VAXELN Window Server

User's Manual

Order Number: AA–PE4HC–TE

This manual provides information about using workstations and terminals that run VAXELN Window Server software.

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Preface

The VAXELN Window Server (EWS) is a collection of software components for setting up an environment in which a host ULTRIX or VMS system provides DECwindows client services for Digital workstations and Digital VT1300 terminals.

Purpose of This Manual

This manual explains how to use systems that run VAXELN Window Server software. You should read this manual before you start using your workstation or terminal.

Who Should Use This Manual

This manual is for people who use a Digital workstation or Digital VT1300 terminal that runs VAXELN Window Server software.

Structure of This Manual

This manual consists of eight sections:

- Section 1 introduces the VAXELN Window Server software.
- Section 2 identifies information about your workstation or terminal hardware that you should provide to your system manager (or system administrator).
- Section 3 explains how to boot your window server.
- Section 4 explains how to log in to the host system from your window server.
- Section 5 explains how to copy files to a local printer.
- Section 6 briefly explains how to use host system DECwindows applications.
- Section 7 explains how to run DECwindows applications across the network.
- Section 8 explains how to use VAXELN Window Server functions.

For More Information

For information about using ULTRIX DECwindows and ULTRIX DECwindows desktop applications, see the following guides:

- *ULTRIX Worksystem Software DECwindows User's Guide*, AA–MA87B–TE
- *ULTRIX Worksystem Software DECwindows Desktop Applications Guide*, AA–MA88B–TE

For information about using VMS DECwindows and VMS DECwindows desktop applications, see the following guides:

- *VMS DECwindows User's Guide*, AA–MG18B–TE
- *VMS DECwindows Desktop Applications Guide*, AA–MG19B–TE

Other manuals that you may need to consult include the following:

- *Guide to DECnet–VAX Networking*, AA–LA47A–TE
- *ULTRIX Reference Pages Section 1: Commands*, AD–PC0WA–T1
- *ULTRIX Reference Pages Section 8: Maintenance*, AA–LY20B–TE
- *VMS DCL Dictionary*, AA–LA12A–TE
- *VMS/ULTRIX Connection System Manager's Manual*, AA–LU50A–TE

For information about the VAXELN Toolkit and Digital's other realtime products, see the following manuals:

- *Introduction to VAXELN*, AA–JL11D–TE
- *Realtime Products Technical Summary*, EK–RPTSS–TM–001
- *Realtime User's Guide*, AA–PE1WA–TE

Conventions Used in This Manual

The following conventions are used in this manual:

mouse	Refers to any pointing device, such as a mouse, a puck, or a stylus.
MB1, MB2, and MB3	MB1 indicates the left mouse button. MB2 indicates the middle mouse button. MB3 indicates the right mouse button. (You can redefine these buttons.)
red ink	Red ink indicates information that you must enter from the keyboard or a screen object that you must choose or click on.

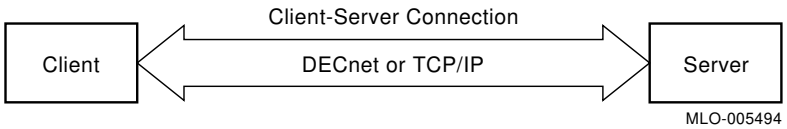
UPPERCASE	Uppercase letters indicate the name of a routine, the name of a file, the name of a file protection code, or the abbreviation for a system privilege.

1 Introduction to the VAXELN Window Server Software

The VAXELN Window Server is DECwindows server software that runs on Digital workstations and Digital VT1300 terminals. DECwindows extends the capabilities of the industry-standard X Window System, Version 11, by providing powerful software that simplifies the development of graphics-oriented applications. The X Window System was developed at the Massachusetts Institute of Technology (MIT) to improve the usability of networked graphics workstations and graphics terminals and to integrate window interfaces into distributed applications. The X Window System architecture, on which DECwindows is built, separates an application's display from its execution. The component that controls the display and the component that determines the functionality are independent.

The basic architecture of the X Window System and window systems built on the X Window System consists of one or more programs, called clients, and a server system. A client and the server communicate by sending X11 protocol data over a connection that the client establishes. Using the X11 protocol programming interface, clients initiate, control, and monitor client-server communication. Figure 1 shows the basic DECwindows architecture.

Figure 1 Basic DECwindows Architecture



The EWS software controls the workstation or terminal hardware and provides DECnet and TCP/IP communication services for client-server connections initiated by clients that run on a host system. The host system is the system on which the client applications run. The host system and a workstation or VT1300 terminal appear to operate as a single distributed DECwindows workstation.

A workstation or terminal that is running VAXELN Window Server software is called a window server. Window servers function as DECwindows terminals; they display DECwindows client applications that run on a more powerful, resourceful host system.

Figure 2 Relationship Between a Host System and a Window Server

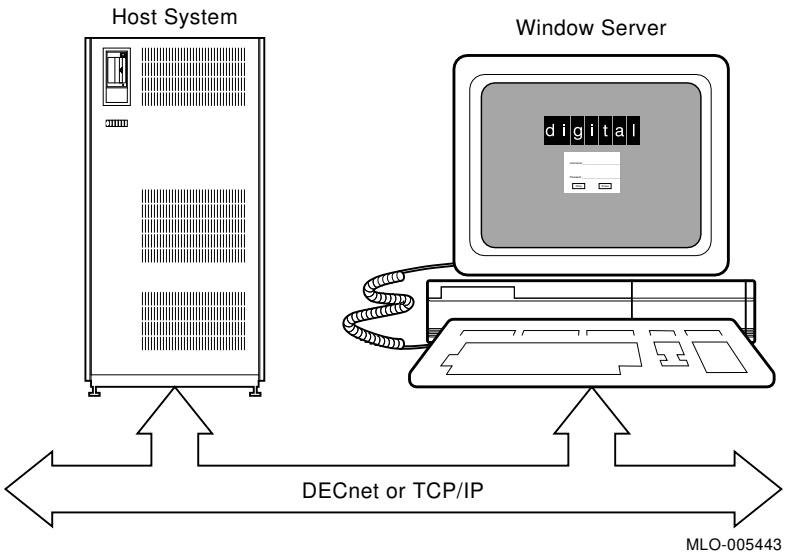


Figure 2 shows the relationship between a host system and a window server.

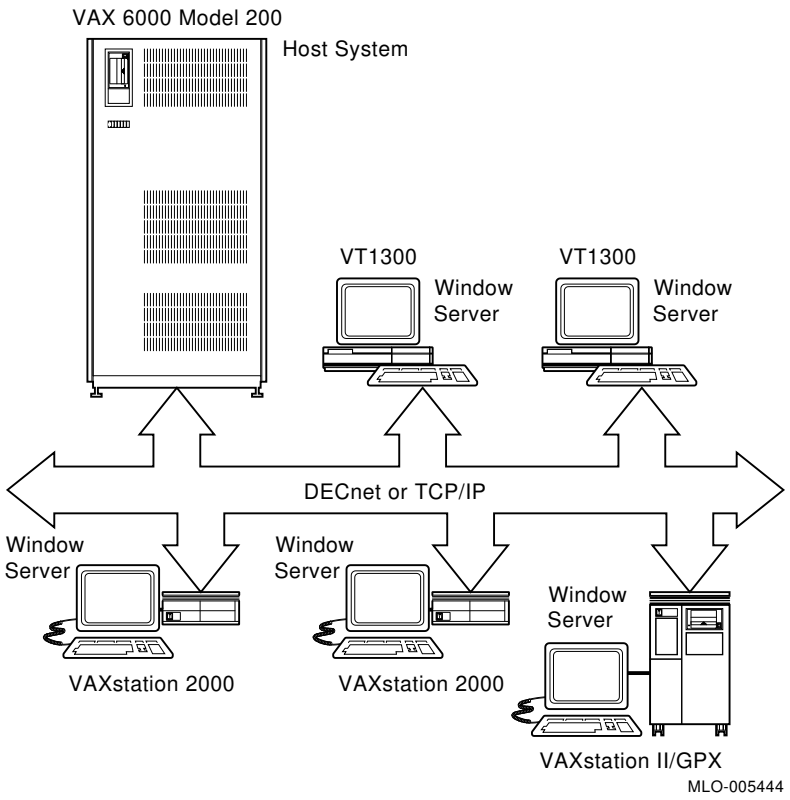
A single host system can support multiple window servers. Figure 3 shows a sample VAXELN Window Server configuration consisting of a VAX 6000 Model 200 host system and the following window servers:

- Two VAXstation 2000 workstations
- A VAXstation II/GPX workstation
- Two VT1300 terminals

Before you can use your workstation or VT1300 terminal as a window server, you must provide your system manager (or system administrator) with information about the device. Section 2 identifies the information you must provide.

After the system manager sets up the VAXELN Window Server software, you can boot your workstation or terminal (see Section 3).

Figure 3 Sample VAXELN Window Server Configuration



Once your window server is up and running, you can log in to the host system from the server and use:

- DECwindows applications that are available on the host system
- DECwindows and other X applications that are running on other remote nodes set up to display on the window server

Sections 6 and 7 discuss these topics.

The VAXELN Window Server software provides functions that you can use to display the status of your window server's memory resources. Section 8 explains how to use these functions.

2 Notifying Your System Manager About Your Window Server Hardware

Before you can use your workstation or VT1300 terminal as a window server, you must inform your system manager about your hardware configuration. The system manager will use the information to add your server to the host system's network databases and create a data file that identifies special server requirements.

You should supply your system manager with the following information:

- The type of workstation or terminal you have.

  The VAXELN Window Server software supports the following systems:

  VAXstation II/GPX workstations
  VAXstation 2000 workstations (monochrome or color)
  VAXstation 3100 workstations (monochrome or color)
  VAXstation 3100/SPX workstations and VT1300 terminals
  VAXstation 3200 workstations
  VAXstation 3500 workstations
  VAXstation 3800 workstations

- The Ethernet hardware address.

  See your hardware documentation for information about determining your system's Ethernet hardware address.

- Node names and addresses.

  Depending on your host system's networking protocols, you need to supply the following information:

If the Host System Uses	Supply
DECnet	DECnet node name DECnet address
TCP/IP	Internet node name Internet address

Note

See your network administrator for this information.

- The monitor density.

  The monitor density can be 75 or 100 dots per inch (DPI). You should use the density that is appropriate for your workstation or terminal.

- The keyboard model and country identifier.

  The software supports either a Model LK201 or Model LK401 keyboard, and their country variants. The keyboard model and its country identifier are specified on the bottom of the keyboard.

- If your host system is a VMS system, the host system users who will be allowed to log in to the window server.

  If the system manager does not identify valid users for your window server, any user who has an account on the VMS host system can do the following:

  - Log in to the window server.
  - Display DECwindows applications on the window server.

  You cannot restrict access to a window server that has an ULTRIX host system. All users who have an account on the ULTRIX host system can log in to and display applications on the window server.

- The font paths for supplemental fonts that you need that are not provided by the VAXELN Window Server software. The VAXELN Window Server software includes all the fonts that the DECwindows desktop applications use.

- Internet data for the window server if it is to display client applications that use TCP/IP. The data you should supply includes:

  - Internet address
  - Network mask
  - Broadcast mask
  - Routing addresses

Note

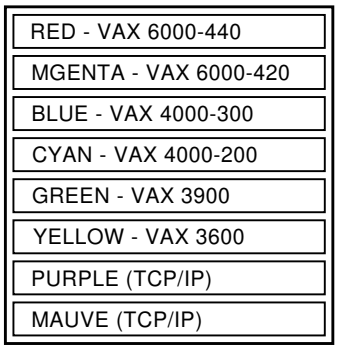
See your network administrator for this information.

3 Booting Your Window Server

After your system manager sets up the ULTRIX or VMS host system for the VAXELN Window Server environment, you should boot your workstation or terminal. For information about booting your system, see the hardware documentation for your workstation or terminal.

4 Logging In

After you boot your workstation or terminal, it displays a DECwindows login window, or a box containing names of available host nodes. If a DECwindows login window is displayed, enter your username and password to log in to the host system from the window server. If a box of host node names is displayed, select the node you wish to log in to by clicking MB1 on the node name. You can interrupt the selection operation by releasing MB1 outside of the box.



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If the host node you selected is unavailable for some reason, the box remains displayed for you to select again. If the selection was successful, a DECwindows login window displays, allowing you to proceed with login.

Note

If you are unable to display a login window, check with your system manager.

5 Printing Files to a Local Printer

Files can be printed on a local printer attached to a VT1300 terminal so long as the baud rate of the printer is set to 4800. Consult your printer's owner's manual for more information on how to set the baud rate for your printer model.

Once the baud rate has been set, files can be queued to the local printer using the VMS COPY command:

```
$ COPY file_name.typ VT1300_name::TTA3:
```

6 Using Host System DECwindows Applications

Once you have logged in to your window server, you can use the DECwindows applications available on the host system.

For information about using ULTRIX DECwindows, see the *ULTRIX Worksystem Software DECwindows User's Guide*. For information about using the ULTRIX DECwindows desktop applications, see the *ULTRIX Worksystem Software DECwindows Desktop Applications Guide*.

For information about using VMS DECwindows, see the *VMS DECwindows User's Guide*. For information about using the VMS DECwindows desktop applications, see the *VMS DECwindows Desktop Applications Guide*.

7 Running Applications over the Network

By default, your window server allows you to establish DECwindows client-server connections only from your host system. To establish DECwindows or other X client-server connections from a remote (another) system, you must do the following:

1. Ensure that the remote system's node name is in the appropriate network database on the window server's host system, Section 7.1.
2. Customize security on your window server such that it authorizes your host or user account on the remote system, Section 7.2.
3. Establish communication with the remote system, Section 7.3.
4. Redirect the remote system's application displays to your window server, Section 7.4.

Once a connection is established, you can start your applications.

7.1 Checking the Host System's Network Databases

Before you can establish DECwindows client-server connections from a remote system, you must ensure that the remote system's node name appears in the appropriate network database on the window server's host system. On an ULTRIX host system, you check for an Internet node name by issuing the `nsquery` command as follows:

```
% nsquery lookup node-name
```

You can check whether a DECnet node name is in the DECnet nodes database by issuing the following command on the host system:

```
% /etc/getnode node-name
```

On a VMS host system, you check for a DECnet node name in the network control program (NCP) database and an Internet node name in the VMS/ULTRIX connection (UCX) UCX$HOST local database or remote BIND database.

You can check the NCP database by issuing the following command:

```
$ MCR NCP SHOW NODE node-name
```

You can check for an Internet node name by using the UCX SHOW HOST command as follows:

```
$ UCX SHOW HOST node-name
```

If the remote system's node is not in the appropriate network database, ask the system manager to update the database for you.

For more information about the `nsquery` command, see the manual page `nsquery(1)` or the *ULTRIX Reference Pages Section 1: Commands*. For information about the `getnode` command, see the manual page `getnode(8)` or the *ULTRIX Reference Pages Section 8: Maintenance*. See the *Guide to DECnet–VAX Networking* for information on the NCP SHOW NODE command. For information about the UCX SHOW HOST command, see the *VMS/ULTRIX Connection System Manager's Manual*.

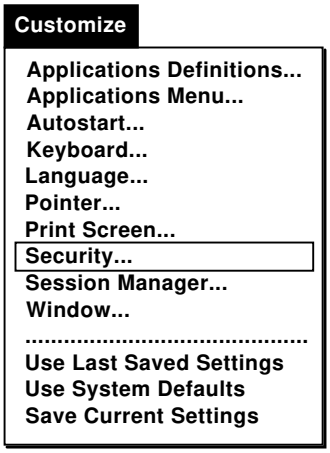
7.2 Customizing Security on Your Window Server

You must customize security on your window server if you want to do the following:

- Establish client-server connections from a remote system.
- Allow other users on the network to display applications on your window server.

To customize your window server's security for network access, do the following:

1. Choose the Security... menu item from the Session Manager's Customize menu.



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   The Session Manager displays the Customize Security dialog box.

2. Enter the appropriate security data.

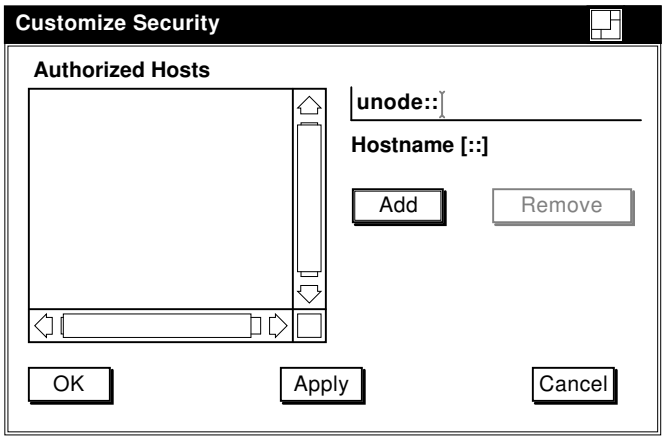
   For ULTRIX

   Enter the host name using the following format:

   node-name[::]

   Specify the double colon (::) if the DECnet transport mechanism is to be used; omit the double colon if the TCP/IP transport mechanism is to be used.

The following ULTRIX screen display shows how to authorize the DECnet node UNODE to display DECwindows applications on your window server.



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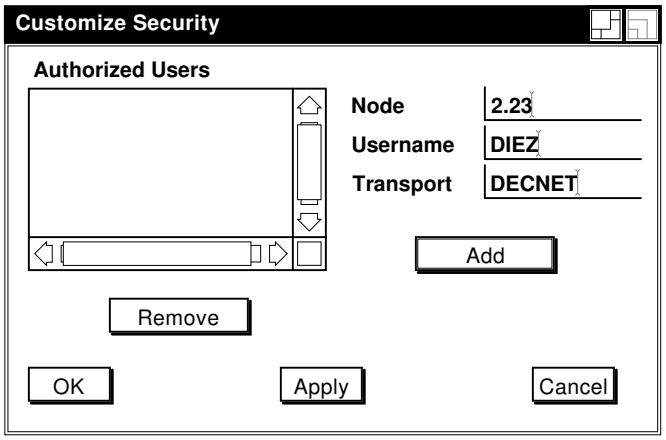
For VMS

Enter the appropriate node number and user name and either DECNET or TCP/IP for the transport mechanism.

Note

You must specify the node number. Do not specify a node name.

The following VMS screen display shows how to authorize user DIEZ to display DECwindows applications on your window server from DECnet node 2.23.



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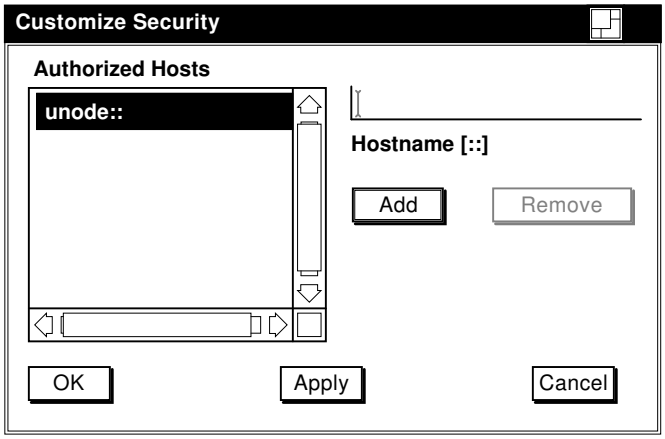
You can use an asterisk (*) wildcard to add all users who match the node and user name information that you specify. For example, to authorize all users who are logged in to node 2.23, enter 2.23 for the node and * for the user name.

3. Click on the Add button.

ULTRIX

The Session Manager adds the host name to the list of authorized hosts.



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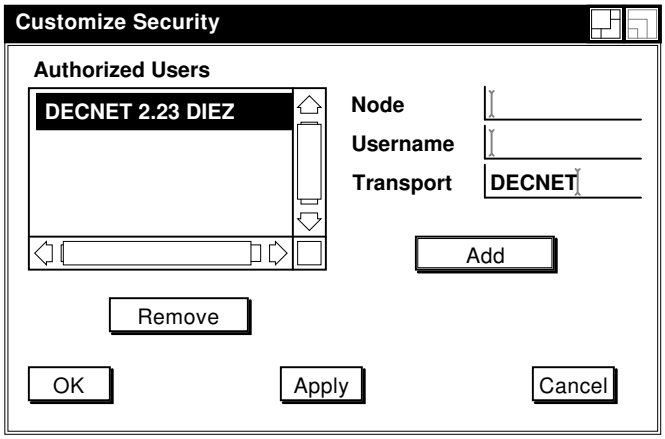
VMS

The Session Manager adds the user data to the list of authorized users.



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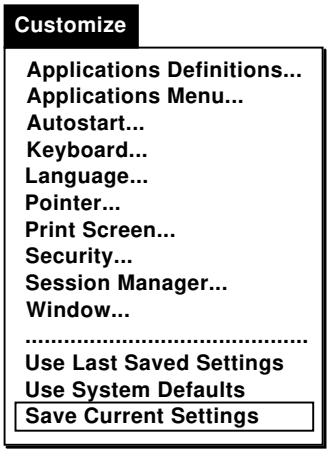
4. Click on the OK button.
5. Save your changes by choosing the Save Current Settings menu item from the Session Manager's Customize menu.



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Note

You should authorize only those hosts or users that need to display applications on your server. Authorizing an indeterminate number of hosts or users can compromise your system's security.

To remove an entry from the list of authorized hosts or users, do the following:

1. Choose the Security... menu item from the Session Manager's Customize menu. The Session Manager displays the Security dialog box.
2. Select the authorized host or user that you want to remove.
3. Click on the Remove button.

   The entry is removed from the list of authorized hosts or users.
4. Click on the OK button.
5. Save your change by choosing the Save Current Settings menu item from the Session Manager's Customize menu.

7.3 Establishing Communications with Remote Systems

After you customize the security on your window server, you can establish communication with the remote system from a terminal emulator window. The command that you use to establish communication depends on whether the remote system is an ULTRIX or VMS system and whether that system is running TCP/IP or DECNET. If you are establishing communication with a ULTRIX system, you can use the `rlogin` or `telnet` command if the system is running TCP/IP or the `dlogin` command if the system is running DECnet. If the remote system is a VMS system, you can use the UCX command TELNET CONNECT if the system is running TCP/IP or the Digital Command Language (DCL) command SET HOST.

The following example shows how you might establish communication with a remote ULTRIX system that is running TCP/IP:

```
% rlogin unode
```

To establish communication with a remote VMS system that is running DECnet, you might use the following command:

```
$ SET HOST VNODE
```

For more information about the `rlogin` or `telnet` command, see the manual page `rlogin (1)` or `telnet(1)` or the *ULTRIX Reference Pages Section 1: Commands*. For information about the `dlogin` command, see the manual page `dlogin(1dn)`. See the *VMS DCL Dictionary* for a description of the DCL SET HOST command. For information about the UCX TELNET CONNECT command, see the *VMS/ULTRIX Connection System Manager's Manual*.

7.4 Redirecting Remote System Application Displays to Your Window Server

Once you establish communication with a remote system, you can use the appropriate operating system commands to redirect that system's display to your window server. Sections 7.4.1 and 7.4.2 explain how to redirect the display for ULTRIX and VMS systems, respectively.

7.4.1 Redirecting ULTRIX System Application Displays

To redirect the display for an ULTRIX system, you can use the command `setenv` as shown in the following example:

```
% setenv DISPLAY display-node-name:0.0
```

You must replace *display-node-name* with your window server's node name. The colon (`:`) indicates that the TCP/IP transport mechanism is to be used for client applications that connect to the server. To use the DECnet transport mechanism, replace the single colon (`:`) with a double colon (`::`).

Suppose you have established communication with the ULTRIX remote host HOSTN from the window server WSNODE. To redirect the display back to the server, you would enter the following command:

```
% setenv DISPLAY wsnode:0.0
```

To verify that the display points to the window server, use the `echo` command as follows:

```
% echo $DISPLAY

wsnode:0.0
```

After you set the display, you can use the `dxterm` command to display a DECterm window. For example:

```
% dxterm -ls &
```

For more information about redirecting application displays, see the *ULTRIX Worksystem Software DECwindows User's Guide*.

7.4.2 Redirecting VMS System Application Displays

To redirect the display for a VMS system, you use the DCL command SET DISPLAY as shown in the following example:

```
$ SET DISPLAY/CREATE/NODE=display-node-name
```

Replace *display-node-name* with your window server's node name. Specify the /CREATE qualifier the first time you want to run an application and redirect the display. If you subsequently redirect the display to another system, you can omit this qualifier.

Suppose you have established communication with the VMS remote host HOSTN from the window server WSNODE. To redirect the display back to the server, you would enter the following command:

```
$ SET DISPLAY/CREATE/NODE=WSNODE
```

To verify that the display points to your window server, use the SHOW DISPLAY command as follows:

```
$ SHOW DISPLAY

Device:      WSA1:
Node:        WSNODE
Transport:   DECNET
Server:      0
Screen:      0
```

The device is your window server device; it may vary each time you use the SET DISPLAY and SHOW DISPLAY commands. The node is the network system to which the display is now pointing. Transport is the mechanism,

either DECnet or TCP/IP, that passes information between the application and the server. Server and screen are always 0.

After you set the display, you can display a DECterm window. For example:

```
$  CREATE/TERMINAL=DECTERM/DETACH
```

For more information about redirecting application displays, see the *VMS DECwindows User's Guide*.

8 Using the VAXELN Window Server Functions

This section describes three VAXELN Window Server functions that you can use:

- Show Free Memory
- Local Pause
- Reset Server

Table 1 lists the functions with brief descriptions.

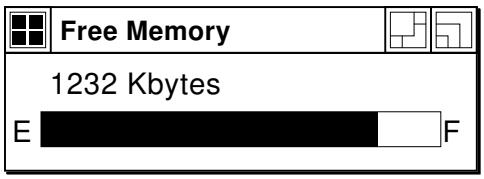
Table 1 VAXELN Window Server Functions

Function	Description
Show Free Memory	Displays a small window on the screen that shows a numeric value and bar graph, indicating the number of Kbytes of memory that are available on the window server.
Local Pause	Pauses the window server using the local pause feature.
Reset Server	Resets the window server, dropping all circuit connections to the host system. The window server then tries to establish a new connection with the host system.

8.1 Monitoring Your Window Server's Free Memory

The VAXELN Window Server software provides the Show Free Memory function to monitor your window server's free memory. Each DECwindows application that you run uses a portion of the server's free memory. Until you become familiar with your server's limitations, you might want to monitor the free memory when you invoke applications to ensure that you do not overload your server.

The Show Free Memory function displays a small window on the screen that shows a numeric value and bar graph, indicating the number of Kbytes of memory that have not been allocated for client application use since the system's last reboot.



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To use the Show Free Memory function, simultaneously press the following:

Ctrl key + Shift key + MB2

While using the free memory window to monitor your server's memory resources, you should note the following:

- If you are not logging in to the window server for the first time after a server reboot, the free memory window display indicates the amount of system memory used by client applications during previous logins. The display will not change significantly until the memory requirements for the applications you start exceed the value shown in the display.
- If you start a number of applications and exit from some of them, the free memory window may not change significantly, but the memory used by the applications from which you exited remains available for use by other applications.

To remove the free memory window from the screen, do the following:

1. Place the pointer in the free memory window.
2. Simultaneously press the Shift key and MB2.

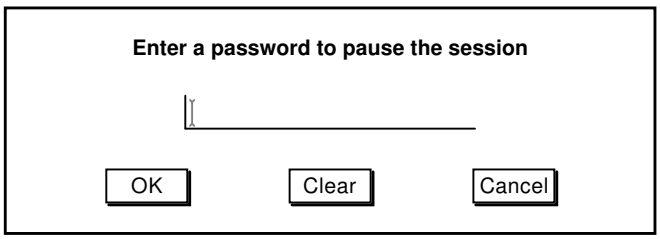
8.2 Local Pause

The window server Local Pause function allows you to pause your session without having to log off the host system. This feature provides increased security over the remote pause feature of VMS or ULTRIX.

To use the Local Pause function, simultaneously press the following:

Ctrl key + Shift key + MB3

This sequence displays the Password dialog box.



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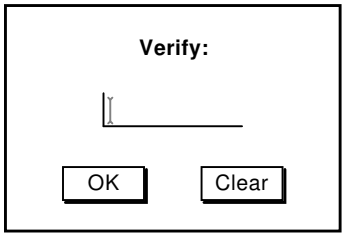
Now enter a password. Your password will not be visible as you enter it, nor will the cursor move from its default position.

Note

The password can contain any alphanumeric characters, the dollar sign ($), or underscore (_). All other characters are removed. It is also possible to specify a null password by simply pressing the Return key without entering any characters.

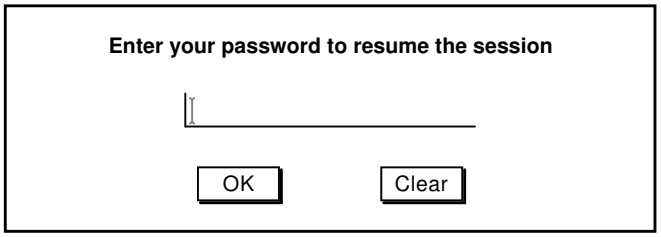
If you wish to clear the field and reenter the password, click on the Clear button. If you wish to return to your session without pausing, click on the Cancel button.

When you finish entering your password, click on the OK button. The Verify dialog box displays.



MLO-007228

Reenter your password and click on the OK button. If you enter an incorrect password, the Password dialog box redisplays. If your password matches, the Resume Session dialog box displays.



MLO-007222

To resume your session, enter your password and click on the OK box.

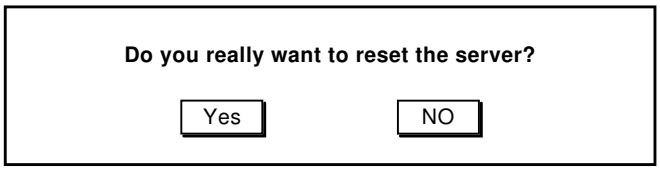
8.3 Resetting Your Window Server

The Reset Server function lets you reset your window server. You should reset the server if the communications path between your window server and the host system is broken. The Reset function drops all circuit connections to the host system and then tries to establish a new connection, or redisplays the list box of host node names. You may need to use this function if the host system crashes or if network problems occur.

To use the Reset Server function, simultaneously press the following:

Ctrl key + Shift key + MB1

The Reset Server dialog box displays.



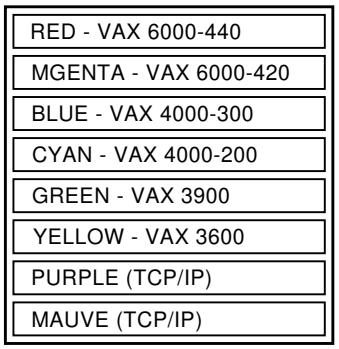
MLO-007223

Click on the Yes button to reset the server, or click on the No button to cancel the operation.

Note

Your system manager has the option of changing the text that is displayed in the Reset Server dialog box. Clicking on the left button always resets the server, while clicking on the right button always cancels the reset operation.

When your workstation or terminal resets, it displays a DECwindows login window, or a list box containing names of available nodes similar to the one below. You can now proceed with your login as described in Section 4.



MLO-007225

Note

The Reset Server function cannot be used while the Reset Server dialog box, Password dialog box, or the Host Nodes list box are displayed.

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