

User's Guide Revision Record for  
*Using Expert*

**Document Number:** 610E19470

**Publication Date:** April, 1989

Rev. Date	Revised Section	Instructions
4/90	Title page	Remove Release 4.0 title page and replace with Release 4.1 title page.
4/90	Table of Contents	Remove pages 3-6 and replace with new pages.
4/90	6.2 Output Server Tool	Remove old pages 6-11-6-24 and replace with new pages 6-11-6-24.
4/90	6.4 RS232C Tool	Remove old pages 6-47-6-48 and 6-59-6-64, and replace with new pages.
4/90	8. Appendixes	Remove old pages 8-1-8-2 and 8-19-8-24, and replace with new pages.
4/90	9. Indexes	Remove old indexes and replace with new indexes.
4/90	Documentation Comment Form	Remove old Documentation Comment Form and replace with new Documentation Comment Form.

**Notes:** Keep this revision record and place it behind the manual's title page.  
Remove any previous revision record(s).



**Using Expert**

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**User's Guide**

**Release 4.0.2**

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Document Number 610E21790 April 1990

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Printed in USA

5.5	The <b>Control!</b> Command	5-17
5.5.1	Controlling File Access	5-20
5.5.2	Controlling Automatic File Backup	5-22
5.6	Design Folder Files	5-25
5.7	Design Folders Included in Expert	5-27
5.8	Managing Design Folders	5-28
5.8.1	Creating Design Folders	5-28
5.8.2	Deleting Design Folders	5-29
5.8.3	Renaming a Design Folder	5-29
5.8.4	Copying Files Between Existing Design Folders	5-30
5.8.5	Copying Design Folder Files Between Workstations	5-30
5.9	Design Folder User.cm Entries	5-31
<b>6.</b>	<b>Expert Tools</b>	6-1
6.1	The File Tool	6-1
6.1.1	The File Tool Window	6-1
6.1.2	Command Parameters	6-2
6.1.3	Commands	6-4
6.1.4	List Options	6-6
6.1.5	Using the File Tool	6-7
6.1.6	File Tool User.cm Entries	6-9
6.2	The Output Server Tool	6-12
6.2.1	The Output Server Tool Window	6-12
6.2.2	Command Parameters	6-13
6.2.3	Commands	6-15
6.2.4	Char Options	6-15
6.2.5	Labeled Tapes	6-17
6.2.6	Unlabeled, IGES, Gerber, and CalComp 925 Tapes	6-20
6.2.7	COMp80 Tapes	6-21
6.2.8	ASCII, VDS, and HPGL Files	6-22
6.2.9	Output Server Tool User.cm Entries	6-23
6.3	Using Floppy Disks	6-25
6.3.1	Floppy Disks	6-25
6.3.2	The Disk Drive	6-27

6.3.3	The Executive Window	6-29
6.3.4	Commands	6-31
6.3.5	Floppy Command Summary	6-42
6.4	The RS232C Tool	6-46
6.4.1	The RS232C Tool Window	6-47
6.4.2	The RS232C Tool Options Property Sheet	6-50
6.4.3	The Terminal Options Property Sheet	6-55
6.4.4	Using the RS232C Tool	6-57
6.4.5	RS232C Tool User.cm Entries	6-59
6.5	The Terminal Tool	6-64
6.5.1	The Terminal Tool Window	6-64
6.5.2	The Terminal Tool Options Window	6-67
6.5.3	Special Function Keys	6-68
6.5.4	Communicating with a VAX	6-69
6.5.5	Storing Files on and Retrieving Files from a VAX	6-70
6.5.6	Terminal Tool User.cm Entries	6-72
6.6	The Character Tool	6-73
6.6.1	The Character Tool Window	6-73
6.6.2	Command Parameters	6-74
6.6.3	Commands	6-75
6.6.4	Using the Character Tool	6-75
6.6.5	Character Tool User.cm Entries	6-76
6.7	The Color Tool	6-77
6.7.1	The Color Tool Window	6-77
6.7.2	Command Parameters	6-78
6.7.3	Slide Bars	6-83
6.7.4	Commands	6-83
6.7.5	Creating Colors	6-84
6.7.6	Using the Color Tool	6-93
6.7.7	Color Tool User.cm Entries	6-94
6.8	The MFileServer	6-95
6.8.1	The MFileServer Window	6-95
6.8.2	Command Parameters	6-96
6.8.3	Using the File Tool with the MFileServer	6-97
6.8.4	MFileServer User.cm Entries	6-102

6.9	The User.cm File	6-103
6.9.1	Editing the User.cm	6-104
6.9.2	Saving the Edits to Your User.cm	6-105
6.9.3	Putting Your Edits into Effect	6-105
6.9.4	System User.cm Entries	6-106
<b>7.</b>	<b>Ending a Session</b>	<b>7-1</b>
7.1	Logging Off	7-1
7.1.1	Logging Off an Expert Color Workstation	7-1
7.1.2	Logging Off a ViewPoint Workstation Running Expert Software	7-2
7.2	Turning Your Workstation Off and On	7-3
7.3	Quick Booting after Powering Off	7-4
<b>8.</b>	<b>Appendixes</b>	<b>8-1</b>
8.1	Using the 790 and 791 Output Servers	8-2
8.1.1	Registering the Output Server	8-2
8.1.2	The Output Server	8-4
8.1.3	The Magnetic Tape Unit	8-6
8.1.4	Using the Magnetic Tape Unit	8-10
8.1.5	Preventative Maintenance for the Magnetic Tape Unit	8-13
8.1.6	Testing the Magnetic Tape Unit	8-15
8.2	Using Versatec Plot Servers	8-19
8.2.1	Registering a Plot Server	8-19
8.2.2	The 890 and 895 Plot Servers	8-22
8.3	Installing a Hewlett-Packard Pen Plotter	8-24
8.4	Quick Enabling a Workstation	8-27
8.4.1	Saving Enabling Password Information	8-27
8.4.2	Restoring Enabling Password Information	8-28
<b>9.</b>	<b>Indexes</b>	<b>Index-1</b>
9.1	Subject Index	Index-1
9.2	Command Index	Index-7



Specify	To have the system...
<b>QuotedStar</b>	treat all asterisks which appear in a file name, in the <b>Source:</b> field, as wildcards.
<b>Greater</b>	store or retrieve a source file only if the destination file exists, and the creation date of the source file is <i>newer</i> than the creation date of the destination file.
<b>Less</b>	store or retrieve a source file only if the destination file exists, and the source file creation date is <i>older</i> than the destination file creation date.
<b>Equal</b>	store or retrieve a source file only if the destination file exists, and the source file creation date is the <i>same</i> as the destination file creation date.
<b>Always</b>	heed the >, <, and = parameters even when the destination file does not exist.
<b>Verify</b>	issue a confirmation command each time you transfer a file.
<b>Type</b>	show the file type when it displays a file listing.
<b>Write</b>	show the last date the file was stored when it displays a file listing.
<b>Author</b>	show the name of the person who created the file when it displays a file listing.
<b>Read</b>	show the date the file was last read when it displays a file listing.
<b>Bytes</b>	show the length of files in bytes when it displays a file listing.
<b>Create</b>	show file creation dates when it displays a file listing.

Table 1

## Expert Tools

### 6.2 The Output Server Tool

The Output Server Tool lets you transfer files between your workstation's local disk and your network's Output Servers and Plot Servers. In addition, you can transfer files between your workstation and an Innovative Data Technology (IDT) 1054 tape drive that is connected to the workstation's RS232C port.

When transferring files to a network server, the Output Server Tool supports two communication protocols: Xerox Network System (XNS) and Transmission Control Protocol and Internet Protocol (TCP/IP). You transfer files to Output Servers using the XNS protocol. You communicate with Plot Servers using the TCP/IP protocol. You send and retrieve files in the same manner, regardless of the server. The system knows which communication protocol to use.

If your network includes either a 790 or 791 Output Server, you can send ASCII and Versatec Random Format (VRF) files to the Versatec electrostatic plotter that is connected to the server. The 791 Output Server includes a magnetic tape unit with which you can store and retrieve files in ANSI Labeled, Unlabeled, IGES, Gerber, CalComp 925, and COMp80 formats. In addition, you can list the files on an ANSI labeled magnetic tape.

If your network includes a Plot Server (890, 895, or ServeWare), you can send ASCII, Versatec Random Format (VRF), Versatec One-dimensional Compacted Raster, and Hewlett-Packard Graphics Language (HPGL) files to the Versatec electrostatic plotter that is connected to the server.

If your workstation is connected to an IDT 1054 tape drive, you can store and retrieve files in ANSI Labeled, Unlabeled, IGES, Gerber, and CalComp 925 formats. In addition, you can list the files on an ANSI labeled magnetic tape.

Initially, the Output Server Tool is inactive.

- To activate the Output Server Tool:
  - 1) Bring up the Inactive Menu.
  - 2) Select **Output Server**.

#### 6.2.1 The Output Server Tool Window

The Output Server Tool appears and operates much like the File Tool. It has three subwindows: a command parameter subwindow, a command subwindow, and a log subwindow. The parameters in the command parameter subwindow and the commands in the command subwindow change whenever you change the type of device you want to use, or when you change the format that you want the system to use when it transfers files between your local disk and a magnetic tape drive. The Output Server Tool has two property sheet windows: a List Options window and a Char-Options window. The List Options window contains parameters governing how the Output Server Tool lists files. The Char-Options window contains parameters that control the parity and line end conventions Expert uses when it sends a file to a server or local tape drive. Figure 6.2 on the next page shows the Output Server Tool window.

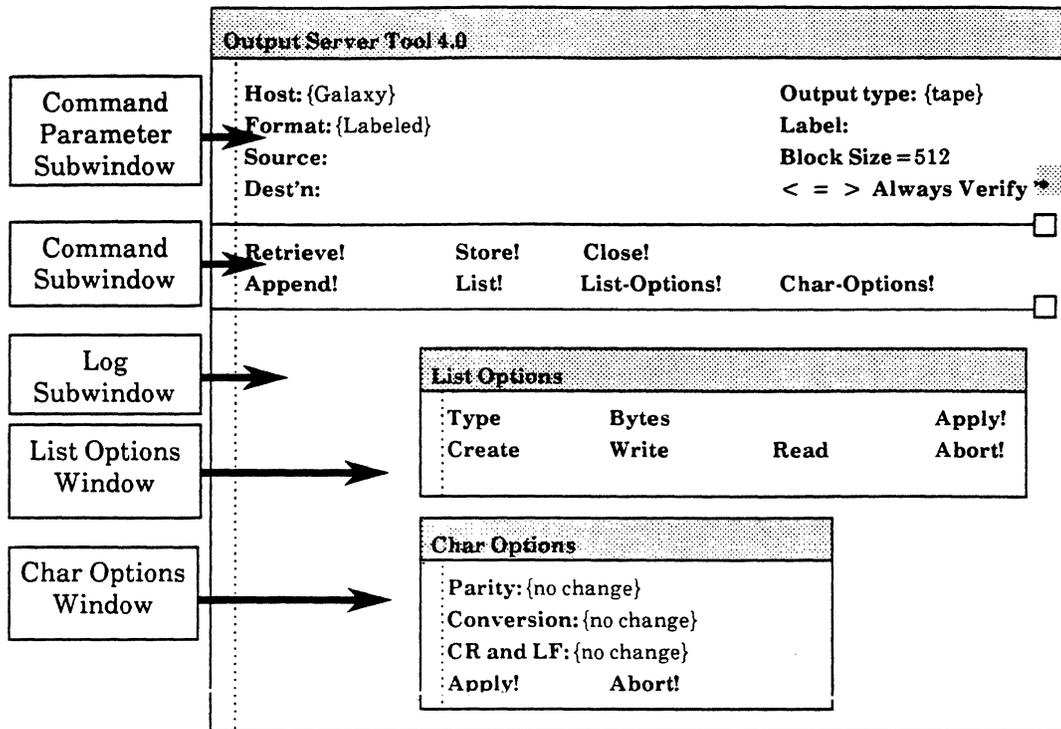


Figure 6.2

### 6.2.2 Command Parameters

The **Host:** parameter specifies the device you want to access. A pop-up menu lists the names or addresses of Output Servers and the names of Plot Servers on your network; the menu also includes a **Local** option.

- ▶ To access an *Output Server*: If the server is registered in the Clearinghouse, select its *name* from the **Host:** Menu. If the server is on a network without a Clearinghouse, select its *decimal address* from the **Host:** Menu.
- ▶ To access a *Plot Server*: Plot Servers are registered in a special text file named *HOSTS.TXT*, which acts as the equivalent of a Clearinghouse. Therefore, select the server's *name* from the **Host:** Menu.
- ▶ To access an IDT 1054 tape drive: Select the **Local** option.

The menu item you select appears in the brackets after **Host:**.

The **Output type:** parameter identifies the kind of device you will send your files to, and the format of those files. A pop-up menu displays the options: **tape**, **ascii**, **vds**.

**tape** Select this option if you are sending your files to a tape drive. This is the default.

## Expert Tools

**ascii** Select this option if you are sending your files to a Versatec electrostatic plotter connected to either an Output Server or a Plot Server and they are in ASCII format.

Or

Select this option if you are sending your files to a Versatec electrostatic plotter connected to a Plot Server and they are in HPGL format.

**vds** Versatec Data Standard. Select this option if you are sending a VRF file to a Versatec electrostatic plotter connected to either an Output Server or a Plot Server. Additionally, use this option when sending a One-dimensional Compacted Raster file to a Versatec electrostatic plotter connected to a Plot Server.

The **Format:** parameter is the format the system will use when transferring your files to and from a magnetic tape drive. A pop-up menu displays the options: **Unlabeled**, **Labeled**, **IGES**, **Gerber**, **CalComp 925**, and **COMp80**. These formats are created and named in the `User.cm`. If your installation does not use one of these formats you may create your own format by editing the `User.cm`. See Section 6.2.9.

The **Label:** parameter lets you assign a label or name to a tape. This parameter is displayed when the **Format:** parameter is set to **Labeled**. Some systems use tape labels to control access to information on the tape.

The **Source:** is a list of files you want to transfer. File names must be separated by spaces or carriage returns and may include *expansion characters* as described in Section 6.1.2.

The **Block Size=** parameter controls the size of the data blocks on the tape. Because different systems have different blocking requirements, you must set the proper block size for your application before storing files on the tape. The blocking size default for **Unlabeled**, **Labeled**, **IGES**, **Gerber**, **CalComp 925** and **COMp80** formats is set in your `User.cm`. You may change the blocking size if necessary. See Section 6.2.9.

The **Dest'n:** parameter is the name of the file resulting from the transfer. For example, you might transfer the file *Sample.xx* from a magnetic tape to your local disk. Entering *Test.xx* as the value of **Dest'n:** renames the file to *Test.xx* on your local disk. If you leave the **Dest'n:** field blank, the file retains its name, as if you entered the same name for both the **Source:** and the **Dest'n:**.

The parameters **<**, **=**, **>**, **Always**, are described in Section 6.1.2. These parameters are displayed for the **Labeled** format only.

The **QuotedStar (\*)** parameter only appears when the **Format:** is set to **Labeled**. This parameter tells Expert to treat all asterisks (\*) which appear in a file name, in the **Source:** field, as wildcards (for example, **Source: \*.xx** tells Expert to look at all file names that end in the suffix *.xx*); or to compare the file names on your local disk with those on a labeled tape. When Expert does a comparison it searches for all file names on the tape that match the file name pattern you entered in the **Source:** field. Expert does not compare the contents

of the file. The default for this parameter is on. When it is on, Expert treats all asterisks in **Source:** as wildcards. When it is off, Expert does a comparison.

The **Verify** parameter causes the system to issue three confirmation commands each time you transfer a file. These commands are described in Section 6.1.2.

### 6.2.3 Commands

The **Retrieve!** command is used to transfer files from magnetic tape to your local disk. This command is only available when the **Output type:** is set to **tape**.

The **Retrieve!** command functions differently for labeled and unlabeled tapes. For labeled tapes, **Retrieve!** transfers a copy of the file(s) you specified in the **Source:** field from the magnetic tape to your local disk. If you do not specify a new file name for the file, in the **Dest'n:** field, the system overwrites the existing file on your local disk. For unlabeled tapes, **Retrieve!** starts at the beginning of the magnetic tape and transfers a group of files from the tape to your local disk storing the file(s) under the name(s) you specify in the **Source:** field.

The **Store!** command stores the file or files you specify in the **Source:** field, at the beginning of the magnetic tape and overwrites any existing files. Therefore, the first file you list in the **Source:** field appears as file 1 on the tape, the second file listed appears as file 2, and likewise for subsequent files. The **Store!** command can also be used to send VDS, ASCII, or HPGL files to an electrostatic plotter.

The **Close!** command closes the connection between your workstation and the host.

The **Append!** command stores the files you specify in the **Source:** field at the end of the magnetic tape. This command only appears when the **Format:** parameter is set to **Labeled** and the **Output type:** parameter is set to **tape**.

The **List!** command lists all files on the tape in the log subwindow. This command only appears when the **Format:** parameter is set to **Labeled** and the **Output type:** parameter is set to **tape**.

The **List-Options!** command displays the List Options window. The List Options control the way the system displays file listings. (See Section 6.1.4.) This command only appears when the **Format:** parameter is set to **Labeled** and the **Output type:** parameter is set to **tape**.

### 6.2.4 Char Options

The **Char-Options!** (Character-Options) command displays the Char-Options window. The Char-Options allow you to change parity or line end conventions and to convert a file either from ASCII to EBCDIC or from EBCDIC to ASCII before you transfer the file between your workstation and the host.

Display the Char-Options window and make the appropriate setting(s) before you issue the Output Server Tool commands **Retrieve!**, **Store!**, or **Append!**.

## Expert Tools

The options you set stay in effect until you change the settings in the Char-Options window.

- To change the Char-Options:
  - 1) Select **Char-Options!** in the command subwindow. The Char-Options window is displayed.
  - 2) Select the option of your choice. The system video-inverts your selection.
  - 3) Select **Apply!**.

### The Char-Options Window

The Char-Options window displays the parameters: **Parity:**, **Conversion:**, **CR and LF:**; and the commands: **Apply!** and **Abort!**.

#### **Parity:**

This option displays a pop-up menu from which you can select one of the following values:

<b>no change</b>	Makes no changes to the destination file during conversion. This is the default value.
<b>bit 8 on</b>	Sets every eighth bit to 1.
<b>bit 8 off</b>	Sets every eighth bit to 0.
<b>odd</b>	Sets every eighth bit to 1, if the resulting 8-bit byte contains an odd number of 1 bits.
<b>even</b>	Sets every eighth bit to 1, if the resulting 8-bit byte contains an even number of 1 bits.

#### **Conversion:**

This option displays a pop-up menu from which you can select one of the following values:

<b>no change</b>	Makes no changes to the file data when sending the file to the host or when receiving the file from the host. This is the default.
<b>ASCII to EBCDIC</b>	Converts ASCII files to EBCDIC.
<b>EBCDIC to ASCII</b>	Converts EBCDIC files to ASCII.

Expert uses ASCII encoding.

#### **CR and LF:**

The parameter value you select determines the type of line end convention Expert will use when it sends a file to the host. This value must match the type of line end convention required by your computer or device. The default is **no change**.

Expert uses a carriage return line end convention. Therefore, files to be used by Expert should not contain line feeds. You can retrieve files containing line feeds, but each line feed will appear as a Control-J (↑J or ^J).

A pop-up menu displays the values:

<b>no change</b>	Do not change the line end convention.
<b>del CR</b>	Delete all carriage returns.
<b>del LF</b>	Delete all line feeds.
<b>CR to CRLF</b>	Change all carriage returns to carriage returns followed by line feeds.
<b>CRLF to CR</b>	Change all carriage returns followed by line feeds to carriage returns only.
<b>LF to CR</b>	Change all line feeds to carriage returns.
<b>CR to LF</b>	Change all carriage returns to line feeds.

### **Apply!**

The **Apply!** command prompts Expert to use the parameters you have selected, and it closes the Char-Options window.

### **Abort!**

The **Abort!** command restores the options to the status they had before you opened the Char-Options window, and it closes the window.

## 6.2.5 Labeled Tapes

Labeled tapes are tapes that conform to ANSI standard X3.27-1978 format. When you use the **Store!** command to store a file on a labeled tape, Expert stores the file(s) at the beginning of the tape and overwrites existing files. When you use the **Append!** command to store files, Expert appends the file to the end of the tape to preserve existing files.

After storing several files, you can retrieve one file at a time. Expert overwrites the existing file on your local disk unless you specify a new name for the file.

You can display a list of all the files on a labeled tape in the log subwindow, and you can compare the file names on your local disk with those on the labeled tape and retrieve matching files from the tape, or list all matching file names in the log subwindow. Figure 6.3 shows the Output Server Tool when the tape format is set to **Labeled**.

## Expert Tools

**Output Server Tool 4.0**

Host: {Galaxy}                      Output type: {tape}  
Format: {Labeled}                    Label:  
Source:                                Block Size = 512  
Dest'n:                                < = > Always Verify \*

Retrieve!                    Store!                    Close!  
Append!                    List!                    List-Options!                    Char-Options!

Figure 6.3

- To store a file on an ANSI labeled tape:
  - 1) Load a tape on your magnetic tape drive unit. (Chapter 8, Section 8.1 provides information on the 791 Output Server.)
  - 2) If necessary, set the tape density as appropriate and then bring the unit on-line.
  - 3) In the Output Server Tool window, select the appropriate item from the **Host:** pop-up menu: the name or address of your Output Server, or **Local**.
  - 4) Set the **Output type:** parameter to **tape**.
  - 5) Set the **Format:** parameter to **Labeled**.
  - 6) Enter the name of the file in the **Source:** field.
  - 7) Enter a new name for the file in the **Dest'n:** field. (*Optional*)
  - 8) Enter the label name you want to assign to the tape in the **Label:** field. (*Optional*)
  - 9) Change the blocking size in the **Block Size =** field if necessary.
  - 10) Select **Store!** or **Append!**.
- To retrieve a file from an ANSI labeled tape:
  - 1) Select the name or address of your Output Server, or **Local** from the **Host:** pop-up menu.

- 2) If necessary, set the tape density on the magnetic tape drive.
  - 3) Set the **Output type:** parameter to **tape**.
  - 4) Set the **Format:** parameter to **Labeled**.
  - 5) In the **Source:** field enter the file name you want to retrieve. If you want the system to overwrite a drawing (.dwg file) or a schematic (.df file) on your local disk, be sure to close the existing drawing or electronic design window on your workstation before continuing with this procedure. If you leave the window open that contains the drawing or schematic, the system will not overwrite the file.
  - 6) In the **Dest'n** field enter the new name for the file. (*Optional*)
  - 7) Select **Retrieve!**. The system retrieves the file. If the drawing or schematic is closed, the system overwrites the file.
- To list all files on an ANSI labeled tape:
    - 1) Do Steps 1-4 from the previous procedure.
    - 2) Select **List!**.
  - To compare the file names on your local disk with those on the tape, and retrieve all files from the tape which have a matching file name:
    - 1) Select the name or address of your **Output Server**, or **Local** from the **Host:** pop-up menu.
    - 2) If necessary, set the tape density on the magnetic tape drive.
    - 3) Set the **Output type:** parameter to **tape**.
    - 4) Set the **Format:** parameter to **Labeled**.
    - 5) Turn the '\*' parameter off. (De-select it.)
    - 6) In the **Source:** field enter the file name you want compared. The file name should include an asterisk (\*) to tell Expert that you want it to find all file names matching the file name pattern you enter. For example, \*.xx would tell Expert to find all file names on the tape ending in the suffix .xx, and matching a file name on your local disk.
    - 7) Select **Retrieve!**. When the system retrieves the file, the file on your local disk is overwritten.
  - To compare file names on your local disk with those on the tape and list all matching file names:
    - 1) Do Steps 1-6 from the previous procedure.
    - 2) Select **List!**.

## Expert Tools

### 6.2.6 Unlabeled, IGES, Gerber, and CalComp 925 Tapes

You usually use unlabeled tapes when you want to transfer design information to other computer systems. Although you can store a group of files on the tape, Expert does not allow you to get a list of the individual files once they are stored. Therefore, when you transfer either a single file or a group of files to a tape, keep a list of the files you stored. Figure 6.4 shows the Output Server Tool when the tape format is set to **Unlabeled**. The commands and command parameters shown in Figure 6.4 are also displayed for IGES, Gerber, and CalComp 925 formats.

Output Server Tool 4.0	
Host: {Galaxy}	Output type: {tape}
Format: {Unlabeled}	
Source:	Block Size = 512 Verify <input type="checkbox"/>
Retrieve!	Store! Close! Char-Options! <input type="checkbox"/>

Figure 6.4

- To store a file on tape, in an Unlabeled, IGES, Gerber, or CalComp 925 file format:
  - 1) Load a tape on your magnetic tape drive unit. (Chapter 8, Section 8.1 provides information on the 791 Output Server.)
  - 2) Set the tape density as appropriate. For CalComp 925 tapes, set the density to "Hi" or 1600 bpi. For Gerber tapes and unlabeled tapes, ask your vendor for the correct setting. For IGES tapes, use either density setting (1600 or 800 bpi). Also, make sure that the density you use to store files on the tape is also available on the tape unit on which you will retrieve the files.
  - 3) If necessary, bring the tape drive unit on-line.
  - 4) In the Output Server Tool window, select the name or address of your Output Server, or **Local** from the **Host:** pop-up menu.
  - 5) Set the **Output type:** parameter to **tape**.

- 6) Set the **Format:** parameter to either **Unlabeled**, **IGES**, **CalComp 925**, or **Gerber**, as appropriate.
- 7) Enter the name of the file in the **Source:** field.
- 8) Change the blocking size in the **Block Size =** field if necessary.
- 9) Select **Store!**.

### 6.2.7 COMp80 Tapes

COMp80 tapes conform to a special format for transfer to a COMp80 Universal Page Setter/COM Graphics Recorder. The commands and parameters displayed for the COMp80 format are the same as the commands and parameters displayed for the unlabeled format, with the exception of the **Block Size =** parameter.

You cannot send a COMp80 file to an IDT 1054 tape drive because the maximum block size you can set for the tape drive is 512 bytes.

Figure 6.5 shows the COMp80 commands and parameters. *Expert Schematics*, Chapter 12, Section 12.1.3 describes converting designs to COMp80 format. *Expert Drafting*, Chapter 6, Section 6.2 discusses how to create a plot file on your local disk which is formatted for a COMp80 Universal Page Setter/COM Graphics Recorder.

Output Server Tool 4.0			
Host: {Galaxy}	Output type: {tape}		
Format: {COMp80}	Verify <input type="checkbox"/>		
Source:	<input type="checkbox"/>		
<b>Retrieve!</b>	<b>Store!</b>	<b>Close!</b>	<b>Char-Options!</b>
<input type="checkbox"/>			

Figure 6.5

## Expert Tools

- To store a file on tape in a COMp80 file format:
  - 1) Load the tape on your Output Server. (See Chapter 8, Section 8.1.4 for instructions.)
  - 2) Set the density **SELECT** lever to the appropriate setting. (See Chapter 8, Section 8.1.3 for additional information about **DENSITY SELECT**.)
  - 3) Simultaneously press the **ONLINE** and **LOAD** buttons on the Output Server.
  - 4) In the Output Server Tool window, select the name or address of your Output Server from the **Host:** pop-up menu.
  - 5) Set the **Output type:** parameter to **tape**.
  - 6) Set the **Format:** parameter to **COMp80**.
  - 7) Enter the name or names of the files in the **Source:** field.
  - 8) Select **Store!**.

### 6.2.8 ASCII, VDS, and HPGL Files

Figure 6.6 shows the commands and parameters used to transfer ASCII, VDS (VRF and Versatec One-dimensional Compacted Raster), and HPGL files to an electrostatic plotter. Note: To send HPGL files to an electrostatic plotter, the plotter must be connected to a Plot Server.

Output Server Tool 4.0	
Host: {Galaxy}	Output type: {vds}
Source:	Verify <input type="checkbox"/>
Store!    Close!    Char-Options!	<input type="checkbox"/>

Figure 6.6

- To send ASCII, VDS, or HPGL files to an electrostatic plotter:
  - 1) Select either the name or address of your Output Server or the name of your Plot Server from the **Host:** pop-up menu.
  - 2) Set the **Output type:** to the appropriate file format (**ascii** or **vds**). Note: You use the **ascii** setting to send an HPGL file to a plotter connected to a Plot Server.
  - 3) Enter the name of the ASCII, VDS, or HPGL file in the **Source:** field.
  - 4) Select **Store!**.

### 6.2.9 Output Server Tool User.cm Entries

The following default values for the Output Server Tool are set in your User.cm file. These values may be changed to meet the needs of your company. User.cm settings for the IDT 1054 tape drive are located in the RS232C Tool section. Refer to Section 6.4.5 for a listing of the parameters and their default values. To change any of the default values, refer to Section 6.9 of this chapter.

[Output Server Tool]  
InitialState: inactive  
Formats: Unlabeled Labeled IGES Gerber "CalComp 925" COMp80  
Host: The Name of Your Output or Plot Server

[Unlabeled]  
Format: unlabeled  
Block size: 512

[Labeled]  
Format: labeled  
Block size: 512

[IGES]  
CALs class: none  
Max bend: 5.0  
Vectorize splines: true  
EOL: none  
Format: unlabeled  
Block size: 80

[Gerber]  
Digits: 3  
Fractions: 3  
Zero suppression: none  
Coordinates: absolute  
Character set: ascii  
Format: unlabeled  
Block size: 512

## Expert Tools

[CalComp 925]  
Format: unlabeled  
Block size: 256  
Pen widths: 10

[COMp80]  
Format: COMp80  
Block size: 1536

There are three **InitialState:** options from which you can choose: *tiny*, *inactive*, and *active*. Specify **tiny** to have the Output Server Tool appear as a tiny window on your display. Specify **inactive** to have the Output Server Tool appear as an item in the Inactive Menu. Specify **active** to have the Output Server Tool appear as an open window on your display.

You may add formats to the **Formats:** line in the [Output Server Tool] section of the User.cm, depending on your needs. Formats which are more than one word must be enclosed within quotation marks. After adding a format, you must add a corresponding section that includes the format name in brackets ([Format Name]), and lists the two parameters: **Format:** and **Block size:** and their parameter values.

For the **Host:** parameter, enter the name of your Output or Plot Server. Names which are more than one word must be enclosed within quotation marks.

The **Block size:** requirement is different for each system. For instance, the CalComp 925 requires a **256** block size and the COMp80 requires a **1536** block size.

The **Pen widths:** should list the widths, in mils, of the pens loaded in the plotter's carousel. List pens in the order in which they are loaded, separating widths by spaces, not commas. For example, 6 6 10 10 would indicate four pens, the first two as 6 mil pens and the second two as 10 mil pens. If you list only one width, the system assumes that all pens share that width. If no value appears in this field, the system assumes 2 mil pens.

The IGES section includes parameters for producing files that meet the CALS (Computer-Aided Acquisition and Logistic Support) requirements for Class 1 documents. These parameters and their possible values are fully described in *Expert Drafting*, Chapter 6, Section 6.1.3.

The Gerber section of the Output Server Tool User.cm allows you to change the values for **Digits:**, **Fractions:**, **Zero suppression:**, **Coordinates:**, and **Character set:**. Have your vendor tell you the correct values to enter for these parameters. For **Digits:** and **Fractions:** you may enter the values: 2, 3, 4, or 5; for **Zero suppression:** enter *none*, *leading*, or *trailing*; for **Coordinates:** enter *absolute* or *relative*; for **Character set:** enter *ascii*, *ebcdic*, *bcd*, *eia*, or *iso*.

### 6.4.1 The RS232C Tool Window

The appearance of the RS232C Tool window changes according to the type of device with which you choose to communicate. The RS232C Tool contains a command parameter subwindow and a terminal emulation subwindow. When emulating a terminal, the second subwindow acts like a terminal display. Figure 6.18 shows the RS232C Tool window as it appears for communication with a VAX computer.

The command parameter subwindow contains the commands and parameters you use to carry out your communications tasks. All RS232C Tool commands end in an exclamation mark (!). The commands available to you at any moment depend upon the current selection in the **Device:** parameter.

Two commands appear in all versions of the RS232C Tool window: **Send!** and **Tool options!**. The **Send!** command allows you to send a file to a specified device. The **Tool options!** command displays a property sheet that lists the parameters governing the protocol, line speed, parity, and character length of the RS232C channel.

**Connect!** only appears in the tool window for VAX, TTY, and NC2400 devices. This command opens a channel between your workstation and the connected device. You can then communicate with the device by typing in the terminal emulation subwindow. **Terminal options!** only appears in the window when the **Device type:** is set to **Host**. This command displays a property sheet that allows you to set the parameters for terminal emulation.

Two command parameters appear in all versions of the tool window: **Device:** and **File name:**. The **Device:** parameter indicates the name of the device with which you want to communicate. The **File name:** parameter indicates the file(s) on which a command will operate. The next section describes how to use these commands and it explains the command parameters in greater detail.

#### Command Parameters

##### **Device:**

This parameter indicates the device to which you want to communicate. A pop-up menu displays the following devices: **HP 7475**, **HP 7580**, **HP 7585**, **HI 695**, **HI 41**, **HI 42**, **CalComp 945**, **VAX**, **TTY**, **IDT1054** (You use the Output Server Tool to access this tape drive; refer to Section 6.2.), **Xerox P1**, **NC2400**.

**CalComp 945**, **HP 7475**, **HP 7580**, **HP 7585**, **HI 695**, **HI 41**, and **HI 42** allow you to send your files to a pen plotter.

**VAX** allows you to emulate a VT100 terminal, or to send files to and receive files from a VAX host.

**TTY** allows you to emulate a teletypewriter.

**Xerox P1** allows you to send a specified text file to a Xerox P1 printer.

**NC2400** allows you to send a file to a Data Specialties NC-2400 Reader/Punch.

## Expert Tools

The system uses the device name that you select here to set the default parameters in the RS232C Tool Options property sheet. (See Figure 6.19.) If you select VAX as your device, then when you select **Tool options!**, the system displays the property sheet with the defaults for the VAX device. The system reads the defaults for the selected device from your User.cm every time you change devices.

- To select a device option:
  - 1) Position the cursor over the word **Device:**.
  - 2) Press and hold both mouse buttons to bring up the pop-up menu. The pop-up menu lists the options: **HP 7475, HP 7580, HP 7585, VAX, TTY, CalComp 945, HI 695, HI 41, HI 42, Xerox P1, NC2400.**
  - 3) Move the cursor through the menu options until the system video-inverts the desired option.
  - 4) Release both mouse buttons. The selected option is displayed in the **Device:** parameter field.

### **File name:**

You enter the name of the file that you want to send or receive in this field. The **Send!** and **Receive!** commands you select in the RS232C Tool window operate on the file you specify.

## 6.4.5 RS232C Tool User.cm Entries

The following default values are set in the User.cm file for the RS232C Tool. These values may be changed to meet the needs of your company. To change the default values refer to Section 6.9 of this chapter.

[RS232CTool]

InitialState: inactive

Devices: "HP 7475" "HP 7580" "HP 7585" "HI 695" "HI 41" "HI 42" "CalComp 945" VAX TTY IDT1054 "Xerox P1" NC2400

[HP 7475]

Device type: Enq/Ack

Line speed: bps4800

Parity: odd

Character length: seven

Stop bits: two

Line terminator: 13

Flow control: false

Pen type: roller

Pen acceleration: 4

Pen force: 6

Pen velocity: 60

Pen widths: 10

Italic text: false

Bold text: false

[HP 7580]

Device type: Enq/Ack

Line speed: bps9600

Parity: odd

Character length: seven

Stop bits: two

Line terminator: 13

Flow control: false

Pen type: roller

Pen acceleration: 4

Pen force: 6

Pen velocity: 60

Pen widths: 10

Italic text: false

Bold text: false

[HP 7585]

Device type: Enq/Ack

Line speed: bps9600

Parity: odd

Character length: seven

Stop bits: two

Line terminator: 13

Flow control: false

Pen type: roller

Pen acceleration: 4

Pen force: 6

## Expert Tools

Pen velocity: 60  
Pen widths: 10  
Italic text: false  
Bold text: false

[HI 695]

Device type: "TTY plotter"  
Protocol: asynchronous  
Line speed: bps9600  
Parity: none  
Character length: eight  
Stop bits: one  
Flow control: true  
XOn: 21B  
XOff: 23B  
Blocking size: 256  
Pen velocity: 16  
Pen widths: 10

[HI 41]

Device type: "TTY plotter"  
Protocol: asynchronous  
Line speed: bps9600  
Parity: none  
Character length: eight  
Stop bits: two  
Flow control: true  
XOn: 21B  
XOff: 23B  
Blocking size: 512  
Pen velocity: 16  
Pen widths: 10

[HI 42]

Device type: "TTY plotter"  
Protocol: asynchronous  
Line speed: bps9600  
Parity: none  
Character length: eight  
Stop bits: two  
Flow control: true  
XOn: 21B  
XOff: 23B  
Blocking size: 512  
Pen velocity: 16  
Pen widths: 10

[CalComp 945]

Device type: "TTY plotter"  
Protocol: asynchronous  
Line speed: bps9600  
Parity: odd  
Character length: seven  
Stop bits: one

Flow control: false  
Pen widths: 10

[TTY]

Protocol: asynchronous  
Line speed: bps300  
Parity: none  
Character length: seven  
Stop bits: one  
Flow control: false

[VAX]

Device type: host  
Protocol: asynchronous  
Line speed: bps300  
Parity: none  
Character length: eight  
Stop bits: two  
Line feed: false  
Flow control: true  
XOn: 21B  
XOff: 23B  
Blocking size: 512

[IDT1054]

Device type: TTY  
Protocol: asynchronous  
Line speed: bps19200  
Parity: none  
Character length: eight  
Stop bits: one  
Flow control: false

[Xerox P1]

Device type: "Xerox P1"  
Protocol: asynchronous  
Line speed: bps2400  
Parity: odd  
Character length: eight  
Stop bits: one

[NC2400]

Device type: TTY  
Protocol: asynchronous  
Line speed: bps2400  
Parity: odd  
Character length: seven  
Stop bits: one  
Flow control: true  
XOn: 21B  
XOff: 23B  
Blocking size: 100

## Expert Tools

There are three **InitialState:** options from which you can choose: *tiny*, *inactive*, and *active*. Specify **tiny** to have the RS232C Tool appear as a tiny window on your display. Specify **inactive** to have the RS232C Tool appear as an item in the Inactive Menu. Specify **active** to have the RS232C Tool appear as an open window on your display.

You may add devices to the **Devices:** parameter. Device names which are more than one word must be enclosed within quotation marks. After adding a device name, you must enter a section for the device that includes the device name in brackets and lists the following parameters and parameter values as necessary:

```
[Device]
Device type:
Protocol:
Line speed: bps
Parity:
Character length:
Ready to send:
Line feed:
Stop bits:
Flow control:
XOn:
XOff:
Blocking size:
```

There are six **Device type:** options from which you can choose: *TTY*, *Enq/Ack*, *TTY plotter*, *Xerox P1*, *XModem* and *Host*.

There are two **Protocol:** options from which you may choose: *asynchronous*, and *bytesynchronous*. Expert currently supports only asynchronous communication.

The **Line speed:** bits per second (bps) range may be from 50-19,200. If you're transferring files between your workstation and an IDT 1054 tape drive, note that the default setting for this parameter is 19,200 bps. You can use this setting if your workstation is either an 8010 or a 6080. If your workstation is a 6085 or a 6085 Model 2, the highest line speed value you can set is 9600 bps. Although, for reliable throughput, we recommend 4800 bps.

The **Line terminator:** parameter may be any number between 0 and 255. This parameter only applies to the Hewlett-Packard pen plotter User.cm entries. Although the **Line terminator:** parameter does not appear in any of the RS232C Tool windows, it does appear in the files for the Hewlett-Packard pen plotters. The number you select for this parameter indicates what character the system will use to identify the end of a block of data on a file.

Specify the number 13 to have the system insert a carriage return at the end of each block of data. If your host computer does not transfer your file, check this parameter and be sure it is set to 13. Specify the number 25 to have the system insert an ETX (end of text) character at the end of the block data. (Most Hewlett-Packard pen plotters default to 25.)

There are five **Parity:** options from which you may choose: *none*, *odd*, *even*, *one* and *zero*.

The four **Character length:** options are *five*, *six*, *seven* and *eight*. These numbers must be spelled out.

The two **Ready to send:** options from which may choose are: *true* and *false*. These options must be spelled out.

The two **Line feed:** options are: *true* and *false*. These options must be spelled out.

The two **Stop bits:** options are: *one* and *two*. These numbers must be spelled out.

The two **Flow control:** options are: *true* and *false*. These options must be spelled out.

The **XOn:** parameter may be any octal number between 0 and 200.

The **XOff:** parameter may be any octal number between 0 and 200.

The parameters **Pen type:**, **Pen acceleration:**, **Pen force:**, **Pen velocity:**, **Pen widths:**, **Italic text:**, and **Bold text:** are described in the *Expert Drafting* manual, Chapter 6, Section 6.2.2; in the *Expert Printed Circuit Board Design* manual, Chapter 12, Section 12.4; and in the *Expert Schematics* manual, Chapter 12, Section 12.2.2.

## Expert Tools

### 6.5 The Terminal Tool

The Terminal Tool uses the Xerox Network System (XNS) protocol to connect your workstation to remote computer systems over the Ethernet. Using the Terminal Tool you can emulate a terminal connected to a remote host, and if you are a system administrator, you can perform remote system administration on a variety of servers (for example, a File Server or a Print Server). The Terminal Tool provides the same terminal emulation capabilities as those offered by the RS232C Tool, but does not require dedicated terminal lines for each workstation.

You can also use the Terminal Tool to connect to a remote VAX/VMS computer. With this type of connection you can emulate a VT100 terminal, write programs using any of the VAX-supported compilers, archive designs on the magnetic tape unit, or send a formatted net list for use on a VAX-based printed circuit board layout system. To connect your workstation to a VAX requires the Xerox Network Service's DEC VAX (XNS/DEC VAX) software package that can be purchased from Xerox and a DEC Deuna Ethernet Controller board that can be purchased from Digital Equipment Corporation.

When you first start the system, the Terminal Tool is not visible on your display.

- To display the Terminal Tool:
  - 1) Bring up the Inactive Menu.
  - 2) Select **Terminal Tool**.

After you've activated the Terminal Tool, you can use the Window Manager commands to change the window's size, shape, and location, and to make it tiny.

#### 6.5.1 The Terminal Tool Window

The Terminal Tool window contains three subwindows. The first subwindow displays messages from Expert, the second contains commands, and the third is either a terminal emulation subwindow or a TTY (teletype terminal) subwindow depending on the type of terminal you are emulating. The terminal emulation subwindow has a vertical scroll bar spanning its left border. Unlike TTY terminals, the Terminal Tool window lets you scroll the information in the subwindow both backwards and forwards. The Terminal Tool window contains two additional windows: the Terminal Tool Options window, and the Terminal Options property sheet. The parameters in the Terminal Tool Options window allow you to select the type of remote host to which you will connect. The parameters in the Terminal Options property sheet allow you to set various terminal options. Figure 6.21 shows the Terminal Tool window.

## 8. Appendixes

This section contains four appendixes. The first appendix, Using the 790 and 791 Output Servers, provides information pertinent to registering, using, and testing the Output Servers. The following appendix, Using Versatec Plot Servers, explains how to register and use three Versatec products: 890 and 895 Plot Servers and ServeWare. The third appendix, Installing a Hewlett-Packard Pen Plotter, details the procedure for connecting a workstation to an HP pen plotter. The final appendix, Quick Enabling a Workstation, explains how to re-enable a workstation, including after the disk has been repartitioned.

Output Servers and Plot Servers (including ServeWare) are network resources shared by workstation users. You send data to these devices using the same Expert tool, the Output Server Tool (see Chapter 6, Section 6.2). Both servers support the same plotters: Versatec models V-80, 8222, 8224, 8236, 8242, and 8272. The two servers differ from each other in the type of communication protocol used. The 790 and 791 Output Servers use the Xerox Network System (XNS) protocol. The Plot Servers and ServeWare use the Transmission Control Protocol and Internet Protocol (TCP/IP) as established by the Department of Defense. The maximum number of plotters that can reside on a network is 16.

The Hewlett-Packard pen plotter is a local output device used by the workstation to which it is connected. It is not a resource shared by all users on the network.

## Using the 790 and 791 Output Servers

### 8.1 Using the 790 and 791 Output Servers

Combining a 790 or 791 Output Server with other network services allows you and other users to share the use of various output devices. Together with a Versatec plotter, the 790 Output Server accepts print or plot data from the Ethernet, processes it when necessary, and passes it on to the plotter where it creates hardcopy plots on paper, film, or vellum. The 791 Output Server offers the same plotting capabilities, while also letting you format and copy files to and from magnetic tapes for use with a range of compatible engineering automation devices. Use the magnetic tape unit on the 791 Output Server to archive work produced by Expert on your network.

This appendix describes the operation, maintenance, and test procedures for both Output Server models and the magnetic tape unit which is provided with the 791 server. The Versatec documentation supporting your Output Server and electrostatic plotter provides detailed information on the use and routine maintenance of Versatec equipment. Familiarize yourself with the procedures listed in these manuals and refer to them as needed. Users with a 791 Output Server can obtain operation and maintenance documentation for the Kennedy tape transport unit by writing to: Kennedy Company, 1600 Shamrock Avenue, Monrovia, CA 91016. The Versatec plotters and the magnetic tape unit are simple to operate and maintain provided that you follow the operating and preventive maintenance procedures described in the supporting documentation.

The system administrator in your department should show you the standard procedures for operating the server and its output devices. Specifically you should know how to thread and load a magnetic tape, remove plots from the plotter, and know where to report errors you encounter while using these devices. Attempting to adjust or repair the units yourself may result in serious damage to the equipment.

#### 8.1.1 Registering the Output Server

If your Output Server is on a network with a Clearinghouse, a system administrator must register it in the Clearinghouse as a File Service before you can use it to communicate with a Versatec electrostatic printer/plotter, or a magnetic tape unit. The following procedures describe how to register a server from either a workstation or a Clearinghouse Server. If your Output Server is on a network without a Clearinghouse, you can use the server by selecting the server's *decimal address* from the **Host:** Menu in the Output Server Tool.

- To register an Output Server from a workstation:
  - 1) Select the Terminal Tool from the Inactive Menu.
  - 2) Select **Tool options!** in the Terminal Tool command subwindow.
  - 3) Select **sa** in the Terminal Tool Options window.

### 8.2 Using Versatec Plot Servers

The addition of a Versatec Plot Server to a network lets you and other network users generate plots on a range of Versatec plotters. Using the TCP/IP protocol, the Plot Server accepts print or plot data from the Ethernet, processes it when necessary, and passes it on to the plotter where it creates hardcopy plots on paper, film, or vellum. Expert supports the full line of Versatec Plot Servers: models 890 and 895 Plot Servers and the ServeWare system.

Versatec 890 and 895 Plot Servers are complete hardware and software systems. The 890/895 Plot Server supports one output device and includes a hard disk for spooling plot data. After the plot file has been transferred from the workstation to the server, the workstation is free for other tasks. The 890 Plot Server is a three microprocessor based server. The 895 Plot Server includes two additional processors for hardware rasterization.

ServeWare is Versatec's second-generation network plotting system. ServeWare software runs on industry-standard hardware platforms: IBM 386 PC/ATs and Sun Microsystems workstations. With the ServeWare system, network users can send plot data to any of the three output devices connected to the ServeWare server. Key features of the system include spooling, job prioritization, replot, plot identification, and automatic handling of different data types.

This appendix describes how to add a Versatec Plot Server to your network. Regardless of the type of Plot Server you add to your network, 890, 895, or ServeWare, you use the same procedures.

When you purchase a Plot Server, Versatec provides you with comprehensive user documentation. Versatec also provides documentation for the plotter(s) purchased with the server. These manuals provide detailed information on the use and routine maintenance of Versatec equipment. Familiarize yourself with the procedures listed in these manuals and refer to them as needed. The Versatec plotters are simple to operate and maintain provided that you follow the operating and preventive maintenance procedures described in the supporting documentation.

The system administrator in your department should show you the standard procedures for operating the server and its output devices. Specifically, you should know how to remove plots from the plotter and where to report errors you encounter while using these devices. Attempting to adjust or repair the units yourself may result in serious damage to the equipment.

#### 8.2.1 Registering a Plot Server

Unlike other network servers, the system administrator does not register a Plot Server in the Clearinghouse. Instead, the system administrator creates the equivalent of a Clearinghouse in a text file named *HOSTS.TXT*. This file lists all the workstations and plotters that communicate using the TCP/IP protocol. The system administrator copies the text file *HOSTS.TXT* to the workstation and edits the file, as well as the workstation's *User.cm*, thus allowing you to send plot data to a plotter connected to a Plot Server.

## Using Versatec Plot Servers

- To create a HOSTS.TXT file:

- 1) Create a file window and name it HOSTS.TXT.
- 2) In the file window, type the word HOST (in capital letters) and a colon.
- 3) Next enter the Internetwork address of the device (usually a workstation or a plotter) that is to communicate using the TCP/IP protocol and a colon. This address is 32 bits in length and must be in the form of four decimal octets (8 bits), with each octet separated by a period.

The Internetwork address of a workstation is not in the form of four decimal octets. The 32 bits are divided as follows: the first 8 bits represent the network number; the next 14 bits define the sub-network number; and the final 10 bits represent the workstation's host identification number. The solid vertical lines in Figure 8.6 illustrate this division. Therefore, you must redivide the 32 bits to obtain a decimal number consisting of four octets. The broken vertical lines in Figure 8.6 show how the bits representing the sub-network and host identification numbers must be divided to obtain a decimal number consisting of four octets.

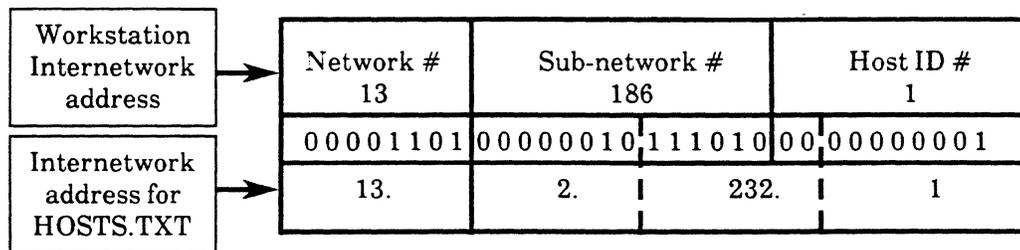


Figure 8.6

To determine the Internetwork address of a plotter, refer to your Versatec documentation.

- 4) After the colon, type the name of the device and a colon. Note: The name of the device does not need to match the name used in the Clearinghouse.
- 5) Next enter the type of device (for example, model of workstation) and type a colon.
- 6) Next type the kind of operating system used by the device and a colon.
- 7) After the colon, enter the communication protocols the device supports and type a colon.
- 8) On a new line, repeat Steps 2 through 7 for each device that is to communicate using the TCP/IP protocol.
- 9) On a new line type the words MY-HOST (in capital letters) and a colon.

## Using Versatec Plot Servers

- 10) Save the HOSTS.TXT text file and store it in a location suitable for retrieval to individual workstations.

Spaces are allowed within individual lines. For example, you can add a space between each type of communication protocol the host supports. Empty lines are not allowed within the file. A sample HOSTS.TXT file is shown in Figure 8.7.

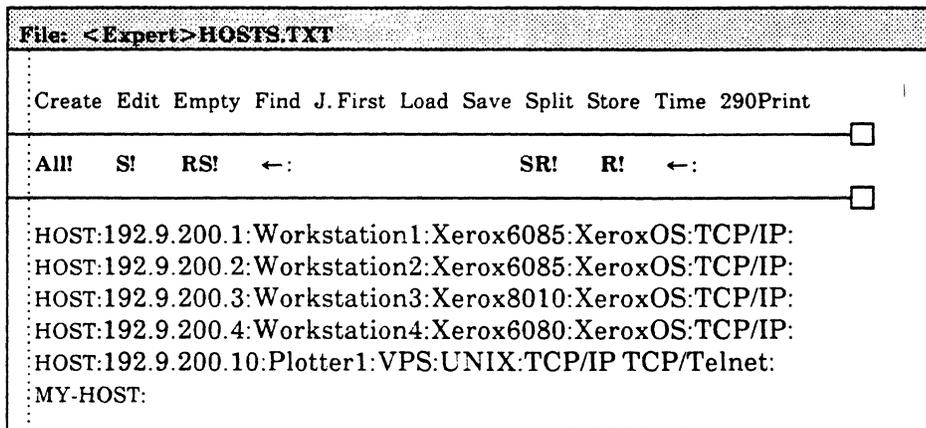


Figure 8.7

- To register a Plot Server on the workstation:
  - 1) Retrieve a copy of the HOSTS.TXT file to the workstation.
  - 2) Load HOSTS.TXT into a file window and make the file editable.
  - 3) After the words MY-HOST: enter the Internetwork address of the workstation on which you are editing the HOSTS.TXT file. Note: The workstation's address should also appear on one of the HOST: lines.
  - 4) Save the HOSTS.TXT file.
  - 5) Load the User.cm file into a file window and make the file editable.
  - 6) Locate the [ARPA] section of the User.cm.
  - 7) After the **HostAddress:** parameter type the workstation's Internetwork address (the same address you entered on the MY-HOST: line in the HOSTS.TXT file).
  - 8) After the **Plotters:** parameter type the names of the plotters connected to the Plot Server(s).
  - 9) For each plotter listed in the **Plotters:** field, create a [Plotter] section. On a new line after the [ARPA] section, type the name of your plotter between brackets (for example, [Plotter1]). You must use the same plotter name that you specified in the HOSTS.TXT file.

## Using Versatec Plot Servers

Note: In the User.cm file provided with the current software release, there is one [Plotter] section that you can edit to satisfy the requirements of your network.

- 10) On a new line type Model, colon, and the model of the plotter. For example, **Model:** V-80. If you do not know the model of the plotter, then add a line with the parameter **Bytes per scanline:** and the appropriate numerical value. For example, **Bytes per scanline:** 264. Refer to your Versatec documentation for the correct bytes per scanline. If you do not specify a plotter model, then the system defaults to plotter model **V-80**.
- 11) On a new line type ServerType, colon, and the server type. For example, **ServerType:** VPS. You can specify one of two types: *VPS* or *ServeWare*. **VPS** is the default if you don't include a **ServerType:**.
- 12) On a new line type Device, colon, and the input/output port (for an 890 or 895 Plot Server) or directory (for a ServeWare system) to which the output should be sent. For example, **Device:** /dev/vds.

If your plotter is connected to an 890 or 895 Plot Server, you can specify one of two output formats for the **Device:** parameter: */dev/vds* or */dev/hpgl\_default*. If you specify */dev/vds*, then data will be sent to the server in Versatec Data Standard (VDS). Expert supports two Versatec Data Standards: Versatec Random Format (VRF) and One-dimensional Compacted Raster. If you specify */dev/hpgl\_default*, then data will be sent to the server in Hewlett-Packard Graphics Language (HPGL) format. If you do not specify a **Device:** parameter, the system uses */dev/vds* as the default. Note: You must include the backslash (/) and underscore (\_) characters and use lower case letters when specifying the format.

If your plotter is connected to a ServeWare system, you specify a valid UNIX directory name for the **Device:** parameter. A backslash (/) must precede the directory name. For example: **Device:** /UNIXDirectoryName.

- 13) Save the User.cm file.

You must perform this procedure on every workstation that is to communicate with a Plot Server.

Expert uses the HOSTS.TXT file and the additional sections in the User.cm to determine the plotters available on the network prior to plotting. Expert looks for available plotters when you select either the **Probe!** command in Expert Schematics or the **Inquire** command in Expert Drafting.

### 8.2.2 The 890 and 895 Plot Servers

The 890/895 Plot Server is a menu-driven system that can be operated either from the server's front panel (see Figure 8.8) or from a CRT terminal connected to the server. Eight alphanumeric character LEDs provide a rotating display of the system's status, the menu selection, or the diagnostic test in progress. You can use the two switches on the server's front panel to control these functions. When operating the server from its terminal, the LEDs provide system status information. You use the front panel switches to invoke setup or controller diagnostic procedures and to re-boot the server.

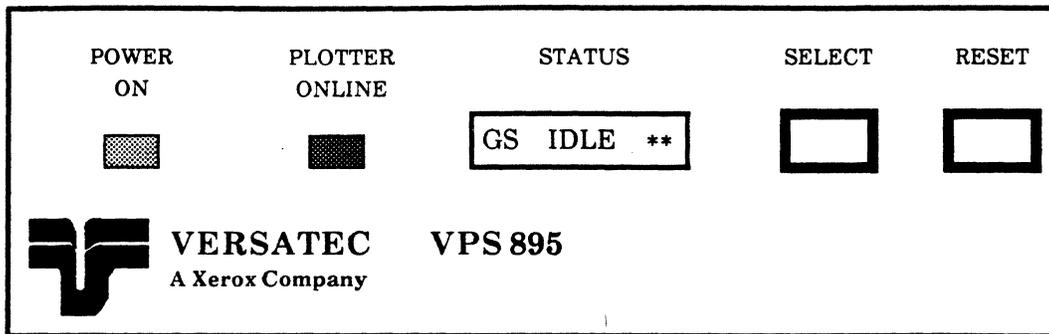


Figure 8.8

### Indicators

LED indicators on the server's front panel are visible only when lighted. The function of these indicators is described below.

#### **POWER ON**

This indicator tells you whether or not power is being supplied to the server and whether it is operational. Once the server is powered on, the POWER ON indicator should remain lighted until the unit is powered off.

#### **PLOTTER ONLINE**

This indicator tells you that a Versatec plotter is connected to the server and the plotter is operational.

#### **STATUS**

This indicator provides a rotating display of server system status, installation, and diagnostic menus/information.

### Switches

You power the server on and off with a master switch located on the unit's rear panel. Two pushbutton switches, SELECT and RESET, are located on the server's front panel and are described below.

#### **SELECT**

You press this switch to invoke the server's setup dialogue, diagnostic tests, and job abort functions.

#### **RESET**

You press this switch to reload the server's software. RESET completely resets the server and cancels any plots in the server's queue.

## Installing a Hewlett-Packard Pen Plotter

### 8.3 Installing a Hewlett-Packard Pen Plotter

This appendix provides the instructions for connecting a workstation to a Hewlett-Packard pen plotter and for setting the switches on the back panel of the plotter.

The RS232C cable included in your RS232C kit is a one-to-one cable. That is, pin 1 in one connector goes to pin 1 of the other connector, pin 2 goes to pin 2, and so on for all twenty-five pins. The Hewlett-Packard pen plotter, however, requires a device called a *null modem* when used together with an Expert workstation. The purpose of the null-modem is to rearrange this one-to-one configuration of the RS232C cable. The null-modem cable switches the wires from pins 2 and 3, from pins 4 and 5, and from pins 6 and 20.

Before you use your workstation with a Hewlett-Packard pen plotter, you must install a null-modem cable. The null-modem cable allows file data to be transferred between the workstation and the plotter.

Figure 8.9 shows the cable connections between the workstation processor and the plotter.

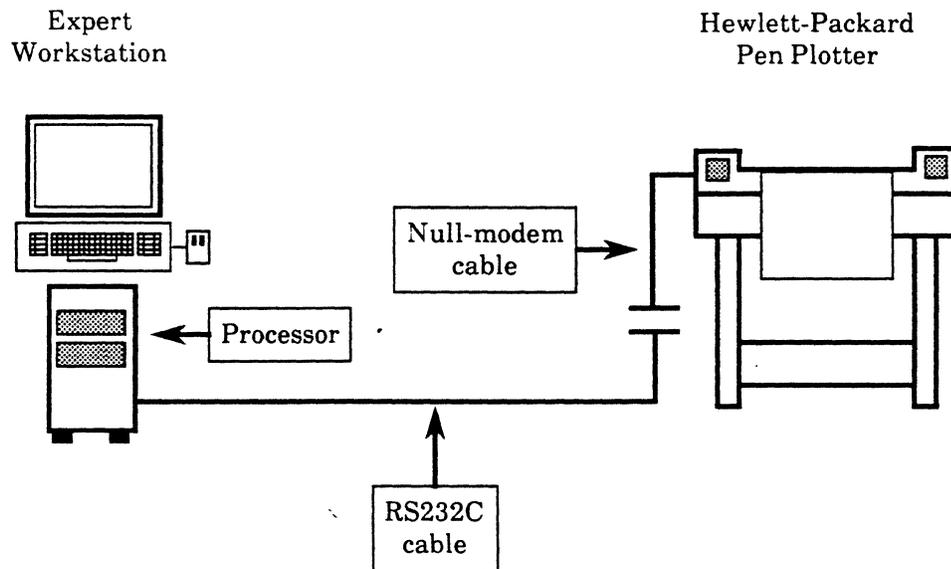


Figure 8.9

You can purchase a null-modem cable from either Xerox or your local electronic supply company, or a technician in your company can construct one for you.

- ▶ To order the cable from Xerox contact your Sales Engineer.
- ▶ To purchase the cable from a local supplier, ask for a null-modem cable that will rearrange the one-to-one configuration of the RS232C cable.

## 9. Indexes

### 9.1 Subject Index

See the *Command Index* (Section 9.2) for the locations of individual commands and command parameters.

#### A

---

Accelerator	3-26
Active window	3-5
ALT B switch	1-4, 2-7
ASCII	
File conversion	4-6, 6-16, 6-73

#### B

---

<b>B RESET</b> switch	1-3, 1-4, 2-4, 2-7
<b>BACKSPACE</b> key	
Floppy disk	6-30
Terminal Tool	6-68, 6-69
Boolean property	3-50
Boot switches	2-4, 2-7
Booting a workstation	2-1, 2-4-2-8
Default boot	2-5
Diagnostic boot	2-4, 2-6, 2-7-2-8
Preboot diagnostics	2-5
Quick booting after powering off	7-4
Without diagnostics	2-6, 2-8

#### C

---

CalComp 925 tape	6-20
Char Options window	6-13
Changing line end	6-16
Changing options	6-16
Changing parity	6-16
Character Tool window	6-73
Converting a file	6-75
Examining a file	6-76

Clearinghouse	2-2
Color files	
Changing color	6-93
Changing color name	6-93
Changing window colors	6-93
Closing	6-94
Retrieving	6-93
Saving	6-94
Color spectrum	6-85-6-86
Color Tool window	6-78
Changing hue	6-90
Color combinations	6-92
Creating black-to-white	6-88
Error messages	6-91
Making colors lighter or darker	6-89
Color wheel	6-85
Command	
Confirming a command	3-3
Selecting a command	3-7, 3-13
Command subwindow	3-6
Command window	3-13
Communication protocol	
Transmission Control Protocol and Internet Protocol (TCP/IP)	6-12, 8-1
Xerox Network System (XNS)	6-12, 6-95, 6-107, 8-1
Communication Server	1-11
Comparing files	
Deleting matching files	6-8
Listing matching files	6-8
Retrieving matching files	6-8
COMp80 tape	6-21
Control characters	
See Control keys and <b>PROP'S</b> key	
Control keys	
C (floppy disk)	6-30
H (Terminal Tool)	6-68
J (Output Server Tool)	6-16
(Character Tool)	6-74
(RS232C Tool)	6-52
W (Terminal Tool)	6-68
Z (RS232C Tool)	6-54, 6-58
Converter icon	3-45, 4-6, 4-7
<b>COPY</b> key	3-37, 3-47, 3-48
Current selection	3-36
Cursor	3-1
Cursor shapes	3-2

# Subject Index

## D

---

DashLink network 3-43  
Date and time setting 2-8-2-10  
Default boot 2-5  
**DELETE** key 3-36, 3-47, 3-48  
    Floppy disk 6-30  
    Terminal Tool 6-68, 6-69  
Design folder 5-1  
    Commands 5-3, 5-4  
    Creating a design folder 5-28  
    Deleting a design folder 5-29  
    Files 5-25, 5-26  
    Included in Expert 5-27  
    Renaming a design folder 5-29  
    Window 5-3  
Design folder files 5-25  
    Access to 5-17  
    Automatic backup 5-22  
    Closing a file 5-5  
    Copying files between existing  
        design folders 5-30  
    Copying files between  
        workstations 5-30  
    Deleting a file 5-10  
    Opening a file 5-5  
    Recovering a file 5-10  
    Renaming a file 5-8-5-9  
    Selecting a file 5-5, 5-7  
Desktop (ViewPoint) 4-1, 4-6, 4-7  
    Expert covering the desktop 4-5  
Desktop Auxiliary Menu 4-1, 4-3  
Diagnostic boot 2-4, 2-6, 2-7-2-8  
Directory 6-1  
Directory icon 4-2  
Disk drive (floppy) 1-3, 6-27  
    Loading a disk 6-28  
    Removing a disk 6-28  
Display 1-2, 1-5-1-6  
    Intensity control 1-5  
Display Manager Menu 3-13  
Documenter system 3-43  
Domain 2-2  
Drawing window 3-13

## E

---

EBCDIC  
    File conversion 6-16, 6-73  
Echo test 8-17  
890/895 Plot Server panel 8-23

**PLOTTER ONLINE** 8-23  
**POWER ON** 8-23  
**RESET** 8-23  
**SELECT** 8-23  
**STATUS** 8-23  
Electronic design window 3-14  
Electrostatic plotter 1-11  
    Printing text files 3-44  
    Transferring ASCII files 6-22-6-23  
    Transferring HPGL files 6-22-6-23  
    Transferring VDS files 6-22-6-23  
Empty window 3-30  
Ethernet 1-3, 1-11, 6-64  
Exec Ops Menu 6-103, 7-4  
Executive window 3-43, 6-29  
    *See* Floppy disk  
Expansion characters 6-3, 6-31  
Expert Message window 3-12  
Expert/ViewPoint user  
    environment 4-1  
    Activating Expert 4-3  
    Closing Expert 4-5  
    Expert in a ViewPoint window 4-3

## F

---

Feedback Menu 3-12  
File information, displaying 6-6  
File list 6-31  
File Server 1-11, 6-1  
File Tool window 6-2  
    Comparing files 6-8  
    Deleting a file 6-8, 6-9  
    Listing a file 6-8, 6-9  
    Retrieving a file 6-7  
    Storing a file 6-7  
File transfer protocol  
    *See* Communication protocol  
File transfers  
    Between Expert and  
        ViewPoint 4-6-4-7  
    To a pen plotter  
        (RS232C Tool) 6-57  
    To an electrostatic plotter  
        (Output Server Tool) 6-22  
    To and from a VAX  
        RS232C Tool 6-57  
        Terminal Tool 6-70, 6-71  
File window 3-30  
    Creating a file window 3-31  
File window accelerator keys 3-47-3-48  
File Window Menu 3-31

## Subject Index

Floppy disk 6-25  
  Commands 6-42-6-43  
  Copying files 6-34, 6-38  
  Deleting files 6-39  
  Describing 6-33  
  Erasing files 6-40  
  Formatting 6-32  
  Issuing commands 6-30, 6-31  
  Keys 6-42, 6-44-6-45  
  Listing files 6-37  
  Maintenance 6-26  
  Scavenging 6-41  
Floppy disk drive 1-3, 6-27  
  Loading a disk 6-28  
  Removing a disk 6-28  
Fully qualified name 2-3  
Function keys 1-7-1-9, 3-47-3-48

### G

---

Gerber tape 6-20

### H

---

Hard disk 1-3  
Help icon 4-2  
Hewlett-Packard pen plotter  
  Installing 8-24  
HOSTS.TXT 6-13, 8-19

### I

---

Idle workstation 2-1, 7-1  
Inactive Menu 3-25  
Innovative Data Technology (IDT)  
  1054 tape drive 6-12  
Intensity control wheel 1-5, 2-1

### K

---

Kennedy tape transport unit 8-2, 8-6  
Keyboard 1-2, 1-7-1-9  
  Function keys as accelerators 3-47-3-48  
  Terminal Tool keys 6-68  
  VT100 keys 6-69

### L

---

Labeled tape 6-17  
  Comparing files 6-19  
  Listing files 6-19  
  Retrieving a file 6-18-6-19  
  Storing a file 6-18  
List Options window  
  File Tool 6-6  
  Output Server Tool 6-13  
Local tape drive  
  See Innovative Data Technology  
  (IDT) 1054 tape drive  
Logging in  
  Access privileges 2-2  
  To an Expert color  
  workstation 2-2-2-3  
  To a ViewPoint workstation  
  running Expert software 2-3-2-4  
Logging off  
  An Expert color workstation 7-1  
  A ViewPoint workstation  
  running Expert software 7-2  
Login window (Expert) 2-2  
Logoff Option sheet (ViewPoint) 7-2  
Logon Option sheet (ViewPoint) 2-3

### M

---

Magnetic tape unit 1-11  
  Bringing unit on-line 8-10  
  Control panel 8-8  
  Deleting from Clearinghouse 8-3  
  Echo testing 8-17  
  Loading a tape 8-10  
  Maintenance of 8-13-8-15  
  Overhead view 8-7  
  Re-booting 8-11  
  Recovering from shutdown 8-11  
  Registering in Clearinghouse 8-2-  
  8-3  
  Test panel 8-15, 8-16  
  Testing 8-15  
  Threading a tape 8-10, 8-12  
  Unloading a tape 8-10-8-11  
Maintenance panel 1-4, 2-7, 6-2  
MARGINS key 3-33, 3-47, 3-48, 6-69,  
6-103  
Menu 3-15  
Menu stack 3-16  
  Selecting a menu 3-16

## Subject Index

Message area (ViewPoint) 4-1  
 Message window (Expert) 3-12  
 MFileServer window 6-95  
     Closing connection 6-101  
     Deleting files 6-100  
     Error messages 6-98  
     Listing files 6-101  
     Overwriting files 6-100  
     Recommendations 6-97  
     Retrieving files 6-99  
     Storing files 6-99  
 Mouse 1-2, 1-10, 3-1  
**MOVE** key 3-37, 3-47, 3-48  
 Multi-function Server 1-11

### N

---

Name frame 3-6  
 Network 1-11  
 Null modem 8-24, 8-25  
 Numeric property 3-53

### O

---

Organization 2-2  
 Output Server 1-11, 6-12  
     *See* Magnetic tape unit  
     *See* Output Server panel  
 Output Server panel 8-4  
     **DENSITY SELECT** 8-8  
     **EOT** 8-16  
     **FAST FORWARD** 8-16  
     **FAST REVERSE** 8-16  
     **FAULT** 8-5  
     **FORWARD RUN** 8-16  
     **HDS** 8-17  
     **INPUT** 8-5  
     **LOAD** 8-8  
     **LOAD POINT** 8-16  
     **ON LINE** 8-8  
     **OUTPUT** 8-5  
     **PLOTTER READY** 8-5  
     **POWER ON** 8-5  
     **PROCESSING** 8-5  
     **READ** 8-8  
     **RESET** 8-5  
     **REWIND** 8-9  
     **SELECT** 8-9  
     **SKEW** 8-17  
     **STOP** 8-16

**TEST** 8-17  
**TEST MODE** 8-16  
**UNIT SELECT** 8-9  
**WRITE** 8-9  
**WRITE ENABLE** 8-9  
**WRITE TEST** 8-16  
 Output Server Tool window 6-13  
     Deactivating/reactivating 6-106

### P

---

Password 2-2, 2-3  
**PASTE (SAME)** key 3-36, 3-47, 3-48  
 Plot Server 1-11, 6-12, 8-19, 8-22  
     *See also* 890/895 Plot Server panel;  
     ServerWare  
 Pointing 3-2  
 Pop-up menu 3-15  
 Power switch (0 and 1) 1-3, 1-4, 2-1,  
     2-4, 7-3  
 Print Server 1-11  
 Printing text files  
     On a 4045 Laser CP  
         printer 4-7-4-8  
     On a local electrostatic plotter 3-44  
     On a network electrostatic  
         plotter 3-44  
     On a Print Server 3-43  
     On a Xerox P1 printer 3-44  
 Processor 1-2-1-4  
 Processor controls 1-3-1-4, 2-4, 7-3  
 Property lists 3-51  
 Property sheets 3-49-3-53  
**PROP'S** key 3-37, 3-47, 3-48  
     Floppy disk 6-30  
     RS232C Tool 6-52  
     Terminal Tool 6-68, 6-69

### R

---

**RETURN** key  
     Floppy disk 6-29, 6-30  
     RS232C Tool 6-52  
 RS232C kit 8-24  
 RS232C Tool Options  
     property sheet 6-49, 6-50  
 RS232C Tool window 6-46, 6-47  
     Creating plots 6-106  
     Deactivating/ reactivating 6-106  
     Emulating a TTY terminal 6-58

## Subject Index

- Selecting a device 6-48  
Sending files 6-57
- S**
- 
- Scroll bar 3-8, 3-9, 4-3  
Scrolling 3-9  
Selection 3-2  
    Selecting a command 3-7, 3-13  
    Selecting a menu from a stack 3-16  
    Selecting a menu item 3-17  
Servers 1-11  
    Server names 1-11  
ServeWare 6-12, 8-19  
**SHIFT** key  
    Floppy Disk 6-30  
    Terminal Tool 6-68, 6-69  
Slide bars 6-83  
**STUFF (OPEN)** key 3-37, 3-47, 3-48  
Subwindow 3-6  
    Adjusting subwindow borders 3-7  
    Command subwindow 3-6  
    Scrolling 3-8  
    Thumbing 3-10  
Switches  
    **Format** 6-42-6-43  
    **List** 6-43  
System administrator 1-11, 2-2, 2-4  
    Deleting Output Server 8-3  
    Registering Output Server 8-2-8-3  
    Registering Plot Server 8-19
- T**
- 
- TAB** key 6-68  
Tab positions (RS232C Tool) 6-57  
Tapes  
    CalComp 925 6-20  
    COMp80 6-21  
    Gerber 6-20  
    Labeled (ANSI) 6-17  
    Unlabeled 6-20  
Teletypewriter 6-29, 6-46  
    See TTY  
Terminal Options property sheet  
    RS232C Tool 6-55  
    Terminal Tool 6-66  
Terminal Tool function keys 6-68, 6-69  
Terminal Tool Options window 6-65, 6-67  
Terminal Tool window 6-65  
Text file 3-29  
    Changing carriage return 6-73  
    Changing parity 6-73  
    Converting to  
        ViewPoint 3-45-3-46, 4-6-4-7  
    Creating a text file 3-32, 3-35  
    Editing a text file 3-33, 3-35  
    Printing a text file 3-43, 4-7  
Text manipulation  
    Copying text 3-37  
    Deleting text 3-36  
    Entering text 3-36  
    Moving text 3-37  
    Pattern matching 3-40, 3-41  
    Selecting text 3-36  
Text Ops Menu 3-38  
Text property 3-52  
Text subwindow 3-30  
Thumbing 3-10  
Time service 2-8  
Time setting 2-8-2-10  
Tiny window 3-5  
Transmission Control Protocol and Internet Protocol (TCP/IP)  
    See Communication protocol  
TTY  
    RS232C Tool 6-58  
    Terminal Tool 6-64, 6-67  
Turning off workstation 7-3  
Turning on workstation 2-1, 7-3  
290 Personal Plotter Interface Unit 1-11  
    Printing text files 3-44  
Type-in point 2-2, 2-3, 3-36, 6-2
- U**
- 
- UNDO** key 3-47, 3-48  
Unlabeled tape 6-20  
User name 2-2, 2-3, 6-107  
User.cm file  
    Displaying 6-103  
    Editing 6-104  
    Re-booting 6-105  
    Saving 6-105  
User.cm sections  
    [ARPA] 8-21-8-22  
    [Character Tool] 6-76  
    [Color Tool] 6-94  
    [Design Folder] 5-32  
    [Executive] 6-106

## Subject Index

[File Tool]	6-9-6-10
[Fonts]	6-107
[HARDCOPY]	6-106-6-107
[MFileServer]	6-102
[Output Server Tool]	6-23-6-24
[RS232CTool]	6-59-6-63
[System]	6-106
[Terminal Tool]	6-72

## X

---

Xerox Network System (XNS)	
<i>See</i> Communication protocol	
Xerox P1 printer	6-46
Printing text files	3-44
XNS DEC/VAX software	6-64, 6-70

## V

---

VAX/VMS computer	
<i>See</i> File transfers	
Archiving a file on tape	6-70
Automatic backup to	5-24
Closing a connection	6-70
File name restrictions	6-71
Opening a connection	6-70
ViewPoint	3-12, 3-45-3-46, 4-1
<i>See</i> Expert/ViewPoint user environment	
VP Basic LAN Services	3-43
VT100 terminal	6-64

## W

---

Window	3-5
Active	3-5
Command	3-13
Drawing	3-13
Electronic design	3-14
Expert Message	3-12
Tiny	3-5
ViewPoint	4-3
Window Manager Menu	3-18
Window Manager accelerators	3-26
Workstation	1-2
Booting	2-1, 2-4-2-8
Color	1-6, 1-10, 6-77
Monochrome	1-5, 1-10
Quick booting after	
powering off	7-4
Re-enabling Expert software	8-27
Setting time	2-8-2-10
Software configurations	1-10
Turning off	7-3
Turning on	2-1, 7-3
ViewPoint, running Expert software	4-1
Write-protection	6-26

## 9.2 Command Index

=	File Tool	6-4, 6-10, 6-11	File Tool	6-7
	Output Server Tool	6-14	Output Server Tool	6-17
>	File Tool	6-4, 6-10, 6-11	RS232C Tool	6-54, 6-57
	Output Server Tool	6-14	Terminal Tool	6-67
<	File Tool	6-4, 6-10, 6-11	ascii (Output Server Tool)	6-14
	Output Server Tool	6-14	Author (File Tool)	6-6
←:	Replace field	3-41	<b>B</b>	
	Search field	3-40	<hr/>	
!	Floppy disk	6-35	<b>Beep off</b> (message window)	3-12
*	File Tool	6-3	<b>Beep on</b> (message window)	3-12
	Floppy disk	6-31, 6-44	<b>Block Size =</b>	
	Output Server Tool	6-14	(Output Server Tool)	6-14
,	File Tool	6-3	<b>Blocking size =</b> (RS232C Tool)	6-53
	Floppy disk	6-31, 6-44	<b>Blue</b> (Color Tool)	6-82
#	Floppy disk	6-31, 6-44	<b>Bottom</b>	3-23
**	File Tool	6-4, 6-10, 6-11	Top/Bottom accelerator	3-27
	Floppy disk	6-36, 6-42, 6-45	<b>Break key!</b> (Terminal Tool)	6-65
	Output Server Tool	6-14	<b>Bye</b>	7-1
'#	Floppy disk	6-45	<b>Bytes</b> (File Tool)	6-6
<b>A</b>			<hr/>	
<b>Abort!</b>			<b>Cancel!</b> (Diagnostics)	6-86
Color Tool	6-84		<b>Carriage Return:</b>	
File Tool	6-7		(Character Tool)	6-74
Output Server Tool	6-17		<b>Char-Options!</b>	
RS232C Tool	6-54, 6-57		(Output Server Tool)	6-15
Terminal Tool	6-67		<b>Character length:</b>	
<b>all!</b> (file window)	3-41		(RS232C Tool)	6-51
<b>Always</b>			<b>Close</b> (Expert window)	4-5
File Tool	6-4		<b>Close!</b>	
Output Server Tool	6-14		File Tool	6-5
<b>Another!</b> (Terminal Tool)	6-65		Output Server Tool	6-15
<b>Appear as</b> (Color Tool)	6-82		<b>Color</b> (Color Tool)	6-78
<b>Append!</b>			<b>Confirm!</b> (File Tool)	6-4
(Output Server Tool)	6-15, 6-17		<b>Connect:</b>	
<b>Apply!</b>			File Tool	6-4
Color Tool	6-83		RS232C Tool	6-50
			<b>Connect!</b> (Terminal Tool)	6-65
			<b>Conversion:</b>	
			Character Tool	6-75
			Output Server Tool	6-16
			<b>Convert!</b> (Character Tool)	6-75
			<b>Copy!</b>	
			Design folder	5-7
			File Tool	6-5
			<b>Cover desktop</b>	4-5
			<b>CR and LF:</b>	
			(Output Server Tool)	6-16

## Command Index

<b>Create</b>	
File Tool	6-6
File window	3-32
<b>Cursor (Color Tool)</b>	6-79
<b>Cursor: (RS232C Tool)</b>	6-56

### D

---

<b>Deactivate</b>	3-24
<b>Default Domain (Logon Option sheet)</b>	2-3
<b>Default Organization (Logon Option sheet)</b>	2-3
<b>Delete (floppy disk)</b>	6-39
<b>Delete! (design folder)</b>	5-10
<b>DELETE key</b>	3-36, 3-47, 3-48
Floppy disk	6-30
Terminal Tool	6-68
<b>DeleteAllowed (MFileServer)</b>	6-96
<b>Deny! (File Tool)</b>	6-4
<b>Destination (Converter icon)</b>	3-46
<b>Dest'n:</b>	
File Tool	6-3
Output Server Tool	6-14
<b>Dest'n File: (Character Tool)</b>	6-74
<b>Dest'n Parity: (Character Tool)</b>	6-74
<b>Destroy (file window)</b>	3-32
<b>Device: (RS232C Tool)</b>	6-47
<b>Device type: (RS232C Tool)</b>	6-52
<b>Diagnostics</b>	
Color Tool	6-86
790/791 Output Server	8-17
<b>Directory: (File Tool)</b>	6-3
<b>Disconnect! (Terminal Tool)</b>	6-65
<b>Display (Diagnostics)</b>	6-86
<b>Display background (Color Tool)</b>	6-79
<b>Done! (Color Tool)</b>	6-84
<b>Drag</b>	3-21
Move/Grow/Drag accelerator	3-28
<b>Duplex: (RS232C Tool)</b>	6-54

### E

---

<b>ecs (Terminal Tool)</b>	6-67
<b>Edit (file window)</b>	3-33
<b>Empty (file window)</b>	3-32
<b>End Session</b>	7-2
<b>Equal (File Tool)</b>	6-9, 6-10
<b>Erase (floppy disk)</b>	6-40

<b>Examine! (Character Tool)</b>	6-75
<b>exec (Terminal Tool)</b>	6-67
<b>Expert</b>	4-3
<b>Expert to VP (Expert window)</b>	4-6

### F

---

<b>File: (Color Tool)</b>	6-84
<b>File name: (RS232C Tool)</b>	6-48
<b>Filestat (floppy disk)</b>	6-34
<b>Find (file window)</b>	3-39
<b>Flow control (RS232C Tool)</b>	6-53
<b>Format (floppy disk)</b>	6-32
<b>Format: (Output Server Tool)</b>	6-14

### G

---

<b>Get! (Color Tool)</b>	6-84
<b>Greater (File Tool)</b>	6-9, 6-10
<b>Green (Color Tool)</b>	6-82
<b>Grow</b>	3-20
Move/Grow/Drag accelerator	3-28

### H

---

<b>Help! (Character Tool)</b>	6-75
<b>Highlight (Color Tool)</b>	6-80
<b>Host:</b>	
File Tool	6-3
Output Server Tool	6-13
Terminal Tool	6-66
<b>Host type: (Terminal Tool)</b>	6-67

### I

---

<b>In window</b>	4-5
<b>Info (floppy disk)</b>	6-33, 6-43
<b>its (Terminal Tool)</b>	6-67

### J

---

<b>J. First (file window)</b>	3-40, 3-47, 3-48
<b>J. Insert (file window)</b>	3-40, 3-47, 3-48
<b>J. Last (file window)</b>	3-40, 3-47, 3-48

## Command Index

**J. Select** (file window) 3-40, 3-47, 3-48

### K

---

**Key click:** (RS232C Tool) 6-56

### L

---

**Label:** (Output Server Tool) 6-14  
**Less** (File Tool) 6-9, 6-10  
**Line feed** (RS232C Tool) 6-52  
**Line speed:** (RS232C Tool) 6-51  
**Line terminator:** (RS232C Tool) 6-56  
**List** (floppy disk) 6-36  
**List!** (Output Server Tool) 6-15  
**List-Options!**  
    File Tool 6-6  
    Output Server Tool 6-15  
**Load** (file window) 3-32, 3-47, 3-48,  
6-103  
**LocalDir:** (File Tool) 6-4  
**Local-Delete!** (File Tool) 6-5  
**Local-List!** (File Tool) 6-5  
**LogActivity** (MFileServer) 6-96  
**Login** (Terminal Tool) 6-67

### M

---

**Move** 3-19  
    Move/Grow/Drag accelerator 3-28

### N

---

**Name** (Logon Option sheet) 2-3  
**New line:** (RS232C Tool) 6-56  
**New name:** (design folder) 5-7, 5-9

### O

---

**Open!** (design folder) 5-5  
**Output type:**  
    (Output Server Tool) 6-13  
**OverWriteAllowed**  
    (MFileServer) 6-96

### P

---

**Parity:**  
    Output Server Tool 6-16  
    RS232C Tool 6-51  
**Password** (Logon Option sheet) 2-3  
**Password:** (Login window) 2-2  
**Plot as** (Color Tool) 6-82  
**Power Off** 7-4  
**Power Off Quick Restart** 7-4  
**Prefix:** (RS232C Tool) 6-54  
**print** 3-43  
**Protocol:** (RS232C Tool) 6-51  
**Put!** (Color Tool) 6-84

### Q

---

**QuotedStar** (File Tool) 6-9, 6-10

### R

---

**Read**  
    File Tool 6-6  
    Floppy disk 6-38  
**Ready to send** (RS232C Tool) 6-51  
**Receive!** (RS232C Tool) 6-50  
**Receive data** (RS232C Tool) 6-54  
**Recover!** (design folder) 5-10  
**Red** (Color Tool) 6-82  
**Refresh:** (RS232C Tool) 6-56  
**Remote-Delete!** (File Tool) 6-5  
**Remote-List!** (File Tool) 6-5  
**Rename!** (design folder) 5-8  
**Reset** (file window) 3-34  
**Reset!** (Color Tool) 6-84  
**Retrieve!**  
    File Tool 6-5  
    Output Server Tool 6-15  
**Running** (MFileServer) 6-96

### S

---

**sa** (Terminal Tool) 6-67  
**Save** (file window) 3-34  
**Scavenge** (floppy disk) 6-41  
**Scroll bar:** (Color Tool) 6-81  
**Scroll bar visible:** (Color Tool) 6-81

## Command Index

<b>Select all!</b> (design folder)	5-7		
<b>Selection</b> (Color Tool)	6-80		
<b>Selection background</b> (Color Tool)	6-80		
<b>Send!</b> (RS232C Tool)	6-50		
<b>Send/Receive control</b> (RS232C Tool)	6-54		
<b>Size</b>	3-22		
Size accelerator	3-29		
<b>Source</b> (Converter icon)	3-46		
<b>Source:</b>			
File Tool	6-3		
Output Server Tool	6-14		
<b>Source File:</b> (Character Tool)	6-74		
<b>Source Length:</b> (Character Tool)	6-75		
<b>Spectrum</b> (Diagnostics)	6-86		
<b>Split</b> (file window)	3-39		
<b>Start</b>			
Logoff Option sheet	7-2		
Logon Option sheet	2-4		
<b>Start!</b> (Diagnostics)	6-86		
<b>Stop!</b> (File Tool)	6-4		
<b>Stop bits:</b> (RS232C Tool)	6-52		
<b>Store</b> (file window)	3-33		
<b>Store!</b>			
File Tool	6-5		
Output Server Tool	6-15, 6-17		
<b>StoreAllowed</b> (MFileServer)	6-96		
<b>Suffix:</b> (RS232C Tool)	6-54		
<b>T</b>			
<hr/>			
<b>tape</b> (Output Server Tool)	6-13		
<b>Terminal:</b> (RS232C Tool)	6-55		
<b>Terminal options!</b>			
RS232C Tool	6-50		
Terminal Tool	6-66		
<b>Terse</b> (message window)	3-12		
<b>Text:</b> (Color Tool)	6-81		
<b>Text in name frame:</b> (Color Tool)	6-81		
<b>Time</b> (file window)	3-33		
<b>Tiny tidy</b> (message window)	3-13		
<b>Tool options!</b>			
RS232C Tool	6-49		
<b>Top</b>	3-22		
Top/Bottom accelerator	3-27		
<b>290Print</b> (file window)	3-34		
<b>Type</b> (File Tool)	6-6		
<b>U</b>			
<hr/>			
<b>User:</b> (Login window)	2-2		
<b>V</b>			
<hr/>			
<b>Verbose</b> (message window)	3-12		
<b>Verify</b>			
File Tool	6-4		
Output Server Tool	6-15		
<b>Visible</b> (Color Tool)	6-79		
<b>VP to Expert</b> (Expert window)	4-7		
<b>vds</b> (Output Server Tool)	6-14		
<b>W</b>			
<hr/>			
<b>Window background</b> (Color Tool)	6-79		
<b>Window frame:</b> (Color Tool)	6-81		
<b>Wrap</b> (file window)	3-40		
<b>Write</b>			
File Tool	6-6		
Floppy disk	6-34		
<b>X</b>			
<hr/>			
<b>XOff (Octal)</b> = (RS232C Tool)	6-53		
<b>XOn (Octal)</b> = (RS232C Tool)	6-53		
<b>Z</b>			
<hr/>			
<b>Zoom</b>	3-23		
Zoom accelerator	3-28		

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