OSPREY 1100 & 1500 USER'S GUIDE

Release 1.2.1

Solaris 2.5.1
Solaris 2.6
Solaris 7

2/2/99

Part # 40-02031-03

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Osprey 1100/1500 User's Guide

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FCC Notice

This device has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. This device generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. If this device causes interference with radio or television reception, the user is encouraged to try to one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the computer and the receiver.
- Connect the computer into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Shielded Cables

Connections between this device and peripherals must be made using shielded cables in order to maintain compliance with FCC radio emission limits.

Modifications

Modifications to this device, not approved by MultiMedia Access Corporation, could void the authority granted to the user by the FCC to operate the device.

Note to CATV Installer

This reminder is provided to call to the CATV installer's attention Section 820-40 of the NEC, which provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

Contents

1. Getting to Know the Osprey-1100/1500

If you already have a working knowledge of the Osprey-1100/1500 and its capabilities, you may want to skip ahead to *Chapter 2, Osprey-1x00 Hardware Installation*, and proceed with the installation process. However, if you'd like to learn more about the Osprey-1100/1500 and the opportunities it can make possible, continue on with the following introduction section.

1.1 Introduction

The Osprey-1x00 family presents a new standard in audio/video processing engines for a broad range of multimedia applications. Designed specifically for use with SBus-based Sun workstations, the Osprey-1100 is able to provide simultaneous video/audio compression *and* decompression. Its sibling card, the Osprey-1500, provides the same capabilities for PCI-based Sun workstations. The Osprey-1000 is for PCs in a Microsoft Windows environment.

The Osprey-1x00 architecture provides for easy integration of components such as:

- video cameras
- microphones
- headsets
- monitors
- ISDN gateways
- modems
- data conferencing software
- software decoders
- standard multimedia tools

The on-board video processor and optional audio DSP allow standard desktop computers, particularly those in networked environments, to become audio/video enabled for applications like corporate training, security, authoring, telemedicine, and video conferencing.

1.2 About This Book

The User's Guide provides helpful information about installing and configuring the Osprey-1100/1500 hardware and software. This book has been designed with the particular needs of the Osprey-1100/1500 end users in mind, particularly first-timers and those working with existing applications. It also includes instructions on using various SunVideo applications.

From this point on, the Osprey-1100 and Osprey-1500 will simply be referred to as the **Osprey-1x00** except for places where there are specific differences between the two boards.

With the purchase of the Developer's Kit, software developers can gain access to information on utilizing various software interfaces, interfacing with the XIL Imaging Library, using the libaudio interface, and working with the cross-platform Osprey API. For information about using the Osprey 1x00 with other operating platforms, please refer to the appropriate Osprey-1x00 OS manual.

The Solaris operating system is referred to often within this book. Three versions of the Solaris OS are currently supported, these are called Solaris 2.5.1, Solaris 2.6 and Solaris 7 (which is sometimes still referred to as Solaris 2.7). Within this book, Solaris 2.6/7 refers to the latter two versions.

1.2.1 Organization

Getting to Know the Osprey-1100/1500

Introduces the Osprey-1100/1500 card, its capabilities, supporting software, and documentation.

Osprey-1x00 Hardware Installation

Details card configuration, and gives instructions and cautions for installing the card into a workstation.

Osprey-1x00 Software Installation

Gives step-by-step instructions for properly installing the Osprey-1x00 application software and drivers.

Using SunVideo Compatibility Mode

Lists system compatibility requirements, and explains how to set up the SunVideo Binary Compatibility Mode.

Example Programs

Contains several sample applications for recording and playing video and audio files. Also provides information on using these sample video and audio drivers to verify proper operation of the Osprey-1x00 hardware and software.

Osprey-1x00 Control Panel

Demonstrates operation of the Osprey-1x00 Control Panel.

Appendix A — Osprey-1x00 Specifications

Information on the Osprey-1x00's physical and environmental specifications.

Appendix B — Video-Conferencing Terminology

Provides a quick reference to some frequently used terms and acronyms.

1.2.2 Symbols

This symbol denotes an important note or warning.

The chapters that describe how to use an Osprey-1x00 application contain step-by-step instructions. The “Shortcut” icon identifies a section that summarizes the detailed steps.

1.3 Platforms Supported

Since the Osprey 1x00 has been designed to run on multiple computing platforms, much of your application-level software can be re-used, instead of preparing special-purpose software to "talk to" different types of video cards.

The Osprey-1x00 is scheduled to support the following hardware and software platforms:

Hardware Platforms	Software Platforms
♦ All standard PCs *	♦ Windows 3.x *
♦ Sun workstations *	♦ Windows 95 *
♦ Digital Alpha (WIN NT) *	♦ Windows NT *
♦ Digital Equipment workstations	♦ Solaris 2.x *
♦ Hewlett Packard workstations	♦ Digital UNIX*
♦ IBM RS6000	♦ HP-UX
♦ PowerPCs	♦ IBM AIX
♦ all other computers utilizing PCI or SBus slots	♦ Windows NT (3.51, 4.0 / X86, Alpha) *

* Supported as of February, 99.

Contact Osprey Technologies at *info@mmac.com,* for the most current information about support availability for specific platforms.

1.4 Osprey-1x00 Features

The video input to the Osprey-1x00 card can be either NTSC or PAL, Composite or S-Video. Decompressed and local video can be transferred across the SBus to be displayed on a workstation. These video signals can also be directed to the on-card video encoder in either NTSC or PAL formats, and outputted to the video output jack. Audio compression can be performed by either the on-board DSP or by the video processor (depending on the type of compression).

A high-speed interface to the host bus provides multiple DMA/IO channels. These channels provide flow-through for:

- Output from a compressed video/audio bitstream.
- Input of a compressed video/audio bitstream.
- Output from decompressed video
- Output from local uncompressed video.

1.5 Osprey-1x00 Specifications

Video Inputs/Outputs[1]	♦ One (1) Composite IN ♦ One (1) Composite **OUT** ♦ One (1) S-Video **IN**	**or**	♦ Two (2) Composite **IN** ♦ One (1) S-Video **IN**
Input Formats	♦ NTSC		♦ PAL
Video Sampling	♦ YUV (4:2:2)		
Audio Inputs	♦ Line In or Microphone In (shared jack)		
Audio Outputs	♦ Headphone Out		♦ Line Out
Video compression	♦ H.261 ♦ H.263[2] ♦ CellB		♦ JPEG ♦ MPEG-1 (I-frames)
Video decompression	♦ H261		♦ H.263[2]
Uncompressed Video Formats	♦ YUV (4:2:2) ♦ 8-bit RGB ♦ 15-bit RGB		♦ 16-bit RGB ♦ 24-bit RGB ♦ Grayscale
Audio Codecs	♦ G.711 (ulaw, alaw) ♦ G.722 ♦ PCM (8- Or 16-Bit)		♦ G.723[2] ♦ G.728 ♦ Echo Suppression
Audio Sampling Rates	♦ Up to 44Khz (CD quality)		
Audio Output Levels	♦ 4Vpp for Headphone		♦ 2.8Vpp for Line Out
Hardware Platforms	♦ SBus/PCI based Sun workstations		
Software Platforms	♦ Solaris 2.5.1, 2.6 and Solaris 7[3]		
Bus Slot Type	♦ Single slot, half length		
SunVideo Compatibility	♦ Binary compatibility with all SunVideo card XIL-based applications.		♦ Able to coexist with a SunVideo card.
APIs	♦ Osprey Programming Interface ♦ XIL Imaging Library		♦ Osprey *libaudio* Compatibility API
Demo Applications	♦ Video recording & playback ♦ TCP/IP Video Conferencing ♦ Audio recording & playback		♦ Security demo ♦ Sound monitor ♦ Video viewer

1. Configured via jumper on Osprey-1100 only.
2. Supported via OPI only (i.e. no XIL or libotiaudio support).
3. Solaris 7 support is currently (as of Jan 1999) only for the Osprey-1500

For more information about the different algorithms supported by the Osprey-1x00, see *Appendix C —Compression Algorithms*, in the Osprey-1x00 Developer's Guide.

1.6 Frame Rates

Depending on the workstation's system load and display window size, the Osprey-1x00 can display video at rates of up to 30 frames-per-second (fps). Keep in mind, though, that video frame rates are application dependent.

The Osprey-1x00 supports the following compressors and frame rates (NTSC rates listed)

Compressor	Frame Rate
• H.261	CIF – 15 fps QCIF – 30 fps
• CellB (encode only)	10 fps
• H.263	up to 15 fps
• Direct (uncompressed) capture and display	30 fps
• MPEG-1 I Frames	30 fps
• JPEG	30 fps

1.7 Osprey-1x00 Software

Included with the Osprey-1x00 is a software package containing everything needed to soar into a new world of multimedia possibilities. This package should include:

- Software Release on diskette
- User's Guide

For more advanced developers, the Osprey-1x00 ODK package also includes a Developer's Guide, an XIL interface for application development, and instructions on using the Osprey Programming Interface (OPI) and the *libotiaudio* API.

1.7.1 Software Updates

Our ftp site is ftp.mmac.com and new releases, bug fixes and other features are placed there occasionally. You will want to go to the *pub/OSPREY1K/solaris/* directory (and then into the *1100/* or *1500/* directory) for updates and links to other added features. The latest release always has a link to it by the name of *latest*. Going to this directory will provide you with the latest official s/w release. There may also be pre-releases (alpha/beta

releases) of s/w at this ftp site. For example, the Solaris 7 release (version 1.2.0) was present on the ftp site for more than a month prior to its official shipping.

1.8 Troubleshooting

As any computer guru will tell you, if things aren't working properly, first, check to make sure it's all plugged in correctly. That will correct the problem about 50% of the time. Then verify that you have a "live" video signal connected to Port 1 of the card.

If you continue to experience problems, please contact the Osprey Support Group, and we'll be happy to help you.

(919)319-9200	**(voice)**
(919)319-9814	**(FAX)**
support@mmac.com	**(email)**
www.mmac.com	**(web information)**
ftp.mmac.com	**(ftp site)**

2. Osprey-1x00 Hardware

The Osprey-1100 video card is designed to be installed in a single SBus slot and the Osprey-1500 video card is designed to be installed in a single, 33MHz, 5-Volt PCI bus slot. Both cards card contain one (1) S-Video port IN , one (1) Composite port IN, and one (1) Composite port which may be configured as either an IN or an OUT port (via a jumper located on the Osprey-1100 card). For audio signals, the Osprey-1x00 also contains one (1) port for line level OUT, one (1) port for headphone level OUT, and one (1) input port that can be configured via the software as either line or microphone level IN.

CAUTION!

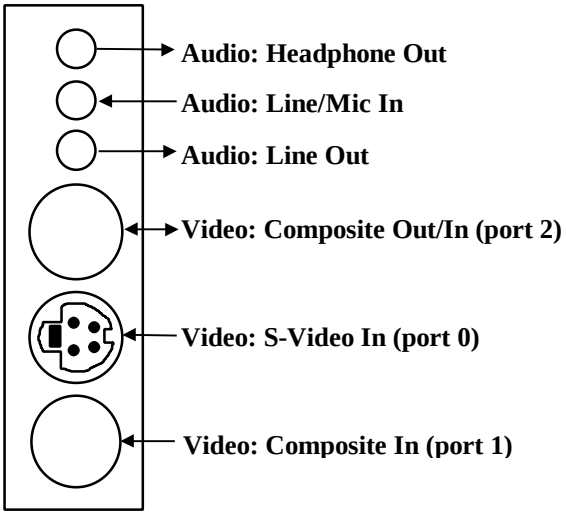
All computer cards are sensitive to electro-static discharge. Slight discharges from clothing or even the normal work environment can adversely affect these cards. Use the following guidelines to minimize the chance of damaging your Osprey-1x00 card.

- Handle cards only by the non-conducting edges.
- Do not touch the card components or any other metal parts.
- Wear a grounding strap while handling the cards.
    - Leave the unit's power cord plugged into a grounded power outlet at all times. This provides a continuous ground path, allowing you to safely install and remove cards and other components within your workstation.

As always, ensure that the workstation is powered OFF before installing any components.

2.1 Cable Connections

The figure below illustrates the connectors located on the back panel of the Osprey-1x00. The port numbers given are used by the Osprey-1x00 software to identify the different input sources.



The Osprey-1x00 supports both Composite and S-Video inputs. S-Video provides a much sharper image than Composite video, with better color separation. S-Video utilizes a four-pin, mini-DIN connector, which provides separate Y (luminance) and C (chrominance) signals.

2.2 Assigning Device Numbers

The operating system assigns device numbers for cards based on the card type, as well as the order that the cards were placed into the Sbus/PCI slots. When the first Osprey-1x00 card is installed into an open slot, the operating system identifies the card as device */dev/o1k0*. If a second card is placed in an open Sbus/PCI slot, it will be assigned device number */dev/o1k1*, and so on.

The operating system remembers the order of slots and Osprey-1x00 device numbers, even if a card is removed and later replaced. So if the first Osprey-1x00 card is moved to another slot, the OS will now identify that card as */dev/o1k2*. If a new Osprey-1x00 card is then placed into the same slot that the first Osprey-1x00 card originally occupied, this new card will now be know as */dev/o1k0*. Once a slot is named as an Osprey-1x00 card slot, it retains that same address, regardless of which card actually calls the slot home.

3. Osprey-1x00 Software Installation

The Osprey-1x00 software is provided on the enclosed diskettes, in a compressed TAR file format. Before using the software, you must first extract the file to a workstation, uncompress the file and then un-tar it. More detailed instructions for this process are given below.

Note that in the instructions to follow, there are slight differences between the Osprey-1100 and the Osprey-1500 with respect to file names and package names.

After the software installation is complete, following the instructions in the Quick Test section later in this chapter can test the Osprey-1x00 card and software.

3.1 Removing Previous Software Releases

Previous releases of the Osprey-1x00 software must be removed before installing any new software packages.

1. Log into workstation as a superuser.
2. Find out what packages are installed:
3. **# pkginfo | grep MMACo1k**
4. Uninstall old software for the Osprey-1x00 listed by step 2. For example, the result of step 2 might produce:

system	**MMACo1ks**	**Osprey-1100 Audio/Video Codec SBUS Card Device Driver.**
application	**MMACo1ku**	**Osprey-1x00 Audio/Video Codec Runtime Support Software**
application	**MMACo1kx**	**Osprey-1x00 Audio/Video Codec XIL 1.2 Runtime Support …**

5. You would then remove the packages MMACo1ks, MMACo1ku and MMACo1kx:

 # pkgrm MMACo1ku MMACo1ks MMACo1kx

3.2 Software Decompression

Before actually installing the Osprey-1x00 software to your workstation, the compressed software must be copied from the installation diskettes, uncompressed and then untar'ed. There should be two diskettes which contain the Osprey-1x00 base software. You should extract the software from both diskettes before installing the packages. If you have problems accessing the floppy disks then ask your system administrator for assistance.

1. Log into workstation as a superuser.
2. Change to the /tmp directory.

```
# cd /tmp
# mkdir o1k
# cd o1k
```

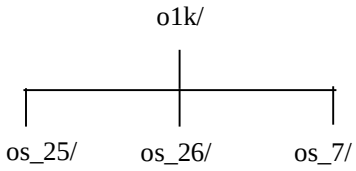
3. Insert the first diskette (*disk1*).
4. Uncompress and untar the file on disk1:

```
# volcheck
# cp    /floppy/floppy0/o1k_1    o1k_1.tar.Z
# uncompress    o1k_1.tar.Z
# tar    xfp    o1k_1.tar
# eject
```

5. Insert the second diskette (*disk2*).
6. Uncompress and untar the file on disk2.

```
# volcheck
# cp    /floppy/floppy0/o1k_2    o1k_2.tar.Z
# uncompress    o1k_2.tar.Z
# tar    xfp    o1k_2.tar
# eject
```

These steps create the sub-directory *o1k* under the */tmp* directory. In the *o1k/* directory are three more sub-directories. These sub-directories now hold all of the uncompressed installation files for the Osprey-1x00.



3.3 Software Installation

The *os_25/* sub-directory contains Solaris 2.5.1 packages; the *os_26/* sub-directory contains Solaris 2.6 packages and the *os_7/* sub-directory contains Solaris 7 packages. Once installation is complete, these temporary directories may be removed.

The directory *o1k/* may also include a file entitled ReleaseNotes, which contains important last-minute revision information. This file, if exist, should be thoroughly examined before continuing.

3.3.1 Installing OS Packages

There are currently three packages for the Osprey-1x00 product. As of Jan 1999, Solaris 7 is only supported for the Osprey-1500.

For the Osprey-1100 these are:

MMACo1ku	This package contains the Osprey-1x00 binaries and libraries
MMACo1kx	This package contains the Osprey-1x00 XIL libraries
MMACo1ks	This package contains the Osprey-1100 SBus device driver.

For the Osprey-1500 the packages are:

MMACo1ku	This package contains the Osprey-1x00 binaries and libraries
MMACo1kx	This package contains the Osprey-1x00 XIL libraries
MMACo1kp	This package contains the Osprey-1500 PCI bus device driver.

1. If not already logged on as superuser, do so now
2. Change to the Osprey-1x00 sub-directory for the operating system you are running:
   - For Solaris 2.5.1 users:

   # cd /tmp/o1k/os_25
   - For Solaris 2.6 users:

   # cd /tmp/o1k/os_26
   - For Solaris 7 users:

   # cd /tmp/o1k/os_7
   - For Solaris 2.6 users:
3. Run the pkgadd utility to install the software.

   # pkgadd -d .
4. According to the board you purchased, complete one of the following:

- For the Osprey-1100, install the **MMACo1ku, MMACo1kx** and the **MMACo1ks** packages.
- For the Osprey-1500, install the **MMACo1ku, MMACo1kx** and the **MMACo1kp** packages

3.4 Rebooting Your Machine

To complete the software installation, reboot your machine. Your machine needs to reconfigure itself. The first reboot after the driver package has been installed should do this for you. You can use the –r option with the reboot command when logged in or with the boot command when at the *ok* boot prompt. Whenever you add/remove/move hardware in your system you should reconfigure your machine.

From a login command line:

```
# reboot -- -r
```

From the ok boot prompt:

```
ok boot -r
```

3.5 Environment Variables

The applications shipped with the Osprey-1x00 do not require any special environment variable settings. This may not be true of other video applications. This section describes the environment variables you may want to set to avoid problems when running other video applications.

3.5.1 Setting LD_LIBRARY_PATH

The demonstration applications that are shipped with the Osprey-1x00 are designed to search */opt/MMACo1k/lib* for the Osprey-1x00 libraries. If the Osprey-1x00 software has been installed in another location other than */opt/MMACo1k*, or if you are using other Osprey-1x00 applications which do not automatically search this default directory, you must include the path to the Osprey-1x00 libraries *libo1kusr* in your environment variable: LD_LIBRARY_PATH.

To change the path with the *sh* or *ksh*, use:

```
% LD_LIBRARY_PATH=/opt/MMACo1k/lib:$LD_LIBRARY_PATH
% export LD_LIBRARY_PATH
```

or, if you're using *csh:*

```
% setenv LD_LIBRARY_PATH /opt/MMACo1k/lib:$LD_LIBRARY_PATH
```

3.5.2 Setting O1KHOME

The environmental variable O1KHOME must also be set to the installation sub-directory. The default installation is shown below. If the Osprey-1x00 software was installed in a different sub-directory, the O1KHOME value must be set to the path of that sub-directory.

With *sh* or *ksh*:

```
% O1KHOME=/opt/MMACo1k
% export  O1KHOME
```

For *csh*:

```
% setenv  O1KHOME   /opt/MMACo1k
```

3.5.3 Modifying the PATH Statement

For ease of operation, you may want to include the path to the Osprey-1x00 applications in your PATH environmental variable.

Using *sh* or *ksh,* use:

```
% PATH=/opt/MMACo1k/bin:$PATH
% export PATH
```

Or, to use *csh*:

```
% setenv  PATH   /opt/MMACo1k/bin:$PATH
```

3.5.4 Setting XIL Environment Variables

Examples, which use XIL, require that certain XIL environment variables are set. The following shows how to set these variables assuming XIL was installed in the default location and that the variables are not already set.

To set variables with the *sh* or *ksh*, use:

```
% LD_LIBRARY_PATH=/opt/SUNWits/Graphics-sw/xil/lib:$LD_LIBRARY_PATH
% export   LD_LIBRARY_PATH
% XILHOME=/opt/SUNWits/Graphics-sw/xil
% export   XILHOME
```

or, if you're using *csh:*

```
% setenv   LD_LIBRARY_PATH   /opt/SUNWits/Graphics-sw/xil/lib:$LD_LIBRARY_PATH
% setenv   XILHOME   /opt/SUNWits/Graphics-sw/xil
```

3.6 Quick Test

Use the following steps to verify proper operation of the Osprey-1x00 card and software.

a) Complete the installation of the Osprey-1x00 card and software, and ensure that the XIL environmental variables are set correctly.

b) Connect a video source to Composite Port 1 of the card.

NOTE: If your source device only outputs S-Video, connect the S-Video cable to the card's S-Video connector.

c) Run the xil_display program to test the video capabilities of the card. This will display 99 frames then exit.

% xil_display

d) Connect an audio line input device to the audio input jack and connect speakers to the audio line output jack.

e) Run the o1k_audloop program to test the audio capabilities of the card. This will play audio for 10 seconds and then exit.

% o1k_audloop –s 10

4. Using The SunVideo Compatibility Mode

The Osprey-1x00 card is binary compatible with SunVideo applications that use the Sun Microsystems XIL library. This means that you can use an Osprey-1x00 card to run applications such as Sun Microsystems' *ShowMe* and *ShowMeTv*!

In the SunVideo compatibility mode (*svc mode*) , you can also use the record and playback features of the SunVideo demonstration program that is included on the Solaris 2.x CD-ROM. (The SunVideo demonstration program requires the *SUNWrtvcu* package, which is also provided on the CD-ROM.)

Due to XIL differences between XIL 1.2 and XIL 1.3, the underlying implementation of the SVC mode for the Osprey-1x00 on Solaris 2.5.1 is different from that on Solaris 2.6/7. Where appropriate, subsections within this chapter discuss these differences.

4.1 System Requirements

- Solaris 2.5.1, Solaris 2.6 or Solaris 7.
- XIL 1.2 or XIL 1.3 Imaging Library installed on the workstation.

4.2 Limitations and Special Notes

- Since the Osprey-1x00 does not provide a hardware-based MPEG-1 I-B-P compressor nor does XIL provide a s/w based MPEG compressor, a program relying on these capabilities will fail. The Osprey-1x00 does provide MPEG-1 I frame compression but only in a CCIR-601 CIF format which is not the same as SunVideo's square pixel format. Thus, applications relying on that image size for MPEG-1 I frame compression will fail.
- Error messages for the Osprey-1x00 are slightly different from SunVideo, so a program relying on trapping a particular error will not work
- The Osprey-1x00's XIL compatibility is **at the level of the XIL library**. Applications that make calls directly to the SunVideo driver may not work correctly. For example, the standard ***mbone*** utility ***vic*** has an xil driver for the SunVideo device. This xil driver uses the FILE_DESCRIPTOR attribute from SunVideo to interact with the SunVideo device driver directly. This is **not** supported by the Osprey-1x00 svc mode. See our ftp site (ftp.mmac.com) for a vic module for the Osprey-1x00 built on top of OPI.
- If the Osprey-1x00 does not provide hardware acceleration for a given XIL molecule, the operation will be performed partly in s/w.

- For Solaris 2.5.1, both the Osprey-1x00 card and a SunVideo card may selected by an application when running in the SunVideo Binary Compatibility Mode. This is not possible under Solaris 2.6/7. When running on the svc mode, only an Osprey-1x00 may be selected by an application. To select a SunVideo device under 2.6/7, the svc mode must be uninstalled.

4.3 Setting Up The SunVideo Compatibility Mode

Basically, to set the Osprey-1x00 card into the SunVideo compatibility mode, the following steps are taken (assuming the Osprey-1x00 hardware and software has already be installed):

a) Create SunVideo "pseudo" device names for each Osprey-1x00.

b) Setup the special svc-mode directory hierarchies.

c) (For Solaris 2.5.1) Set the environmental variable XILHOME.

d) (For Solaris *2.5.1*) Set the environmental variable *LD_LIBRARY_PATH*.

Under Solaris 2.5.1, the svc mode is installed by running a setup script (step b) and then enabled by setting some environment variables. To disable the svc mode, these env vars are unset. Under Solaris 2.6/7, environment variables do not control whether the svc mode is enabled or not. When the setup script (step b) is run on Solaris 2.6/7 the svc mode is actively enabled. A separate script is used under Solaris 2.6/7 to uninstall/disable the svc mode.

Earlier chapters of this User's Guide give instruction on how to install the Osprey-1x00 card and software. The following sections will provide directions on how to perform the steps above.

4.3.1 Creating SunVideo "pseudo" Devices

Whether provided by the user or generated internally, all SunVideo applications use */dev/rtvc#* device names to indicate to XIL which SunVideo device to access and operate on. For the svc mode, */dev/rtvc#* device names need to be generated for each Osprey-1x00 installed in a system. These entries are only valid when used running under the svc mode. If a SunVideo application is run outside of the svc mode and tries to use one of these device names, an error will occur.

The script *svc_devices* is used to both **add** and **remove** "pseudo" SunVideo device names (i.e. */dev/rtvc#* entries) for Osprey-1x00 devices. The default location for the *svc_devices* script is */opt/MMACo1k/bin*, and the script's syntax is:

svc_devices <add | remove>

Run:

 # svc_devices add

to install SunVideo compatibility mode pseudo devices. Run:

 # svc_devices remove

to remove SunVideo pseudo devices entries. The *svc_devices* script does not overwrite any existing SunVideo device names. This enables you to install both SunVideo and Osprey-1100 Sbus cards in the same workstation.

Table 4-1 shows examples of how the devices are named, for different combinations of Osprey-1100 and SunVideo installations.

Table 4-1

Device Names

Cards Installed	Device Name	Notes
One (1) Osprey-1100 card.	*/dev/o1k0*	
	/dev/rtvc0	(pseudo-device symbolic link to */dev/o1k0)*
One (1) Osprey-1100 card and	*/dev/o1k0*	
One (1) SunVideo card.	*/dev/rtvc0*	(SunVideo card)
	/dev/rtvc1	(pseudo-device symbolic link to */dev/o1k0*)
Two (2) Osprey-1100 cards	*/dev/o1k0*	
And one (1) SunVideo card.	*/dev/o1k1*	
	/dev/rtvc0	(SunVideo card)
	/dev/rtvc1	(pseudo-device symbolic link to */dev/o1k0*)
	/dev/rtvc2	(pseudo-device symbolic link to */dev/o1k1*)

To select an Osprey-1x00 card from a SunVideo application program, use the *rtvc* pseudo device name. For example, if a workstation has one of each type of card, the SunVideo card would be identified as *rtvc0* and the Osprey-1x00 card would be named *rtvc1*. To select the SunVideo device, device/board 0 (/dev/rtvc0) should be selected. To use the Osprey-1x00 device, device/board 1 (/dev/rtvc1) should be selected.

NOTES! If you use *pkgrm* to remove the Osprey-1x00 software, there is no need to first run *svc_devices remove*. *Pkgrm* also removes all pseudo devices.

If you plan to add, remove or move any SunVideo or Osprey-1x00 device, you should first remove pseudo devices (*svc_devices remove*) and the re-add them (*svc_devices add*) after you've made your change.

4.3.2 Solaris 2.5.1 SVC Mode

Under Solaris 2.5.1 the script *svc_install_xil1.2* is used to install the special svc-mode directory hierarchy. This installation does not in itself enable the svc mode. The svc mode is considered enabled when two environment variables have been set to direct applications to use the special mode directory hierarchy.

4.3.2.1 The svc_install_xil1.2 Script

The *svc_install_xil1.2* script creates the special svc-mode directory hierarchy. The default location for the *svc_install_xil1.2* script is */opt/MMACo1k/bin,* and the script's syntax is:

svc_install_xil1.2 [options]

The script's options and defaults are:

-s O1KHOME	The location of the Osprey-1x00 source directory. The default location is */opt/MMACo1k*.
-t DESTDIR	The destination location for the SunVideo compatibility mode pipeline hierarchy. The default location is */opt/MMACo1k/svc*. *DESTDIR* does not need to exist. The hierarchy requires approximately 360Kbytes.
-v	Verbose mode, which displays status information on stdout. The default is to not display information.
-x XILHOME	The location of the XIL Imaging Library source directory. The default location is */opt/SUNWits/Graphics-sw/xil*.

Typically, you can run the script without any options. You must be logged in as a superuser if you do not have write permissions to the *DESTDIR* directory.

4.3.2.2 Setting the XILHOME and LD_LIBRARY_PATH Environmental Variables

In order to use the special XIL pipelines and Osprey-1x00 compatibility features, you must set the *XILHOME* environment variable to */opt/MMACo1k/svc*.

You must include *DESTDIR/lib* in the L*D_LIBRARY_PATH* environmental variable, where *DESTDIR* is the destination location for the SunVideo compatibility mode pipeline hierarchy that was specified when the *svc_install_xil1.2* script was run. The default location for *DESTDIR* is */opt/MMACo1k/svc*.

If the XIL library is already in the user's L*D_LIBRARY_PATH*, then either *DESTDIR/lib* needs to be prepended to *LD_LIBRARY_PATH*, or the XIL library path needs to be removed from the user's L*D_LIBRARY_PATH* before the new path is appended to *LD_LIBRARY_PATH*.

An example of prepending *DESTDIR/lib* (if you are using the *sh* or *ksh*) is:

% LD_LIBRARY_PATH=/opt/MMACo1k/svc/lib:$LD_LIBRARY_PATH
% export LD_LIBRARY_PATH

Or, if you are using *csh*:

% setenv LD_LIBRARY_PATH /opt/MMACo1k/svc/lib:$LD_LIBRARY_PATH

4.3.3 Solaris 2.6/7 SVC Mode

Under Solaris 2.6/7 the script *svc_install_xil1.3* is used to install the special svc mode directory hierarchy. Unlike under Solaris 2.5.1, this installation does itself **enable** the svc mode. Due to this situation, an addition script, *svc_uninstall_xil1.3*, is provides under Solaris 2.6/7 to **uninstall/disable** the svc mode.

4.3.3.1 The svc_install_xil1.3 Script

The *svc_install_xil1.3* script creates the special svc mode directory hierarchy and enables the svc mode. The default location for the *svc_install_xil1.3* script is:

/opt/MMACo1k/bin

and the script's syntax is :

svc_install_xil1.3 [options]

The script's options and defaults are:

-v	Verbose mode, which displays status information on stdout. The default is to not display information.

4.3.3.2 The svc_uninstall_xil1.3 Script

The *svc_uninstall_xil1.3* script removes the special svc-mode directory hierarchy and thus disables the svc mode. The default location for the *svc_uninstall_xil1.3* script is:

/opt/MMACo1k/bin

and the script's syntax is :

svc_uninstall_xil1.3 [options]

The script's options and defaults are:

-v	Verbose mode, which displays status information on stdout. The default is to not display information.

4.4 Other Notes

The following sections are important reminders and addition information about the svc mode.

4.4.1 Other Osprey Products and the SVC Mode

Other Multimedia Access/Osprey Technology products (such as the Osprey-150 and the SLIC-Video card) also support an svc mode. Under Solaris 2.5.1, the special directory hierarchy can exist simultaneously for each product although only one can be enabled at a given time by your environment variables. Under Solaris 2.6/7, only one svc mode can be installed at a given time. In other words, the svc mode can not be installed for both the Osprey-150 and the Osprey-1500 at the same time.

The svc mode under Solaris 2.5.1 does support applications accessing both SunVideo and Osprey products under the svc mode. Note, however, that if SunVideo pseudo devices have been created for multiple products (say for the Osprey-1100 and the SLIC-Video) it is possible for an application to select the pseudo device for a Osprey device not currently being enables (via env vars) under the svc mode. An application error will occur in this case. For this reason, it is advised to use the svc_devices script to remove SunVideo pseudo device names for an Osprey product when your intent is to enable the svc mode for a different Osprey device.

4.4.2 Adding/Moving/Removing Cards:

Repeated from above, if you wish to add, move or remove an Osprey-1x00 card or SunVideo card to a workstation after you've already run the SunVideo compatibility mode setup scripts, you first run

svc_devices remove

to remove the pseudo-device names. Then, after you've made your hardware change, rerun

svc_devices install.

The reason for this is that when a device is added/moved, the operating system may overwrite existing SunVideo pseudo device names.

You should also be aware that due to the persistent nature of device registration in Solaris, if a device is moved or removed, the existing device name will remain. This may cause you to directly or indirectly try and use a device that is no longer physically present in your machine. Under this condition, an application error will occur indicating to you the failure to open the requested device.

4.4.3 Updating (Patching/Upgrading/Etc) Xil SW:

If at anytime you plan on performing an action that will update XIL libraries (for example, you are applying an XIL patch to your system or upgrading your system) then you must do the following. (Note: If you are unsure of whether or not a s/w update will modify XIL components, it is always safer to follow these steps just in case)

On **Solaris 2.5.1** it is ok to go ahead with the update. Once complete just rerun the **svc_install_xil1.2** script. This script will detect that you have already installed the special svc mode directory hierarchy and will ask you if you want to remove it. Answer yes and the script will remove the old svc mode and reinstall it.

On **Solaris 2.6/7** is very important to **first** uninstall the svc mode before updating your system. You do this by running the **svc_uninstall_xil1.3** script. After running this script, it is ok to update your system. Once done, run the svc_install_xil1.3 script again to reinstall the svc mode.

4.4.4 When Not Running in SunVideo Compatibility Mode

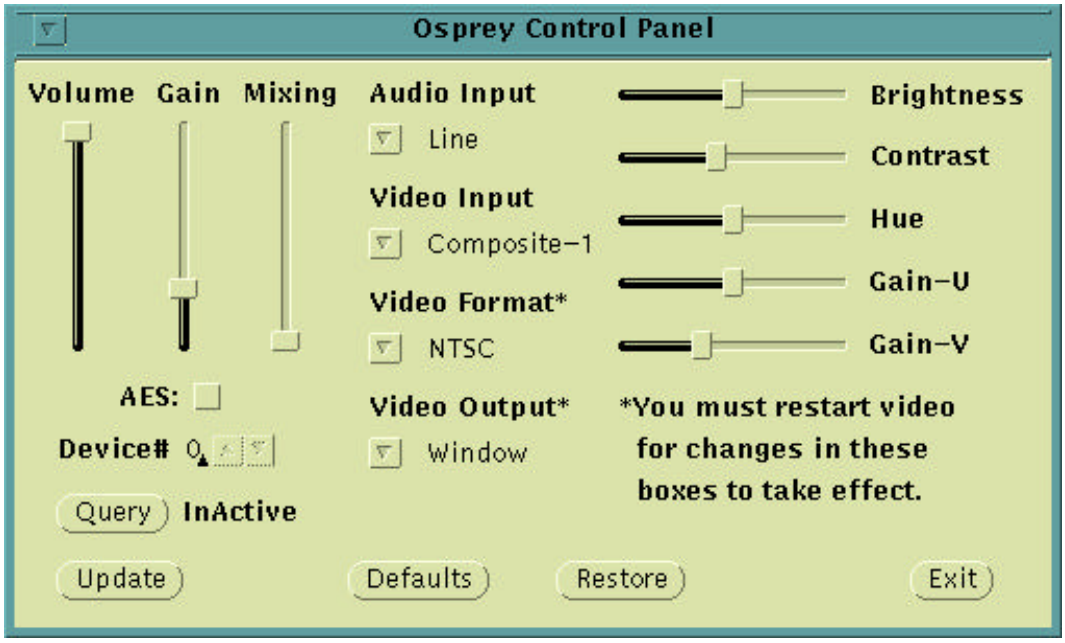
If you are not running in SunVideo compatibility mode, but you have installed compatibility mode pseudo-devices, an attempt by an application to use a pseudo-device will generate the following XIL error message:

“Could not open SUNWrtvcu device.”

For this reason, it is advised to use the svc_devices script to remove SunVideo pseudo device names for an Osprey product when you do not intend to enable the svc mode and plan to run SunVideo applications in a native SunVideo mode.

5. The Control Panel

The Osprey-1x00 control panel, *o1k_ctl*, allows both static and dynamic changes to various audio/video attributes (such as video/audio input selections, audio volume/gain, video brightness, contrast etc.) for each Osprey device installed in a system.



The settings for each installed Osprey device are kept in a database. When changes are made to the various attributes in the control panel, the database for the selected device is modified. Whenever an Osprey device is opened, the current settings in the database are used to configure the device. While an Osprey device is opened, the control panel will also communicate with the process using the Osprey device to dynamically change settings.

There are a few settings in the control panel that can not be dynamically changed and thus only take effect when an Osprey device is first opened. For example, video output may either be moved across the system bus and displayed on your computer monitor or it may be moved to the composite video-output jack on the Osprey. This setting and others must be set before the Osprey device is opened. These settings are marked with an "*" in the control panel.

The video format may be set to **NTSC, PAL**, or **AUTO**. If **AUTO** is selected, when the Osprey device is opened, the video format will be auto detected. However, since this auto detection can take up to 1.5 seconds, if you know what video format you are using, it is best to set the video format manually.

The **Query** button can be used to dynamically check to see if a selected Osprey device is currently opened by another process.

The various attributes on the control panel may also be changed programmatically by a user program. Since these change can be made by another process while the control panel is opened, the attribute statuses may not always be correct. Clicking the **Update** button on the control panel will update the current status of the control panel settings.

The control panel also has a check mark for enabling/disabling audio echo suppression Generally, this should only be enabled when the input audio is like “speech” (as compared to music for example).

6. Example Programs

Included with the Osprey-1x00 software is the source code for several example programs:

Note: On multiprocessor Solaris 2.6/7 machines, you may want to set the XIL_DEBUG environment variable to threads=1 if you experience any process trashing or visual tears in the display image. This is caused by XIL using multiple threads to process portions of a captured image.

♦ ***o1k_audrec***	a tool for recording audio to file.
♦ ***o1k_audplay***	a tool for playing audio files.
♦ ***o1k_audloop***	a tool for looping audio IN to audio OUT.
♦ ***Soundtool***	a GUI tool for recording, playing and modifying u-law audio files.
♦ ***xil_compress***	an XIL example which captures and compresses video and saves compressed data to a file.
♦ ***xil_decompress***	an XIL example that reads compressed data from a file, decompresses it, and displays the decompressed video.
♦ ***xil_display***	an XIL example that captures and displays video.
♦ ***xil_video_broadcast/ xil_ video_receiver***	two XIL examples: *broadcast* transmits over TCP captured and compressed video; *receiver* receives this video stream, decompresses and displays it.
♦ ***xilh_video_broadcast/ xil_ video_receiver***	performs the same functions as the previous example, while adding H.261 to the list of compressed formats.
♦ ***o1k_conf***	a point-to-point audio/video conference example built using XIL and the Osprey-1x00 audio library.

These programs will also help verify proper operation of the Osprey-1x00 card.

6.1 Audio Recording

The *o1k_audrec* program is a simple command-line driven tool for recording audio to a file.

The command-line syntax for the *o1k_audrec* example is:

o1k_audrec [options] -o <*filename*>

Legal Options	Description (and values)	Default
<-D device>	device name	*/dev/o1k0*
<-f format>	encoding format (0=ULAW, 1=ALAW, 2=PCM8, 3=PCM16, 4=G722, 5=G728)	0
<-r rate>	sample rate (8000, 11025, 16000, 22050)	8000
<-c channels>	channels (1,2)	1
<-p port>	input port (0=LINE,1=MIC)	0
<-g gain>	input gain (0..1.0)	.125
<-m mgain>	monitor gain (0..1.0)	0
<-I info>	audio file string info	“”
<-b size>	buffer size	1000
<-h amount>	print hash marks after amount	0

6.2 Audio Playing

The *o1k_audplay* program is a simple command-line driven tool for playing audio files.

The command-line syntax for the *o1k_ audplay* example is:

o1k_audplay [options] -i <*filename*>

Legal Options	Description (and values)	Default
<-D device>	device name	*/dev/o1k0*
<-v gain>	output gain (0..1.0)	1.0
<-b size>	buffer size	1000

6.3 Audio Looping

The *o1k_audloop* program is another command-line driven tool, used to loop audio IN to audio OUT.

The command-line syntax for the *o1k_audloop* example is:

***o1k_audloop* [options]**

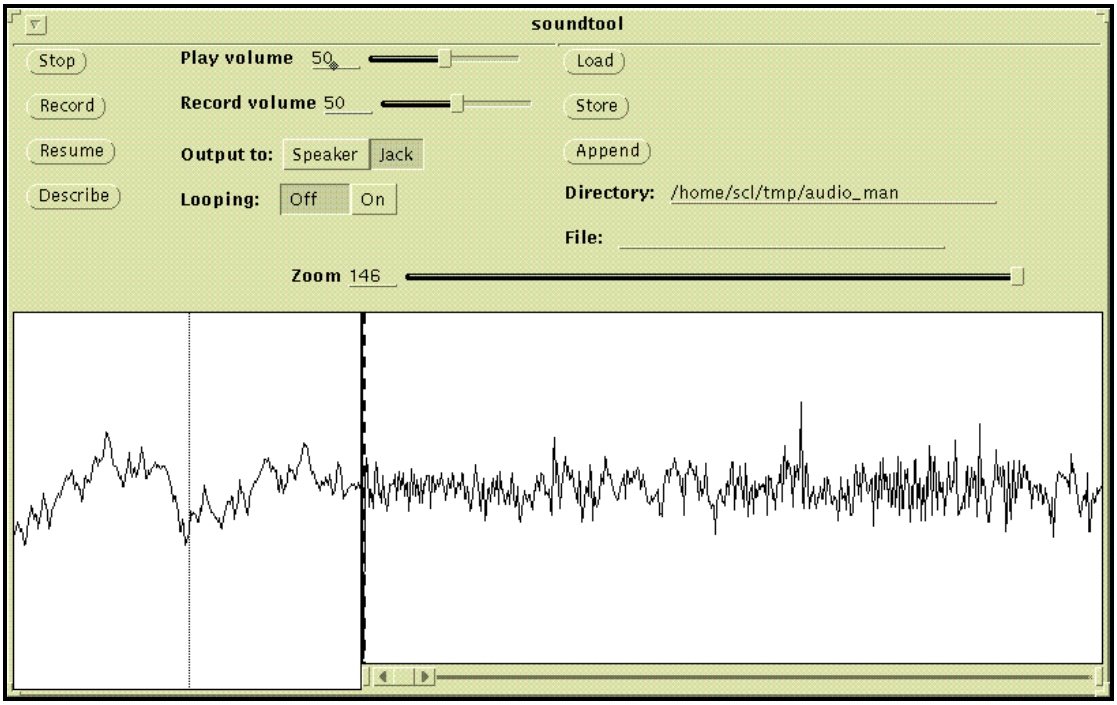
Legal Options	Description (and values)	Default
<-D device>	device name	*/dev/o1k0*
<-f format>	encoding format (0=ULAW, 1=ALAW, 2=PCM8, 3=PCM16, 4=G722, 5=G728)	0
<-r rate>	sample rate (8000, 11025, 16000, 22050)	8000
<-c channels>	channels (1,2)	1
<-p port>	input port (0=LINE,1=MIC)	0
<-g gain>	input gain (0..1.0)	.125
<-v gain>	output gain (0..1.0)	1.0
<-b size>	buffer size	1000
<-s secs>	Number of seconds to loop (0==infinite)	0

6.4 soundtool

soundtool is a GUI tool for recording, playing and modifying u-law audio files.

The command-line syntax for the s*oundtool* example is:

***soundtool* [-D <device>]**



Soundtool is one of the demo programs that is distributed by Sun in the SUNWaudmo package. It is typically installed into */usr/demo/SOUND/src/soundtool/*. Sun's soundtool uses Sun's audio library libaudio and a few systems calls (such as open/close, read/write, ioctl and fcntl) to operate on Sun's standard hardware audio devices. The source for the soundtool demo distributed with the Osprey-1100 s/w is installed in the example sub-directory of *o1kHOME* (usually */opt/MMACo1k/examples/soundtool*). The Osprey-1x00 Developer's Guide discusses the changes made to the original Sun source in order for the demo to work on top of the Osprey's audio library (*libotiaudio*).

6.5 xil_compress

This is an XIL example to which H261 compression was added. See notes in source code for specific H261 code changes. The SunVideo version of this demo can be run under the SunVideo Binary Compatibility Mode without modification (the SunVideo version does not include H261). Note that the default shrink factor is 2 (-s 2) which results in CIF sized image compression. To compress QCIF sized images, use -s 4.

The command-line syntax for the *xil_compress* example is:

xil_compress [options] -o filename

Legal Options	Description (and values)	Default
-o %s	save bitstream in file	NULL
-C %s	Compression type (CellB, Jpeg, H261, Mpeg1)	CellB
-s %d	shrink factor	2
-I %d	select input channel	1
-f %d	frames to capture	100
-i %d	frames to skip between capture	0
-D %s	name of device	/dev/o1k0
-B %d	H261 / Mpeg1 Bitrate (kbits/sec)	256/2000
-Q %d	H261 max quant / Mpeg1 fixed quant	10
-R %d	Mpeg1 rate control flag	1

Legal Switches	Description (and values)	
-E	exit on first error	

Example Usage:

- To compress a CIF CellB bitstream:
  % xil_compress -C CellB -o /tmp/t.clb
- To compress a CIF JPEG bitstream:
  % xil_compress -C JPEG -o /tmp/t.jpeg
- To compress a CIF h261 bitstream:
  % xil_compress -C H261 -o /tmp/t.h261

- To compress a QCIF h261 bitstream:
  % xil_compress -C H261 -s 4 -o /tmp/tq.h261

6.6 xil_decompress

This is an XIL example to which H261 compression was added.

For H261 decompression, the Osprey-1x00 XIL molecules will by default use the first Osprey-1x00 card installed in your system for h/w accelerated decode of H261. If you want to use another Osprey-1x00 device for decode, you must explicitly use the -D option below.

To decode H261 and have the video directed out the composite video port on the Osprey-1x00, you must use both the -D option and the -O option.

The command-line syntax for the *xil_decompress* example is:

xil_decompress [options] -I <input filename>

Legal Options	Description (and values)	Default
-C	Compression Type [CellB | Jpeg | H261 | Cell | Mpeg1]	CellB
-s %d %d	CellB width and height	320,240
-r %d	playback frame rate (0 == fast as possible)	0
-V	use hardware colorcube if in 8bit mode	FASLE
-x	Exit when done decompressing all frames	FALSE
H261 Options		
-D %s	name of Osprey-1x00 device for H/W decompression	NULL
-O	enable decode to composite out	FALSE

Example Usage:

- To decompress CellB bitstream:
  % xil_decompress -C CellB -s 320 240 -i /tmp/t.clb
- To decompress JPEG bitstream:
  % xil_decompress -C Jpeg -i /tmp/t.jpeg
- To decompress H261 bitstream:
  % xil_decompress -C H261 -i /tmp/t.h261
- To decompress H261 bitstream using the second Osprey-1x00 card in you system:
  % xil_decompress -C H261 -i /tmp/t.h261 -D /dev/o1k1
- To decompress H261 bitstream and to have the video directed to the composite video out port on the first Osprey-1x00 installed in your system:
  % xil_decompress -C H261 -i /tmp/t.h261 -D /dev/o1k0 –O

6.7 xil_display

This is an XIL example which just captures video and displays it.

Changes to video attributes that affect color of the image (brightness, contrast, hue, etc.) are also made to the database used by the control panel. Thus the defaults for these (which are indicated as *none* below) depend on how they were last set. So if you run this application once and set the brightness to some value. This will be the default brightness the next time any video application is run.

The colormap version option does nothing if the current display depth is 24bits. On 8bit display depths it affects which colormap is installed for the video window. Both XIL versions cause the Osprey-1x00 to capture 16bit video data which is then dithered in s/w by the XIL molecules to 8bits.

Example Usage:

- To display video:
  % xil_display

The command-line syntax for the *xil_display* example is:

xil_display [options]

Legal Options	Description (and values)	Default
-s %d	shrink factor	2
-I %d	select input channel	1
-f %d	frames to capture	100
-w %d	capture subimage width	640
-h %d	capture subimage height	480
-i %d	frames to skip between capture	0
-m %d	max frames to buffer	2
-x %d	x window location	(random)
-y %d	y window location	(random)
-D %s	name of device	/dev/o1k0

Legal Switches	Description (and values)	
-g	enable grayscale mode	
-E	exit on first error	
-d	don't display result of capture	

Video Attributes	Description (and values)	Default
-B %d	Brightness	none
-C %d	contrast	none
-H %d	Hue	none
-U %d	saturation/gain U component	none
-V %d	saturation/gain V component	none
-c %d	colormap version (0=XIL std, 1=XIL gamma corrected)	1

6.8 xil_video_broadcast/xil_video_receiver

These are XIL examples which run on the Osprey-1x00. The SunVideo version of these demos can be run under the SunVideo Binary Compatibility Mode without modification.

The command-line syntax for the *xil_video_broadcast* example is:

xil_video_broadcast [options]

Legal Options	Description (and values)	Default
-C %s	Compression type (CellB, JPEG, UYVY)	CellB
-H %s	destination hostname	local subnet
-c %d	broadcast channel (0-9)	0
-F %s	file of destination hostnames	none
-D %s	name of Osprey-1100 device	*/dev/o1k0*
-I %d	select input channel	1
-P %d	delay x ms per transmit	0
-d %s	save bitstream in file	NULL
-f %d	frames to broadcast	18000
-i %d	frames to skip between capture	0
-m %d	max frames to buffer	2
-s %d	shrink factor	2
-w %d	width of capture window	NTSC: 640; PAL: 768
-h %d	height of capture window	NTSC: 480; PAL: 576
-x %d	x coordinate of display window	(random)
-y %d	y coordinate of display window	(random)

6.8.1 xil_video_broadcast

Legal Switches	Description (and values)	
-p	disable preview	
-b	enable display of partial CellB frames by receiver	
-t	disable transmission	
-E	exit on first error	
-v	print verbose messages	

6.8.2 xil_video_receiver

The command-line syntax for the *xilh_video_ receiver* example is:

xil_video_ receiver [options]

Legal Options	Description (and values)	Default
-C %s	compression type (CellB, JPEG, UYVY)	CellB
-c %d	broadcast channel (0-9)	0
-f %d	frames to broadcast	18000
-x %d	x coordinate of display window	(random)
-y %d	y coordinate of display window	(random)

Legal Switches	Description (and values)	
-b	enable display of partial CellB frames by receiver	
-E	exit on first error	
-v	print verbose messages	

Example Usage:

- To broadcast/receive video:
  machine a) xil_video_receiver -C CellB
  machine b) xil_video_broadcast -C CellB

6.9 xilh_video_broadcast/xilh_video_receiver

These are XIL examples which run on the Osprey-1x00 and use H261 compression.

The command-line syntax for the *xilh_video_broadcast* example is:

xilh_video_broadcast [options]

Legal Options	Description (and values)	Default
-C %s	Compression type (CellB, JPEG, UYVY)	CellB
-H %s	destination hostname	local subnet
-c %d	broadcast channel (0-9)	0
-F %s	file of destination hostnames	none
-D %s	name of Osprey-1100 device	*/dev/o1k0*
-I %d	select input channel	1
-P %d	delay x ms per transmit	0
-d %s	save bitstream in file	NULL
-f %d	frames to broadcast	18000
-i %d	frames to skip between capture	0
-m %d	max frames to buffer	2
-s %d	shrink factor	2
-w %d	width of capture window	NTSC: 640; PAL: 768
-h %d	height of capture window	NTSC: 480; PAL: 576
-x %d	x coordinate of display window	(random)
-y %d	y coordinate of display window	(random)
-B %d	H261 bitrate	256
-Q %d	H261 max quantization	10

6.9.1 xilh_video_broadcast

Legal Switches	Description (and values)	
-p	disable preview	
-b	enable display of partial CellB frames by receiver	
-t	disable transmission	
-E	exit on first error	
-v	print verbose messages	

6.9.2 xilh_video_receiver

The command-line syntax for the *xilh_video_ receiver* example is:

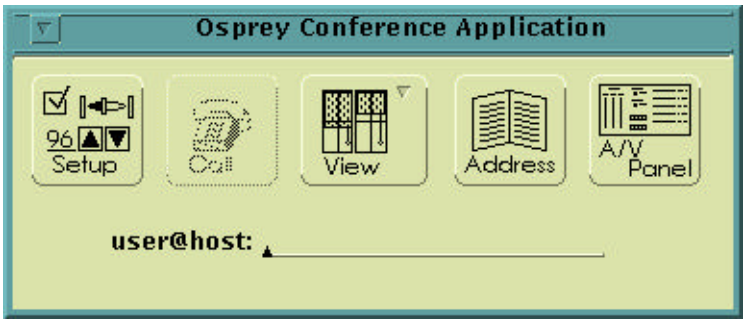
xilh_video_ receiver[options]

Legal Options	Description (and values)	Default
-C %s	compression type (CellB, JPEG, UYVY)	CellB
-c %d	broadcast channel (0-9)	0
-f %d	frames to broadcast	18000
-x %d	x coordinate of display window	(random)
-y %d	y coordinate of display window	(random)

Legal Switches	Description (and values)	
-b	enable display of partial CellB frames by receiver	
-E	exit on first error	
-v	print verbose messages	

6.10 o1k_conf

This example is a point-to-point audio/video conference written in C++ using XIL and the Osprey-1x00 audio API. It supports CellB, Jpeg and H261 and various audio formats. The main conference panel looks like:



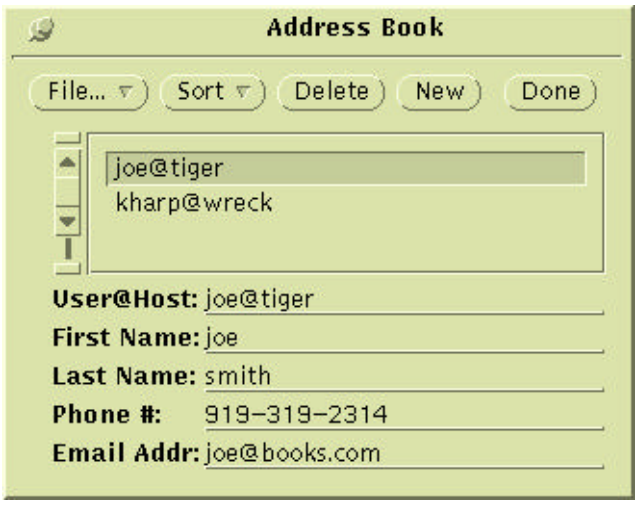
The o1k_conf program may be started with the ***–u*** usr@hostname command line option to initialize the user@host field. For example:

o1k_conf –u scl@quark

Currently, the o1k_conf application does not know if PAL video is being received from the far end of a conference or not. If you know in advance that the far end will be providing a PAL bitstream, you should use the **–p** option of o1k_conf. This will tell the application to expect PAL video from the far/remote site. With this option, it is possible to have a mixed NTSC/PAL conference.

For Solaris 2.6 a **–x** option has been added. XIL 1.2 in Solaris 2.5.1 is not MT-Safe. Therefore, multithreaded applications (like o1k_conf) need to use special locking between threads that use XIL. This locking effects performance. XIL 1.3 in Solaris 2.6 is MT-Safe. The –x option can be used to disable this locking and greatly improves performance for Solaris 2.6.

The o1k_conf application allows for configuration of audio/video parameters and provides an address book for storing information about users you want to connect to. The address book is brought up by clicking on the **Address** button. The address book looks like the following:



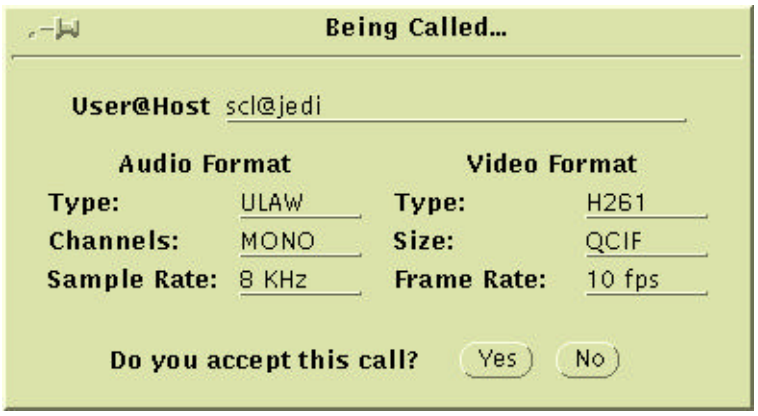
A user is added by selecting the **New** button. The most important information is the *User@Host* field which is what is used to contact another person when calling a conference. The other information is optional. After filling in the user information, click on the **Add** button (which only appears after the new button is selected). To save your address book, select **Save** in the **File** menu. To select a user for a conference, select the user in the list, and then hit the **Done** button. This will close this pop-up and place the user@host name in the main conference panel. Instead of going to the address book you may also just type in the user you want to call on the user@host line on the main conference panel.

Only the user calling the conference needs to configure it because when a conference is called, the far end will be told of the caller's configuration. The default configuration for *o1k_conf* is:

Video: H261, QCIF, 10fps, 256 Kbits/sec
Audio: *u*law, 8KHz, mono

To change the conference configuration, click on the **Setup** button and process through the menu and pop-up windows.

When called by an another user, a pop-up occurs which informs you who is calling and the parameters of the call. You can then decide whether to join or not:



During the conference you can monitor status information like audio and video bit rates and frame rates and network packet activity by bring up the status pop-up via the **View** menu. Audio and video parameters can be changed by bring up the a/v panel by hitting **the A/V Panel** button.

During a conference you'll have two windows on your display, a local view (that's you) and a far view (that's the person you are talking to). With H261, a picture-in-a-picture is possible on the far view window with you inlayed in the top left corner. To reduce CPU utilization, you can iconify the local view. This is certainly advisable during a H261 conference. If video out has been selected in the a/v panel, there will be no far view window for H261. Instead video will be directed out the video out port on the Osprey-1100.

Appendix A — Osprey-1x00 Specifications

The following tables provide specifications for the Osprey-1x00 card.

Table A-1
Physical Dimensions

Length	178 mm
Width	19 mm
Height	108 mm
Weight	170 grams

Table A-2
Environmental Specifications

Operating temperature range	0º to 40º C
Non-operating temperature range	-40º to +75º C (RH)
Operating humidity range	Between 5% and 80% (non-condensing) @ 40º C
Non-operating humidity range	95% RH (non-condensing); gradient 30% per hour
Operating altitude range	0 to 3,048 meters (10,000 feet)
Non-operating altitude range	0 to 15,240 meters (50,000 feet)

Appendix B — Video-Conferencing Terminology

This section contains an informal, quick reference for some frequently used terms. More formal definitions will be added over time.

TERM	DEFINITION
AVI (Audio Video Interface)	A Microsoft Windows format for files that can contain multiple streams of different kinds of data, such as video, audio, and MIDI. Applications built with the Video for Windows DK use the AVI file format.
CellB	A non-proprietary video codec format that provides high quality, low bit-rate image compression that can be easily and efficiently decoded in software. CellB is based on Block Truncation Coding (BTC) encoding.
CIF (Common Intermediate Format)	Some video codec algorithms define CIF as a 352x288 sized image which is independent of the video format (PAL or NTSC). Other algorithms define CIF as 352x240 for NTSC and 352x288 for PAL for CCIR resolution and 320x240(NTSC) and 384x288(PAL) for square pixel resolution. See also "QCIF—Quarter Common Intermediate Format".
Codec (Coder/decoder)	Software or hardware that encodes an analog stream (video or audio) into a compressed digital format, then decodes and decompresses the digital data back into analog data.
DCI (Display Control Interface)	A display driver interface created jointly by Microsoft and Intel. DCI provides developers with a way of writing data directly to a computer's frame buffer.
DCT (Discrete Cosine Transformation)	A mathematical process used by many standard compression algorithms.
G.711	A 64Kbs audio compression standard that is part of H.320 for mono audio. G.711 describes the A-Law and U-Law audio codecs.

TERM	DEFINITION
G.722	A 64Kbs audio compression using ADPCM for stereo audio.
G.723	A low-bit rate audio compression standard that is part of H.324. It provides voice-quality audio at bit rates from 5 to 7 Kbps.
G.728	An audio compression standard that provides 16Kbs high-quality compressed audio.
H.261	A video-conferencing standard for a codec that uses a Discrete Cosine Transfer algorithm to compress video. H.261 is part of the umbrella H.320 standard. H.261 uses both inter-frame and intra-frame compression. Inter-frame compression provides for high rates of compression by compressing and delivering only the parts of a frame that have changed from previous frames. H.261 is tied to two image sizes: CIF (Common Interchange Format), which is 352x288 pixels and QCIF (Quarter CIF), which is 176x144 pixels.
H.263	A DCT-based compression standard for video in the H.324 suite. This is an extremely low bit rate compression format intended for video transmission over standard (POTS) telephone lines.
H.320	An umbrella video conferencing standard that supports video conferencing over ISDN telephone service. In addition to ISDN, H.320 references standards such as H.261 (video codec) and H.728 (audio codec).
H.323	An ITU standard that describes protocols for network-based video-conferencing.
H.324	An umbrella video-conferencing standard that supports video-conferencing over Plain Old Telephone (POTS) service, using 28.8Kbs modems. H.324 references standards such as H.263 (video codec) and G.723 (5.3Kbs or 6.3Kbs audio codec).
ISDN – (Integrated Systems Digital Network	A digital telephone standard that supports multiple “B” channels; each with a bandwidth of 64Kbps. ISDN service costs substantially more than standard telephone service, and may not be available in all areas. Consult you local telephone company.

TERM	DEFINITION
ITU	International Telecommunications Union
JPEG	(Joint Photographic Experts Group) JPEG is the international standard for still picture compression. It requires no inter-frame compression, so each image is independent of all others, and easily edited.
MJPEG	A pseudo-standard constrained subset of JPEG images, generally considered Motion JPEG.
MPEG-1	(Motion Picture Experts Group) MPEG-1 is the international standard for motion video compression at CD-ROM bitrates.
MVIP	(Multi Vendor Interface Protocol) A standard, ribbon-connector, that tie together input cards and network interface cards.
POTS	"Plain Old Telephone Service" A traditional telephone line.
QCIF	"Quarter Common Intermediate Format" This is ½ of CIF in both the horizontal and vertical resolution. See CIF for size information.
T.120	An emerging data conferencing standard that addresses application and data sharing among applications across different network protocols and transport mechanisms.
XIL	Sun's Imaging and Video Library