COMPAQ

ELSA GLoria Synergy Graphics Controller

Installation Guide

Order Number: EK-COMGS-IG. C01

This guide describes the installation of the ELSA GLoria Synergy graphics controller on supported Compaq products.

Compaq Computer Corporation

Contents

Figures

Tables

Preface

Intended Audience

This manual is for owners installing the ELSA Gloria Synergy graphics controller in a computer system.

Document Structure

This manual has four chapters.

- **Chapter 1, Overview**, provides an overview of the ELSA GLoria Synergy graphics controller.

- **Chapter 2, Installation**, describes how to install the Compaq ELSA GLoria Synergy graphics controller in your Compaq personal workstation running Windows NT.

- **Chapter 3, Compaq Tru64 UNIX Configuration**, describes how to configure the Compaq ELSA GLoria Synergy graphics controller in systems running the Tru64 UNIX or DIGITAL UNIX operating system.

- **Chapter 4, Compaq OpenVMS Configuration**, describes how to configure the Compaq ELSA GLoria Synergy graphics controller in systems running the OpenVMS operating system.

Compaq ELSA GLoria Synergy Graphics Controller Documentation

The following related documentation may be used when Graphics Support Services Software is available for use with the ELSA GLoria Synergy graphics controller.

- *Graphics Support Services Software Version 4.8 for Microsoft Windows NT Installation and User Guide for Alpha Systems*

- Compaq Open3d documentation for Tru64 UNIX

Conventions Used in This Guide

In this guide, every use of Windows NT means the Windows NT operating system.

This guide also uses the following conventions:

Convention	Meaning
Note	A note calls the reader's attention to any item of information that may be of special importance.
Caution	A caution contains information essential to avoid damage to the equipment.
italic type	*Italic type* indicates complete titles of manuals.
bold type	**Bold type** indicates text that is highlighted for emphasis.
`Monospaced`	In text, this typeface indicates the exact name of a command, routine, partition, pathname, directory, or file.

Information on the Internet

Visit the Compaq Web site at www.compaq.com for service tools and more information about the ELSA GLoria Synergy graphics controller.

Chapter 1
Overview

1.1   Introduction

This chapter provides a brief overview of the ELSA GLoria Synergy and PowerStorm 4D10T graphics controllers. The modules are essentially the same. This manual will refer to the ELSA GLoria Synergy graphics controller only for clarity; the PowerStorm 4D10T graphics controller will be referred to only where a significant difference exists.

1.2   Module Description

The Compaq ELSA GLoria Synergy and PowerStorm 4D10T accelerator modules are single expansion-slot, 32-bit PCI bus graphics options that provide 2D graphics acceleration for Alpha workstations and Intel systems running Windows NT. They are based on 3Dlabs' Permedia2 graphics chip.

Option numbers are listed in Table 1–1.

Table 1–1 ELSA GLoria Synergy Graphics Controller

Option	Description
SN-PBXGK-BB	ELSA GLoria Synergy graphics controller with 8 MB of SGRAM memory
SN-PBXGK-AB	PowerStorm 4D10T graphics controller with 8 MB of SGRAM memory

Table 1–2 provides a support matrix for the SN-PBXGK-BB and SN-PBXGK-BC ELSA GLoria Synergy graphics controllers.

Table 1–2 Supported Systems and Support Matrix

Option	System
SN-PBXGK-BB	Compaq Professional Workstation XP1000
	DPWS 433a(u) (enhanced)
	500a(u) (enhanced)
	600a(u) (enhanced
SN-PBXGK-AB	DPWS 433a(u) (enhanced)
	500a(u) (enhanced
	600a(u) (enhanced)

The ELSA GLoria Synergy graphics controller modules contain one switch jumper for enabling or disabling the VGA capability when more than one VGA graphics module is installed in the same system.

Figure 1–1 ELSA GLoria Synergy Graphics Controller
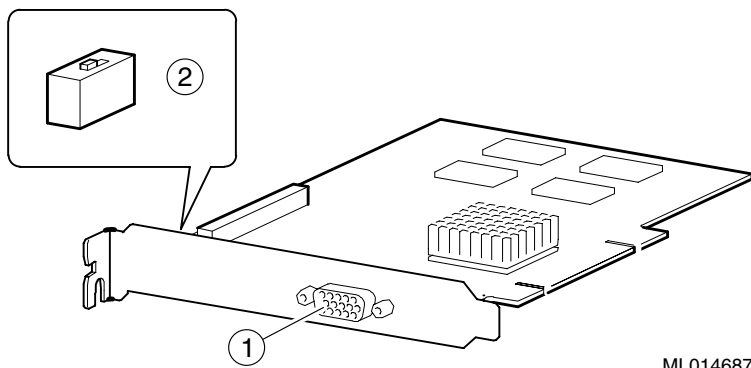
ML014687

①   Standard 15-pin VGA connector   ②   VGA enable/disable switch
(switch default = enabled)

1.3   Connector Pinouts

Table 1–3 contains a listing of the pins and signals found on the standard 15-pin VGA connector.

Table 1–3 Standard 15-Pin VGA Connector Pinout

Pin No.	Signal
1	RED VIDEO
2	GREEN VIDEO
3	BLUE VIDEO
4	NC (no connection)
5	GROUND
6	GROUND
7	GROUND
8	GROUND
9	+5V SUPPLY
10	GROUND
11	Monitor ID2
12	BI-DIRECTIONAL DATA
13	HORIZONTAL SYNC or COMPOSITE SYNC
14	VERTICAL SYNC (VCLK)
15	DATA CLOCK

1.4   Specifications

Table 1–4 lists the specifications for the ELSA GLoria Synergy graphics controller.

Table 1–4 ELSA GLoria Synergy Graphics Controller Specifications

Resolution	1920 x 1200 8,16 bit (maximum) @ 75 Hz 1280 x 1024 8, 16, 24 bit (maximum) @ 75 Hz
Color planes	32 bit double buffered
Z-buffer	16 bit
Unified memory (frame buffer, Z-buffer, texture memory)	8 MB
Form factor	Single half-length PCI card
PCI	PCI 2.1, 32-bit, 33 MHz, 5V signaling
Input voltage	3.3 Vdc, 5 Vdc, +12 Vdc
Power	25 W maximum
Operating temperature	10°C to 40°C (50°F to 104°F)
Relative humidity	10% to 90% noncondensing

Chapter 2
Installation

2.1   Introduction

This chapter describes the installation of the ELSA GLoria Synergy graphics controller in a Compaq personal workstation system. Topics included in this chapter are:

- Unpacking

- Windows NT 4.0 installation

- Hardware installation

2.2   Unpacking

The graphics option hardware is packaged in a single carton that contains the following:

Description	Part Number
Graphics option	SN-PBXGK-BB
ELSA GLoria Synergy Graphics Controller Installation Guide (this manual)	EK-COMGS-IG
CD-ROM containing Windows NT and UNIX software drivers for Alpha and Intel systems	GSSS Version 4.8

2.3　Installation Procedure (Windows NT 4.0)

_____**Note**_____

If a graphics option other than the ELSA GLoria Synergy graphics controller was previously operating in the system, keep that option installed and refer to Section 2.3.2. If the previously installed graphics option is not available or it is not operational, refer to Section 2.3.1.

_____

2.3.1　New Installation or Upgrade of Windows NT

Before installing the software drivers during a Windows NT upgrade or new installation, install the ELSA GLoria Synergy graphics controller as described in Section 2.4. You can then install Windows NT as described in the Windows NT documentation.

During Windows NT installation, a hardware and software component list is displayed, like the one shown here:

Computer: Compaq Personal Workstation xxx (xxx = CPU type)

Display: VGA Compatible

Keyboard: XT, AT, or Enhanced Keyboard (83-104 keys)

Keyboard Layout: US

Pointing Device: Mouse Port Mouse

No Changes: The above list matches my computer

When you have completed the Windows NT installation, go to Section 2.3.2.

2.3.2　Software Driver Installation

If you have purchased the ELSA GLoria Synergy graphics controller as an add-on, you must install the software drivers. Install the 2D and 3D drivers (the Compaq optimized OpenGL support) from the included diskettes (or the Graphics Support Services Software CD-ROM that will be included in future releases) by performing the following steps:

1. Boot your system and log into Windows NT if you have not already done so.

2. From the desktop, choose **My Computer**.

3. From My Computer, choose **Control Panel**.

4. From Control Panel, choose **Display**.

5.   From the Display Properties dialog box, choose the **Settings** tab.

6.   From the Settings dialog box, choose the **Display Type** button to see the driver and adapter (board) information.

7.   From the Display Type dialog box, choose **Change**.

8.   From the Change Display dialog box, choose **Have Disk**.

9.   In the Install from Disk dialog box, you are prompted to insert the manufacturer's installation disk into the selected drive. Insert the appropriate diskette (Alpha or Intel) into the floppy drive (or the Graphics Support Services Software CD-ROM that will be included in future releases into the CD-ROM drive unit).

10. Enter the path of the PowerStorm 4D10T driver and choose **OK**.

     The path is of the following format, where `dev:\` is the drive name (for example, `A:\` for floppy diskettes or `E:\` for the E drive):

     `dev:\`   (Alpha or Intel systems - Floppy Diskettes)

     `dev:\i386\pbxgk\nt40`   (Intel systems - GSSS CD-ROM)

     or

     `dev:\alpha\pbxgk\nt40`   (Alpha workstations - GSSS CD-ROM)

11. In the Change Display dialog box, the driver whose path you just defined is displayed. Confirm this choice by choosing **OK**. The driver name displayed is:

          `PowerStorm 4D10T`

12. When the message displays stating that this is a third party driver, confirm by choosing **Yes**. A status box displays reflecting the progress of the driver installation.

13. When the files have been copied to your hard disk, a dialog box indicating that the driver was successfully installed is displayed. Choose **OK** and remove the CD-ROM from the drive.

14. Choose **Close** to close the Display Type dialog box.

15. Choose **Close** to close the Display application.

16. When a message displays stating that you must restart your computer to use the new display driver, choose **No**.

17. Shut down your system by choosing **Shut Down** from the Start menu, then remove power from your computer system and install the PowerStorm 4D10T graphics option as described in Section 2.4 if you haven't already done so.

18. After installing the ELSA GLoria Synergy graphics controller, reboot your system to access the new display driver. After your system reboots, a message displays indicating that the default screen resolution and refresh rate are being used. For information on changing these values, refer to Section 2.3.3.

2.3.3   Changing Windows NT Display Characteristics

After installing the ELSA GLoria Synergy graphics controller, you can change the screen resolution and refresh rate, collectively referred to as the *display mode*. Before changing the display mode, you should verify that your monitor can accept the new values (refer to the monitor documentation). To change the display resolution and refresh rate, perform the following steps:

1. From the desktop, choose **My Computer**.

2. From My Computer, choose **Control Panel**.

3. From Control Panel, choose **Display**.

4. From the Display Properties dialog box, choose the **Settings** tab.

5. From the Settings dialog box, click on the arrows in the **Desktop Area** to change the screen resolution.

   To change the refresh rate, choose one of the options in **Refresh Frequency**. (You can also change the resolution and refresh rate by choosing **List All Modes** and the desired mode, and then choosing **OK**.) If the refresh rate selected is not supported by the resolution you chose, the resolution will automatically change to the nearest value supported by that refresh rate, or the refresh rate will change to support the resolution.

6. Choose **Test** to verify that the settings work correctly. A test pattern will be displayed on your monitor for about five seconds.

7. You will now see the question "Did you see the test bitmap properly?". If you are satisfied with the video display, choose **Yes**.

   Choose **OK** to accept the changed settings.

8. You may have to adjust your monitor to align the new resolution to the monitor. This is typically done by using the controls on the front or side of the monitor.

2.4   Hardware Installation

The following section describes how to install the ELSA GLoria Synergy graphics controller. To install the graphics option, perform the following steps:

_____ **Note** _____

Before installing the graphics controller, check your monitor specification for signal compatibility and supported features offered by the graphics option.
_____

_____ **Caution** _____

Static electricity can damage sensitive electronic components. When handling your graphics option, use an antistatic wriststrap that is connected to a grounded surface on your computer system.
_____

1. Perform a normal power-down of your computer system and disconnect the monitor cable.

2. Remove the cover from your computer (refer to your system documentation).

3. Put on an antistatic wriststrap.

_____ **Caution** _____

An antistatic wriststrap must be worn when handling any module to prevent damage to the module.
_____

4. If your computer has an existing graphics module, remove the screw that secures it and then remove the module.

5. If your system had a previously installed graphics option, you can use that slot if it is a PCI slot, or you can select any empty PCI expansion slot. Remove the slot cover if you are using a new slot. Refer to your system owner's guide for information about graphics option slots.

6. Grasp the top edge of the graphics controller, carefully insert it into the slot, and seat it firmly.

7. Secure the module retaining bracket.

8. Replace the computer cover.

9. Ensure that the monitor cable is connected to the video output connector located on the back of the graphics option.

10. Perform a normal power-up of your computer system.

Chapter 3
Compaq Tru64 UNIX Configuration

The following two configurations are supported by both Compaq Tru64 UNIX and DIGITAL UNIX:

- **ELSA GLoria** 8 MB of video memory. PCI Vend_ID: 0x104c, Dev_ID: 0x3d07, Sub_Vend_ID: 0x1048.
- **Powerstorm 4D10T** 8 MB of video memory. PCI Vend_ID: 0x104c, Dev_ID: 0x3d07, Sub_Vend_ID: 0x1011, Sub_Dev_ID: 0x4d10.

3.1   Resolutions

ELSA GLoria Synergy and PowerStorm 4D10T graphics controllers are capable of supporting various graphics resolutions and refresh rates as shown in Table 3–1.

Table 3–1 Supported Tru64 UNIX Video Modes

Resolution	Color Depths (Bits per Pixel)	Refresh Rates
640x480	8, 16, 24	60, 65, 70, 75, 85 Hz
800x600	8, 16, 24	60, 65, 70, 75, 85 Hz
1024x768	8, 16, 24	60, 65, 70, 75, 85 Hz
1152x870	8, 16, 24	60, 65, 70, 75, 85 Hz
1152x900	8, 16, 24	60, 65, 70, 75, 85 Hz
1280x1024	8, 16, 24	60, 65, 70, 75 Hz
1280x1024	8, 16	85 Hz
1600x1200	8, 16	60, 65, 70, 75 Hz
1600x1280	8, 16	60, 65, 70, 75 Hz
1920x1080	8, 16	60, 65, 70, 75 HZ
1920x1200	8, 16	60, 65, 70, 75 HZ

3.2　Configuring Graphics Resolution or Vertical Refresh Rate

There are two X server related files that can be used to configure or change characteristics of the X server. Systems by default use a file named "Xservers" to start and optionally pass startup configuration parameters to the X server.

3.2.1　Current Graphics Resolution

The graphics Resolution and Refresh Rate is set at the default value, 1024x768 at 70Hz Refresh Rate. The graphics resolution of a running system can be obtained by executing the command /usr/sbin/sizer -gr. The Refresh Rate being used can be obtained from the /var/dt/Xerrors file. The Refresh Rate has to be determined by reviewing what the documented refresh rate is for the resolution being used, or if the rate has been previously changed, the non-default value may be obtained from the Xservers file.

3.2.2　Changing the Resolution & Refresh Rate Using the Xservers File

The steps necessary to change the X servers graphics resolution differ depending on which X Windowing System is in use, XDM/Motif or the new standard CDE (Common Desktop Environment). The CDE GUI is the default GUI for systems shipped with V4.0 and higher. The XDM/motif GUI is still available for systems running V4.0-*. So, first determine which GUI is in use for the system and then proceed to the appropriate section of this document, "How to Change the Resolution and Refresh Rate on XDM GUI" or "How to Change the Resolution and Refresh Rate on CDE GUI".

3.2.3　How to Determine which GUI Is in Use

1. Check the environment variable XLOGIN defined in the file /etc/rc.config. Example (showing the CDE GUI being used):
   ```
   # /usr/sbin/rcmgr get XLOGIN
   cde
   #
   ```
2. If the variable is defined to be "cde," the default GUI is CDE. If the variable is defined to be "xdm," the default GUI is XDM/Motif.

How to Change the Resolution and Refresh Rate on XDM GUI

1. Log in to the system as "root".

2. Make a backup copy of the file /usr/lib/X11/xdm/Xservers .
    Example:
    # cp /usr/lib/X11/xdm/Xservers /usr/lib/X11/xdm/Xservers.original

3. Edit the file `/usr/lib/X11/xdm/Xservers` and add the appropriate X
    server Option, "-screen0" and or "-vsync0" to the line that starts the X
    server. This line is generally the last line in the file Xservers.
    Example line from the Xservers file used with XDM/Motif.
    ```
    :0 local /usr/bin/X11/X
    ```
    Or
    ```
    :0 local /usr/bin/X11/X -nice -2
    ```

> X server Options:
> -screen[screen] WxH
> Set screen (W)width and (H)height.
> -vsync[screen] Hz
> Set screen (Hz) Vertical refresh rate

_____**Note**_____

- These are device dependent X server options and not available for ALL graphics
  options. Please refer to the Graphics options Owners/Installation Guide for
  supported Resolutions and Refresh Rates.
- The X server startup line in the Xservers file is as follows:

  ```
  :0 local /usr/bin/X11/X
  ```

- Both the Width and Height should be specified in the "-screen" option and not just
  the Width. On some X server graphics devices setting ONLY the Width will cause
  the X server to fail.
- The [screen] number need not be specified if only one screen exists or if the user
  wants all screens to use the same values. The [screen] value is generally '0' as
  shown in the example below.
  Example:
  ```
  -screen0 1280x1024
        ^
        |_ [screen] value
  ```
- Anything added after the "-I" option will be ignored by the X server and passed on
  to the DDX, Device Dependent X layer of the server, i.e. the driver. Generally this
  option is used to pass "ffbdodma" settings for the graphics device. The "-screen"
  and or "-vsync" option(s) should precede the "-I" option.

_____

4. Restart the GUI.

    # /sbin/init.d/xlogin stop
    # /sbin/init.d/xlogin start

Examples of Typical Resolution and Refresh Rate Settings Using XDM/Motif:

Setting the Screen Resolution to 1024x768 (common on the AlphaServer DS20 systems using the ELSA GLoria Synergy graphics controller).
:0 local /usr/bin/X11/X -nice -2 -screen0 1024x768
Setting the Screen Resolution to 1024x768 and the Vertical Refresh rate to 60Hz. Commonly needed on AlphaServers using the ELSA GLoria Synergy graphics controller and monitors that do not support the card's default resolution of 1024x768 at 70Hz.
:0 local /usr/bin/X11/X -screen0 1024x768 -vsync0 60
Setting the Screen Resolution to 1280x1024 and the Vertical Refresh Rate to 75Hz. Commonly set up on systems with the ELSA GLoria Synergy graphics controller.
:0 local /usr/bin/X11/X -screen0 1280x1024 -vsync0 75

How to change the Resolution and Refresh rate on CDE GUI

1. Login to the system as "root".
2. Check to see if the directory /etc/dt/config exists, if not create it as follows.
    Example:
    # mkdir /etc/dt/config
    # chmod 755 /etc/dt/config
3. Copy the Xservers file from the path `/usr/dt/config` to the path `/etc/dt/config`.
    Example:
    # cp /usr/dt/config/Xservers /etc/dt/config/Xservers
4. Edit the file /etc/dt/config/Xservers and add the appropriate X server Option, "-screen0" and or "-vsync0" to the line that starts the X server. This line is generally the last line in the file Xservers.
    Example line from the Xservers file used with CDE:
    :0 Local local@console /usr/bin/X11/X :0 -screen0 1280x1024

    X server Options:
      -screen[screen] WxH
      Set screen (W)width and (H)height.
      -vsync[screen] Hz
       Set screen (Hz) Vertical refresh rate

_____ **Note** _____

- These are device dependent X server options and not available for ALL graphics options. Please refer to the Graphics options Owners/Installation Guide for supported Resolutions and Refresh Rates.
- Both the Width and Height should be specified in the "-screen" option and not just the Width. On some X server graphics devices setting ONLY the Width will cause the X server to fail.
- The [screen] number need not be specified if only 1 screen exists or if the user wants all screens to use the same values. The [screen] value is generally '0' as shown in the example below.
  Example: -screen0 1280x1024
  ^
  |_ [screen] value
- Anything added after the "-I" option will be ignored by the X server and passed on to the DDX, Device Dependent X layer of the server, i.e. the driver. The "-screen" and or "-vsync" option(s) should precede the "-I" option. The "-screen" and or "-vsync" option(s) should precede the "-I" option.

_____

5. Restart the CDE GUI.
   For Digital UNIX V4.* systems use:
   ```
   # /sbin/init.d/xlogin stop
   # /sbin/init.d/xlogin start
   ```
Examples of some typical Resolution and Refresh rate settings using CDE:
Setting the Screen Resolution to 800x600.
```
:0 Local local@console /usr/bin/X11/X :0 -screen0 800x600
```
Setting the Screen Resolution to 1024x768 and the Vertical Refresh rate to 60Hz. Commonly needed on AlphaServers using the ELSA GLoria graphics controller and monitors that do not support the card's default resolution of 1024x768 resolution at 70Hz.
```
:0 Local local@console /usr/bin/X11/X :0 -screen0 1024x768 -vsync0 60
```
Setting the Screen Resolution to 1280x1024 and the Vertical Refresh Rate to 75Hz. Commonly set up on systems using the ELSA GLoria graphics controller
```
:0 Local local@console /usr/bin/X11/X :0 -screen0 1280x1024 -vsync0 75
```

3.3   Multihead Support

Multiple ELSA GLoria graphics controllers may reside in the same system. Only one will be used for the VGA console. This board must have its VGA jumper set to "enable," and must be in a lower numbered slot than the other

boards. The other boards must have their VGA jumpers set to "disable." See your workstation or server user manual to determine slot numbering.

Under Tru64 UNIX version 4.0E and higher, the software driver supports up to 15 devices in a single system. Prior releases of the system software supported seven or fewer devices. Other software, such as the X server or base operating system, may put additional restrictions on the number of units supported.

The supported number and configuration of multiple ELSA GLoria graphics controllers also varies by platform. Other documentation shipped with your workstation or server will put specific limitations on the number and configuration of multihead support.

The ELSA GLoria graphics controller is not supported in conjunction with any other graphics board residing in the same system.

3.3.1   Matching X Server Primary Screen with VGA Console

PCI slots are not always probed by the system in the order of their slot numbers. Because of this, the order of X server screens will not necessarily correspond to the order of the slots in which the ELSA GLoria graphics controllers reside.

The X server command line option `-screenOrder` may be used to alter the mapping of physical screens to logical screens. In particular, this can be useful if you desire the X server's primary screen to coincide with the VGA console.

3.4   Messages

Device driver messages are typically logged to `/var/adm/messages` on Tru64 UNIX systems. Should problems arise, this file should be checked for informational messages. Some messages of interest:

- `comet0: %dx%d cursor glyph truncated to hardware limits`
  The X Server attempted to use a cursor larger than the 64x64 limits of the hardware. Cursor glyph will be displayed incorrectly. Application should be brought into conformance with X11 expectations.
- `comet0: Video pixel fifo underflowed during previous video format`
  The flow of pixel data from video memory to the video DACs was exhausted possibly causing visual artifacts on the display. It is permissible and expected that this may occur once, shortly after booting, when the device hasn't been configured.

Chapter 4
Compaq OpenVMS Configuration

This chapter provides information for installing and modifying the ELSA GLoria Synergy graphics controller two-dimensional (2D) support software on an OpenVMS system.

The method used to load the software is directly dependent on the version of OpenVMS that you will be installing or upgrading to. Section 4.2, Installation, explains in detail the steps that must be taken for each of the different OpenVMS versions.

The behavior of the ELSA GLoria graphics controller support software may be modified after installation on OpenVMS by editing the appropriate files and issuing DCL commands. (See Sections 4.5 and 4.6.)

4.1   Installation Preparation

This section describes how to prepare for installation of the ELSA GLoria support software.

The ELSA GLoria support software will be fully integrated into OpenVMS Version 7.3. For versions prior to 7.3, Table 4–1 provides information on installing the software driver.

Table 4–1 OpenVMS Versions Supporting the ELSA GLoria Synergy Graphics Controller

OpenVMS Version	Alpha Platform
7.3	Automatically loaded on the system when using this version for an upgrade or installation.
7.2-1H1 7.2-1 7.1-2	Copy the POLYCENTER Software Installation patch kits from net location http://www.support.compaq.com/patches/* OR Copy the patch kits by anonymous ftp at ftpl.support.compaq.com in VMS version specific subdirectories of /public/vms/axp/
Prior to 7.1-2	Not supported
*Caution: The required list of patch kits for a particular version of OpenVMS can vary over time. Check Readme files associated with each of the kits to be sure that the patch kit is appropriate for your usage.	

4.2   Installation

This section covers installation of the ELSA GLoria software driver on various versions of the OpenVMS operating system.

4.2.1   OpenVMS Version 7.3 Installation

For OpenVMS Version 7.3 and higher, the ELSA GLoria support software is loaded automatically following installation and becomes active when the operating system is booted. No other action needs to be taken by the system operator.

4.2.2   OpenVMS Version 7.2-1H1, 7.2-1, and 7.1-2

Copy the latest UPDATE and GRAPHICS POLYCENTER Software Installation utility patch kits from the World Wide Web at http://www.support.compaq.com/patches/ or via anonymous ftp at ftp1.support.compaq.com. Then, use the POLYCENTER Software Installation utility (DCL PRODUCT INSTALL) to install the latest UPDATE kit and the latest GRAPHICS kit, if required. View the Readme files for each kit to

determine if the *UPDATE* kit has superseded the GRAPHICS kit or if the GRAPHICS kit is newer than the UPDATE kit.

Using the following DCL command, reboot the system for the new images to take effect:

$ @SYS$SYSTEM:SHUTDOWN

Answer all questions when presented with a system prompt. You may either answer Yes to the REBOOT question or use the console to reboot the system following a shutdown.

For more information on using POLYCENTER Software Installation utility, see the *POLYCENTER Software Installation Utility User's Guide.*

4.3   Video Resolutions Supported

The ELSA GLoria Synergy graphics controller is capable of supporting the following video modes:

Table 4–2 Supported OpenVMS Video Modes

Resolution	Color Depths (Bits per Pixel)	Refresh Rates (Hertz)
640 x 480	8, 24	60, 65, 70, 75, 85
800 x 600	8, 24	60, 65, 70, 75, 85
1024 x 768	8, 24	60, 65, 70, 75, 85
1152 x 1024	8, 24	60, 65, 70, 75, 85
1280 x 1024	8, 24	60, 65, 70, 75
1600 x 1200	8	60, 65, 70, 75
1600 x 1280	8	60, 65, 70
1920 x 1200	8	60, 65, 70

The modes available are dependent on how much video memory is available and the monitor capabilities.   In general, refresh rates below 70 Hz are discouraged, as they tend to show flicker based on the lighting source and surrounding equipment.

The available resolution is monitor dependent. All heads must have the same pixel depth. The pixel depth default is to 8 bits per pixel.

4.4   Default Settings

The default graphics resolution is 1024 x 768. The default refresh rate is 70 Hz and the default color depth is 8 bits per pixel.

4.5   Determining Current Settings

To find the default or current settings under OpenVMS, issue the following two commands, in order, at the DCL prompt:

```
$ @DECW$UTILS:DECW$DEFINE_UTILS
$ XDPYINFO
```

Alternatively, you can view the following error log file to determine the current default settings:

```
$ TYPE SYS$MANAGER:DECW$SERVER_0_ERROR.LOG
```

4.6   Overriding Default Settings

To override any of the default settings, follow these steps:
1. Copy or rename the SYS$MANAGER:DECW$PRIVATE_SERVER_SETUP.TEMPLATE file to create a new command (.com) file called DECW$PRIVATE_SERVER_SETUP.COM.
2. Edit the settings you want to change using a text editor, and save the file.
3. For the changes to take effect immediately, restart the X server using the following command:

```
$ @SYS$MANAGER:DECW$STARTUP RESTART
```

The new file settings will now override the original default settings.

The DECW$PRIVATE_SERVER_SETUP procedure contains documentation for many of the default X server settings which may be changed. For more information on making changes to the default settings, symbols, and system-wide logicals, refer to the manual titled *Managing DECwindows Motif forOpenVMS Systems*. This document describes the symbols and settings that can be changed in the DECW$PRIVATE_SERVER_SETUP.COM file. For a copy of the document, contact your local sales support representative or visit the Compaq web site at http://www.compaq.com.

Additional system logicals are described in
SYS$MANAGER:DECW$DEVICE_CONFIG_GZ.COM.
However, this file should **not** be modified. If you wish to make changes to the
default logicals defined within it, redefine them in the
DECW$PRIVATE_SERVER_SETUP.COM file. These changes will supersede
the logicals assigned in the device configuration file.

Some of the items that you can change via system logicals are described in the
device configuration file but are not normally defined in DECW$PRIVATE
SERVER_SETUP.COM file. Those default settings not defined in that file but
that can be changed include the following items:

> DECW$XSIZE_IN_PIXELS
> DECW$YSIZE_IN_PIXELS
> DECW$SERVER_REFRESH_RATE
> DECW$SERVER_PIXEL_DEPTH

4.7   Multihead Support

Multiple ELSA GLoria Synergy graphics controllers may reside on the same
system. However, only one will be used for the VGA console. This board must
have its VGA jumper set to "enable," must be in a lower numbered slot than the
other graphics boards, and must be placed on the PCI bus containing the ISA
bridge. The other boards must have their VGA jumpers set to "disable."   Refer
to your workstation or server user's manual to determine appropriate slot
numbering.

The supported number and configuration of multiple ELSA GLoria Synergy
graphics controllers varies by platform. For OpenVMS Version 7.2-1H1 and
higher, the software can support up to five devices on a single system. The
actual maximum is a combination of the number of slots available and
qualification for each of the platforms. Other software may put additional
restrictions on the number of units supported.

Other documentation shipped with your workstation or server may put specific
limitations on the number and configurations for multihead support. Therefore,
you should refer to the appropriate documentation set for limitations or
exclusions that are appropriate to your situation.

The ELSA GLoria Synergy graphics controller is not supported when using
other manufacturers' graphic boards residing on the same system.

4.7.1 Matching Primary Screen with VGA Console

Screen 0 is always the VGA-enabled head and must be installed in the lowest numbered slot of installed graphics cards. If you wish to change a screen with any of the console displays, you can alter the logical order for mapping of physical screens to logical screens by making a copy of the file DECW$PRIVATE_SERVER_SETUP.TEMPLATE and saving it to a new file named DECW$PRIVATE_SERVER_SETUP.COM. You can then make changes to the default settings by editing the newly created file. Refer to Section 4.6 for details on changing the default settings.

Caution: Changing the default settings in the DECW$PRIVATE_SERVER_SETUP.COM file to try matching a screen with a console display can have unanticipated and adverse consequences. You should attempt to perform this operation only if you fully understand **all** possible consequences including the chance for loss of your primary screen.

4.8   Messages

Server messages are typically logged to the DECW$SERVER_0_ERROR.LOG file located in the SYS$MANAGER directory. Be sure to check this file first for informational messages related to any problems that are encountered during installation or usage.

4.9   POLYCENTER Software Installation

At the end of the OpenVMS POLYCENTER Software Installation procedure, a message is displayed that recommends a reboot of the system. At the conclusion of the installation, the POLYCENTER Software Installation utility does not prompt for or enforce a reboot of the system for the new software image to become effective immediately. The ELSA GLoria Synergy graphics controller two-dimensional (2D) support software becomes active only after the operating system has been rebooted.

If you are installing the software in a clustered environment and it is not convenient to perform a reboot immediately following installation, then you may perform a rolling reboot for the new image to take effect across all systems.