Osprey-1000 User's Guide
Release 2.9

Windows 95, Windows NT 4.0

2/15/00

Part No. 40-02004-07

ViewCast.com

Osprey Technologies Division

Osprey-1000 User's Guide
PCI/Windows Version
Release 2.7 and later

COPYRIGHT

DISCLAIMER

ViewCast.com reserves the right to change any products herein at any time and without notice. ViewCast.com and Osprey Technologies Division make no representations or warranties regarding the content of this document, and assumes no responsibility for any errors contained herein.

TRADEMARK ACKNOWLEDGMENT

Osprey-1000 is a trademark of ViewCast.com. Microsoft, Windows NT, Windows 95, and Video for Windows are trademarks or registered trademarks of Microsoft Corporation. Any other product names, trademarks, trade names, service marks, or service names owned or registered by any other company and mentioned herein are the property of their respective companies.

ViewCast.com
Osprey Technologies Division
600 Airport Blvd., Suite 900
Morrisville, NC 27560 USA

FCC Notice

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. 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. However, there is no guarantee that interference will not occur in a particular installation. If this device does cause harmful interference to radio or television reception, which can be determined by turning the equipment on and off, the user is encouraged to try to correct the interference by 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 ViewCast.com, 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.

Table of Contents

Chapter 1 — Getting to Know the Osprey-1000


Shortcut

If you already have a working knowledge of the Osprey-1000 and its capabilities, you may want to skip ahead to Chapter 2, Osprey-1000 Hardware, and proceed with the installation process. However, if you'd like to learn more about the Osprey-1000 and the opportunities it can make possible, continue on with the following introductory section.

Introduction

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

The Osprey-1000 architecture provides for easy integration of components such as:

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

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

About This Book

The User's Guide provides helpful information about installing and configuring the Osprey-1000 hardware and software. This book has been designed with the particular needs of the Osprey-1000 end users in mind, particularly first-timers and those working with existing applications. It also includes instructions on using standard Video for Windows (VFW) applications.

With the purchase of the Developer's Kit, developers can gain access to information on various software interfaces, interfacing with Video for Windows, WAV Programming Library, and the Osprey Programming Interface (OPI) and H.320. They can also gain access to the source code for the Video for Windows demo, Network Demo, and OPI examples. For information about using the Osprey-1000 with other operating platforms, please refer to the appropriate Osprey-1000 OS manual.

With the purchase of the H.320 Developer's Kit, developers can gain access to the source code and additional information on the H.320 API.

Organization

Getting to Know the Osprey-1000

Introduces the Osprey-1000 card, its capabilities, supporting software, and documentation.

Osprey-1000 Hardware

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

Osprey-1000 Software Installation

Gives step-by-step instructions for installing the Osprey-1000 software and drivers.

Osprey-1000 Control Panel

Provides instructions on using the Control Panel.

Osprey-1000 Demo Applications

Guides the user through several Osprey-1000 sample applications.

Osprey-1000 Configuration Software

Guides the user through the Osprey-1000 configuration programs.

Using the Osprey-1000 with Popular Applications

Guides the user through using the Osprey-1000 with 3rd party software applications.

Appendix A — Osprey-1000 Specifications

Information on the Osprey-1000's physical and environmental specifications.

Appendix B — Video-Conferencing Terminology

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

Appendix C — Installing the Osprey-1000 MVIP Cable

Provides instructions and diagrams for installing the MVIP cable.

Appendix D — Installing the Videoserver Connections Card

Gives instructions for installing and configuring the Videoserver Connections Network Access Card.

Symbols

This symbol denotes an important note or warning.

The chapters that describe how to use an Osprey-1000 application contain step-by-step instructions. The "Shortcut" icon identifies a section that summarizes the detailed steps.

Platforms Supported

Since the Osprey-1000 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. Its Multi-Vendor Interface Protocol (MVIP) interface allows the Osprey-1000 to connect to a wide variety of communication cards

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

Hardware Platforms

- All standard PCs
- Sun workstations
- Digital Alpha (WIN NT) *
- Digital Equipment workstations
- Hewlett Packard workstations *
- IBM RS6000 *
- PowerPCs*

Software Platforms

- Windows 95
- Windows NT 4.0 (x86)
- Windows NT 4.0 (Alpha)
- Solaris 2.x
- Digital UNIX
- HP-UX *
- IBM AIX *

* Supported in a future release.

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

Osprey-1000 Features

The video input to the Osprey-1000 card can be either NTSC or PAL, composite or S-Video. Optionally, the decompressed video can output to the on-card video encoder in either NTSC or PAL formats. 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 channels that handle:

- Output of the compressed video/audio bitstream.
- Input of a compressed video/audio bitstream.
- Output of a decompressed video (when displayed on the workstation's monitor).
- Output of local uncompressed video.

Osprey-1000 Specifications

Video Inputs	♦ One (1) Composite ♦ (NTSC or PAL)	♦ One (1) S-Video
Video Output	♦ One (1) Composite	
Input Formats	♦ NTSC	♦ PAL
Video Sampling	♦ YUV (4:2:2)	
Audio Inputs	♦ Line or microphone (shared jack)	
Audio Outputs	♦ Headphone out	♦ Line out
Video codecs (compressor/ decompressor)	♦ H.261/H.320 ♦ H.263 ♦ H.323	♦ CellB ♦ JPEG[1] ♦ MPEG[1]
Uncompressed Video Formats	♦ YUV (4:2:2) ♦ 8-bit RGB ♦ 15-bit RGB	♦ 16-bit RGB ♦ 24-bit RGB
Audio Codecs	♦ G.711 (ulaw, alaw) ♦ G.722 ♦ PCM (8- Or 16-Bit)	♦ G.723 ♦ G.728

Audio Sampling Rates	♦ Up to 44kHz (CD quality)	
Audio Output Levels	♦ 4Vpp for Headphone	♦ 2.8Vpp for Line Out
Software Platforms	♦ Windows 95 ♦ WIN NT 4.0 ♦ IBM AIX[2]	♦ Solaris 1.x ♦ Solaris 2.x ♦ Digital NT ♦ Digital UNIX[2] ♦ HP-UX[2]
Bus Slot Type	♦ Single slot, half length	
APIs	♦ Osprey Programming Interface ♦ Osprey H.320 API	♦ Video for Windows ♦ WAV/ACM
Demo Applications	♦ Video viewer[2] ♦ Video recording & playback	♦ TCP/IP Video Conferencing ♦ Audio recording & playback (Microsoft SoundTool)

1. Unscheduled support.
2. Supplied by Microsoft as part of the Video for Windows development kit.

For more information about the different algorithms supported by the Osprey-1000, see *Appendix B —Video Conferencing Terminology*.

Frame Rates

Depending on the workstation system load and display window size, the Osprey-1000 can display video at rates of up to 30 frames-per-second (fps). Keep in mind, though, that video frame rates are application dependent.

With Release 2.0 and later, the following compressors and frame rates are supported:

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

Compressor	Frame Rate
H.320 (with bundled ISDN card)	15 fps

Variables Affecting Performance

The performance of a codec ***within a system*** is a true measurement of its abilities. Thus, the performance of a codec is actually a function of both its processing capabilities and the level of integration into the desktop system. The Osprey-1000 has been designed from the onset to offer an optimal ***system*** level solution.

Many factors can affect system performance, such as

Codec Capabilities

- Video compression & decompression processing power
- Audio compression & decompression processing power
- Data movement (on/off the card)
- Device driver

User Selected Options

- Window size
- Video quality
- Video frame rate
- Compressed bit rate

Video/Audio Algorithm

- Computational requirements vary with each algorithm

System Configuration

- Operating system
- Processor/memory speed
- Graphics card
- Graphics card drivers

Osprey-1000 Software

The PCI/Windows Osprey-1000 package includes a suite of software that gives developers access to the full capabilities of the card.

This software includes:

- Device drivers for Windows NT and Windows 95.
- Video for Windows (VFW) and audio drivers that allow the Osprey-1000 to operate with existing video and audio programs.
- Control Panel, which allows the user to control various video and audio parameters such as brightness and volume.

Demo applications, such as:

- Osprey-1000 Demo. This program allows users to view motion video under different compression algorithms.
- Osprey-1000 Video for Windows Demo. Similar to the Osprey-1000 Demo, but written with Video for Windows.
- NetDemo. This simple application allows video-conferencing across a LAN.

With purchase of the Osprey-1000 Development Kit, Osprey-1000 developers can also receive:

- The Osprey-1000 programming interface cross-platform API[1].
- Information on programming the Osprey-1000 to standard interfaces.
- Source code examples.

Testing the Osprey-1000

After installation, the Osprey-1000 can be initially tested by running the Osprey-1000 Demo program in Chapter 5.

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'll correct the problem about 50% of the time. Then verify that you have an active video signal connected to Port 1 of the card. Check the application and system requirements to ensure that your system is properly configured for running the Osprey-1000.

Try running the Osprey-1000 Demo program, and the Video for Windows Demo program, to verify proper operation of the card and its software. The most common error codes are listed in the Table 1-1 below, giving their most probable cause, and suggested solutions.

[1] Supported as of 2nd Quarter, 1997.

Table 1-1
Error Codes

Error	Cause	Solutions
AVCFail -101	General failure	Reboot system. Also chance of IRQ conflict (see below).
AVCLoad -103	Error loading file	Possible file missing. Check to make sure installation directory does not have spaces in the name, e.g. “Program Files”. Contact Osprey.
AVCOpen -121	Cannot open device driver	Make sure another program is not using the Osprey-1000 driver. If not, reboot the system. If problem still occurs, check for IRQ conflict (see below).
AVCLoad -128	Can not load firmware to VCP	Possible file missing. Check to make sure installation directory does not have spaces in the name, e.g. “Program Files”. Contact Osprey.
AVCReset -134	Can not access board to do a reset	Problem accessing the board on the PCI bus. Try swapping Osprey board with other PCI boards. Check for possible IRQ conflict (see below).
Non-AVC errors, Windows Application errors, etc.	Various.	Possibly a problem with the board or software. If running NetDemo, could have H.261 bitrate set too high. Contact Osprey.
OpenMemDMA failed	Not enough memory to dma video data from the hardware	Reboot system.
Error Initializing Video	Cannot access Osprey-1000	Reboot system. Also check for IRQ conflict (see below).

Error	Cause	Solutions
Parity error during system boot-up	Parity problem on PCI bus	PCI parity check needs to be disabled on the slot that the Osprey card is plugged into. Check BIOS settings for a setting that allows parity disabling on the PCI slots.
Card fails (no errors or AVC errors other than listed above)	IRQ conflict	See section below on IRQ conflicts.
Random failures (no errors) or reboots	ATI PCI graphics adapter	Obtain updated drivers from ATI at card conflict, www.atitech.ca, or swap the ATI card and Osprey card slots.

IRQ Conflict Resolution

If your Osprey-1000 does not work, or if after installing it another service such as your network connection stops working, or if a device driver fails to initialize when you restart the computer, a likely cause of the problem is that the Osprey-1000 is trying to use the same interrupt (IRQ) line that another card is trying to use.

Two PCI cards can share the same IRQ line, but a PCI card and an older-style ISA card cannot. NT is not able to detect what IRQ line an ISA card is using, and hence cannot prevent the conflict.

You can view the system's IRQ assignments by running the Windows NT Diagnostics program in the Administrative Tools menu or program group. Select the Resources tab and click the IRQ button at the bottom of the field. If the list of cards shows an ISA card using the same IRQ, the conflict should be resolved by changing the IRQ of the ISA card.

Unfortunately, if a device driver for an ISA card has failed to initialize because of an IRQ conflict, the card's IRQ will not appear in the list. To find the conflict, you have to examine all your ISA cards with the Control Panel to find out what IRQs they are trying to use. Examples of cards that might conflict include network adapters, sound cards, communications cards, and older ISA display adapters.

While we cannot enumerate here how to examine and change IRQs of all possible cards, we can give an example of how to change the IRQ of a typical network adapter under NT 4.0. The procedure is similar for other types of cards:

First of all, have the Windows NT Diagnostics program running and displaying the list of IRQs in use, as described above.

Open the Control Panel and start the Network applet. Select the **Adapters** tab and click on the name of the card. Click the **Properties**... button. A setup dialog appears with a drop list of possible interrupt numbers from which to select. If the current IRQ is the same as the Osprey-1000's, or that of any other device, then you have found your problem; change it to one that is not being used. Restart the system and see if the board is now functioning properly.

If you're still having problems, please contact the Osprey-1000 Support Group, at:

(888) 852-6622	**(voice, toll-free)**
(919) 319-9200	**(voice)**
(919) 319-9814	**(FAX)**
support@viewcast.com	**(email)**

Thanks

Special thanks to 8x8, Inc. and Analog Devices, for joining Osprey Technologies on our flight into a new world of multimedia opportunities.

Osprey Technologies is proud that 8x8, Inc. has approved our company as a Development Partner, and selected the Osprey-1000 as a reference design for their new processor, the VCP. This processor serves as the primary video compression engine for the Osprey-1x00 line of products.

8x8, Inc.

2445 Mission College Blvd.
Santa Clara, CA 95054
(408)727-1885
http:\\www.8x8.com

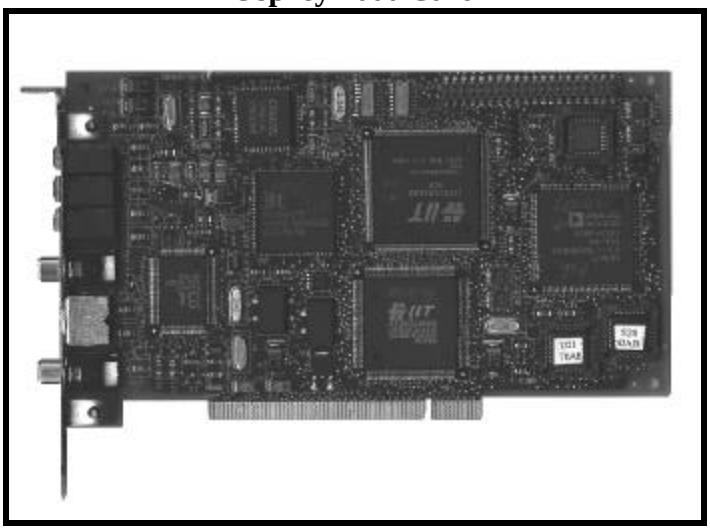
Analog Devices

One Technology Way
PO Box 9106
Norwood, MA 02062
(617)329-4700
http:\\www.analog.com

Chapter 2 — Osprey-1000 Hardware

The Osprey-1000 card (Figure 2-1) fits a single PCI slot.

Figure 2-1
Osprey-1000 Card



Installation Prerequisites

The Osprey-1000 card requires that a computer have the following:

- A Pentium-family processor (minimum 133MHz) with an available PCI bus slot
- Microsoft Windows 95 or Windows NT
- At least 16Mb of memory
- 10Mb of available disk space
- A VGA graphics card
- Optionally, a graphics card that supports the DDI (Direct Draw Interface) driver interface

Tested Computers and Graphics Cards

Osprey Technologies has tested the Osprey-1000 card with the following computers and graphics cards. Refer to the "Readme" file on the installation diskettes for updated testing information.

Computers (with PCI Bus)	Graphics Cards
♦ Acer	♦ Diamond Stealth
♦ Dell	♦ Number Nine
♦ Gateway 2000	♦ ATI Mach64
♦ HP	♦ Matrox Millenium
♦ IBM (Aptiva)	♦ Matrox Mystique
♦ Micron	
♦ Zeos	

Installing the Card

CAUTION!

All computer cards are sensitive to electrostatic discharge. Slight discharges from clothing or even from the normal work environment can adversely affect these cards. By following these simple guidelines, however, you can minimize the chance of damaging your Osprey-1000 card.

To be used only with UL Listed computers that include instructions for user installed accessories.

- 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 (if in a high static area).
- Provide a continuous ground path by leaving the power cord plugged into a grounded power outlet.
- Ensure that the workstation is powered OFF before installing any components.

CAUTION: If you are not familiar with how to install a PCI bus card, refer to your system's documentation for more complete, step-by-step instructions.

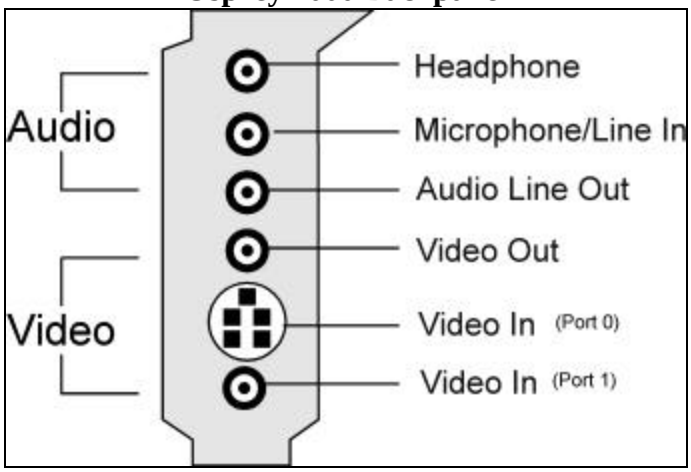
Use the following steps to install the Osprey-1000 card.

1. Power down the computer. Make sure that the computer's power switch is turned OFF. Read caution note above for grounding precautions.
2. Remove the computer's cover.
3. Locate an empty PCI slot.
4. Remove the slot-cover screw from the empty PCI slot's cover, set the screw aside, and remove the slot cover.
5. Remove the card from its anti-static bag.
6. *For H.320 operation only,* configure the MVIP stream selection jumper J1 as per Appendix C.
7. Install the Osprey-1000 card into the empty slot. **Note**: Be sure that the card is seated evenly into the slot.
8. Secure the backpanel of the card with the slot's cover screw.
9. *For H.320 operation only,* install the ISDN circuit board and MVIP cable as per instructions in Appendix C and Appendix D.
10. Replace the computer cover.
11. Connect any video or audio cables to the Osprey-1000 card. Figure 2-2 shows details of the card's backpanel connectors.
12. Turn the computer on.

Connecting Cables

Figure 2-2 illustrates the Osprey-1000 backpanel connectors

Figure 2-2
Osprey-1000 Backpanel



Connecting a Composite Source

If your video source provides only composite video, connect the source's output cable to the Osprey-1000 card's Port 1 RCA Video In connector. The Osprey-1000 default setting is Composite video.

Connecting an S-Video Source

If your video source supports S-Video, connect the source's output cable to the S-Video In connector (Port 0) on the Osprey-1000 card. Compared to composite signals, S-Video provides a sharper image with better color separation. S-Video uses a four-pin mini-DIN connector that provides separate Y (luminance) and C (chrominance) signals. Refer to Chapter 4 to learn how to select the S-Video port for input from the Osprey-1000 Control Panel.

Video Out Option

To display video on a separate NTSC or PAL monitor, or to send video to a VCR, connect the device's RCA composite video input cable to the Video Out port on the Osprey-1000 board. Refer to Chapter to learn how to select video output from the Osprey-1000 Control Panel.

Connecting an Audio Source

You can connect an audio source, such as a microphone or an audio CD player, to the card's Microphone In/Line In connector. If, for instance, you are going to establish a video conferencing connection that requires some privacy, you can plug a headset's microphone jack into this connector and plug the earphone jack into the Headphone connector.

By default, the software will look for a signal at the Microphone In port. To configure for Line In, refer to Chapter 4 to learn how to select Line Input from the Osprey-1000 Control Panel.

Connecting Speakers or Headphones

Headphones may be jacked into the Headphone connector, and speakers may be connected to the Line Out port. The audio levels at these two connectors differ: 2.8Vpp for Line Out, 4Vpp for Headphone. Unlike the audio input port, both of these ports are always active.

Chapter 3 — Osprey-1000 Software Installation

The Osprey-1000 software is provided on one or more diskettes for each operating system.

After you've installed the software, you can test the card and software by running the Osprey-1000 demonstration program, which is described in Chapter 5.

Notes

- See Installation Prerequisites for information about the prerequisite hardware and software for an Osprey-1000 installation.
- If you have already installed a version of the Osprey-1000 software, you must remove it before installing an updated version.
- For instructions on using the Osprey-1000 uninstall program, refer to "Uninstalling the Osprey-1000 Software", later in this section
- To retrieve the latest software drivers available, please see the "Downloading Drivers via FTP" section below.

Downloading Drivers via FTP

The latest software drivers for the Osprey-1000 are available via FTP (file transfer protocol), at the following locations:

Windows 95	ftp.viewcast.com:/pub/OSPREY1K/win95/latest
Windows NT 4.0	ftp.viewcast.com:/pub/OSPREY1K/winnt/latest

The FTP transfer can be accomplished using any web-browser (refer to your browser's help files for specific commands). These files can also be captured using an FTP program, with the following commands:

1. From the FTP program, enter **open ftp. viewcast.com**.
2. Logon as "**anonymous**" and use your email address as the password.
3. Go to the */pub/OSPREY1K* directory (type **cd pub/OSPREY1K**).
4. Go to the appropriate subdirectory (type **cd win95/latest**, etc.).
5. Set the transfer mode to binary (type **bin**).
6. To capture the files in that subdirectory, use the FTP get command with command line arguments specifying all files to be transferred (wild-card specification not allowed).

Make sure you download all the files in the directory, and place them in a single directory on your system. The setup.exe file will look for the other setup.wnn files in the same directory where it resides, so it is important that all files are downloaded to a single directory. Alternatively, the setup files may have been packaged into a single self-extracting executable file, depending on release version downloaded.

Software Installation

The Windows 95 and Windows NT install programs are functionally and visually similar. For purposes of clarity, only the snapshots of the NT 4.0 installation programs windows will be shown, although program windows for the other operating systems will appear very similar.

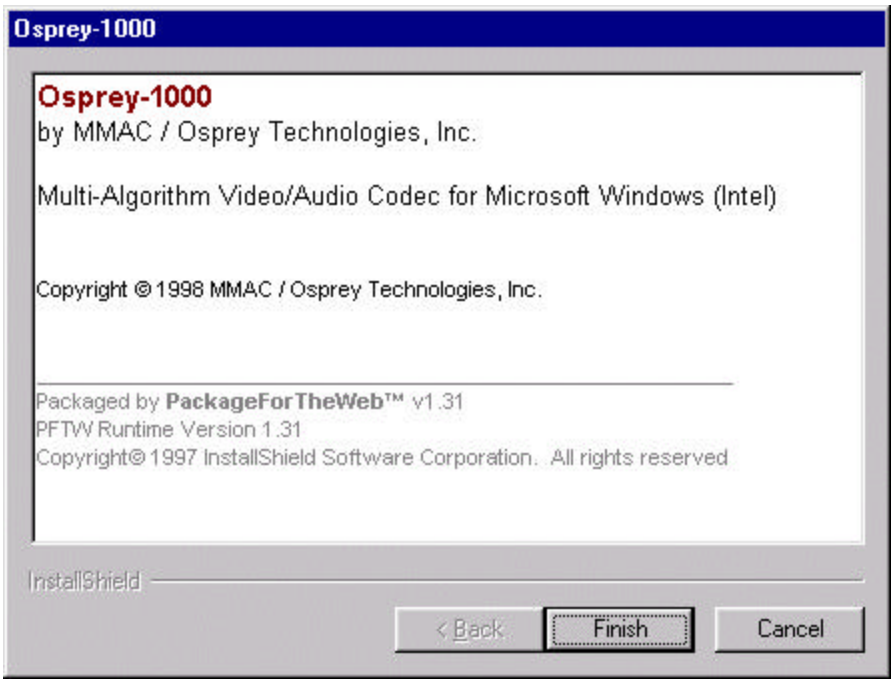
For users familiar with standard software installation practices, run **setup.exe** from the installation diskette, and follow the instructions.

Running the Installation Program

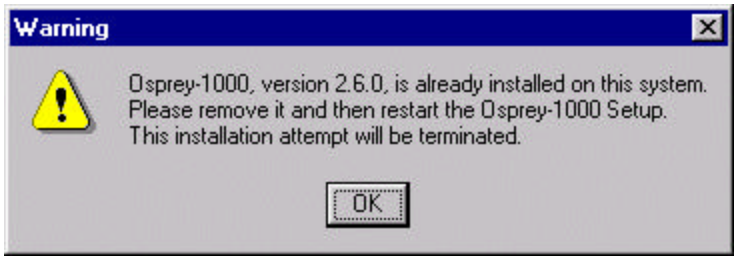
NOTE: **If installing the software from an FTP download, enter the pathname and filename – or browse to the location of the downloaded file(s) – to run the installation program. Otherwise, install the program from the system diskettes as described below.**

1. Place the Osprey-1000 diskette into your computer's A: (or B:) diskette drive.
2. Run the setup program:
   a) Click on the **Start** window in the lower left-hand corner.
   b) Click on **Run**.
   c) In the Run Command Line, enter **A:\setup** (or **B:\setup**) or specify the path and filename or the installation program file(s) obtained from the FTP download.
   d) Click **OK.**

3. If you are running an installation program obtained via FTP download, you may see a preliminary screen:

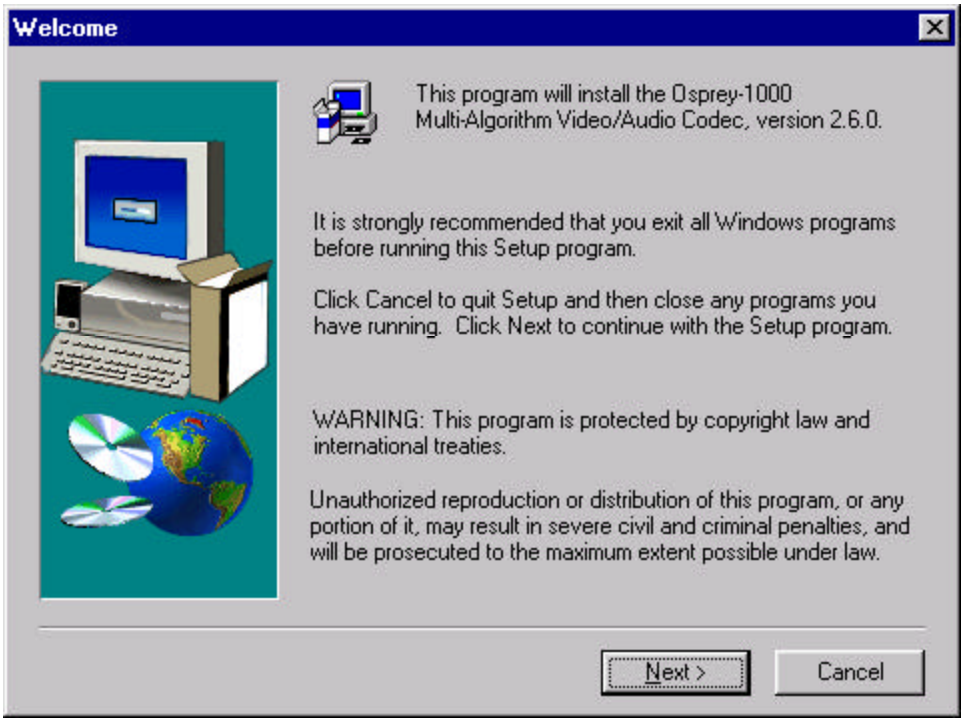


4. If you see this screen, click **Finish** to allow the self-extracting executable program to extract and execute additional files necessary for installation.
5. The installation program will examine your computer to determine if a previous version of the Osprey-1000 software is present. If a previous version is found, a Warning dialog box will appear:



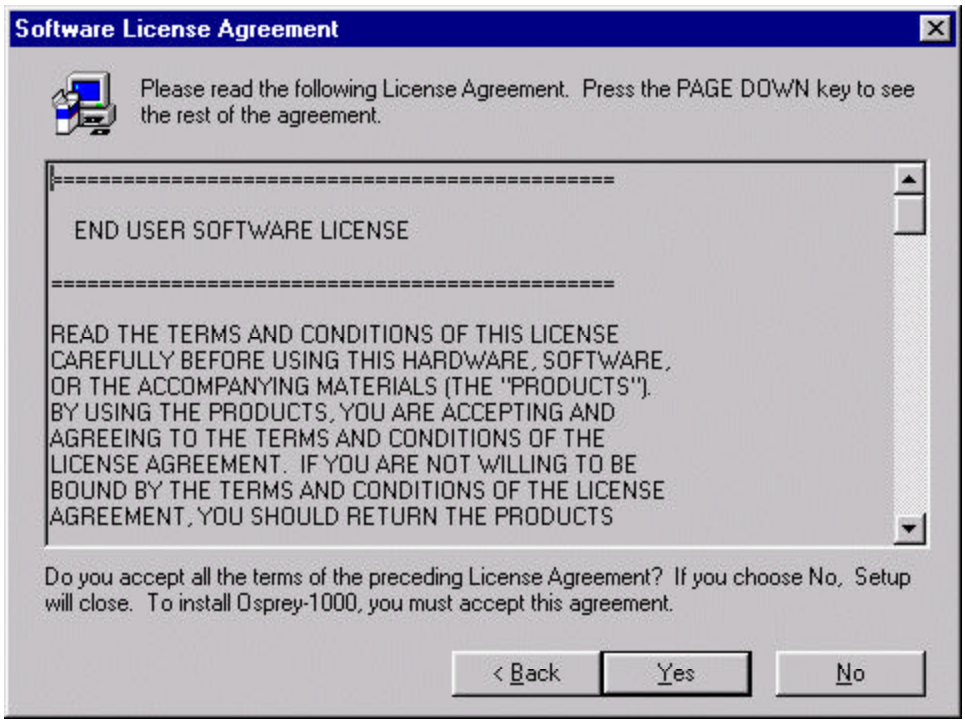
If this message appears, you must remove the previous version, restart your machine, and then restart the Osprey-1000 installation program. Detailed steps for this process are provided under *Uninstalling the Osprey-1000 Software*, later in this section.

6. The Installation "Welcome" dialog will appear, showing the version of the Osprey-1000 software to be installed:

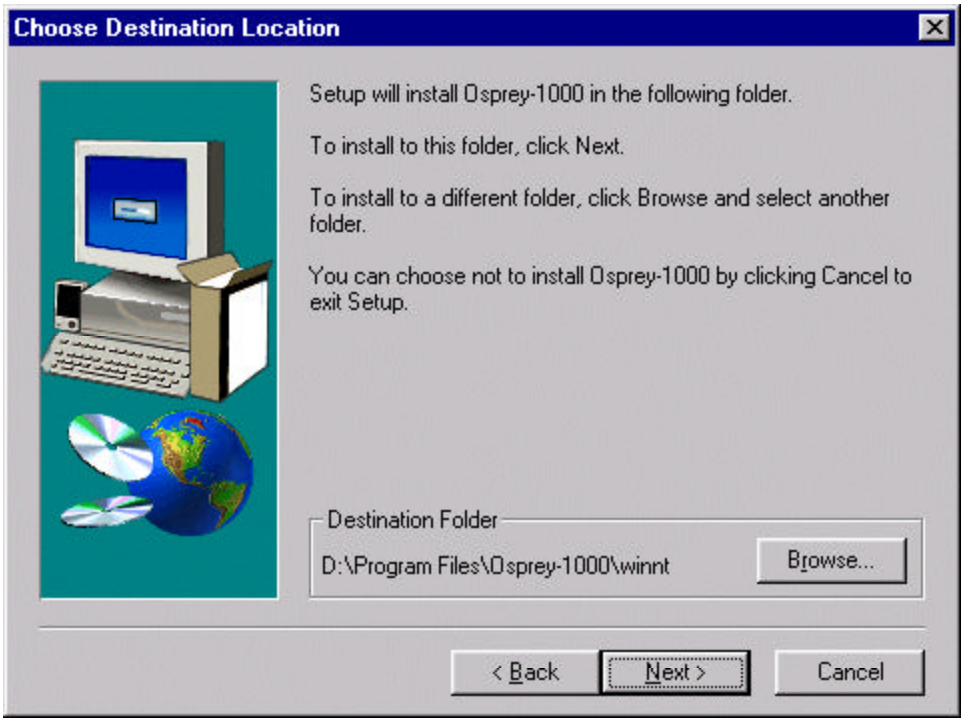


7. Click **Next** to proceed with Osprey-1000 installation, or click **Cancel** to cancel the installation (no files will be installed).

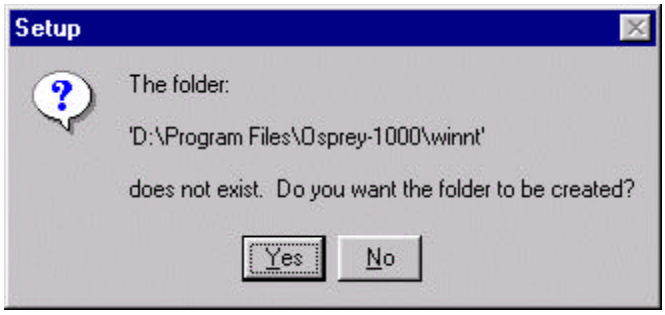
8. The "Software License Agreement" dialog will appear next, asking you to accept the terms of the Osprey-1000 software license. By choosing Yes, you agree to all terms of the license agreement:



9. The "Choose Destination Location" dialog will appear next, including buttons to allow you to accept the default installation directory or to select a different directory:

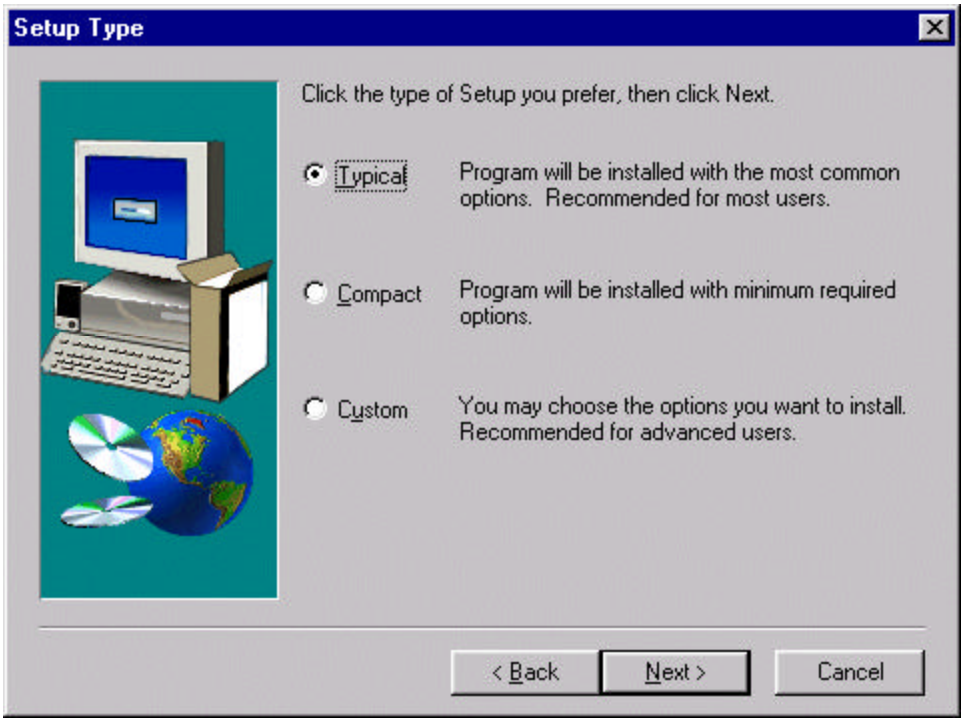


10. Click **Next** to select the default installation directory, or Click **Browse** to enter the "Choose Folder" dialog (select or enter the pathname of a new directory and then click **OK)**.
11. If the destination directory does not exist, the Setup query box will appear, asking if you want to create the specified directory:



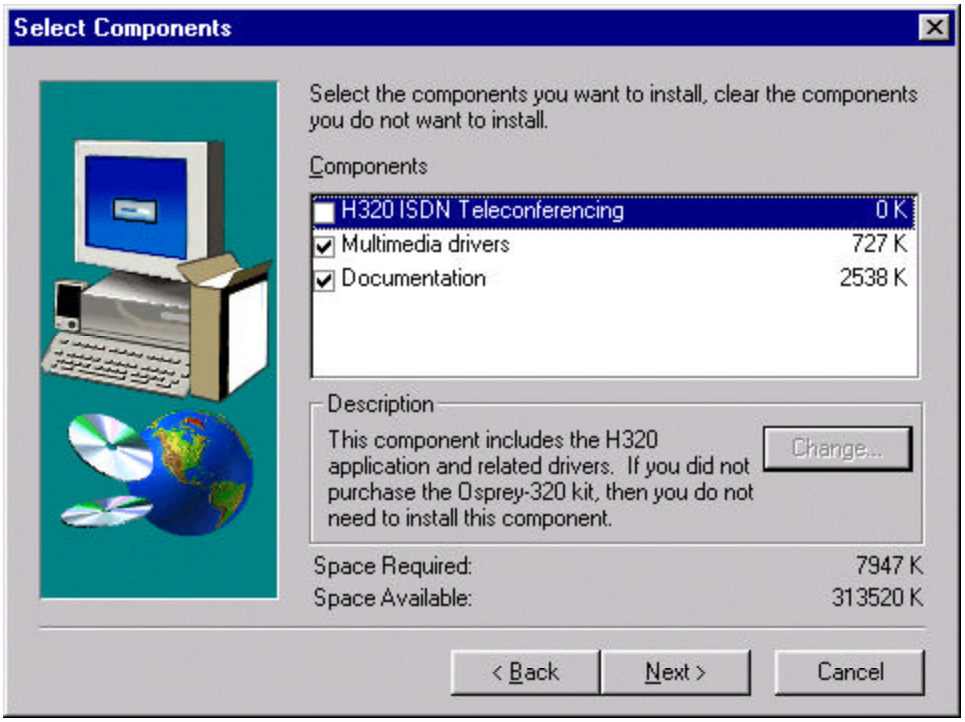
12. Select **Yes** to create and install to the selected directory, or **No** to return to the "Choose Folder" dialog.

13. On the "Choose Folder" and "Choose Destination Location" dialogs, Click **Next** to proceed.
14. The "Setup Type" dialog will appear next to allow you to optionally select which software components to install:



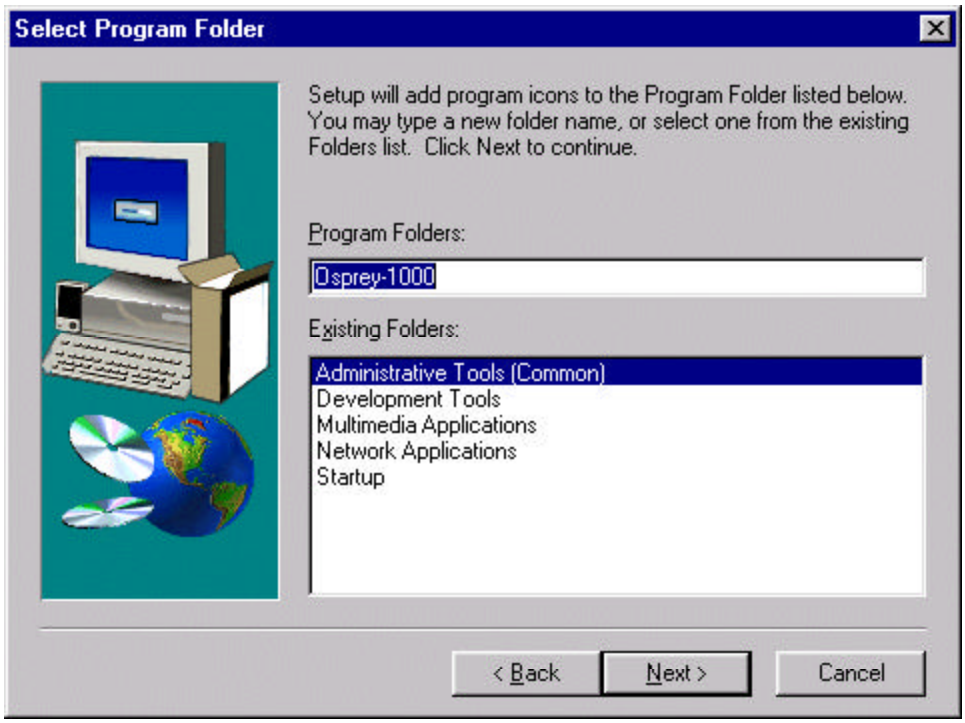
15. Most installations should select the Typical setup. Select the Compact setup to install only minimal Osprey-1000 support if you are installing additional applications which provide their own interface to the Osprey-1000 device and you will use them exclusively for access to the Osprey-1000 device. Alternatively, select the Custom Setup to select/deselect individual components. If you purchased an Osprey 320/2 or 320/6 package, which includes a Videoserver Connections ISDN card, then select Custom Setup and then check the H320 ISDN Teleconferencing component for installation from the optional custom component selection dialog. Click **Next** to proceed.

16. If you selected a Custom Setup type, then the "Select Components" dialog will appear next to allow you to optionally select which software components to install:



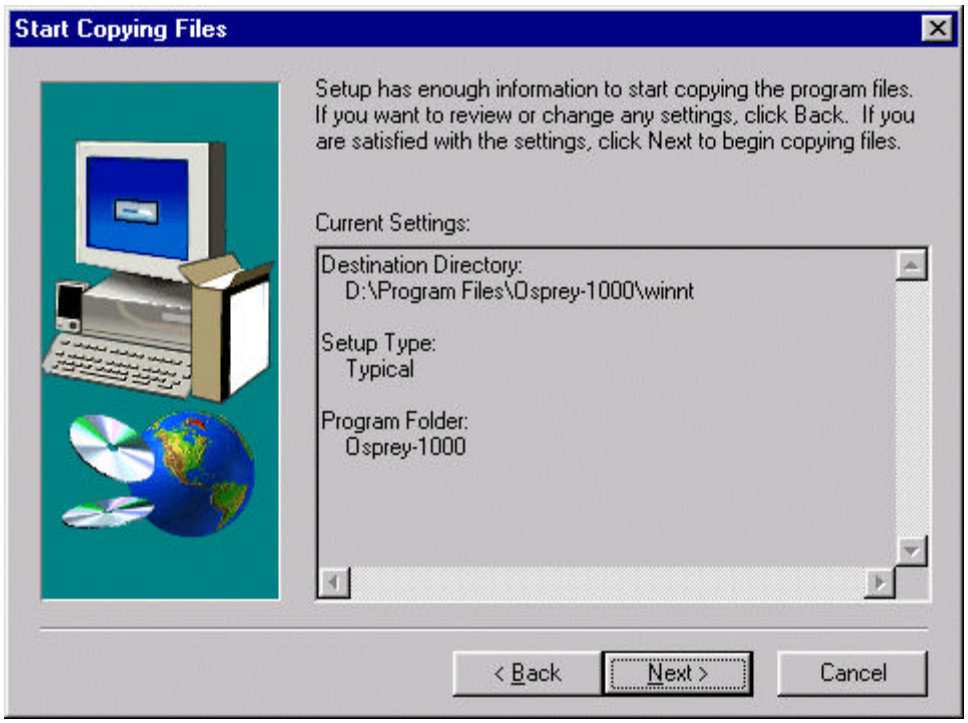
17. If you purchased an Osprey 320/2 or 320/6 package, which includes a Videoserver Connections ISDN card, then check the **H320 ISDN Teleconferencing** component for installation. Uncheck the **Multimedia drivers** item to install only minimal Osprey-1000-NTA support if you are installing additional applications which provide their own interface to the Osprey-1000-NTA device and you will use them exclusively for access to the Osprey-1000-NTA device. Uncheck the **Documentation** item if you do not want to install the Osprey-1000-NTA User's Guide for online access. Click **Next** to proceed.

18. The "Select Program Folder" dialog box will appear next to enable you to select a Program Manager group for the Osprey-1000 installation:



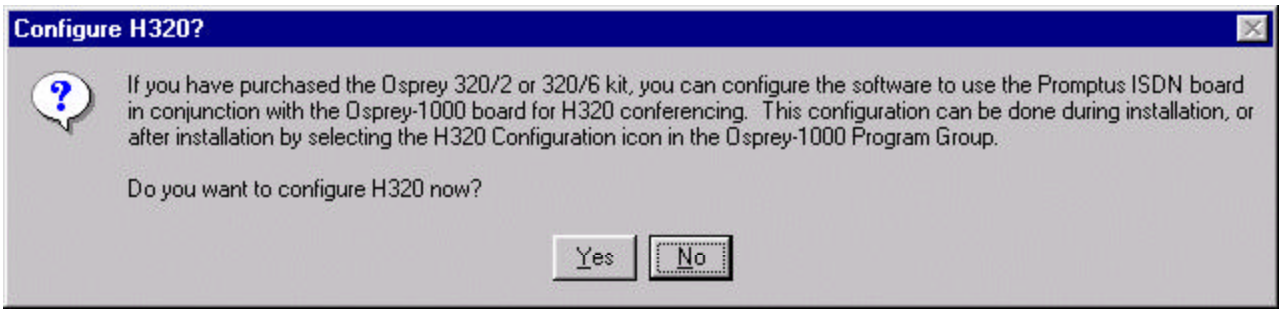
19. Click **Next** to create the default Program Manager group for the Osprey-1000 software. Or, select an existing group to place the icons into, and then click **Next**.

20. The Installation program then displays the "Start Copying Files" dialog, which shows the information entered by the user from the previous Install dialogs:



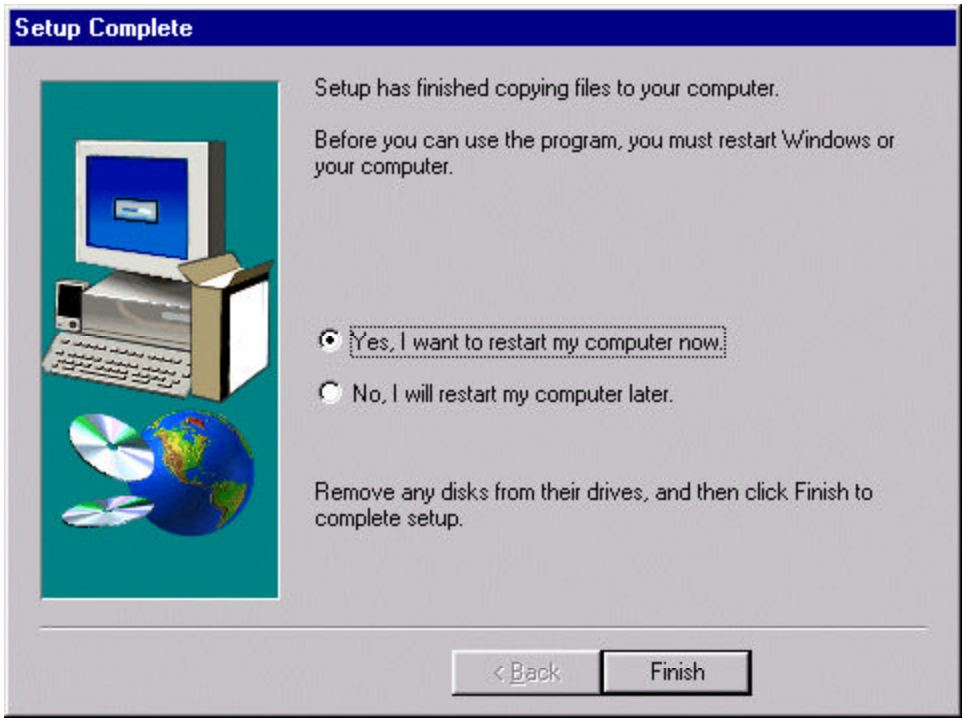
21. Click on **Back** to go back and change the information listed. Click **Next** to begin the installation.
22. The installation process will then proceed with file copying, device driver installation and registry modifications, accompanied by informational messages showing progress through these operations.

23. If you selected Custom Setup on the "Setup Type" dialog and then checked the H320 ISDN Teleconferencing component for installation, then the "Configure H320?" query will appear next:



24. If you select **Yes**, you will be presented with a series of H320 setup dialogs to allow you to configure the Osprey-1000 for ISDN teleconferencing. Please consult the Software Installation section of the H.320 User's Guide to review these dialogs. If you select **No**, then the H320 setup dialogs will be skipped. You may run the H320 setup dialogs at any time subsequent to Osprey-1000 installation by selecting the "H320 Configuration" item in the Osprey-1000 Program Group.

25. Once the installation process is complete, the "Setup Complete" dialog box will appear:



26. You should allow the installation process to restart your computer. Click on **Finish** to complete the installation.
27. After your computer has restarted, examine the Osprey-1000 Program Group. Review the Osprey-1000 "Release Notes" files for important information regarding the Osprey-1000 installation.
28. If you purchased an Osprey 320/2 or 320/6 package and you have not already configured the Osprey-1000 for ISDN teleconferencing, continue with the Software Installation section of the H.320 User's Guide.

Uninstalling the Osprey-1000 Software

There are two ways to uninstall the Osprey-1000 software:

- By selecting the "Uninstall Osprey-1000" icon from the Osprey-1000 program group.
- By running the "Add/Remove Programs" Applet of the Control Panel, then selecting the "Osprey-1000" from the list.

In either case, you will be asked to confirm that you want to completely remove the Osprey-1000 and all of its components. If you allow the uninstallation to proceed, an uninstallation progress bar will appear and will show progress as items are removed and checked off. Upon completion of uninstallation, you may review files still in use by clicking **Details**, or simply acknowledge completion of uninstallation by clicking **OK.** Several files typically will remain in use and will not be deleted until your computer is restarted. It is recommended that you restart your computer at this time.

Changing Driver Settings

After you've installed the Osprey-1000 software, you can configure the Osprey-1000's driver settings. This enables the user to set the default audio and video formats for the board.

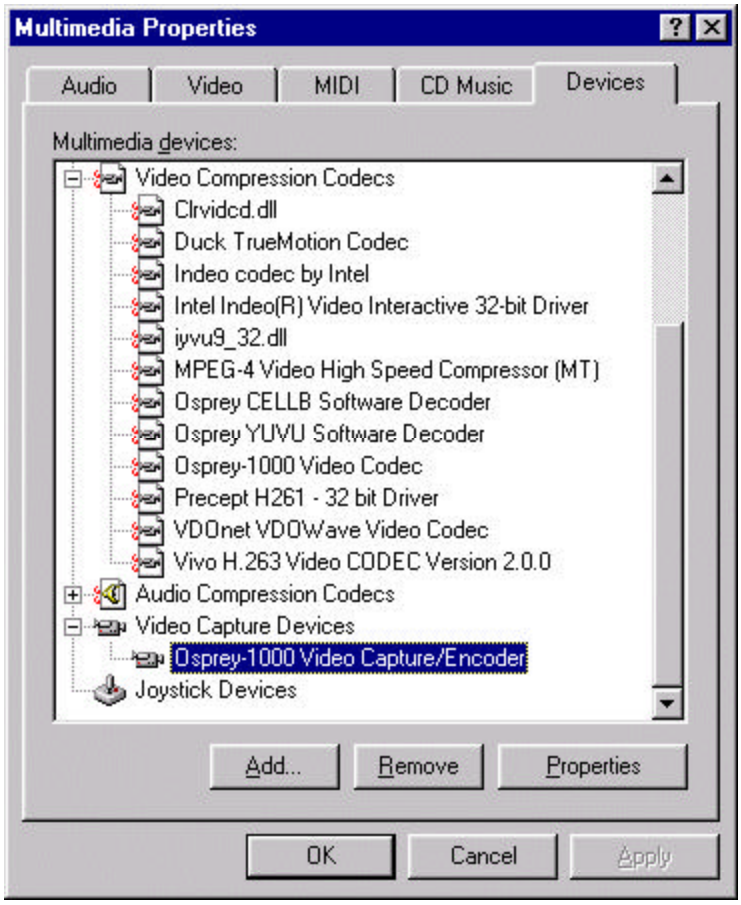
Video Capture/Encoder and Video Codec

You can access the Video Capture/Encoder or Video Codec dialogs from the Windows Control Panel applet (or from some applications).

From the Windows Control Panel:

1. Open the Windows Control Panel

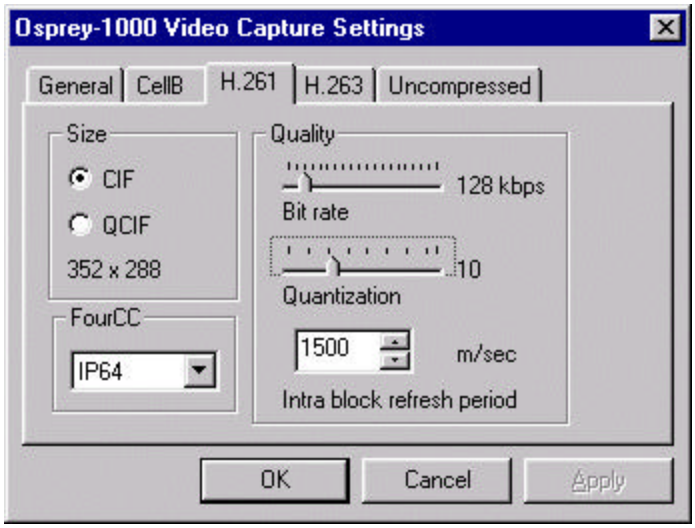
2. Click on **Multimedia Devices**.



3. Click on the Advanced (Win95) or Devices (NT) tab.
4. Double-click on **Video Compression Codecs** for the Video Codec dialog, or **Video Capture Devices** for the Video Capture Settings dialog.
5. Double-click on **Osprey-1000 Video Codec** and click on the **Settings** button to open the Video Codec dialog.
6. Double-click on **Osprey-1000 Video Capture/Encoder** and click on the **Settings** button to open the Video Capture Settings dialog.

Video Capture Dialog

From the Video Capture Settings dialog, you can change the default video format and input, change compression-specific settings, change window size, and make trade-offs between transfer rates and quality.



By default, the Osprey-1000 is set for H.261 format. By selecting CellB, H.261, H.263, or Uncompressed, you can set the default format of the Osprey-1000 Video Capture/Encoder. The General tab contains settings for selecting Hardware Draw and setting the Overlay Frame Rate.

The last tab selected before clicking **OK** (or going to the General tab) is the format the Osprey-1000 will use. For example, if you want to set the Osprey-1000 to use uncompressed video, select the Uncompressed tab, configure as needed, and click **OK**.

Video Codec Dialog

From the Video Codec dialog, you can select a software decoder to use when the hardware decoder is busy. You can also select **Stretch Video to Window Height**.

The **Stretch Video to Window Height** setting allows you to tell the driver whether you want it to stretch the video image to fit the current window size. In some cases, this may not be desirable as it may distort the video image.

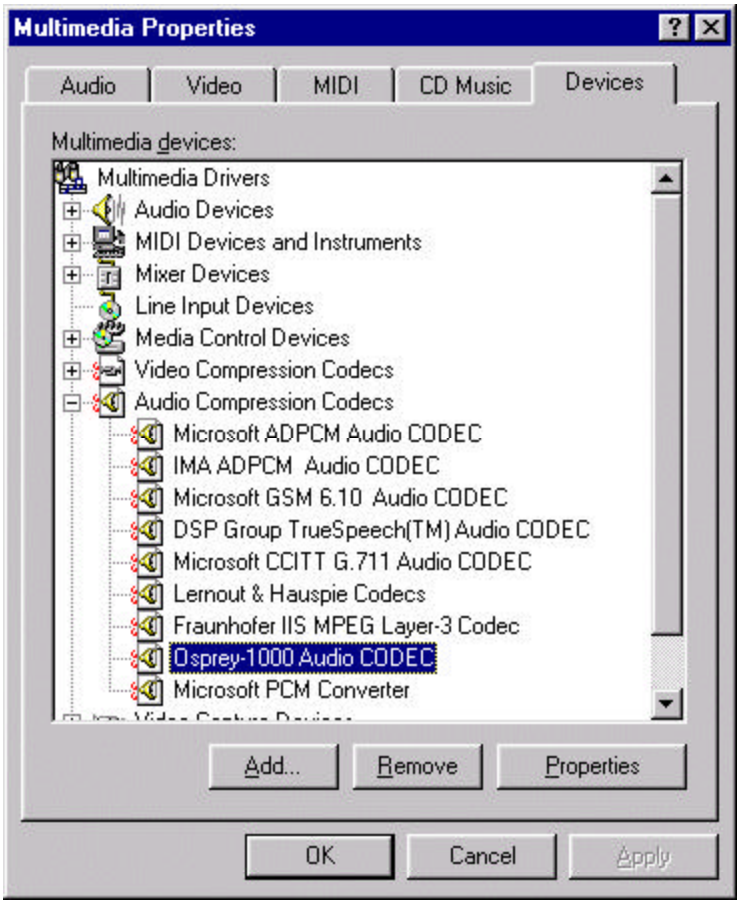
Audio CODEC

The Osprey-1000 supports a variety of compressed audio formats. The Audio CODEC controls these formats. You can select which formats the Audio CODEC supports via the Audio CODEC Properties dialog.

You access the Audio CODEC from the Windows Control Panel (or from some applications).

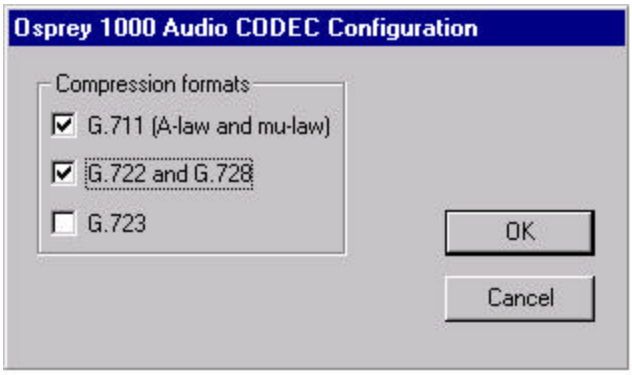
From the Windows Control Panel:

1. Open the Windows Control Panel
2. Click on **Multimedia Devices**.



3. Click on the Advanced (Win95) or Devices (NT) tab.
4. Double-click on **Audio Compression Codecs** for the Audio CODEC dialog.
5. Double-click on **Osprey-1000 Audio CODEC** and click on the **Settings** button to open the Audio CODEC Properties dialog.

Audio CODEC Dialog



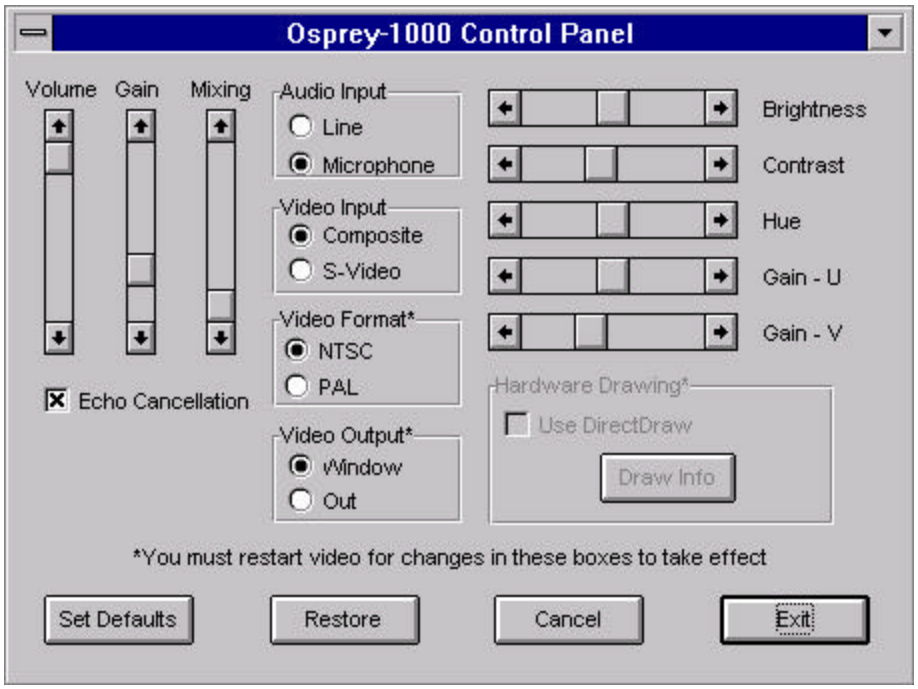
The Audio CODEC dialog allows you to select four different compressed audio formats.

By default, the driver is configured to support G.711, G.722, and G.728 audio. You can select or deselect the formats you want the driver to support. Note that selecting G.723 automatically deselects G.722 and G.728, and vice versa. The driver can not support both of these formats at once.

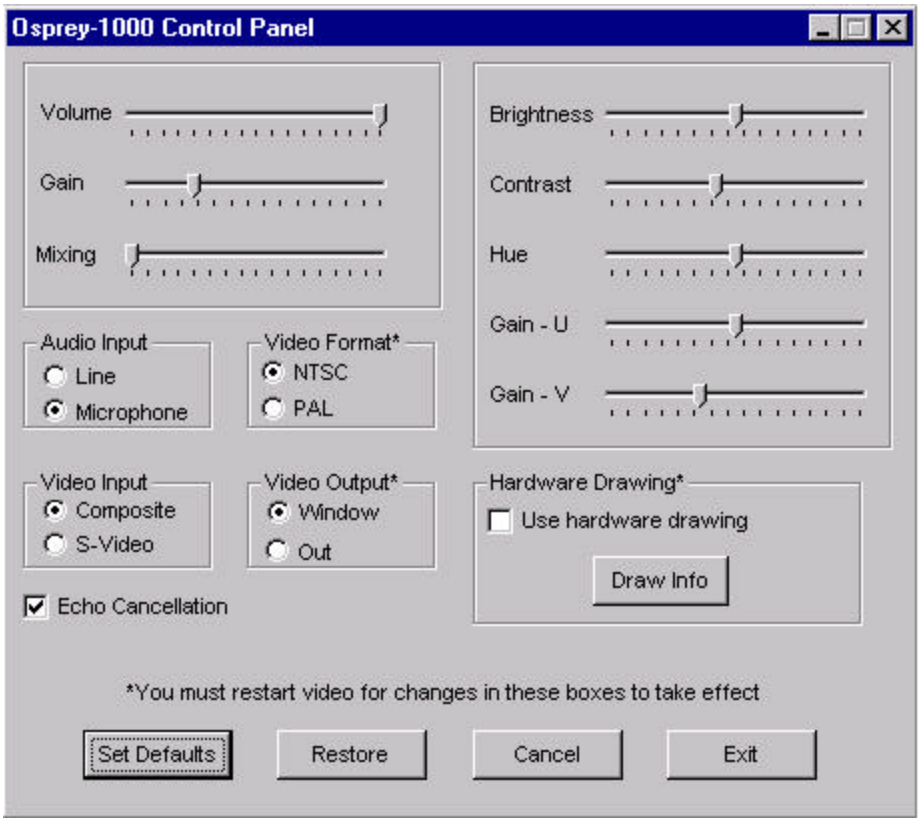
Chapter 4 - Osprey-1000 Control Panel

Control Panel

The Osprey-1000 Control Panel can be accessed from the Osprey-1000 program group. Under Windows 95 (when running a 16-bit application), the Osprey-1000 Control Panel will look like this:



Under Windows NT (or Windows 95 running a 32-bit application), the control panel has been updated to use the Osprey API interface. The Osprey-1000 Control Panel will then look like this:



From the Control Panel, you can:

- adjust audio volume, gain and mixing
- select between line and microphone audio inputs
- select between composite and S-Video video inputs
- adjust video parameters
- Click **Set Defaults** to return the settings to their original (installation) values.
- Click **Restore** to return the setting to their previous values.
- Click **Exit** to close the Control Panel and save your changes.
- Click **Cancel** to close the Control Panel without saving changes.

Direct Draw

With Release 2.00, Windows NT 4.0 now utilizes Microsoft's DirectDraw to support hardware drawing from the Osprey-1000 directly to the graphics adapter. DirectDraw provides for optimal data transfers, direct from video capture and codec devices to the display device. This program is not supported by all graphics adapters.

To successfully use DirectDraw with the Osprey-1000, your system must have access to the following:

- A graphics adapter and related I/O driver that support DirectDraw. NOTE: The Windows NT 4.0 distribution provides drivers with DirectDraw support for many major brands Osprey has successfully tested ATI Mach64, Diamond Stealth64 Graphics 2000 & Video 3000, and Number Nine 9FX Motion 771 graphics adapters.
- The latest I/O drivers which enable DirectDraw support. These can be obtained from the adapter manufacturer if needed.
- A graphics adapter that supports 16-bit color (65,526 colors at the desired screen resolution).
- A minimum of 2MB of onboard memory to support hardware drawing from the Osprey-1000.
- A minimum of 4MB for 16-bit display resolutions above 800x600.
- A display adapter that is supported under the DirectDraw Devices/Primary Display Driver folder for BLT under General Caps, OFFSCREENPLAIN & PRIMARYSURFACE under Surface Caps, and SRCCOPY under ROPS.
- BLTSHRING & BLTSTRETCH under FX Caps are desirable, though not necessary system requirements. 9FX Motion 771 is one of several major supporting brands.

A graphics adapter that meets the requirements listed above may be enabled for video capture and decompression using the Osprey-1000.

First, check the **Use DirectDraw** box on the Osprey-1000 Control Panel. Then, from the Windows NT 4.0 desktop, select **Display Properties**, **Settings**, **Color Palette**, **65536 Colors**. The Osprey-1000 video Capture/Encoder, the decompression portion of the video codec, and miscellaneous demo programs will each attempt to use DirectDraw for their display window output. The **Stretch** and **Shrink** options are made available, if supported. DirectDraw will support any programs that utilize and query Video-for-Windows hardware drawing capability.

To determine if your system configuration is adequate, run the Osprey-1000 demonstration program in 16-bit mode, with DirectDraw enabled. If the demo program is unable to locate required DirectDraw resources, a pop-up message will appear to describe the failure. Once the failure message is OK'd, the demo program will continue on in DIB drawing mode. Other failure messages may appear for faulty application initialization, using the Osprey-1000 and Video-for-Windows with DirectDraw enabled. In such cases, the fallback will be as dictated by the application. DirectDraw failure messages can be suppressed by opening the ***Software/Osprey/Osprey1000/Device0/DrwDll/Settings*** folder in the Windows NT Registry key, and resetting the ***PopupOnError*** variable for the current user.

Limited support is also provided for 8-bit color (256 colors). However, in some cases the display adapter color palette may not properly load into the Osprey-1000 libraries. A possible remedy to the problem is to run the Osprey-1000 Demo Program in 8-bit mode with DirectDraw enabled, and determine if color palettizing is properly supported by your display adapter.

Due to hardware and software limitations, the Osprey-1000 cannot gracefully support hardware and non-hardware drawing modes simultaneously. Therefore, whenever hardware drawing is enabled, any attempt at non-hardware decompression will fail. Video quality may be improved by turning off hardware drawing mode in some cases.

Win32 SDK and DirectX 2 SDK from Microsoft both provide DXVIEW (DirectX Viewer), a tool for displaying the DirectX capabilities of your system. DirectDraw is, in fact, a subset of DirectX. The Osprey-1000 does not currently support DirectDraw in Windows 95.

Chapter 5 — Osprey-1000 Demo Applications

The Osprey-1000 software includes several demo applications. The Osprey-1000 Demo and the Video for Windows Demo are used to show loopback video. The Network Demo (referred to as NetDemo) is used to demonstrate a point-to-point conference using TCP/IP over a network. The Microsoft VidCap Demo is a simple video capture application. The Osprey-1000 H320 Demo, when the Osprey-320/2 or Osprey-320/6 package has been purchased, can perform video conferencing over an ISDN connection.

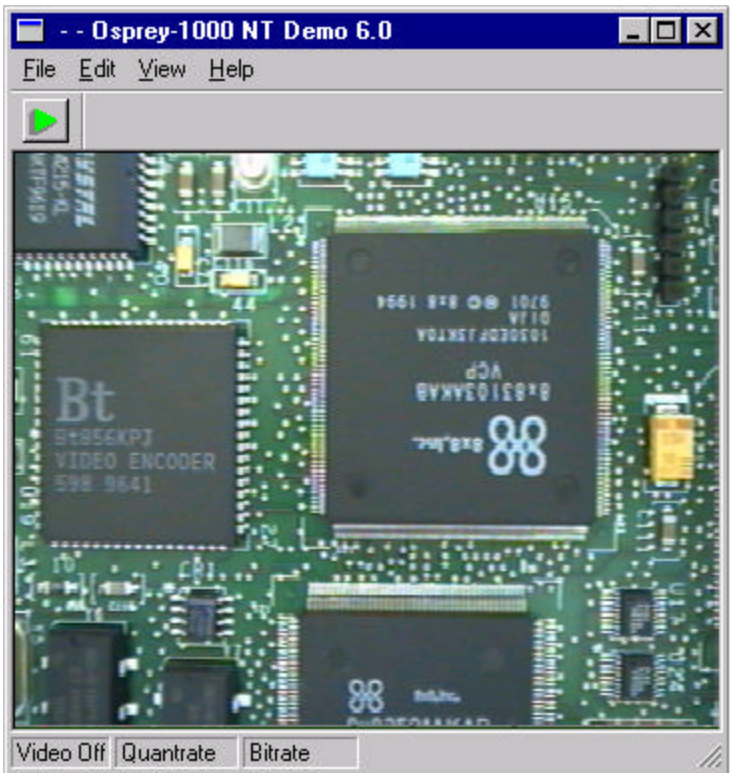
This chapter will provide instructions for the use of the demos provided with the Osprey-1000 software. One should note that while the Osprey-1000 software does not provide a demo explicitly for audio, the Microsoft Sound Recorder application, which comes with both Windows 95 and NT, is a good test for audio. This chapter will briefly explain its use.

Osprey-1000 Demo

The Osprey-1000 Demo shows loopback video in uncompressed, H.261, and H.263 formats.

Basic Operation

1. Connect a video camera, VCR, laser disc player, or other video source to the Osprey-1000 card's Video-In jack. **NOTE**: The default for the test program is the composite jack, though you can also use the S-Video Video-In jack by changing the Control Panel settings.
2. Open the **Osprey-1000 Demo** from the Osprey-1000 program group to start the demonstration program and display the main window.
3. Click on the green arrow to begin video loopback. By default, this will show uncompressed 16-bit RGB video.



Toggling Video

Click on the “Play” button (the “Green Arrow” button) and the "Stop" button (the "Red Square" button) to toggle the video capture operation between motion video and a freeze frame.

Resizing the Display Window

You can resize the display window arbitrarily or to pre-assigned sizes. CIF size is 320 x 240, and QCIF size is 160 x 120.

- Select View - Window Size, and then the desired pre-assigned size. The available sizes are CIF, 2X CIF, and QCIF.
- You can also resize the display window arbitrarily by clicking and dragging the window's borders.

H.261 and H.263 Demonstrations

The Osprey-1000 Demo can also show H.261 and H.263 (NTSC only) compressed video. The following steps describe how to show H.261 or H.263 video.

1. Click on **Edit**, and then **Format**.
2. Click on H261 (or H263, if desired).
3. Click on the **Play** icon.
4. The codec will begin operation as described above.

Picture-in-Picture Demo

The demonstration application includes a sample of the Osprey-1000 picture-in-picture capability when using H.261 compression.

1. Click on **Edit**, and then **Format**.
2. Click on H261.
3. Click on **View**, and then **H261 Picture in Picture**.
4. Click on the **Play** icon.
5. The codec will begin operation with a Picture in Picture window showing a reverse view of the local video image.

Video Options

The Osprey-1000 includes an options dialog that allows the user to configure Quantization, Bit Rate, Frame Rate, and Compression Size. Note that the available option settings vary for Raw (uncompressed), H261, and H263 video.

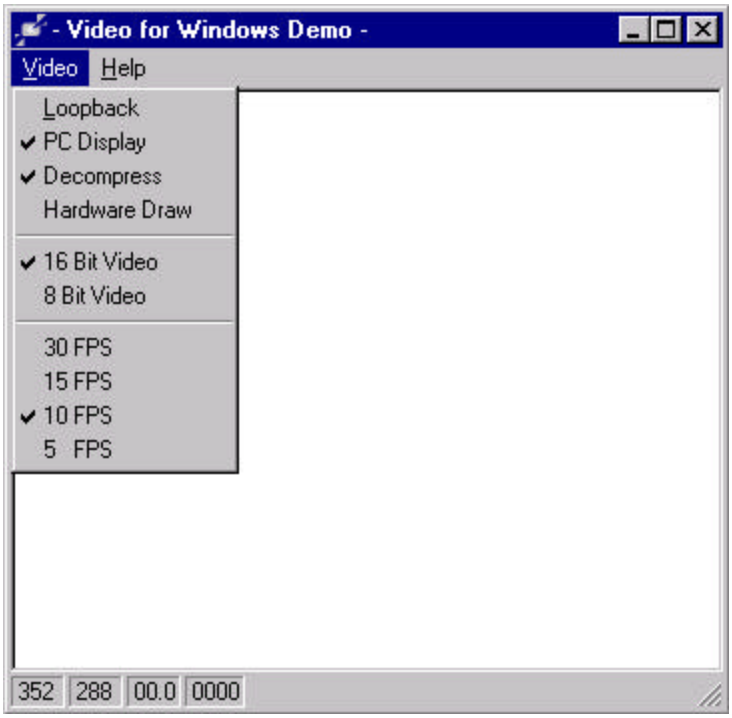
- Select **Edit** and then **Options** to view the Options dialog.
- You can leave the Options dialog window open while changing the video format to view the valid options for each format.

Osprey-1000 Video for Windows Demo (VFW Demo)

The VFW Demo provides loopback video just as the Osprey-1000 Demo does. However, the VFW Demo was written using Microsoft's Video for Windows API. Unlike the Osprey-1000 Demo, which always defaults to use the raw (uncompressed) video format, the VFW Demo uses the format set in the Osprey-1000 Video Capture/Encoder.

Basic Operation

1. Open the VFW Demo program from the Osprey-1000 program group.



2. To set the frame rate, click on **Video** and then select desired frame rate. The default is 10fps.

3. To view video, click on **Video** and select **Loopback**.
4. Note the numbers at the bottom of the video window. The first two numbers represent the size of the video image (352 by 288 in this example). The second two numbers (9.9 and 219) represent the frame rate and the bit rate, respectively.

Toggling Video

Click on **Video** and then select **Loopback** to start video motion. Click on **Video** and then deselect **Loopback** to stop video.

Resizing the Display Window

The VFW Demo does not provide preset window sizes to select for resizing the display. By default, the demo window is CIF size. The display can be resized by clicking and dragging the window's borders. However, without a preset size to select, you may have problems setting the window size back to the default.

Setting the Video Format

The VFW Demo does not provide a menu selection for setting the video format. As discussed earlier, the video format the demo uses is the current format of the Video Capture/Encoder. To change the video format, see the *Video Capture Dialog* section in Chapter 3.

Osprey-1000 Network Demo (NetDemo)

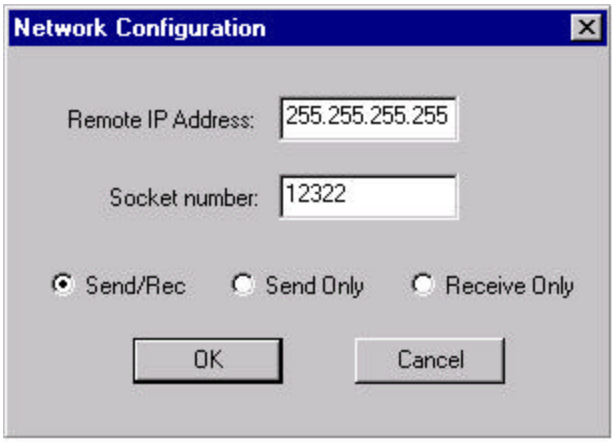
The NetDemo program displays simple TCP/IP-based video-conferencing. It allows the user to connect two systems with Osprey-1000 boards via a videoconference with optional audio. The instructions below should be run on both systems that will be connecting with NetDemo, or on the single system that will connect to itself for testing loopback with NetDemo.

Basic Operation

To run the NetDemo program, you must first set up the program for network communication.

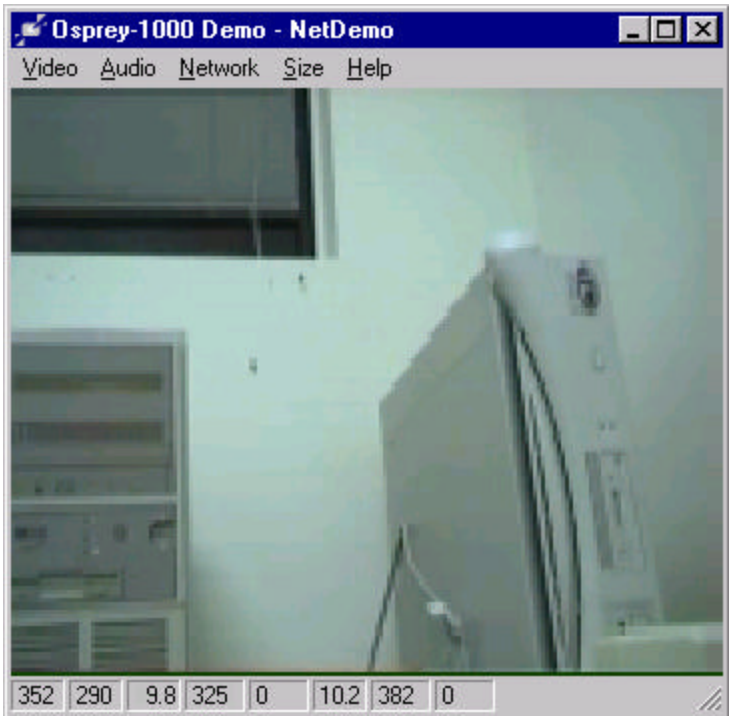
Open the NetDemo program from the Osprey-1000 program group.

1. Click on **Network**, then click on **Configure**. The Network Configure window below will appear.



2. Make sure **Send/Rec** is selected, then enter the IP address or machine name of the remote system. If you want to test NetDemo in loopback mode, enter the IP address or machine name of the local system.

3. If the Socket number listed is in use by your system, you may enter a different Socket number. Any unused socket value will work. Make sure both systems are configured to use the same Socket number.
4. If audio is desired, click on **Audio** and then **Format** to select the desired audio format. Click on **Audio** and then **Enable** to enable audio, and then click on **Audio** and select **Play** and/or **Record** for receiving audio and/or sending audio.
5. Click on **Video** and then **Format** to select the desired video format. This will bring up the Video Capture Dialog as described in Chapter 3.
6. The default frame rate is 10fps. To change the frame rate, click on **Video** and select from the frame rate options (5, 10, 15, or 30fps).
7. Click on **Network** again, then click on **Connect**. Video should appear in the NetDemo window.



8. Note the numbers at the bottom of the video window. The first two numbers show the size of the video image (352 by 290 in this example). The next set of three numbers (9.8, 325, 0) designate the received frame rate, bit rate, and dropped packets, respectively. The second set of three numbers (10.2, 382, 0) designate the sending frame rate, bit rate, and dropped packets, respectively.

Toggling Video

Since NetDemo is not a loopback video demo, there is really no video toggle function. To open a connection to view remote video, click on **Network** and then select **Connect** to connect to the remote system. To close the connection, click on **Network** and deselect **Connect**.

To see local video while running NetDemo, click on **Video** and then click on **Local View**. Note that **Local View** is only available when NetDemo is connected and displaying remote video. If you bring up NetDemo and simply select **Local View**, you will not get local video.

You can also see local video by setting up NetDemo to connect to itself by using the IP address of the system NetDemo is running on as opposed to a remote IP address.

Resizing the Display Window

You can resize the display window arbitrarily or to pre-assigned sizes. CIF size is 320 x 240, and QCIF size is 160 x 120.

- Select Size and then the desired pre-assigned size. The available sizes are CIF and QCIF.
- You can also resize the display window arbitrarily by clicking and dragging the window's borders.

Setting the Video Format

Like the VFW Demo, the video format NetDemo uses is the current format of the Video Capture/Encoder. However, unlike the VFW Demo, NetDemo provides a menu selection for accessing the Video Capture dialog. Select **Video** and then **Format**, then the Osprey-1000 Video Capture dialog will appear. See the *Video Capture Dialog* section in Chapter 3 for information on changing the video format.

The NetDemo application will support video capture in any selected format on the transmitting end, however on the receiving end, the machine must have a decoder available for the transmitted format. The Osprey-1000 is shipped with H.263, H.261 & IP64 decoders which use the Osprey-1000 for hardware decoding. Viewing of images captured in any other format (such as CellB or YUYV) may require third-party software decoders which are not supplied with the Osprey-1000 installation and must be obtained elsewhere. In this case, the NetDemo application will issue an error message on the receiving end if it receives video in a format for which it cannot find an appropriate decoder. The NetDemo application will not be aware of this deficiency on the transmitting end.

NOTE: H.261 is the recommended format for NetDemo. H.261 is well suited for use with videoconferencing applications on a LAN.

Picture-in-Picture Demo

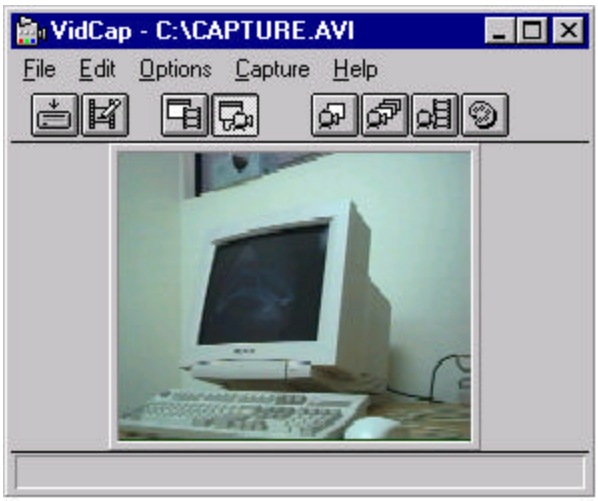
During a conference with NetDemo, you can bring up Picture-in-Picture to show local video. Click on **Video**, and then select **PIP**, and a **Display Options** dialog will appear. Select "Picture-in-Picture" to activate PIP. You can also select where the PIP window will appear from the four preset locations. Then, when you connect to a conference, you should get a Picture-in-Picture local view.

Microsoft VidCap Demo

The Microsoft VidCap program is a video capture tool. It allows the user to capture video and optional audio to an AVI format file. If capturing uncompressed video, the user can optionally select a software compressor to compress the video before storing to the AVI file.

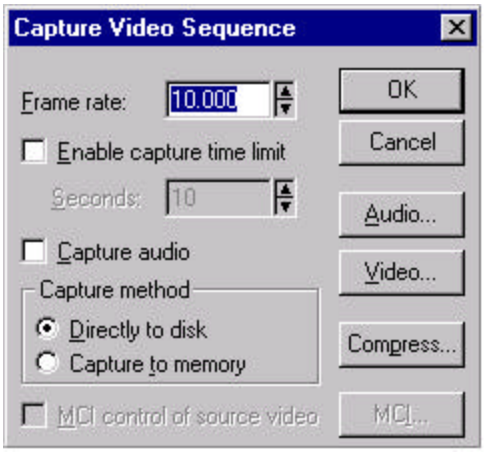
Basic Operation

Open the VidCap program from the Osprey-1000 program group.



1. Click on **Options** and then **Overlay** (or click on the **Overlay** button, fourth from the left) to view overlay video.
2. You could also select **Preview** (third button from the left) instead of **Overlay** to view Preview video.
3. To setup a video capture file, click on **File** and then select **Set Capture File**. The default capture file is C:\CAPTURE.AVI.
4. To set the video format, click on **Options** and then select **Video Format** to bring up the Osprey-1000 Video Capture dialog.
5. To begin video capture, click on **Capture** and then select **Video**. Note that if you want to capture frames or a single frame, those options are also available under the **Capture** menu.

6. The Capture Video Sequence dialog should appear.



7. From this dialog, you can set the frame rate, enable audio capture, and set other options before beginning video capture. Clicking on the **Audio** or **Video** button in this dialog will bring up the format dialogs for those items.

NOTE: If you do not wish to have VidCap do software compression on the video you are capturing, click on the Compress button and select either "Full Frames (Uncompressed)" or "No Recompression". Software compression can cause low frame rates and dropped frames, especially if used in conjunction with hardware compressed video, such as H.261.

8. Click **OK** to start capture, and hit the Escape key to stop capture. VidCap will report the length (time) of the capture, the number of frames captured, the number of frames dropped, and the frame rate during capture.

The captured AVI file can be viewed with the Microsoft Media Player or by opening the AVI file. Note that when capturing audio, VidCap makes no attempt to keep audio in sync with the video. This is a simple application that is not designed for robust capture and editing.

Osprey-1000 H320 Demo

The Osprey-1000 H320 Demo is an H320 conferencing application that allows the user to conference over ISDN telephone lines. If you did not purchase an Osprey-320/2 or 320/6 package, then the Osprey-1000 H320 Demo will simply show loopback video. If you did purchase one H320 products, see the Osprey-1000 H320 User's Guide for information on running the Osprey-1000 H320 Demo.

Microsoft's Sound Recorder

The Sound Recorder application is installed under Windows 95/NT as part of the Multimedia Applications set. It can be used to verify that audio with the Osprey-1000 board is functioning properly.

Basic Operation

From the Windows **Start** menu, select **Programs**, then **Applications**, and then **Multimedia**, and open the Sound Recorder. To test audio playback, make sure speakers are connected to the line output jack of the Osprey-1000 board. Then select **File** and **Open**, and enter the path to a WAV format file. Click on the **Play** button to begin playing audio.

To test audio record, select **File** and **New**. Make sure you have a microphone or other audio input source plugged into the input jack on the Osprey-1000. If the source is not a microphone, make sure you have selected "Line Input" in the Osprey-1000 Control Panel. Click on the **Record** button (red dot) to begin recording, and click on the **Stop** button to stop recording. Click on the **Play** button to play the recorded audio.

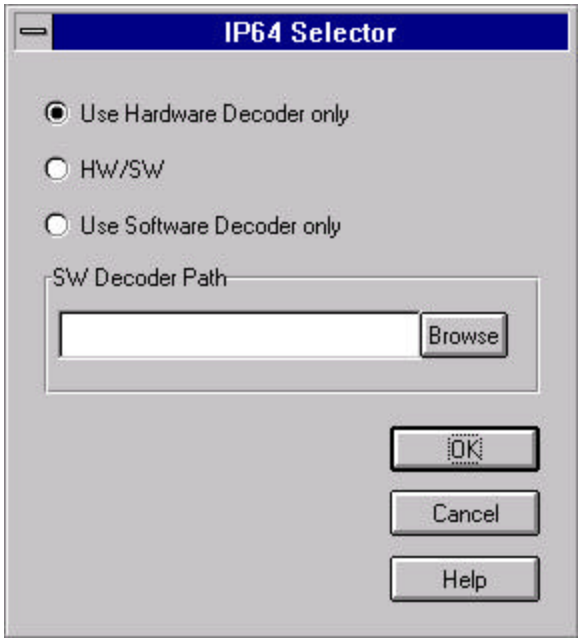
Chapter 6 - Osprey-1000 Configuration Software

The Osprey-1000 software includes programs that can be used to configure the drivers to function in a certain manner. This chapter will discuss how to use these programs.

Switching Hardware and Software Decoders

When using H.261 video with the IP64 FourCC code, the IP64 Selector allows a user to select HW only, SW only, or HW/SW decompression of IP64 streams. If you are running Communiqué!, enter IP64_32.dll in the SW compressor box, and check HW/SW. Otherwise, select HW only (unless you have an IP64 decoder from another source).

From the Osprey-1000 program group, select the IP64 Selector.



The Osprey-1000 can only decode one stream at a time. In order to provide multi-way conferencing, you must use a SW decompressor supplied by another vendor. Under Communiqué!, this SW decompressor is called IP64_32.dll, and can be entered either through the IP64 Selection Program, or through the configuration box for the ICM in the Control Panel's Multimedia Properties applet. If you are using HW only decompression and try to decompress multiple streams, the video bitstreams will be interleaved and you will see blocks from both streams in each window.

Osprey-1000 H263 Selector

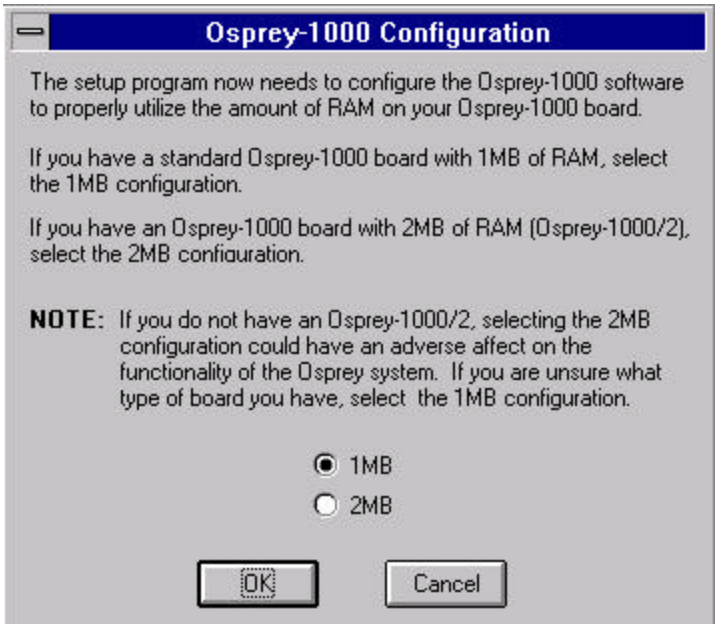
The Osprey H263 Selector program allows you to configure the Osprey software to use either hardware or software decoding for the H.263 video format.

From the Osprey-1000 program group, select the H263 Selector.

Osprey-1000 On-Board RAM Configuration

The Osprey RAM Configuration program allows you to configure the Osprey software to fully utilize the amount of RAM on-board the Osprey-1000.

From the Osprey-1000 program group, select Osprey RAM Configuration.



Once you tell the program the amount of RAM on the Osprey board in your system, it will make necessary modifications to the registry.

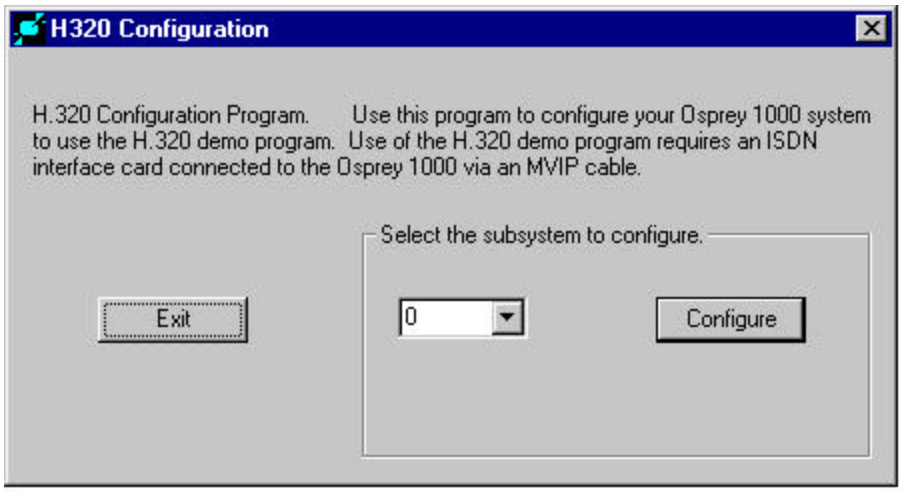
Currently, all Osprey-1000 boards are shipped with 2MB of RAM. To support users of older boards with 1MB of RAM, the Osprey-1000 software is installed with the configuration for 1MB of RAM.

Configuring the H320 Software

The H320 Configuration program runs as part of the install program. This allows you to configure the H320 software for use with the Videoserver Connections ISDN card, and to make ISDN calls using the Osprey-1000 H320 Demo. Refer to the H320 User's Guide for more details on operating the H320 software.

NOTE: The Osprey-1000 and Videoserver Connections ISDN board combine to form a "subsystem". You may have multiple subsystems in a computer, and must configure each subsystem separately. To properly configure the Videoserver Connections module, you must set the IO Base, the IRQ, and the line protocol for the ISDN connection.

After installation, select the H320 Configuration program in the Osprey-1000 Program Group to configure the H320 software.

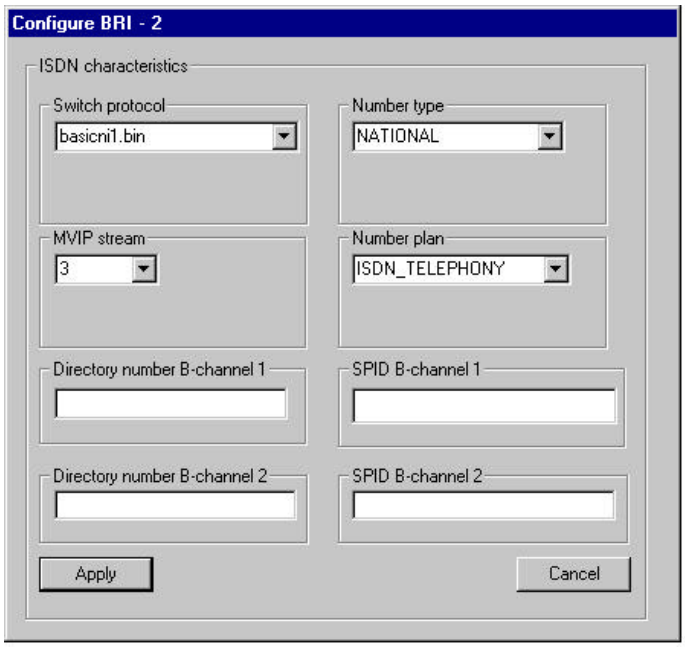


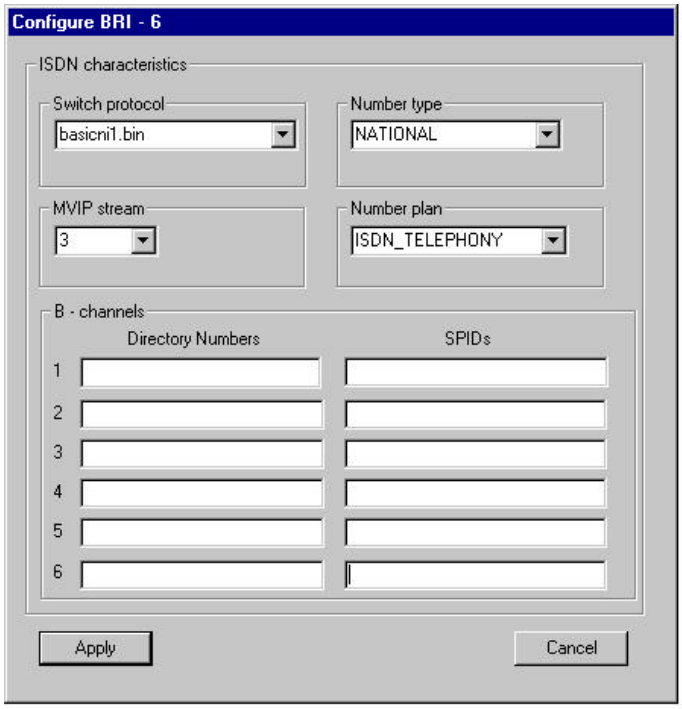
This dialog box allows the operator to exit the program, or configure a subsystem. Once the operator has configured the subsystems that are installed they select the "exit" button to terminate the program. For each hardware subsystem installed the operator will select the appropriate subsystem in the edit box and then select the "configure" button to start the configuration process on that subsystem.

This dialog box asks the user to enter the name (description) for the subsystem, the type of Videoserver Connections board installed, the base address for the Videoserver Connections board, and the IRQ number for the Videoserver Connections board. Each Videoserver Connections circuit board must have a unique base address, but all Videoserver Connections circuit boards may use the same IRQ number.

The following dialog boxes appear depending on the selection of Videoserver Connections board type in the above dialog box.

Videoserver Connections BRI-2, BRI-6





The configuration information collected by these dialog boxes are the telephone switch protocol, the telephone numbering plan, the telephone numbering type, the MVIP stream, the telephone directory numbers, and the telephone SPIDs.

The switch protocol is information that is supplied by the provider of your ISDN lines. Currently supported protocols are:

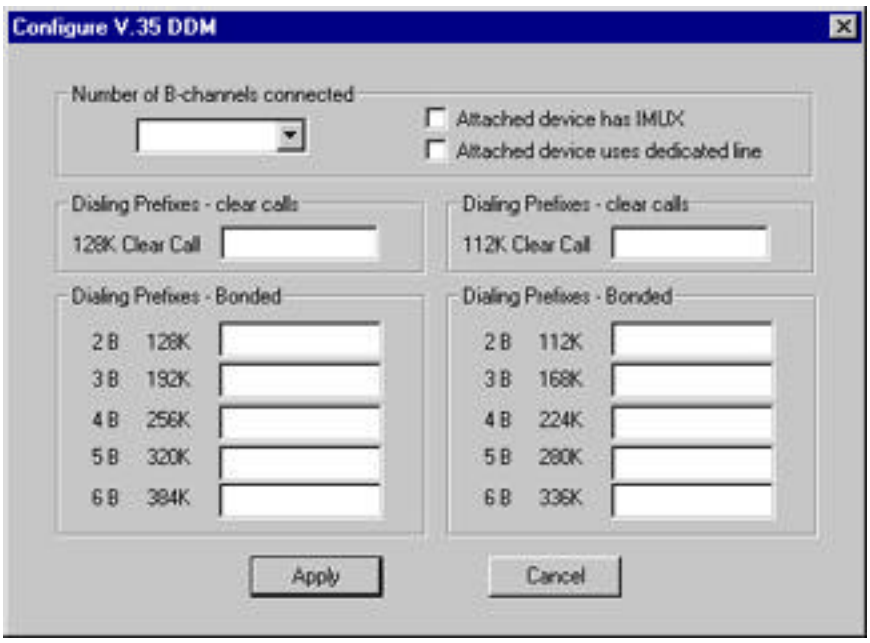
Basictph.bin	Australian
Basicins.bin	Japanese INS - 64
Basicni1.bin	National ISDN – 1
Basicnet.bin	obsolete
Basiccts.bin	European ISDN
Basicdms.bin	DMS-100 Custom
Basic5e.bin	5ESS Custom (AT&T)
Basictr6.bin	obsolete

Numbering type and numbering plan depend on the configuration of your ISDN lines. The defaults are NATIONAL and ISDN_TELEPHONY. If these values do not work try the NO_TYPE and NO_PLAN selections.

Osprey 1000 circuit boards are set at the factory to use MVIP stream three (3).

Your ISDN provider will supply the directory numbers and SPIDs for your ISDN lines. The H.320 system uses a minimum of four digits for the directory number. Although the configuration program will accept less than four digits the system will not function properly with directory numbers of less than four digits.

Videoserver Connections DDM (V.35)



For the Videoserver Connections DDM board the information that the user enters is the number of B-channels hooked to the external device, whether or not the external device has IMUX capabilities, whether or not the external device uses a direct connection, and the prefixes used to select the bandwidth to use.

The prefix information is specific to the external device. Please check the documentation supplied with the external device to determine what should be entered into the prefix fields to dial using the desired bandwidth and characteristics.

NOTE: Use of the Videoserver Connections V.35 DDM board requires a jumper change on the Osprey 1000. The DDM only supports MVIP stream zero. Refer to the hardware installation instructions to determine how to set the jumpers for operation on stream zero.

Chapter 7 - Using the Osprey-1000 with Popular Applications

This chapter will discuss how to setup, configure, and use the Osprey-1000 with several different software applications. This chapter is not intended as a user's guide for the applications, but merely a guideline for properly configuring the Osprey-1000 board and drivers to function with the software. It is assumed that the reader has already made himself or herself familiar with the application before using it with the Osprey-1000.

If you have difficulties in getting the board to function properly with a 3rd party application, first make sure the Osprey-1000 board is functioning properly by running some of the demos listed in Chapter 5. If the demos are not working, contact Osprey Technical Support.

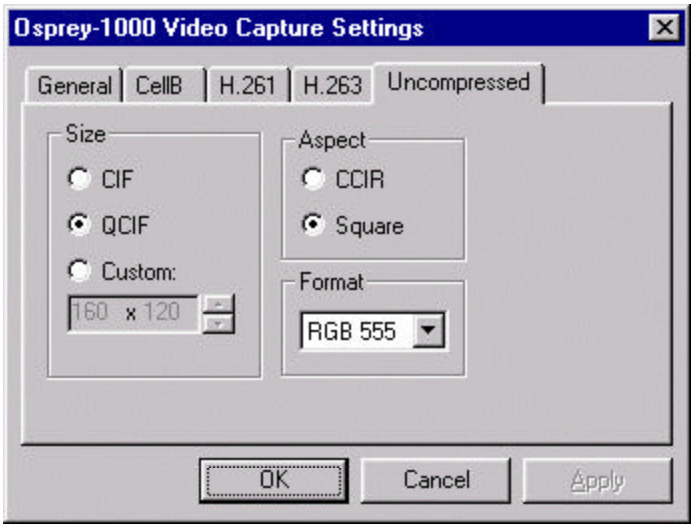
If the demos are functioning properly, then the problem may be that the software is improperly installed or configured, or the Osprey-1000 is improperly configured for use with the application. In this case, we recommend that you first contact the software manufacturer to verify the software application is installed and configured properly, and then if there are still problems, contact Osprey.

White Pine's CU-SeeMe

CU-SeeMe is a videoconferencing application that allows the user to share video, audio, text, and graphics with multiple users across the Internet. It can also be used over any TCP/IP network for real-time conferencing, broadcasts, or chats. The following instructions were tested with CU-SeeMe version 3.1.

Driver Configuration

CU-SeeMe uses uncompressed video from the Osprey-1000 and performs software-based compression. The Osprey-1000 Video Capture/Encoder should be configured for Uncompressed RGB video as shown below.



This is the format that is most commonly used for CU-SeeMe. With Release 2.3, Osprey added support for 24-bit RGB video. You may want to try selecting 24-bit RGB instead of RGB 555.

For audio, you should not have to make any changes to the Osprey drivers.

Basic Operation

Once the Osprey-1000 is configured for use with CU-SeeMe, open the application. If this is a new installation of CU-SeeMe, it may run through a series of configuration options before starting. If it is a previously installed version, then click on **Test Setup** to verify that the Osprey-1000 is working properly with CU-SeeMe.

When the **Test Setup** dialog appears, there should be two video windows. One displays local video, and the other displays remote video. You may see a local view in both windows if there is no active connection.

If you do not see video, make sure the Hardware section of the dialog lists "Osprey-1000 Video Capture/Encoder" as the video capture device. Then click on the **Format** button and make sure the Video Capture/Encoder is configured as shown above. If you still are not seeing video, close down CU-SeeMe and run the Osprey-1000 demo and Osprey Video for Windows demo to verify that the board is functioning properly.

If audio is not functioning properly, click on the **Audio** tab. If you are using the Osprey-1000 for audio, make sure the Recording Device and Playback Device are both set to "Osprey-1000". You can click on **Test** to check the speaker volume. If you not hear audio, make sure the speakers are connected properly and the audio levels are set properly. Shut down CU-SeeMe and test audio with Sound Recorder as described in Chapter 5.

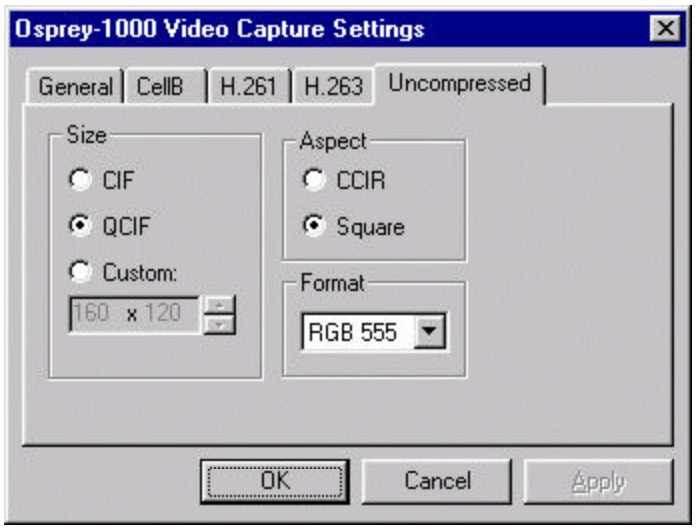
If audio and video are functioning properly, you may begin conferencing with CU-SeeMe.

Microsoft's NetMeeting

NetMeeting is another videoconferencing application that allows users to share video, audio, text, graphics, and applications across the Internet. It can also be used over a TCP/IP network. The following instructions were tested with NetMeeting version 2.1.

Driver Configuration

NetMeeting uses uncompressed video from the Osprey-1000 and performs software-based compression. The Osprey-1000 Video Capture/Encoder should be configured for Uncompressed RGB video as shown below.



This is the format that is most commonly used for NetMeeting. With Release 2.3, Osprey added support for 24-bit RGB video. You may want to try selecting 24-bit RGB instead of RGB 555.

For audio, you should not have to make any changes to the Osprey drivers.

Basic Operation

Once the Osprey-1000 is configured for use with NetMeeting, open the application. Click on the **Current Call** icon. Two video windows should appear on the right, "My Video" and "Remote Video". Click on the play button in the "My Video" window to view local video.

If you do not see video, click on the **Tools** menu, and select **Options**. Then click on the **Video** tab and look under "Video camera properties". Make sure the video capture device is set to Osprey-1000 Video Capture/Encoder. If you still are not seeing video, close down NetMeeting and run the Osprey-1000 demo and Osprey Video for Windows demo to verify that the board is functioning properly.

If audio is not functioning properly, click on the **Audio** tab. If you are using the Osprey-1000 for audio, make sure that "Enable full duplex audio…" is selected. If audio is still not functioning properly, you can try changing the audio code. Click on the **Advanced** button and select "Manually Configure Compression Settings". Then select "CCITT u-Law" and click on the **Up** button to move the audio codec to the top of the list. The Osprey-1000 should work with all the codecs listed, but moving this one to the top of the list will force NetMeeting to use it first. If audio is still not functioning properly, shut down NetMeeting and test audio with Sound Recorder as described in Chapter 5.

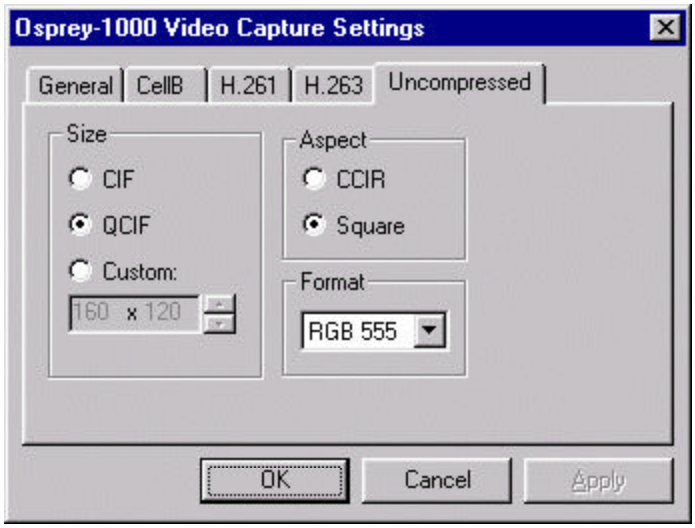
If audio and video are functioning properly, you may begin conferencing with NetMeeting.

Microsoft's NetShow ASF Real-Time Encoder

The NetShow Active Streaming Format (ASF) Real-Time Encoder encodes live audio and video into an ASF stream for broadcast over a network or storage to a file. The encoded stream can be sent to a NetShow Server for multicasting or unicasting. The stream can also be sent to an ASF and viewed as non-live content. This section will discuss using the encoder with live content. The following instructions were tested with ASF Encoder version 2.0.0.912.

Driver Configuration

The ASF Encoder uses uncompressed video from the Osprey-1000 and performs software-based compression. The Osprey-1000 Video Capture/Encoder should be configured for Uncompressed RGB video as shown below.



This is the format that is most commonly used for NetShow. With Release 2.3, Osprey added support for 24-bit RGB video. You may want to try selecting 24-bit RGB instead of RGB 555.

For audio, you should not have to make any changes to the Osprey drivers.

Basic Operation

Once the Osprey-1000 is configured for use with the ASF Encoder, open the application. Select "Live Source" as the media input source. If you are using the Osprey-1000 for audio, make sure the Audio Source is set to Osprey-1000. Make sure the Video Source is set to Osprey-1000 Video Capture/Encoder. Click on the **Next** button.

Select the Network bandwidth you wish to use, and click on the **Next** button.

For the Audio Compression, select "Lernout & Hauspie CELP 4.8kbit/sec". This is the format that works best with the Osprey-1000 for audio. For Video Compression, select "Osprey-1000 Video Codec" or "MPEG4 Video High Speed Compressor (MT)". If the ASF Encoder gives an error for the Osprey code, the MPEG4 codec will function quite well. You could also try any of the other codecs that appear. The list of codecs may vary depending on what software you have installed on your system. Click on the **Next** button to continue.

Select the stream destination, and click on the **Next** button. If you selected "To a NetShow Server", you will be prompted for server information. If you selected "To a local ASF file", you will be prompted for file information. Click the **Next** button to continue.

If desired, enter a description of the ASF stream, and then click the **Finish** button.

You should then see a screen with information about the settings you just configured. Unfortunately, the ASF Encoder does not provide a video window for viewing video as it is being encoded. You will not be able to preview the video before encoding. Click on the **Start** button to begin encoding.

If audio and video are not functioning properly, you should get an error from the ASF Encoder. If the problem is not obvious, try shutting down the encoder and testing the Osprey-1000 board with the demos as described in Chapter 5.

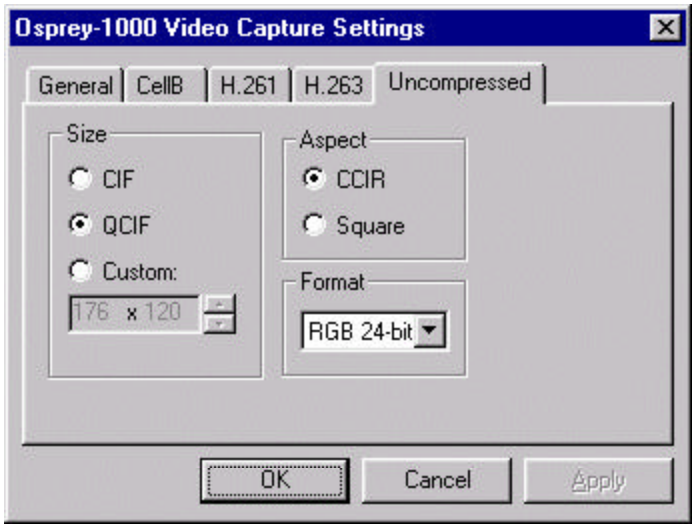
If audio and video are functioning properly, the Summary Stats should start updating. When you are finished encoding, click on the **Stop** button.

RealNetworks' RealEncoder

The RealEncoder is another streaming video application. The RealEncoder can encode video and/or audio into RealVideo and RealAudio formats. Encoded content can then be sent over the Internet in real-time using the RealServer. The RealEncoder allows you to encode from pre-existing files or do live encoding and broadcasting. The following instructions were tested with the RealEncoder version 5.0.

Driver Configuration

The RealEncoder uses uncompressed video from the Osprey-1000 and performs software-based compression. The Osprey-1000 Video Capture/Encoder should be configured for Uncompressed RGB video as shown below.



With Release 2.3, the Osprey-1000 supports RGB 24-bit video. This is the preferred format for the RealEncoder. You can also select RGB555 instead of RGB 24-bit.

For audio, you should not have to make any changes to the Osprey drivers.

Basic Operation

Once the Osprey-1000 is configured for use with the RealEncoder, open the application. Click on **File**, and select **Open Session**.

Under Source, select Capture Device. Select Audio, Video, or both depending on the content you wish to encode. Under Destination, select RealMedia File, RealServer, or both. Provide the proper information necessary for the File and/or Server, and click the **OK** button.

The encoder will take a few seconds to initialize, and then you should see video in the left window. If it is unable to connect to the Osprey-1000 Video Capture/Encoder, you should get an error message. Close the RealEncoder, verify you have set the proper video format, and try testing with the demos described in Chapter 5.

If you see video in the left window, select the desired template and click on the **Advanced** button. Make sure the Video format is set for "RealVideo (Standard)". Configure the other settings as desired and click the **OK** button.

To start encoding, click on the **Start** button under File Encoding. After a few seconds, you should see encoded video in the right window. Click on the **Stop** button when you are finished encoding.

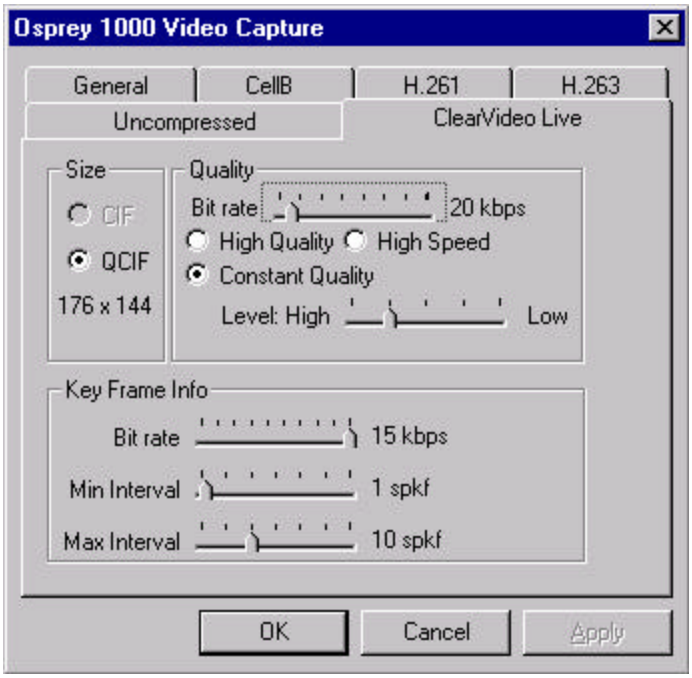
Iterated's ClearVideo Live Encoder

Firmware support for Iterated's ClearVideo Live Encoder is available from VIEWCAST.COM at extra cost.

The ClearVideo encoder is another streaming video application. It is based on RealNetworks' RealEncoder, with support for hardware encoded video using a fractal-based codec. It functions exactly like the RealEncoder, but the hardware compression allows it to run on slower systems because it does not require a high-speed CPU for video compression. The following instructions were tested with ClearVideo Live Encoder version 1.02.

Driver Configuration

The ClearVideo Encoder uses hardware-compressed video from the Osprey-1000. The Osprey-1000 Video Capture/Encoder should be configured for the ClearVideo Live format as shown below.



With ClearVideo Live, the Osprey-1000 Video Capture Drive is updated to allow the user to select the ClearVideo Live fractal codec as a format option.

For audio, you should not have to make any changes to the Osprey drivers.

Basic Operation

Once the Osprey-1000 is configured for use with the ClearVideo Encoder, open the application. Click on **File**, and select **Open Session**.

Under Source, select Capture Device. Select Audio, Video, or both depending on the content you wish to encode. Under Destination, select RealMedia File, RealServer, or both. Provide the proper information necessary for the File and/or Server, and click the **OK** button.

The encoder will take a few seconds to initialize, and then you should see video in the left window. If it is unable to connect to the Osprey-1000 Video Capture/Encoder, you should get an error message. Close the ClearVideo Encoder, verify you have set the proper video format, and try testing with the demos described in Chapter 5.

If you see video in the left window, select the desired template and click on the **Advanced** button. Make sure the Video format is set for "RealVideo (Fractal)". Configure the other settings as desired and click the **OK** button.

To start encoding, click on the **Start** button. After a few seconds, you should see encoded video in the right window. Click on the **Stop** button when you are finished encoding.

Other Applications

Obviously, we can not cover all software applications that can utilize the Osprey-1000 board. If you are using an application that is not mentioned in this guide, keep the following in mind.

- Make sure the Osprey-1000 Video Capture/Encoder is set for the proper video format for the application.
- Most applications do not require special audio configuration for the Osprey-1000.
- If the application is having problems with video, test the Osprey-1000 by running the demos described in Chapter 5.
- If the application is having problems with audio, make sure the Osprey-1000 is the preferred audio device and test it with Sound Recorder.
- If the board appears to be functioning properly but does not work with the software application, check with the software manufacturer to make sure the software is installed and configured properly.
- If the board is not functioning properly, or if you have verified the software is installed and configured properly, contact Osprey Technologies Technical Support.

Appendix A — Osprey-1000 Physical and Environmental Specifications

The following tables provide specifications for the Osprey-1000 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 40ºC
Non-operating temperature range	-40º to +75ºC (RH)
Operating humidity range	Between 5% and 80% (non-condensing) @ 40ºC
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 definitions will be added as this manual is developed.

TERM	DEFINITION
AEC (Acoustic Echo Cancellation)	Acoustic Echo Cancellation (AEC) can be used to digitally detect and eliminate cascading echo caused by a microphone picking up speaker output. If conferencing with speakers and a microphone, the microphone can pick up the speaker output and cause a cascading echo on both sides of a conference. AEC can be used to eliminate this problem.
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. It provides somewhat lower quality video than H.261, but it is fairly tolerant of packet drop and easy to decode. As machine speeds have increased, software decoders of higher quality algorithms, such as H.261, can be deployed with good performance. The reasons for using CellB are primarily for compatibility with applications that already use CellB.
CIF (Common Intermediate Format)	A 352x288-pixel window format for displaying video. 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.

TERM	DEFINITION
DCT (Discrete Cosine Transformation)	A mathematical process used by many standard compression algorithms.
DirectDraw	A software interface standard for transferring video processing from a PC's CPU to the video adapter. The standard was first developed by Intel and called the Display Control Interface (DCI) and is now supported by Microsoft with the name DirectDraw as a registered trademark. The driver allows an application to send update information directly to the video adapter. The Osprey-1000 board supports DirectDraw under Windows NT. For more information, see the Osprey-1000 Release Notes.
Direct Capture	Direct, or uncompressed, capture provides the highest quality image, but takes the most space. A 30-second clip of uncompressed video in 16-bit RGB format, CIF size, uses nearly 150Mbytes of disk space. The images are digitized version of the input and have no compression artifacts. Uncompressed video input may be useful in some applications that perform off-line or software decompression.
G.711	A 64Kbps audio compression standard that is part of H.320 for mono audio. G.711 describes the A-Law and U-Law audio codecs.
G.722	A 64Kbps 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 16Kbps high quality compressed audio.

TERM	DEFINITION
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.
ITU	International Telecommunications Union

TERM	DEFINITION
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.
Lossless JPEG	Lossless JPEG provides a method for reproducing the exact source image after decompression. Most compression techniques do not produce the exact same source image after going through a compress -> decompress cycle. Data loss occurs as part of the compression process. Lossless JPEG does not provide nearly the compression ratios of the other techniques, but can reproduce the source image exactly. This technique can be valuable in medical imaging or other fields where there is no tolerance for data loss.
MPEG	Motion Picture Experts Group.
MJPEG	A pseudo-standard constrained subset of JPEG images, generally considered Motion JPEG.
MPEG-1	MPEG-1 is the ITU compression standard for movies. There is an MPEG audio portion of the specification in addition to video, although the term MPEG is typically used to refer to the video streams as well as the system streams, which are comprised of both audio and video. It was originally designed for CD-ROM video playback and thus offers excellent quality in the 1-6Mbits/second range. MPEG-1 does use inter-frame compression and thus is not well suited for editing or lossy transmission (packet-based networks).
MVIP	(Multi Vendor Interface Protocol) A standard ribbon-connector that ties together input cards and network interface cards.
POTS	"Plain Old Telephone Service" A traditional telephone line.

TERM	DEFINITION
QCIF (Quarter Common Intermediate Format)	Quarter Common Intermediate Format A 176x144 pixel window format for displaying video (one-quarter the resolution of a CIF window).
T.120	An emerging data conferencing standard that addresses application and data sharing among applications across different network protocols and transport mechanisms.

Appendix C — Connecting the Osprey MVIP Cable

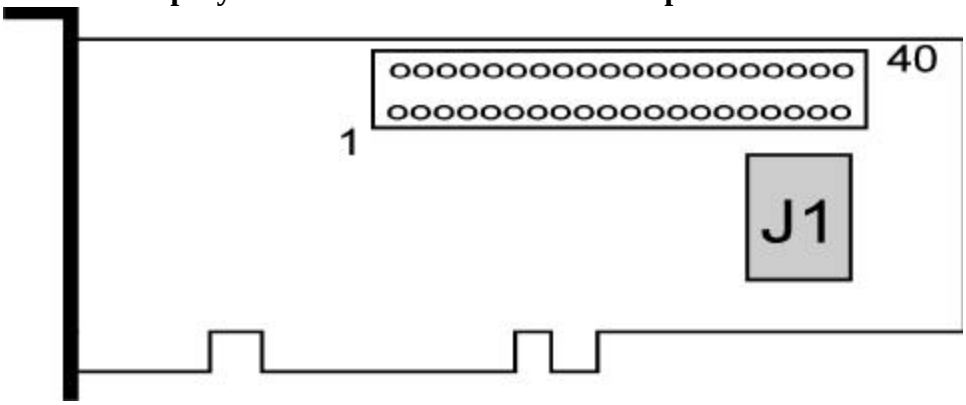
Attaching the MVIP Ribbon Cable

In addition to the normal hardware installation procedures, a 40-pin MVIP ribbon cable must be attached between the MVIP connector on the Osprey-1000 and the MVIP connector on the Videoserver Connections module. See Figure C-1 below for proper pin location.

NOTE: Pin 1 of the Osprey-1000 MVIP connector is the corner pin closest to both the motherboard and the audio/video connector end of the board.

The Videoserver Connections module has a shrouded MVIP connector. Pin 1 is farthest from the S/T telephone connectors located in the mounting bracket. Usually, the end of the connector with Pin 1 is indicated by a triangular depression in the plastic shroud.

Figure C-1
Osprey-1000 MVIP Connector and Jumper Location



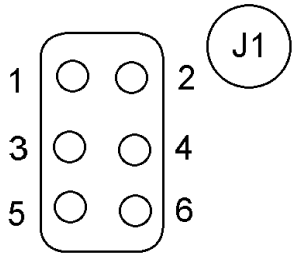
1. Connect the ribbon cable between the two boards.
2. Ensure that pin 1 on the cable connector (usually identified by a red stripe on the cable) is attached to pin 1 on the board connector.

NOTE: Proper installation of the MVIP cable normally requires that the cable twists one-half turn between the two boards.

Jumper Block Set-up

Information flows across the MVIP bus in eight, bi-directional serial data streams at 2.048 Megabit/second. Jumper set J1 on the Osprey-1000 (see Figure C-2) allows the user to select which stream the Osprey-1000 will use to transmit and receive data.

Figure C-2
Jumper Set J1



The default stream is three (3).If a stream setting other than the default value is used, the H320 software settings must be changed to indicate the selected MVIP stream. See Table C-1 below for jumper settings. During software installation you should enter the stream number that you selected with jumper J1. You will be prompted for the stream setting during H320 configuration. This can also be set after installation as explained in Chapter 3 under Configuring the H320 Software.

Table C-1
Data Stream Selection by Jumper Placement

Jumper Position	**Data Stream Selected**							
	0	1	2	3	4	5	6	7
Pin 1 to Pin 2	ON	ON	ON	ON	OFF	OFF	OFF	OFF
Pin 3 to Pin 4	ON	ON	OFF	OFF	ON	ON	OFF	OFF
Pin 5 to Pin 6	ON	OFF	ON	OFF	ON	OFF	ON	OFF

Note: Data stream 3 (shaded) is the default stream.

Appendix D — Installing and Configuring a Videoserver Connections Network Access Card

This appendix describes how to install and configure your Videoserver Connections Network Access Card (NAC). The topics covered include:

- Prerequisites to installing the NAC.
- How to install and configure the NAC.
- Setting the I/O base address on the NAC.
- Setting the clock signal termination.
- Setting the IMUX daughter board configuration.

Getting Ready

Installing a Videoserver Connections Network Access Card into a personal computer is a simple task. To install a network interface card(s), you will need:

- a Phillips or flat-blade screwdriver, and
- unrestricted access to the slots in the back of your computer.

To prepare for installing the network interface card:

1. Open the NAC shipping box on a clean working area, close to the computer where the card will be installed.
2. Inspect the NAC cardboard shipping box and make note if any damage has occurred.
3. Open the cardboard shipping box and remove any packing materials. You should store the shipping box in case you have to remove and transport the NAC in the future.
4. Remove the network interface card.

CAUTION! Before handling your network interface card, use a grounding strap, or touch a grounded metal object (such as the chassis of your PC) to discharge any static electricity.

5. Power down your computer system and peripherals, disconnect them from their power sources, and ground yourself.

WARNING! Failure to turn the power off and disconnect all power cords may result in electrical shock to the user or damage to the PC.

6. Remove the computer cover. If you need information about removing the computer cover, please refer to your PC owner's manual.

Installing and Configuring Network Access Cards:

The Videoserver Connections NAC can be installed in any available 16-bit expansion slot of a standard PC/AT class computer. The following instructions describe the hardware installation procedure, as well as configuring various parameters.

CAUTION! Before handling your network interface card, use a grounding strap, or touch a grounded metal object (such as the chassis of your PC) to discharge any static electricity.

Installing the Videoserver Connections Card

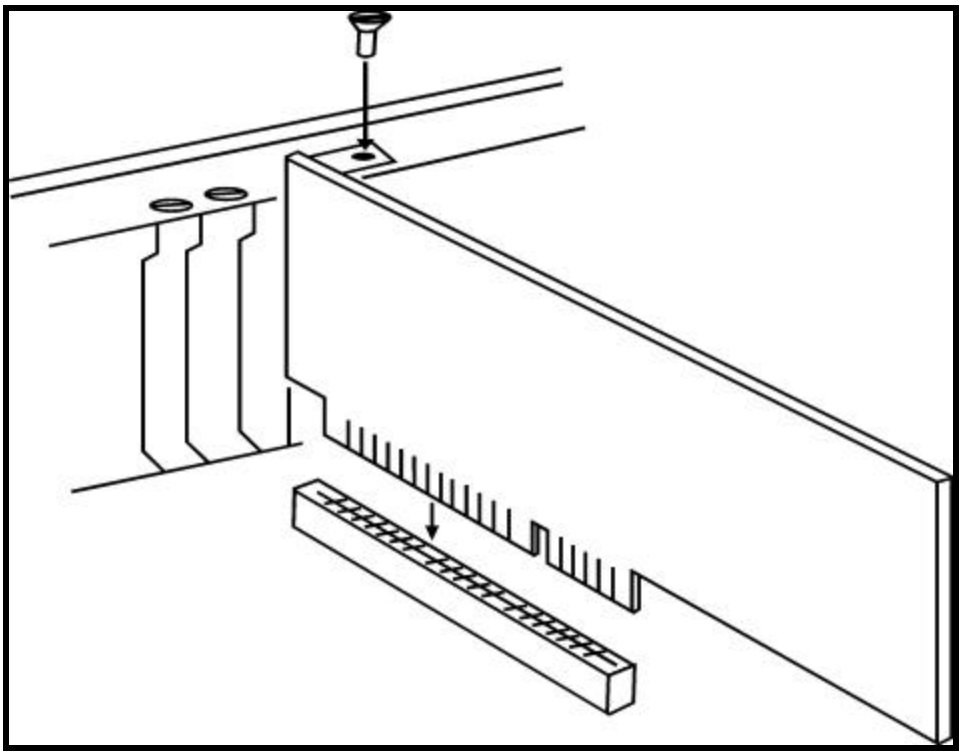
1. Select a 16-bit expansion slot into which the NAC is to be installed, then remove the retaining screw and the slot cover plate. If you need information about removing the cover plate, please refer to your PC owner's manual.
2. Select an I/O port address to be decoded by the NAC. See *Setting the I/O Base Address* later in this appendix, for information about switch settings.
3. Set the clock signal termination. Refer to *Setting the Clock Signal Termination,* later in this appendix.
4. If you are using the IMUX option, set the IMUX daughter board switch. Refer to *Setting the IMUX Daughter Board Option,* later in this appendix.


Shortcut

Insert the NAC into the expansion slot and tighten the retaining screw (see Figure D-1).

5. Insert the NAC into the expansion slot and tighten the retaining screw (see Figure D-1). Follow the steps below if you are unfamiliar with this procedure.
   a) Position the card's metal exit bracket toward the outside edge of the PC where the cover plate was removed.
   b) Align the card's bottom edge connector into the expansion slot and press gently until the edge connector is securely seated.
   c) When the NAC is properly inserted into the expansion slot, use the retaining screw from the old cover plate to secure the card's exit bracket.

Figure D-1
Videoserver Connections Card Installation



Setting the I/O Base Address

An NAC module can be located in any 16-byte segment (PRI or BRI card) of the entire I/O address space. The I/O base address for accessing the NAC's control registers is set through an 8 or 10 segment dip switch (SW1 on the module). The 8-segment switch allows addressing bits A6 through A13. The 10-segment switch allows addressing bits A4 through A13. A switch in the ON position represents a logic 0 for that address bit, and a switch in the OFF position represents a logic 1.

The layout of a BRI card is shown in Figure D-2, showing the location of the MVIP Bus Connector, the I/O Base Address Switch, the IMUX connector, and other features. Figure D-3 shows a similar layout for a PRI card.

Figure D-2
BRI Card Layout

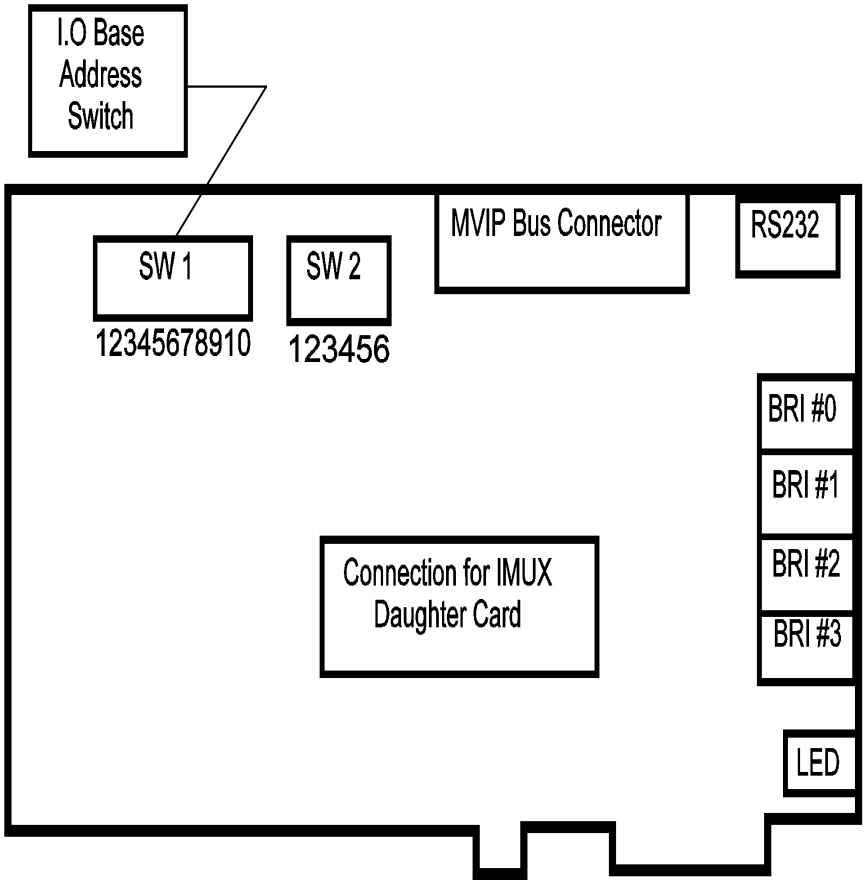
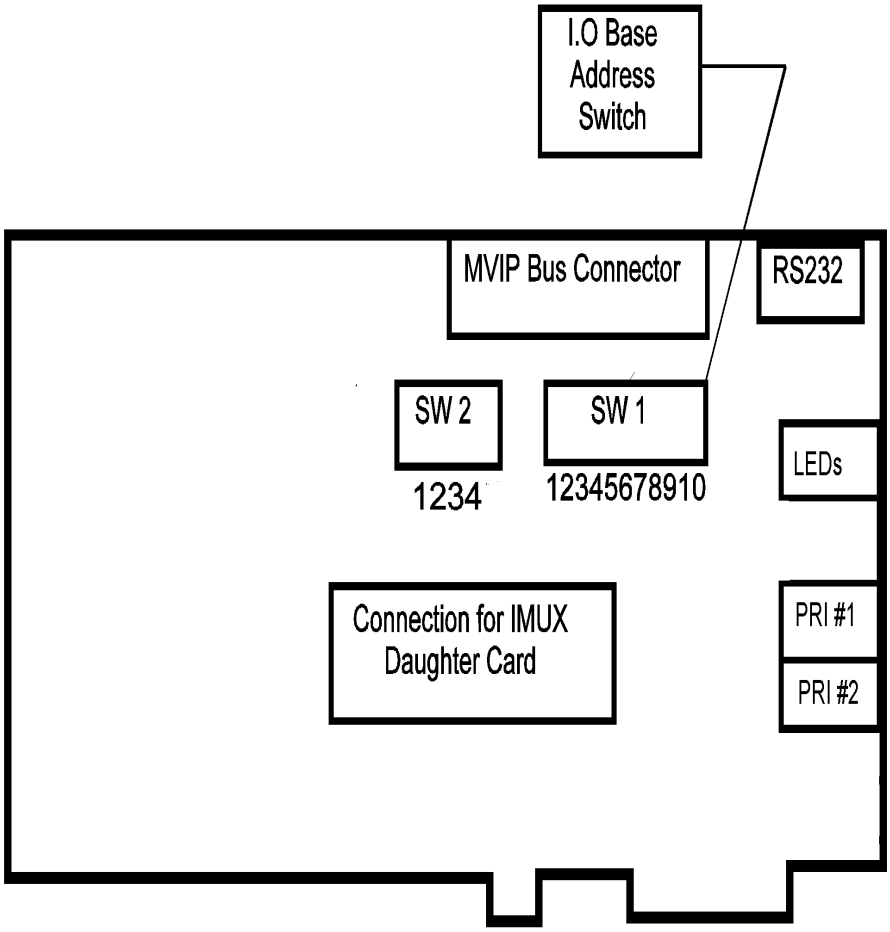


Figure D-3
PRI Card Layout



BRI Videoserver Connections boards communicate over the telephone lines through the use of an NT1 communications device. The telephone service line (also know as a "U interface") connects to the NT1 device. The NT1 device then communicates with the Videoserver Connections board over an S/T interface line, which plugs into the BRI sockets on the end of the cards.

Figure D-4 demonstrates how a four digit hexadecimal address is generated from the switch selection on a 10-bit switch. All boards decode 16 bits, where bits 15 and 14 must be a logic 0. Table D-1 gives the I/O Address Map.

NOTE: Decoding only 10 bits of I/O address is common practice on many peripheral cards. Therefore, an address overlap will exist if the least significant 10 bits match the I/O address of such peripheral cards. For example, an I/O address of 2B00 is also decoded by a 10-bit card set to 300 hex.

Avoid address decode conflicts, for example:

Videoserver Connections always sets bits A14-A15 to 0; bits A0-A3 don't care

Videoserver Connections address decode (2B00) = 10-bit lsb address decode (300)

0010 1011 0000 XXXX ⇐ bits A0-A15

Videoserver Connections address decode (2700) = 10-bit lsb address decode (300)

0010 1011 0000 XXXX

10-bit lsb address decode (300)

XXXX XX11 0000 XXXX ⇐ bits A0-A9 (bits A10-A15 don't care)

Figure D-4
I/O Map Base Address 10-Bit Switch Setting Guide (BRI and PRI)

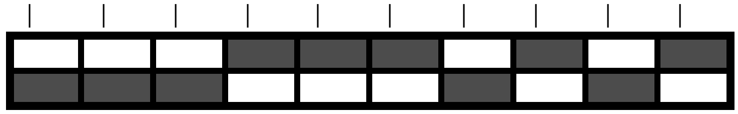
2 B 80

	Switch 9	Switch 10
0	ON	ON
1	OFF	ON
2	ON	OFF
3	OFF	OFF

	Switch 5	Switch 6	Switch 7	Switch 8
0	ON	ON	ON	ON
1	OFF	ON	ON	ON
2	ON	OFF	ON	ON
3	OFF	OFF	ON	ON
4	ON	ON	OFF	ON
5	OFF	ON	OFF	ON
6	ON	OFF	OFF	ON
7	OFF	OFF	OFF	ON
8	ON	ON	ON	OFF
9	OFF	ON	ON	OFF
A	ON	OFF	ON	OFF
B	OFF	OFF	ON	OFF
C	ON	ON	OFF	OFF
D	OFF	ON	OFF	OFF
E	ON	OFF	OFF	OFF
F	OFF	OFF	OFF	OFF

	Switch 1	Switch 2	Switch 3	Switch 4
00	ON	ON	ON	ON
10	OFF	ON	ON	ON
20	ON	OFF	ON	ON
30	OFF	OFF	ON	ON
40	ON	ON	OFF	ON
50	OFF	ON	OFF	ON
60	ON	OFF	OFF	ON
70	OFF	OFF	OFF	ON
80	ON	ON	ON	OFF
90	OFF	ON	ON	OFF
A0	ON	OFF	ON	OFF
B0	OFF	OFF	ON	OFF
C0	ON	ON	OFF	OFF
D0	OFF	ON	OFF	OFF
E0	ON	OFF	OFF	OFF
F0	OFF	OFF	OFF	OFF

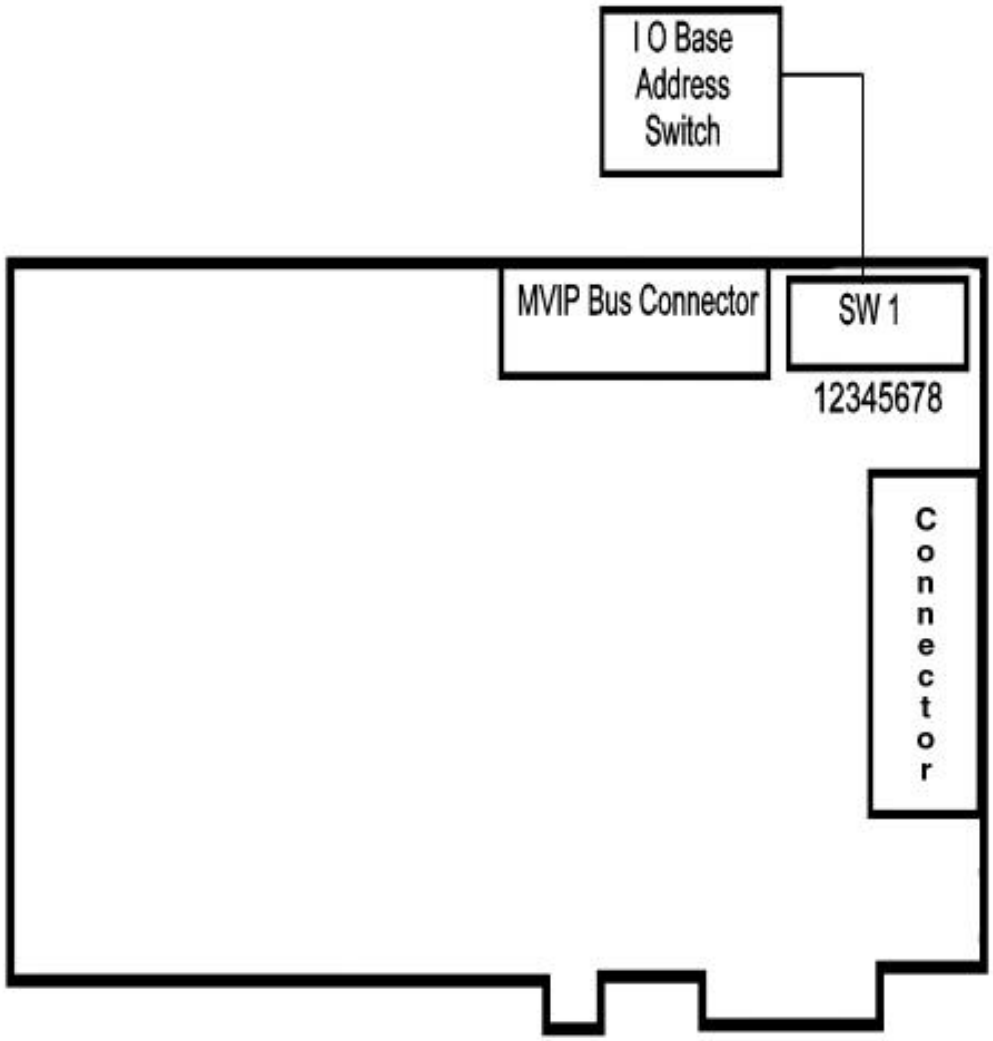
SW 1 I/O Address ON / OFF



lsb 1 2 3 4 5 6 7 8 9 10 msb

Figure D-5

DDM Card Layout



Videoserver Connections' DDM boards communicate via external V.35 devices connected to the system. These devices have their own characteristics and settings. See the manual for your external device for configuration and set up information.

Figure D-6 demonstrates how a four digit hexadecimal address is generated from the switch selection on an 8-bit switch. All boards decode 16 bits, where bits 15 and 14 must be a logic 0. Table D-1 gives the I/O Address Map.

Figure D-6
I/O Map Base Address 8-Bit Switch Setting Guide (DDM)

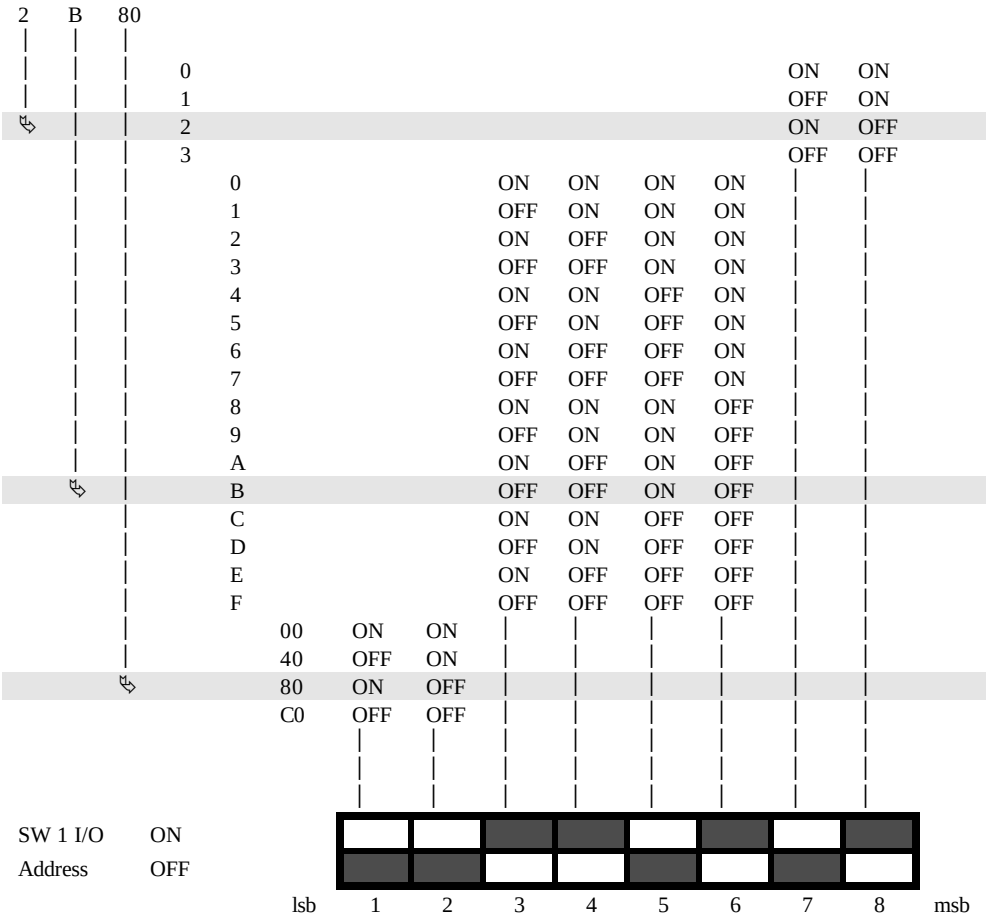


Table D-1
I/O Address Map

Hex Range	Device
000-0FF	System Board I/O
100-1EF	Start of range available on the I/O channel
1F0-1F8	Fixed Disk
200-207	Game I/O
20C-20D	Reserved
21F-	Reserved
278-27F	Parallel Printer port 2
2B0-2DF	Alternate Enhanced Graphics Adapter
2E1-	GPIB (Adapter 0)
2E2-2E3	Data Acquisition
2F8-2FF	Serial Port 2
300-31F	Prototype Card
360-363	PC Network (low address)
364-367	Reserved
368-36B	PC Network (high address)
36C-36F	Reserved
378-37F	Parallel Printer port 1

Hex Range	**Device**
380-38F	SDLC, bisynchronous 2
390-393	Cluster
3A0-3AF	Bisynchronous 1
3B0-3BF	Monochrome Display and Printer Adapter
3C0-3CF	Enhanced Graphics Adapter
3D0-3DF	Color/Graphics Adapter
3F0-3F7	Diskette Controller
3F8-3FF	Serial port 1 End of range available on the I/O Channel
6E2-6E3	Data Acquisition (Adapter 1)
790-793	Cluster (Adapter 1)
AE2-AE3	Data Acquisition (Adapter 2)
B90-B93	Cluster (Adapter 2)
EE2-EE3	Data Acquisition (Adapter 3)
1390-1393	Cluster (Adapter 3)
22E1	GPIB (Adapter 1)
2390-2393	Cluster (Adapter 4)
2B00	ACCESS MODULE Factory default
42E1	GPIB (Adapter 2)

Hex Range	Device
62E1	GPIB (Adapter 3)
82E1	GPIB (Adapter 4)
A2E1	GPIB (Adapter 5)
C2E1	GPIB (Adapter 6)
E2E1	GPIB (Adapter 7)

MVIP Bus Information[2]

The MVIP Bus uses multiple 2.048 Mbit/second serial data streams, each of which adhere to the ST-BUS Generic Device Specification (Rev A) as described in Mitel Application Note MSAN-126. The signals are passed from card to card within one PC chassis using a 40-pin ribbon cable with mass termination connectors at each card. Signal names and pin assignments are shown in Table D-2.

The bus is carried in a 40-wire ribbon cable (3M #3365 or equivalent). The maximum ribbon cable length is 22 inches. Cable connectors are 3M #3417-6000 or equivalent. The board connector is a 40-pin double-row right-angle header with 0.1 inch spacing between pins (3M #2540-5002UB, Ansley #609-4007 or equivalent shrouded connector preferred, 3M #2440-5122 or equivalent unshrouded connector acceptable).

[2] Information concerning the MVIP Bus specifications is excerpted from *Multi-Vendor Integration Protocol Reference Manual, Release 1.1*, from Natural MicroSystems Corporation. Please refer to this manual for additional information.

Table D-2
MVIP Bus Connector Pin Assignments

Pin	Signal	Description	Pin	Signal	Description
1	Reserved		2	Reserved	
3	Reserved		4	Reserved	
5	Reserved		6	Reserved	
7	DSo0	2.048 Mbit/sec serial data stream	8	DSi0	2.048 Mbit/sec serial data stream
9	DSo1	2.048 Mbit/sec serial data stream	10	DSi1	2.048 Mbit/sec serial data stream
11	DSo2	2.048 Mbit/sec serial data stream	12	DSi2	2.048 Mbit/sec serial data stream
13	DSo3	2.048 Mbit/sec serial data stream	14	DSi3	2.048 Mbit/sec serial data stream
15	DSo4	2.048 Mbit/sec serial data stream	16	DSi4	2.048 Mbit/sec serial data stream
17	DSo5	2.048 Mbit/sec serial data stream	18	DSi5	2.048 Mbit/sec serial data stream
19	DSo6	2.048 Mbit/sec serial data stream	20	DSi6	2.048 Mbit/sec serial data stream
21	DSo7	2.048 Mbit/sec serial data stream	22	DSi7	2.048 Mbit/sec serial data stream
23	Reserved		24	Reserved	
25	Reserved		26	Reserved	

Pin	Signal	Description	Pin	Signal	Description
27	Reserved		28	Reserved	
29	Reserved		30	Ground	
31	/C4	4.096 MHz clock	32	Ground	
33	/F0	8 kHz framing signal	34	Ground	
35	C2	2.048 MHz clock	36	Ground	
37	SEC8K	secondary 8 kHz signal line	38	Ground	
39	Reserved		40	Reserved	

Signal Definitions

DSi0 through DSi7 and DSo0 through DSo7 are 2.048 Mbit/sec serial data streams, which conform to Mitel ST-Bus serial data stream specifications. SEC8K is a secondary 8 kHz signal line, used to carry 8 kHz timing information derived from secondary digital trunk interfaces to a digital trunk interface board, providing clocks to the MVIP Bus.

Reserved pins should be left OPEN. In the future, these lines may be assigned for additional capabilities.

Setting the MVIP Clock Signal Termination

The clock lines C2 and /C4 can be electrically terminated with a 1000 Ohm/ 1000 pF series termination to ground, selected by using SW2 positions 1 and 4. The switch SW2 settings for the Videoserver Connections NAC are given in Table D-3 below.

Table D-3
SW2 Settings

SW2 Position	Setting	Defaults Values
1	OFF - No C2 termination ON - C2 terminated	ON
2	OFF (always)	—
3	OFF (always)	—
4	OFF - No /C4 termination ON - /C4 terminated	ON
5 (BRI only)	OFF - IMUX daughter board installed ON - IMUX daughter board not installed	BRI-2 — ON BRI-6 — OFF
6 (BRI only)	OFF - IMUX daughter board installed ON - IMUX daughter board not installed	BRI-2 — ON BRI-6 — OFF

NOTE: Default values are given for a single (1) Osprey card, operating together with a single (1) Videoserver Connections card.

For systems with five or fewer MVIP Bus connections and less than 90 pF load on the clock lines, only one separate terminator is required. It is allowable to place the master clock source board at one end of the cable, and install the termination on the circuit board at the other end of the cable.

On systems with more than five MVIP connections or more than 90 pF of load on the clock lines, both ends of the cable should be electrically terminated with the 1000 Ohm/ 1000 pF termination. No other boards should terminate these lines.

Setting the IMUX Daughter Board Option

The IMUX daughter board option is usually pre-installed at the factory. If you have to remove or install this option on the BRI card, use SW2 positions 5 and 6 (see Table 3-3 earlier in this section for SW2 Settings). Detection of the IMUX daughter board is automatic on PRI cards.

Installing/Removing the Second Interface Daughter Card

A second network interface is available on the PRI Network Access Cards (Revision B T1 access module). The second network interface is contained on a daughter card. When the daughter card is installed or removed the Network Access Card's eeprom memory must be altered so that the Network Access Card software can initialize and operate the daughter card. A utility program which performs this function, *upgrade.exe,* is provided with the Developer's Kit. The program may be executed as follows:

upgrade [-Aaddr] [-IOBase] [type]

-Aaddr	use "addr" as base of shared memory. Valid selections are: 8000, 9000, A000, B000, C000, D000, E000, F000
IOBase	use "IOBase" as I/O address of module
type	Set the second network interface to "type". Valid selections are CSU, DSX, CEPT, or NONE. If type is not specified the eeprom will be displayed and not altered. Use NONE when removing the daughter card.

The source code for this program is provided so developers may incorporate it into their application if necessary. Care should be taken when altering this program. The Network Access Card software uses the data contained in the eeprom to initialize the main and daughter cards. If the data in the eeprom is improperly altered, the module or operating software may fail.

CAUTION! **When installing the daughter card be sure that all pins are aligned. If the mounting screws for the daughter do not align with the main card, the daughter card is not installed properly. Remove and re-install the daughter card.**