



Software Product Description

PRODUCT NAME: Compaq Open3D Version 4.96 for Compaq Tru64 UNIX

SPD 45.07.28

DESCRIPTION

Compaq Open3D Version 4.96 for Compaq Tru64 UNIX Systems provides the capability of running the following graphics accelerators on DIGITAL/Compaq Alpha workstation, AlphaStation and Alphaserver products using the Compaq Tru64 UNIX Operating System, for Peripheral Component Interconnect (PCI) accelerators:

- PowerStorm family: PowerStorm 3D30, PowerStorm 4D20, PowerStorm 4D51T

Compaq Open3D provides a complete development and run-time environment for 2D and 3D applications. Compaq Open3D supports the X Window System client/server model for network-transparent graphics and windowing. The PowerStorm 3D30/4D20, and PowerStorm 4D51T families of graphics servers provided with Compaq Open3D can display output from:

- 2D client applications supporting Release 6 of the X Window System, Version 11 (X11R6)
- 3D client applications supporting the OpenGL 3D extensions to the X Window System

Compaq Open3D provides X- and OpenGL-compliant servers for the PowerStorm 3D30/4D20, and PowerStorm 4D51T graphics accelerators. Furthermore, Compaq Open3D includes the Compaq implementation of the OpenGL application programming interface (API), provided as a set of programming libraries.

Compaq Open3D supports Common Desktop Environment (CDE), the default graphical user interface for Compaq Tru64 UNIX. CDE provides a consistent user interface for end users and a coherent development environment for application developers across multiple UNIX platforms. CDE on Compaq Tru64 UNIX is based

on the X Window System Release 6 (X11R6) and CDE/Motif Version 1.0 (OSF/Motif 1.2.4), and is available for Compaq Open3D and other products running on Compaq Tru64 UNIX.

Graphics Servers

Compaq Open3D provides the device-dependent portions of the X11 display server to support the PowerStorm 3D30/4D20, and the PowerStorm 4D51T PCI graphics accelerators. These device-dependent portions include the device-dependent X layer, device drivers, server extensions, client extensions, and hardware-specific microcode. The device-independent portions of the X11 display server are provided by the Compaq Tru64 UNIX Operating System.

The X11 display server provided with Compaq Open3D is a port of the standard X11R6 display server. By offering this server, Compaq can consistently incorporate X Consortium display server enhancements in future releases of Compaq Open3D.

Extension Support

In addition to support for core X11R6, all X servers on Compaq Open3D support DEC Stereo Extension (PowerStorm 3D30/4D20 families of options).

The Compaq Open3D PowerStorm 3D30/4D20 and PowerStorm 4D51T families of graphics servers support the OpenGL Extension to the X Window System (GLX).

Server Enhancements

The Compaq Open3D PowerStorm 3D30/4D20, and PowerStorm 4D51T families of graphics servers support additional hardware features of the corresponding graphics accelerators through a set of library routines and device-specific server extensions. These libraries and server extensions allow the application developer to access the overlay planes and stereo viewing hardware (when applicable) on these units. Support is as follows:

- DECstereo Extension (PowerStorm 3D30/4D20 families of options)
- OpenGL stereo support (PowerStorm 4D51T options)
- Support for Overlays (PowerStorm 4D20, and PowerStorm 4D51T options)

Multihead configurations (the simultaneous use of more than one graphics accelerator) are also supported per the chart in the MULTIHEAD MATRIX section later in this SPD.

Programming Support

Compaq Open3D includes an extensive set of programming libraries for building 2D and 3D applications. Two categories of programming libraries are provided with Compaq Open3D:

- 2D X11R6 API
- 3D rendering API: OpenGL

Programming support is also provided by the Compaq Tru64 UNIX Operating System, which includes the standard X and OSF/Motif libraries and tools (Xlib, Xtoolkit intrinsics, OSF/Motif UIL compiler), and Compaq added-value extensions. Used with the Compaq Open3D libraries, the Compaq Tru64 UNIX standard graphics and windowing APIs provide a robust environment for developers creating interactive 2D and 3D graphics applications.

For more details on the graphics programming environment provided with the Compaq Tru64 UNIX Operating System, see the Software Product Description 41.61.22.

OpenGL

OpenGL is the software interface that enables application developers to produce high quality images of 3D objects. OpenGL has been designed to work with various operating and window system environments. The version of OpenGL supplied as part of Compaq Open3D has been integrated with the X Window System, which allows the support of network-transparent 3D graphics. GLX allows an OpenGL client on one vendor's platform to run across a network and display the results on another vendor's server.

OpenGL is not supported for use in a multi-thread environment, however use of OpenGL from a single threaded application on a Multi-Processor system is supported.

The OpenGL API and X protocol extensions are defined by the OpenGL Architecture Review Board. To enhance the compatibility of different vendors' implementations of OpenGL, a suite of conformance tests has been developed to determine if a vendor's implementation of OpenGL conforms to the specification. The Compaq implementation of OpenGL has passed all tests required of a conformant implementation of OpenGL per the following:

- OpenGL Version 1.0, GLX Version 1.1, and OpenGL Utility Library (GLU) Version 1.2 running the PowerStorm 3D30 and PowerStorm 4D20
- OpenGL Version 1.1, GLX Version 1.2, and OpenGL Utility Library (GLU) Version 1.2 running PowerStorm 4D51T.

OpenGL is packaged as a set of dynamic shared libraries against which an application is linked. The shareable libraries are activated at runtime as needed.

OpenGL supports a wide variety of 2D and 3D functionality, including:

- Graphics primitives
 - Points
 - Lines
 - Polylines
 - Fill area
 - Triangle strips
 - Triangle fans
 - Quadrilateral meshes
 - Trimmed and untrimmed NURBs (nonuniform rational B-splines)
- Object properties
 - Line type and width
 - Color
 - Character attributes
- Viewing and transformation operations
- Rendering styles
 - Flat shading
 - Smooth shading
 - Hidden line hidden surface removal (HLHSR)
- Advanced rendering features
 - Antialiasing

- Texture mapping
- Alpha blending
- Transparency
- Accumulation buffers for effects such as depth of field, motion blur, and shadows

Character Fonts

Compaq Open3D includes a series of stroke precision character fonts. These character fonts were digitized by Dr. Allen V. Hershey of the Naval Surface Weapons Laboratory, and supplied to Compaq by the National Bureau of Standards.

CONFORMANCE TO STANDARDS

The following have passed the tests required of a conformant implementation of OpenGL Version 1.0, GLX Version 1.1, and GLU Version 1.2:

- The Compaq implementation of OpenGL
- PowerStorm 3D30/4D20 servers

The following have passed the tests required of a conformant implementation of OpenGL Version 1.1, GLX Version 1.2, and GLU Version 1.2:

- The Compaq implementation of OpenGL
- PowerStorm 4D51T servers

In addition, Compaq Open3D is designed to conform with the following standard:

X Window System Version 11 Release 6 (X11R6)

HARDWARE REQUIREMENTS

The following PCI systems are supported:

System Processor	Graphics Accelerators Supported
Digital Personal Workstation 433au (enhanced version)	PowerStorm 3D30, PowerStorm 4D20, PowerStorm 4D51T
Digital Personal Workstation 500au (enhanced version)	PowerStorm 3D30, PowerStorm 4D20, PowerStorm 4D51T

Digital Personal Workstation 600au (enhanced version)	PowerStorm 3D30, PowerStorm 4D20, PowerStorm 4D10T (8 MB), GLoria Synergy (8 MB), PowerStorm 4D51T
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Digital Ultimate Workstation 533au ²	PowerStorm 3D30, PowerStorm 4D20, PowerStorm 4D51T
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Compaq Professional Workstation XP1000	PowerStorm 3D30, PowerStorm 4D51T
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Digital AlphaServer 4100 300 MHz†	PowerStorm 4D20, PowerStorm 4D51T
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Digital AlphaServer 4100 466 MHz‡	PowerStorm 4D51T
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Digital AlphaServer 4100 600 MHz*	PowerStorm 4D51T
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† 300 MHz Digital AlphaServer 4100 with 4 CPUs and 2 GB of memory.

‡ 466 MHz Digital AlphaServer 4100 with 2 CPUs and 1 GB of memory.

* 600 MHz Digital AlphaServer 4100 with 4 CPUs and 8 GB of memory.

For additional supported AlphaServer configurations, visit the following web site:

<http://www.digital.com/alphaserver/configure.html>

Disk Space Requirements (Block Cluster Size = 1)

Disk space required during and after installation (files compressed): 34 MB

Disk space required during and after installation (files uncompressed): 64 MB

These figures refer to the disk space required on the system disk. The sizes are approximate; actual sizes may vary depending on the user's system environment, configuration, and software options.

Memory Requirements for Motif:

The minimum supported memory for Compaq Open3D running in a standalone Motif environment, with both the client and server executing on the same system, is 64 MB. The memory size suggested for most typical hardware configurations, however, is more than 64 MB, depending on the system.

The system configuration and performance requirements of Motif applications can determine the memory needed on your system as follows:

- Less memory may be required on the client system (where the software is installed and executed) if the server (component displaying the application) resides on another system.
- More memory may be required on a system where improved performance is desired, or where several applications are running.

MULTIHEAD MATRIX

Multihead configurations are supported per the following, subject to the PCI slot limitations of the system:

Configuration	# of Heads Supported
Digital Ultimate Workstation 533au²	
Graphics Accelerators:	
PowerStorm 3D30	2
PowerStorm 4D20	2
<i>Can run a combination of PowerStorm 3D30/4D20s.</i>	
Digital Personal Workstation 433au (enhanced version), Digital Personal Workstation 500au (enhanced version), Digital Personal Workstation 600au (enhanced version)	
Graphics Accelerators:	
PowerStorm 3D30	3 (4 if 2D only)
<i>If 3 heads, can run a combination of PowerStorm 3D30/4D20s; if 4 heads, must be all PowerStorm 3D30s.</i>	
PowerStorm 4D20	3
<i>Can run a combination of PowerStorm 3D30/4D20s.</i>	
PowerStorm 4D51T	2
<i>2 PowerStorm 4D51Ts only.</i>	
Compaq Professional Workstation XP1000	
Graphics Accelerator:	
PowerStorm 3D30	1 (3D), 3 (2D only)
PowerStorm 4D51T	2
<i>2 PowerStorm 4D51Ts only.</i>	

Configuration	# of Heads Supported
Digital AlphaServer 4100 600 MHz with 4 CPUs and 8 GB of memory	
Graphics Accelerator:	
PowerStorm 4D51T	4
<i>4 PowerStorm 4D51Ts only.</i>	

SOFTWARE REQUIREMENTS

Compaq Open3D Version 4.96 requires the following operating system:

Compaq Tru64 UNIX Operating System Version 4.0E or 4.0F

Compaq Open3D Version 4.96 requires the following language for the development of applications and programs that use Compaq Open3D on Compaq Tru64 UNIX:

Compaq Tru64 UNIX C Developers' Extensions

GROWTH CONSIDERATIONS

The minimum hardware and software requirements of future Compaq Open3D versions may differ from the requirements of the current version.

DISTRIBUTION MEDIA

This product is distributed on the Compaq Tru64 UNIX Alpha Software Library Package CD-ROM (order number QA-054AA-H8).

Online documentation only is distributed on the Compaq Tru64 UNIX Alpha Online Documentation Library CD-ROM (order number QA-4KP8A-G8.) Binaries only are distributed on the Compaq Tru64 UNIX Alpha Software Products Library CD-ROM (order number QA-4KN8A-A8.)

These library packages contain the Compaq Open3D software binaries and online documentation in ASCII and HTML format. The Compaq Open3D documentation is also available in printed form, which can be ordered separately.

ORDERING INFORMATION

- Software License Compaq Open3D: QL-0AFA*-AA
- Software Library Package CD-ROM: QA-0AFAA-H8
- Software Documentation Compaq Open3D: QA-0AFAA-GZ
- Software Product Services Compaq Open3D: QT-0AFA*-**

* Denotes variant fields. For additional information on available licenses, services, and media, refer to the appropriate price book.

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Compaq Open3D supports the Compaq Tru64 UNIX License Management Facility (LMF). License units for Compaq Open3D are allocated on an Unlimited System Use basis under the TRADITIONAL LICENSE terms. For more information on the License Management Facility, refer to the Compaq Tru64 UNIX Operating System Software Product Description (SPD 41.61.xx) or the Compaq Tru64 UNIX Operating System documentation.

SOFTWARE PRODUCT SERVICES

A variety of product services are available from Compaq. For more information, contact your local Compaq office.

YEAR 2000 READY

This product is Year 2000 Ready.

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For additional information visit the DIGITAL Brand area on Compaq's Year 2000 Ready web site located at <http://www.compaq.com/year2000/warranties.html>.

SOFTWARE WARRANTY

This software is provided by Compaq with a 90 day conformance warranty in accordance with the warranty terms applicable to the license purchase.

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