcolo/OpenVMS/ssb71/6489/6489p005.htm#files_ch) for more information about file protection.) |
| 5 | Delete the directory file using the DELETE command. |

**5.3.8 Example**

The following example shows how to delete the subdirectory [JONES.LICENSES]:

$ SET DEFAULT [JONES.LICENSES]

$ DIRECTORY

%DIRECT-W-NOFILES, no files found

$ SET DEFAULT [JONES]

$ SET SECURITY/PROTECTION=OWNER:D LICENSES.DIR

$ DELETE LICENSES.DIR;1

**5.4 Defaults**

The following sections describe how to set and manage default directories.

**5.4.1 Changing Your Default Directory**

To change your default directory, use the SET DEFAULT command. The new default remains in effect until you enter another SET DEFAULT command or log out. To set default to a subdirectory, append the subdirectory name to the name of the directory one level above it.

**5.4.2 Examples**

* + In the following example, default is set to the directory [JONES] and then the file [JONES]STAFF\_VACATIONS.TXT is displayed:
  + $ SET DEFAULT [JONES]
  + $ TYPE STAFF\_VACATIONS.TXT
  + In the following example, the file BILLING.DAT, which is located in the subdirectory [JONES.TAXES], is displayed:
  + $ SET DEFAULT [JONES.TAXES]
  + $ TYPE BILLING.DAT

**5.4.3 Setting Default to Nonexistant Directories**

Note that the operating system allows you to set default to a nonexistent disk or directory. If you have set default to a nonexistent directory, when you try to manipulate a file, the system displays a message stating that the directory does not exist. If you find yourself in a nonexistent disk or directory and cannot carry out a desired operation, set default to an existing disk or directory.

**5.4.4 SHOW DEFAULT Command**

To display your current default directory, enter the command SHOW DEFAULT, as shown in the following example:

$ SHOW DEFAULT

DISK1:[JONES.TAXES]

$ SET DEFAULT [PUBLIC]

$ SHOW DEFAULT

DISK1:[PUBLIC]

**5.4.5 Setting Default Devices**

You can use the SET DEFAULT command to change the default device. The default remains in effect until you enter another SET DEFAULT command or log out. You can also specify the device to which you want to set default without including the directory in the command.

**5.4.6 Examples**

* + The following example shows how to change the default device:
  + $ SHOW DEFAULT
  + DISK1:[JONES]
  + $ SET DEFAULT DISK2:[GROUP]
  + $ SHOW DEFAULT
  + DISK2:[GROUP]
  + In the following example, the directory [JONES] is assumed and exists on DISK1 and DISK2:
  + $ SHOW DEFAULT
  + DISK1:[JONES]
  + $ SET DEFAULT DISK2:
  + $ SHOW DEFAULT
  + DISK2:[JONES]

**5.4.7 Using Temporary Defaults**

If you enter a list of files and do not give a complete file specification for each file in the list, the system applies temporary defaults for node names, device names, and directory names. To substitute your current default directory for a temporary default, use empty square brackets. If you include a node name in a file that appears in a list, you can override the temporary default by using a double colon.

**5.4.8 Examples**

* + In the following example, A.LIS and B.LIS are copied from the [STATS] directory to the [RESULTS] directory:
  + $ COPY [STATS]A.LIS,B.LIS [RESULTS]

Note that the system uses the preceding file specification in the list, [STATS]A.LIS, to determine that the temporary default directory for file B.LIS is [STATS] as well.

* + In the following example, a temporary default device and two different directories are used:
  + $ COPY BASE:[STATS]A.LIS,[TIME]B.LIS,C.LIS [RESULTS]

All three files (A.LIS, B.LIS, and C.LIS) are copied from the BASE device. The A.LIS file is copied from the [STATS] directory. The other two files are copied from the [TIME] directory.

* + In the following example, the current default directory is [BETA]. This command copies [ALPHA]TEST.DAT and [BETA]FINAL.DAT to the [RESULTS] directory:
  + $ COPY [ALPHA]TEST.DAT,[]FINAL.DAT [RESULTS]

**5.5 Protecting Directories from Other Users**

You cannot completely protect a file without applying at least the same protection to the directory in which the file resides. For example, if you deny a user all access to a file but allow that user read access to the file's directory, the user cannot access the contents of the file but can see that it exists. Conversely, a user allowed access to a file and denied access to the file's directory (or one of the parent directories) cannot see that the file exists.

**5.5.1 Private Files**

To protect private files, directory protection alone is not adequate. You must also protect each file within the directory.

**5.5.2 Default Directory Protection**

By default, top-level directories receive UIC-based protection (S:RWE,O:RWE,G:RE,W:E) and no ACL. Subdirectories receive UIC-based protection from the parent directory. For more information on protection codes, see [Section 19.4](http://www0.mi.infn.it/~calcolo/OpenVMS/ssb71/6489/6489p036.htm#int_prot_code).

**5.5.3 UIC-Based Protection**

To specify UIC-based protection explicitly when creating a directory, use the /PROTECTION qualifier with the CREATE/DIRECTORY command. You cannot specify an ACL for the directory until the directory is created. To change the UIC-based protection of an existing directory, apply the SET SECURITY/PROTECTION command to the directory file.

**5.5.4 Limiting Directory Access**

You can limit but not prohibit directory access by specifying execute access but not read access. Execute access on a directory permits you to examine and read files that you know are contained in the directory; that means you can examine a file if you already know what the file specification is, but you cannot display a list of the files in the directory. For additional security information, see *OpenVMS Guide to System Security*.

**5.6 Using Wildcards to Search the Directory Structure**

From any point in a directory structure, you can refer to another directory or subdirectory in the structure. Do this by specifically naming the directory or subdirectory you want or by using the ellipsis (...) and hyphen (-) wildcard characters. For additional information about wildcards, see [Section 4.3](http://www0.mi.infn.it/~calcolo/OpenVMS/ssb71/6489/6489p005.htm#match_wildcards_sect).

**5.6.1 Ellipsis Wildcard Character**

Use the ellipsis (...) wildcard character to search down into the directory hierarchy. To search the current directory and all the subdirectories below it, use the ellipsis by itself as shown:

$ DIRECTORY [...]

If you begin the directory specification with an ellipsis, the search begins from your current directory. However, if you begin the directory specification with a period, only the subdirectory that is one level lower than the current directory is searched.

To search all top-level directories and their subdirectories from wherever you are in the directory structure, use an asterisk (\*) followed by an ellipsis (...).

**5.6.2 Examples**

* + In the following example, assuming the current directory is [JONES], the latest versions of all files named FEES.DAT in [JONES] and all subdirectories under [JONES] will be displayed:
  + $ TYPE [JONES...]FEES.DAT
  + In the following example, assuming the current default directory is [JONES], all subdirectories that end in .SALES are searched, and the latest versions of the file FEDERAL.LIS are displayed:
  + $ TYPE [...SALES]FEDERAL.LIS
  + In the following example, the latest versions of all files named DEPT.DAT in [JONES] and all subdirectories under [JONES] are displayed:
  + $ TYPE [...]DEPT.DAT
  + In the following example, assuming the current directory is [JONES], the [.LICENSES] subdirectory will be searched for the file MAILING.LIS, but [JONES.LICENSES.MARRIAGE] will not:
  + $ TYPE [.LICENSES]MAILING.LIS
  + In the following example, assuming the current directory is [JONES], the latest versions of all files named DEPT.DAT in the [.LICENSES] subdirectory under [JONES] and all subdirectories under the [.LICENSES] subdirectory are displayed:
  + $ TYPE [...LICENSES...]DEPT.DAT
  + In the following example, as many as eight levels of directory names (the top-level directory and seven subdirectories) are searched (if they exist). Note that the command shown requires READALL privilege.
  + $ DIRECTORY [\*...]

**5.6.3 Hyphen Wildcard Character**

Use the hyphen (-) wildcard character to move up through the directory structure. Each hyphen refers to the directory one level up from the current one. You can follow the hyphens with directory and subdirectory names to move down the directory structure on another path.

You can specify more than one hyphen. If you enter so many hyphens that you point above the top-level directory, the system displays an error message.

**5.6.4 Examples**

* + In the following example, the current directory is [JONES.LICENSES]. The following command displays the latest version of STAFF.DIS in [JONES]:
  + $ TYPE [-]STAFF.DIS
  + In the following example, the current directory is [JONES.LICENSES]. The command shown displays the latest version of BILLING.DAT in [JONES.TAXES]:
  + $ TYPE [-.TAXES]BILLING.DAT
  + In the following example, the command shown moves you up two levels in the directory hierarchy:
  + $ SET DEFAULT [--]

**5.7 Working with Directories in UIC Format**

Although this chapter focuses on how to use named directories, you can also specify directory names in UIC format. In UIC format, a 2-part octal number forms a user identification code (UIC) that refers to a user file directory (UFD). Almost every DCL command that accepts a file specification can recognize directory names in UIC format. In general, you do not need to use this format unless you are working with a real-time Resource Sharing Executive (RSX) operating system.

**5.7.1 UIC Directory Format and Rules**

A UIC directory specification has the following format:

[group,member]

For example, [122,1] is a UIC directory specification representing member 1 in group 122. Directory names in UIC format generally, but not necessarily, correspond to the UIC of the owner of the directory.

When you refer to a UIC directory, observe the following rules:

* + Use an octal number in the range of 1 to 37776 to specify the group.
  + Use an octal number in the range of 0 to 177776 to specify the member.
  + Do not use the hyphen (-) or ellipsis (...) wildcard as part of the specification.

**5.7.2 Using Wildcards with UIC Directories**

It is also possible to use the asterisk (\*) wildcard to specify a UIC directory. For example, [\*,6] indicates all directories with any group number and a member number of 6. The search is limited to directories in UIC format. The directory specification [\*,\*] locates all directories in UIC format. To locate all named directories as well as all directories in UIC format, use [\*].

**5.7.3 Translating to Named from UIC Format**

Note that you can translate a directory name in UIC format to named format. If necessary, add zeros to the left of the group and member numbers to create a 6-character name.

You cannot combine UIC format and named format. If you have a directory with a name in UIC format and you want to specify one of its subdirectories, translate the UIC format to named format.

**5.7.4 Examples**

* + The named equivalent of the UIC directory specification [122,1] is as follows:
  + [122001]
  + To refer to the subdirectory [122,1]SUB.DIR, use the named directory [122001.SUB].

**Chapter 6  
Mail: Communicating with Other Users**

**6.1 Overview**

The OpenVMS Mail utility (MAIL) lets you send messages to other users on your system or on any other computer that is connected to your system with the DECnet for OpenVMS network. This chapter describes:

* + Invoking and exiting mail
  + Reading messages
  + Sending messages
  + Sending mail over networks
  + Sending messages to multiple users
  + Manipulating files in mail
  + Other ways to send messages
  + Organizing messages
  + Deleting messages
  + Printing mail messages
  + Protecting mail files
  + Using text editors in Mail
  + Customizing your Mail environment
  + Summary of Mail commands

For additional information, see the following:

* + For information on commands and qualifiers, enter the HELP command at the MAIL> prompt.
  + For information on controlling the use of Mail through user accounts, see the *OpenVMS System Manager's Manual*.
  + For information on MAIL command qualifiers, enter the HELP MAIL command at the DCL prompt.

**6.1.1 Figure: Sample Mail Message**

The following figure shows a sample mail message and its components:

**6.2 Invoking and Exiting Mail**

The following sections describe how to invoke and exit Mail.

**6.2.1 Invoking Mail**

To invoke the Mail utility, enter the DCL command MAIL, as follows:

$ MAIL [Return]

MAIL>

Once you are in the Mail utility, you perform the following operations by entering the appropriate command at the MAIL> prompt and then pressing either the Return or Enter key:

* + Read a mail message
  + Send a mail message
  + Reply to a mail message
  + Forward a mail message
  + Organize mail messages into files and folders
  + Delete a mail message
  + Print a mail message

**6.2.2 Exiting from Mail**

To exit from Mail, enter the EXIT command at the MAIL> prompt, as follows:

MAIL> EXIT [Return]

$

You can also exit from Mail by pressing Ctrl/Z or by using the QUIT command.

**6.3 Reading Messages**

Mail stores the messages you receive in mail files, which have the default file type .MAI. In this file, by default, Mail provides two *folders* that store old and new messages. New messages are automatically placed in a folder called NEWMAIL; old messages are placed in a folder called MAIL. After you read a new message, the message automatically moves from the NEWMAIL folder to the MAIL folder, unless you enter the FILE, MOVE, or DELETE command. Mail deletes the NEWMAIL folder after you have read all new mail messages and either select another folder or exit from Mail.

**6.3.1 New Mail Notification**

When you are logged in to your account and receive a mail message, Mail notifies you. For example, notification of a message sent by user FELLINI is displayed as follows:

New mail on node DOODAH from STONE::FELLINI (10:02:23)

**6.3.2 Reading New Mail**

To read a new message, invoke Mail and press the Return key at the MAIL> prompt, as follows:

$ MAIL

You have 1 new message.

MAIL> [Return]

**6.3.3 Reading More Than One Message**

If you have more than one new message, press Return at the MAIL> prompt to read the other messages. When you have read all your new messages, Mail issues the message %MAIL-E-NOMOREMSG, no more messages and continues to prompt for commands until you exit Mail.

**6.3.4 Reading New Mail While in Mail**

If you receive a mail message while you are in Mail, enter the READ/NEW command to read the new message.

**6.3.5 Reading Old Messages**

To reread old mail messages in your default Mail folder, use the following procedure:

|  |  |
| --- | --- |
| **Step** | **Task** |
| 1 | Enter the SELECT command at the MAIL> prompt. For example:  MAIL> SELECT MAIL  [Return]      Mail places you in the folder named MAIL. |
| 2 | To read the first message in your default MAIL folder, press Return at the MAIL> prompt or enter the READ command.  Mail displays the first message (1) in your default mail file. |
| 3 | To display the next message, press Return.  If the message is too long to display on one screen, press Return to display the next part of the message.  To skip the remainder of a message and display the next message, enter the NEXT command. |

**6.3.6 Reading Specific Old Mail**

To read a particular message in your default MAIL folder, use the following procedure:

|  |  |
| --- | --- |
| **Step** | **Task** |
| 1 | Enter the DIRECTORY command at the MAIL> prompt.  To select a subset of messages from the list, use the DIRECTORY command qualifiers /FROM or /SUBJECT. |
| 2 | Enter the number of the message that you want to read at the MAIL> prompt.  Mail displays the message that you selected. |

**6.3.7 Example**

In the following example, the DIRECTORY command is used to display old messages and then the message labeled 2 is selected for reading:

MAIL> DIRECTORY [Return]

MAIL

# From Date Subject

1 STONE::FELLINI 11-DEC-1996 Sales presentation on May 11

2 DOODAH::JONES 11-DEC-1996 Status

MAIL> 2 [Return]

**6.3.8 Searching for Messages**

If you have many messages, you can locate a particular message by using the SEARCH command to find a string in one or more of the messages. To search for a string, specify that string as a parameter to the SEARCH command.

Each time you specify a new string, the SEARCH command starts the search at message number 1. To continue searching the folder for messages that contain the specified string, use the SEARCH command without specifying a parameter. To search for the same string in a different folder, enter the SELECT or SET FOLDER folder-name command and continue using the SEARCH command without specifying a parameter.

**6.3.9 Example**

In the following example, messages in the current folder are searched for the first messages that contains the string *appointment*:

MAIL> SEARCH "appointment" [Return]

**6.4 Sending Messages**

To send a mail message to any user on your system, do the following:

|  |  |
| --- | --- |
| **Step** | **Task** |
| 1 | Enter SEND at the MAIL> prompt.  Mail prompts you for the name of the user to receive the message. |
| 2 | Enter the name of the user receiving the message and press Return.  Mail prompts you for the subject of the message. |
| 3 | Enter the subject of the message and press Return. Entering this information is optional.  Mail prompts you for the text of the message. |
| 4 | Enter the text of a message, or just press Return. Entering this information is optional. |
| 5 | Press Ctrl/Z to send the message. If you decide not to send the message, press Ctrl/C, which cancels the send operation without exiting from Mail. |

**6.4.1 Example**

In the following example, a message is sent to a user named THOMPSON:

MAIL> SEND [Return]

To: THOMPSON [Return]

Subj: Meeting on April 20 [Return]

Enter your message below. Press CTRL/Z when complete, or CTRL/C to quit:

I have some new ideas about the Hubbub Cola account. [Return]

Let me know when you are available to talk about them. [Return]

[Return]

--Jeff

**6.5 Sending Mail Over Networks**

The following sections describe how to send mail across the network.

**6.5.1 Specifying Node Names**

If your computer system is part of a network, you can send mail to any other user on the network. If you are sending mail to someone on a different node, enter the user's node name and user name at the To: prompt. If the user name contains special characters or spaces, you must enclose the user name in quotation marks (""). Use the following format:

nodename::username

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