Tech Source

Raptor DL-Lite X11R6.1 for AIX Installation and Reference Manual

Addendum Information

Date Released   February 22, 2005

Changes made to:

REVISION NUMBER	CHANGES	DATE
A	Initial Release	02-22-05

PREFACE

This publication documents the Tech Source Raptor X11R6.1 for AIX Installation for use with the Tech Source, Inc. Raptor DL-Lite card. This manual is intended for users who incorporate the Tech Source Raptor cards into IBM RS/6000 workstations running AIX operating systems.

This is a guide to the installation of the Raptor software. All systems vary to a degree. Knowledge of the features of your system and an understanding of UNIX shell scripts are helpful during the installation process.

WARRANTY

The Raptor cards are warranted for one (1) year from date of shipment. During the warranty period, Tech Source, Inc. will, at its discretion, repair or replace a defective component at its expense.

Freight charges associated with the repair or replacement of components under warranty are to be shared by Tech Source, Inc. and the customer. All customers, domestic and international, shall bear the freight charges for the product return. Tech Source, Inc. shall bear the outbound freight charges up to $13.00 (USD) per returned product, whether domestic or international. Any additional freight charge shall be the responsibility of the customer. We suggest that you contact your dealer first with any questions you may have about the product. Unlimited technical support (via telephone/facsimile/email) is provided for one (1) year from date of shipment. The installation of any Tech Source, Inc. hardware/software product is the sole responsibility of the customer.

Tech Source, Inc. offers a continuing hardware/software support program that provides telephone consultation and any required hardware repair after the expiration of the warranty period. This is a billable annual maintenance contract. Contact Tech Source, Inc. for the available maintenance plans.

Customers will be charged an hourly rate plus materials ($300.00 USD minimum) for repairs and/or maintenance performed by Tech Source, Inc. that are not covered by a Tech Source, Inc. warranty or maintenance contract.

TABLE OF CONTENTS

TABLE OF CONTENTS

Chapter 1

INTRODUCTION

1.1 Overview

This manual describes the installation for Raptor DL-Lite X11R6.1 for AIX. This software supports the following cards:

- Raptor DL-Lite

In this manual, the Raptor DL-Lite card will be referred to as the "Raptor" card.   Knowledge of the AIX operating system and the SMIT installation tool will be useful during this installation. The AIX versions currently supported are AIX 4.3.3, AIX 5.1 and AIX 5.2.

From this point forward, Tech Source, Inc. will be referred to as Tech Source or TSI.

The software is provided on a CD-ROM and consists of the following:

- Tech Source Raptor DL-Lite device-drivers for AIX
- X11R6.1 binary distribution (clients, libraries, fonts, etc.)
- X11R6.1 server for Tech Source Raptor cards
- MOX (Multiple Overlay eXtension) Client libraries, include files and examples

Note: Before installing this software, you must uninstall any previous versions of the software.

1.2 MOX Extension Support

Tech Source supports an X-server extension called MOX (Multiple Overlay eXtension) on the Raptor graphics cards. The underlying software (available as a server extension and a client library) needed for MOX support has been included as a part of this Raptor DL-Lite X11R6.1 for AIX software product. Enabling of this extension during the X-server startup is described in Section 4.4.

1.3 Conventions

This manual will follow certain conventions throughout.

Whenever a variable name, command name, directory, or filename is used in a paragraph they will appear in a mono-spaced font.

At times the reader will be instructed to enter commands at a prompt. In this case a transcript of a sample session will be provided where a prompt similar to one the reader might see will be followed by the commands the reader is to enter. The entire transcript will be in a `mono-spaced` font with the prompt in a normal weight and the user's entries in **bold**.

The prompt used in a transcript varies depending on the circumstances. The following are some common prompts and when they are used:

`prompt#` used when the user is required to have root privileges

`prompt%` used when the user is not required to have root privileges

`ok` prompt displayed when the user is in Boot PROM mode

Chapter 2

HARDWARE INSTALLATION

2.1 Hardware Configurations Supported

The software has been tested on and currently supports IBM RS/6000 systems (with PCI slots), running in single and multi-screen configurations. The RS/6000 systems currently tested on Raptor cards are:

- 43P
- 44P
- IntelliStation Power 275

This chapter discusses the installation of Raptor cards in one of these machines. Please contact Tech Source if you have installation issues on a different machine.

2.2 Installation Instructions

The Raptor card installation is simple and consists of a few easy steps. These installation instructions presume that you are familiar with the AIX operating system.

NOTE: Remember which cables go to which connectors. You may want to label the cables and connectors before disconnecting them.

Step 1:   Shutdown the system and turn the power OFF. Remove the system's cover, find an available PCI Local Bus slot, and remove the bracket and screw.

Ground yourself by touching the metal part on the case.

Step 2:   Install the Raptor card firmly into the PCI Local Bus slot. Take care to press it evenly and snugly into the slot. Once you are certain the card is installed properly in the slot, secure it with the bracket screw.

Step 3:   Secure the system's cover, attach any previously removed cables.

Step 4:   Connect the Dual Link DVI cable from the Apple HD panel to the Raptor DL-Lite card.

The Raptor card is now installed and the system is ready for software installation. Refer to Chapter 3 for installing the Raptor DL-Lite X11R6.1 for AIX software.

Chapter 3

SOFTWARE INSTALLATION

3.1 Requirements

The following are prerequisites for installing Raptor DL-Lite X11R6.1 for AIX Software:

- The system is running AIX 4.3.3, AIX 5.1, AIX 5.2
- Any previous version of TSI software has already been uninstalled. (Please refer to the manual that accompanied that software for the appropriate uninstall procedure).
- 41MB of disk space is available in `/usr`.

One or more of the cards listed in Section 1.1 is presently installed in the workstation.

3.2 CD-ROM Installation

Installation of Raptor software can be done through SMIT. The following are the step-by-step instructions for installing Raptor DL-Lite X11R6.1 for AIX software from CD-ROM:

1.   Install a Raptor card in the computer as described in Chapter 2.

2.   Login as `root` on the target install machine.

3.   Uninstall any previous version of TSI software in accordance with the instructions supplied with that software.

        The installation may fail if previous TSI software already exists on the system.

4.   Insert the CD-ROM labeled "Raptor DL-Lite X11R6.1 for AIX" into the CD-ROM drive.

5.   Mount the CD-ROM drive. To do this using SMIT, perform the following steps:

- *Select System Storage Management | File Systems | Mount a File System*
- In the *File System Name* box, select `/dev/cd0` (or the location of your CD-ROM device)
- In the *Directory to Mount* box, select `/cdrom`
- In the *Type of File System* box, select `cdrfs`
- In the *Mount as READ-ONLY file system* box, select `yes`.

6.   Install the software. To do this using SMIT, perform the following steps:

- Select *Software Installation and Maintenance | Install and Update Software*
- *Install Software*
- In the *Input Device/Directory for Software* box, select the appropriate directory below based on the type of the system you use:

For 43P and 44P machines:

- `/cdrom/power3`

For IntelliStation Power 275:

- `/cdrom/power4`

- In the *Software to Install* box, make sure it says "_all_latest".

After installing the drivers, reboot the machine. Turn on the machine and the AIX should now recognize the Raptor correctly. You can verify this by entering the following command:

```
prompt% lsdisp
```

If a Raptor DL-Lite card is present in the system, this command should return an entry like:

```
 DEV_NAME   SLOT    BUS    ADPT_NAME DESCRIPTION
 ========   ====    ===    ========= ===========
 rapdlt0     02     pci              Raptor DL-Lite
                                     Graphics
                                     Adapter
```

Note: The Raptor cards are identified by the operating system as follows:

Raptor DL-Lite   rapdlt#

Where # is an instance number assigned by the operating system.

3.3 Configuring the Raptor as LFT Display

In order to use the Raptor card as the LFT display, use the chdisp command to change the current display device to the Raptor device.

For Raptor DL-Lite, type the following:

```
prompt% chdisp [-d|-p] rapdlt0
```

> **Note:** Use "-d" for temporary change of display until the next reboot, or "-p" to make a permanent change of display

If the Raptor card is the only graphics device in the system, it will automatically be configured as the default LFT (console) device.

3.4   Supported Resolutions

The resolution for Raptor DL-Lite is fixed at 2560x1600, for the Apple LCD panel.

Chapter 4

INVOKING X11R6.1

4.1   Overview

There are several ways to invoke X11R6.1 on your system:

- `xinit`
- `xdm`
- Common desktop Environment (CDE)
- All of the above with MOX extension enabled

Important: For all these methods, there are some environment variables that **must** be set. These can be set in your `.cshrc` file.

```
prompt% setenv X11R6HOME /usr/X11R6.1

prompt% setenv LD_LIBRARY_PATH  \
          $X11R6HOME/lib

prompt% set path=($X11R6HOME/bin $path)
```

The `Xtsi` server is provided in the `$X11R6HOME/bin` directory.

The examples used in this chapter refer to the device `rapdlt0`. Your actual device name will vary according to the Raptor card type and the instance number.

4.2   xinit

The `xinit` program can be directly used to start the X Window System server. The `xinit` format is as follows:

```
xinit  [[client]  options]  [ -- [server]
[display]   options ]
```

If no specific client program is given on the command line, `xinit` will look for a file in the user's home directory called `.xinitrc` to run as a shell script to start up client programs. If no such file exists, `xinit` will use the following as a default:

```
xterm -geometry +1+1 -n login -display :0
```

If no specific server program is given on the command line, `xinit` will look for a file in the user's home directory called `.xserverrc` to run as a shell script to start up the server. If no such file exists, `xinit` will use the following as a default:

```
X :0
```

Note that this assumes that there is a program named `X` in the current search path. The X11R6.1 server in this software is called `Xtsi` and is in the directory `$X11R6HOME/bin`.   A symbolic link has been made from `X` to `Xtsi`.

To startup the server using `xinit`, type:

```
prompt% xinit -- $X11R6HOME/bin/Xtsi -P11 rapdlt0
```

You may add any other command line arguments to the end of the line. For additional information on `xinit`, refer to the `xinit` man page.

The X server can run in multi-screen mode. The example below shows how to start on two Raptor DL-Lite cards:

```
prompt% xinit -- $X11R6HOME/bin/Xtsi -P11 rapdlt0
        -P12 rapdlt1
```

4.3   Setting Bit-Depth and Resolution

4.3.1   Setting Bit-Depth

Raptor cards support various bit-depths and overlay configurations. This section describes the required settings for these configurations. The default bit-depth for all Raptor cards is 8-bit.

The bit-depth of the Raptor DL-Lite can be set to 8-bit only, 8+24-bit, 24-bit, mox16, mox24 or mox32 (see *Table 2*.)

Mode/Bit-Depth	Description of Mode
8-bit	8-bit PseudoColor visual
8+24 mode	One 8-bit visual + One 24-bit visual (simultaneous)
24-bit	24-bit TrueColor visual only
mox16	mox mode w/16 planes
mox24	mox mode w/24 planes
mox32	mox mode w/32 planes

Table 2

An explanation of different MOX modes can be found in Section 4.4.

There are two ways to set bit-depth on the Raptor DL-Lite:

- By setting the environment variable STARSMODE

- By editing the config file /etc/X11/TSIScreenConfig

4.3.1.1   STARSMODE Variable

The bit-depth of the Raptor DL-Lite card can be set using the `STARSMODE` environment variable. This variable should be set before starting up the X server.

For example, set the bit-depth of the Raptor DL-Lite card to 8+24

```
prompt%  setenv STARSMODE +8+24
```

To set the bit-depth of the Raptor DL-Lite card to mox16

```
prompt%  setenv STARSMODE +mox16
```

Other bit-depths can be selected in a similar manner.

> **NOTE:** In the case when both methods to set bit-depth are used, the `STARSMODE` variable takes precedence over the settings in the `TSIScreenConfig` file.

4.3.1.2   Config File

The depth of the Raptor DL-Lite card can be set using the `/usr/X11R6.1/etc/TSIScreenConfig` file. Each row in the file corresponds to a specific Raptor DL-Lite card that is identified by its device name.   The fields in each row are separated by spaces. In the sample config file shown below the bit-depth of the Raptor DL-Lite (`rapdlt0`) card is set to 8+24. The cached pixmap field is used for debugging purposes only and should always be set to `1`. The other fields are discussed in 4.3.2.

```
# device   Depth   Resolution Sync Cached Resfile
                                    pixmap
rapdlt0    8+24    DEFAULT      1    1      trzresinfo
```

The default visual in 8+24-bit mode is PseudoColor. In order to set the default visual in the 8+24-bit mode to TrueColor, the X Server should be started with command line option `cc` set to `4`. The example below shows how to set the default visual to TrueColor for the card `rapdlt0`.

```
#xinit -- $X11R6HOME/bin/Xtsi –Pll rapdlt0 –cc 4
```

> **NOTE:** This method of setting the default visual has an effect only in the 8+24-bit mode.

4.3.2 Setting the Resolution

The resolution of the Raptor DL-Lite cards is fixed at 2560x1600.

4.4   Enabling MOX Extension During X11R6.1 Server Startup

By default, the X11R6.1 server starts in an 8-bit mode. However, on Raptor DL-Lite cards you may start the X11R6.1 server with MOX extension enabled. (Details of the MOX Extension to X Server are in separate technical white paper documentation.)

These MOX modes are available on Raptor DL-Lite cards:

```
mox16          MOX, 8-bit Normal, 13-bit Group, 5-bit Absolute
mox24          MOX, 8-bit Normal, 21-bit Group, 13-bit Absolute
mox32          MOX, 8-bit Normal, 29-bit Group, 21-bit Absolute
```

To enable MOX on a Raptor card, set the bit-depth to one of the MOX modes. Please refer to Section 4.3.1 for details.

4.5   xdm

The X Display Manager (`xdm`) program is used for running multiple users on the same host machine. `xdm` provides services similar to those provided by `init`, `getty` and `login` on character terminals prompting for login name and password, authenticating the user, and running a session. It provides a login window for each user or selected users.

Several files that are required to start `xdm` are provided in the

directory `$X11R6HOME/lib/X11/xdm`. The configuration file `xdm-config` contains references to the other files and is used to specify other configuration parameters of `xdm`. The `Xservers` file specifies the users (displays) that must get a login window.

The `Xservers` file will have individual lines to represent the X-server startup on each of the display device on which an `xdm` login screen is desired. Each startup line in `Xservers` file should be modified to look like the following to enable the Raptor device based `xdm` login screen:

```
:0 Local local-uid@console root \
/usr/X11R6.1/bin/Xtsi :0 -P11 rapdlt0
```

You may also add any other command line arguments to the end of the line. For more information on `xdm` refer to the `xdm` man pages.

4.5.1 MOX Mode Using xdm

In order to enable MOX under `xdm` you must make use of the `StartWin` script installed in `/usr/X11R6.1/etc`. The `Xservers` file should be modified as follows:

```
:0 local /usr/X11R6.1/bin/StartWin:0
```

Additional command line options can be appended at the end of this line. The following example `StartWin` script will start up the X Server in mox24 mode.

```
#!/bin/sh
      STARSMODE=+mox24
      export STARSMODE
      pass="/usr/X11R6.1/bin/Xtsi"$*
      exec $pass
```

NOTE: By default, the `StartWin` script starts up the X Server in mox24 mode. It can be edited in order to support other MOX modes.

4.6 Common Desktop Environment (CDE)

Common Desktop Environment (CDE) is available with AIX and is independent of the Raptor software. In order to use CDE, you need to configure only `/usr/dt/config/Xservers` file. The example below shows how to modify `Xservers` file to start CDE on a Raptor DL-Lite.

```
:0 local /usr/X11R6.1/bin/Xtsi -Pll rapdlt0 :0
```

CDE can be started by typing:

```
prompt# /usr/dt/bin/dtlogin
```

4.6.1 MOX Mode Using CDE

In order to enable MOX when using CDE, you must make use of the `StartWin` script installed in `/usr/X11R6.1/etc`. The `Xservers` file should be modified as follows:

```
:0 local /usr/X11R6.1/bin/StartWin:0
```

Additional command line options can be appended at the end of this line. The following example `StartWin` script will start up the X Server in mox24 mode.

```
#!/bin/sh
      STARSMODE=+mox24
      export STARSMODE
      pass="/usr/X11R6.1/bin/Xtsi"$*
      exec $pass
```

NOTE: By default, the `StartWin` script starts up the X Server in mox24 mode. It can be edited in order to support other MOX modes.

4-7

This page intentionally left blank.

Chapter 5

UNINSTALLING RAPTOR DL-Lite X11R6.1 FOR AIX

5.1 Uninstall Using SMIT

To uninstall Raptor DL-Lite X11R6.1 for AIX using SMIT, perform the following steps:

- Select Software Installation and Maintenance | Maintain Installed Software | Remove Software Products
- In the Software Name box, select the installed Raptor software products.
- Click the button to complete the uninstallation.

The following are installed Raptor packages:

- `raptor.srv`
- `raptor.x11r61`
- `raptor.xmox`
- `devices.pci.27123900.rte`
- `devices.pci.27123900.msg.en_US.rte`

Note: Be sure that the ***Preview Only*** option is set to `no` prior to uninstalling, or else the uninstallation will not actually occur.

This page intentionally left blank.

Chapter 6

TECHNICAL ASSISTANCE

6.1 Who to Call for Help

If you need help, please call our Technical Support Team at (800) 330-8301, or directly at (407) 262-7100 between the hours of **9:30am - 5:30pm EST** Monday through Friday.

Please have the software part number, version, and serial number for your Raptor card(s) available when contacting Tech Source in order to expedite support. Please make a note of this information in the area below:

DETAILS OF YOUR CARD(S):

P/N: _____

Model Name: _____

Serial Number(s):   _____

> **NOTE:** Technical Assistance will be available only for products under standard or extended warranty.

6.2 Email Address

Our email address is `hotline@techsource.com.`

International customers should use email or our fax line at (407) 339-2554.
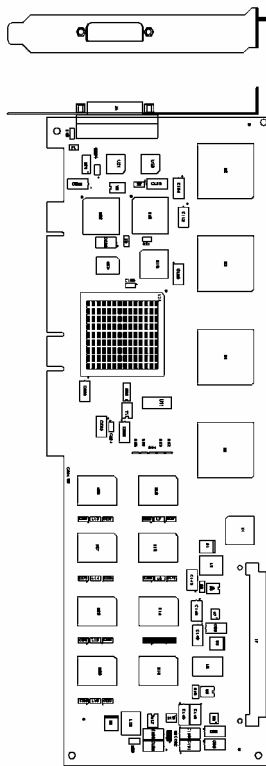
6.3 Website

Detailed product information and Frequently Asked Questions (FAQs), are available on our website located at:

`http://www.techsource.com`

Appendix A

CARD SPECIFICATIONS

A.1 Raptor DL-Lite Specifications

Frame Buffer:	64MB SGRAM
MOX Hardware:	Tech Source MOX ASIC; 32 layer Priority Management, 2 blending layers
Hardware Cursor:	Up to 3 cursors
Color Lookup Tables:	Primary color map with 2048 entries and two auxiliary color maps with 256 entries each
PCI Interface:	33/66 MHz, 32/64-bit Universal Signaling
Video Connector:	DVI Dual-Link
Temperature Rating:	10^0 to 50^0C operating -10^0 to 70^0C non-operating
Humidity Rating:	5 to 90% (non-condensing)
Power Rating:	+5V @ 5 Amps
Dimensions:	312mm x 107mm (12.28" x 4.2")

This page intentionally left blank.

Notes

Notes

Notes