

Jaleo Octane 2.7 Installation and Setup Guide

© Comunicación Integral

I. OVERVIEW

Welcome to Jaleo Octane 2.7!

This Installation and Setup Guide consists of the following information:

- Required Hardware and Software
- Installation Notes
- Configuration Notes

Jaleo for Octane, version 2.7, running on an SGI MXI Octane, should be installed according to the procedures outlined in this manual. Because of this, and because of minimizing the time spent in installation and configuration, please spend some of your time reading this guide carefully.

This guide is part of three documents on Jaleo for Octane 2.7: the Release Notes, the User Manual Update, and the Installation and Setup Guide. These three documents can be accessed in electronic format as well, in the form of PDF-files, residing in the 'docs' directory of the Jaleo for Octane distribution CD-ROM.

Furthermore all of these documents, as well as all documentation on previous Jaleo releases can be accessed in electronic format on your SGI machine. After the Jaleo for Octane software has been installed, use the Toolchest -> JALEO DOCS entry on the desktop of your Octane to open any of the required documents.

Any feedback on this guide is highly appreciated. Write, fax, telephone or email us with your remarks, and we will get back to you. Email can be sent to: support@jaleo.idecnet.com

II. REQUIRED HARDWARE AND SOFTWARE

II.1 Hardware Requirements

Jaleo Octane 2.7 requires the following hardware:

- SGI Octane workstation with two 195 MHz processors and MXI graphics;
- 256 MB RAM (minimum);
- Octane Digital Video XIO board;
- MSCSI multiple SCSI XIO board;
- A suitable disk array for real time performance;
- A VLAN Transmitter/Receiver, for frame accurate VTR control;
- optionally, a graphical Tablet, like a Wacom tablet;

and, although this is not hardware:

- IRIX 6.4 Operating System with the September 1997 Recommended Patch Set.

Other configurations have not been tested – most likely they will permit partial functionality of the software. For real time effects, the most critical resource is the CPU speed. Models with two 175 MHz CPUs will most likely not permit real time effects.

Smaller graphics than MXI may be applicable, but the real time DVE most likely will not work.

We strongly recommend to use no other configuration than specified above. In any case, we can not take responsibility for the proper operation of this Jaleo Octane 2.7 version on any other platform. *Also, other configurations will not be supported by CIC.*

II.2 Required Software

Jaleo Octane requires the following software components:

- IRIX 6.4: this comes in the form of two CD's:
IRIX 6.4 for Origin, Onyx2 and Octane; SGI part no. 812-0616-002, 02/97, and
IRIX 6.4 Applications, February 1997, SGI part no. 812-0617-002, 02/97.

- Digital Media software, in the form of one CD:
Digital Media 3.0, SGI part no. 814-622-001, 04/97
This software includes SGI patch 1765, which is needed.
- ONLY if required: NFS software, in the form of one CD:
ONC3/NFS Version 2 for IRIX 6.2/6.3/6.4, SGI part no. 812-0305-009, 02/97

PLEASE DO **NOT** USE:

ONC3/NFS for IRIX 6.2/6.3/6.4, SGI part no. 812-0305-008, 11/96.

- SGI patch 2105 if you want to do a installation over a network.
This patch will enable NFS to show ISO9660 CDROM content over NFS.
You will find this patch on the Jaleo for Octane distribution CD as ptch2105.tar .
- The Silicon Graphics Recommended Patch Set of September 97 for IRIX 6.3 and 6.4 (IRIX 6.3 and 6.4 Recommended/Required Patches September 1997 - SGI part no. 812-0688-006, 09/97).
Since this CDROM will be very hard to get, and since this patch set has been discontinued as being available from the SGI web site, we included part of it (the patches needed for the IRIX 6.4 for Octane installation) on the Jaleo for Octane distribution CD.

There are newer patch sets for Octane available from SGI; newer Octane machines come with newer operating system patches pre-installed. However, other patch sets have not been tested, and we urge you to follow the installation of the IRIX operating system **exactly** as described. In a number of cases this will mean a complete re-installation of machine and operating system, for the system to become compliant with CIC recommendations. CIC will only support machines with the full recommended patch set 9/97 installed, with the recommended installation procedure followed.

II.3 Storage considerations

Jaleo Octane 2.7 is not using Raw storage any more. Instead, it uses a XFS file system to store real time data. A XFS file system for this purpose must:

- Be placed on a disk array with sufficient continuous throughput. All the disks in the array must be combined in a single logical volume;
- Be used exclusively by Jaleo – that is, you must NOT write small files to this file system, not even if you intend to leave them there only for a short time. Severe fragmentation is the result of using an XFS file system dedicated for Jaleo real time storage for other purposes.

To run Jaleo Octane with its complete feature set, you must have a suitable disk array connected to the system. At the time of this writing, *only* SCSI arrays connected to the SGI MSCSI XIO card have been tested. In the future, we expect to test and verify other storage interfaces, specifically FibreChannel and PCI-card cage based SCSI solutions.

To repeat, at the time of this writing only SCSI arrays connected to the MSCSI card have been tested and verified for Jaleo operation.

II.3.1 Storage Utilization

Jaleo uses about 1.5 GB per minute of storage (PAL), with preview size set to quarter size (LOWRESRATIO 4), with NTSC requirements being slightly lower. The true number is a bit lower (around 1.35 GB), but a bit of “air” should be calculated. An array with 16 9GB disks would thus permit 96 minutes of storage.

If you have disabled preview creation on capture, size demands are about 100K per minute lower.

II.3.2 Configurations

For dual stream operation, at least 8 disk drives striped over two controllers are required, although more drives and more controllers are recommended if you wish to use more than two streams.

A typical configuration might look like this:

- Eurologic or Megadrive storage arrays with two buses, housing 8 disk drives,
- or
- two Ciprico RAID 3 arrays. We have tested the 6900 and 6500 (50 GB) series array.

The rule of thumb for non-RAID (also known as RAID 0) arrays is:

- 4 disks on one separate controller per stream of video.

That is, for two streams you need 8 disks on two controllers, for three streams 12 disks on 3 controllers. The best possible performance you can get with at least 16 disks on 4 controllers. For configurations with more than two controllers, differential arrays must be used.

It should be noted that the disk drives used in all tested array configurations are Seagate Barracuda 7200rpm drives with 4 and 9 GB capacity.

For the Ciprico RAID 3 arrays, the rule of thumb is:

- one array per controller per stream of video;
- a requirement for these arrays is that they should be *differential* arrays.

As disk parameters continue to change, we kindly asked the dealer or distributor installing the hardware and software, in case of doubt, to give us a call or send email to: support@jaleo.idecnet.com.

III. INSTALLATION

Before trying any installation it is highly recommended to read the Silicon Graphics Octane Workstation Owner's Guide, SGI Document no. 007-3435-001.

Installing the hardware combination of the MXI graphics board, the Digital Video board, and the MSCSI board (all XIO boards) inside the Octane can be somewhat cumbersome, and should be done with the utmost care. Some remarks:

- the MXI card should be placed in the slots NOT near the side of the Octane, to allow the card to be optimally ventilated;
- the majority of the original texture memory modules on the MXI card of MXI-Octanes out in the field now had to be replaced, failing after some time. Check with your local SGI supplier if he can provide you with spare texture memory when needed;
- please watch the flex wiring connecting the MXI card and the Digital Video card, especially at the top, since this can easily be bent and damaged when sliding the combined XIO boards assembly into the Octane;
- please place the Octane in a well ventilated space, allowing it to loose the heat generated inside. Placing the Octane into a small, closed space will inevitably lead to malfunctioning due to overheating;
- Please also refer to the documentation that comes with the boards.

Of the aforementioned Owner's Guide especially Chapter 8 (Installing and Removing Software) is highly recommended: although the information in this chapter is not entirely correct, it will give you a good first idea what an operating system (re-)installation is about.

III.1 Operating System (re-) Installation

III.1.1 STEP 1: basic operating system installation

Many newer Octane systems come with pre-installed operating systems (IRIX 6.4), already containing newer patch sets (newer than the September 1997 Recommended Patch Set). Since removing (or downgrading) patches from an existing operating system often leads to unpredictable results (patches do not always get removed successfully, even if the installation procedure says so), we strongly urge you to make a complete (re-) installation of the IRIX 6.4 operating system.

Although this may take some time (several hours), it is the only way to guarantee that the system (being the SGI hardware and the SGI IRIX operating system) are CIC compliant.

We offer this (re-) installation as a step-by-step guide, actually describing a network installation. Please, at least, consult your system-administrator first, and obtain proper IP-addresses for the machine to be installed (here named JEVA) and the machine from which to install (here called RES).

- After assembling the Octane with the proper XIO boards, and optionally connecting the disk array, power the system up;
- Immediately when the system shows ‘Running Power-On Diagnostics’ press the the ‘Escape’ key, or, when the system shows ‘Starting Up the System’ click the button ‘Stop for Maintenance’; you will now enter the Maintenance menu;
- Enter the PROM monitor by clicking on it, or just type ‘5’;
- Once inside the PROM monitor, after the prompt, type:

```
hinv <Enter>
```

- The output will allow you to check if all hardware is seen by the system, and should look like:

```
>hinv
2 195 MHZ IP30 Processors
CPU: MIPS R10000 Processor Chip Revision: 2.7
FPU: MIPS R10010 Floating Point Chip Revision: 0.0
Main memory size: 256 Mbytes
Instruction cache size: 32 Kbytes
Data cache size: 32 Kbytes
Secondary unified instruction/data cache size: 1 Mbyte
Integral SCSI controller 0: Version QL1040B (rev. 2)
  Disk drive: unit 1 on SCSI controller 0
Integral SCSI controller 1: Version QL1040B (rev. 2)
Integral SCSI controller 2: Version QL1040B
  Disk drive: unit 5 on SCSI controller 2
  Disk drive: unit 6 on SCSI controller 2
  Disk drive: unit 7 on SCSI controller 2
  Disk drive: unit 8 on SCSI controller 2
```

```

Integral SCSI controller 3: Version QL1040B
  Disk drive: unit 1 on SCSI controller 3
  Disk drive: unit 2 on SCSI controller 3
  Disk drive: unit 3 on SCSI controller 3
  Disk drive: unit 4 on SCSI controller 3
Integral SCSI controller 4: Version QL1040B
Integral SCSI controller 5: Version QL1040B
IOC3 serial port: tty1
IOC3 serial port: tty2
IOC3 parallel port: plp1
Graphics board: MXI
Integral Fast Ethernet: ef0, version 1
Iris Audio Processor: version RAD revision 12.0, number 1
Digital Video: unit 1, revision 4.2, TMI: revision 2, CSC: revision 1

```

- In this example, you will actually see that we have connected 8 disks to two of the four UltraSCSI ports from the MSCSI board; this board is actually seen as controllers number 2, 3, 4 and 5. You also see the MXI hardware, the Digital Video board, and, of course, the two processors, the main memory, and the built-in SCSI controllers.
- Quit the PROM-monitor by clicking the button 'Done' or by typing 'exit'; you will re-enter the Maintenance menu;
- Put the first IRIX 6.4 CD into the CD-ROM drive on the remote machine.
(IRIX 6.4 for Origin, Onyx2 and Octane; SGI part no. 812-0616-002, 02/97).
This remote machine will have the name "RES" for this example;
- Click 'Install System Software' ; when prompted for the location, you will have to choose between a 'Remote Directory' or a 'Local CD-ROM'. We will follow this step-by-step guide by giving instructions for the *network based installation*.
- Click 'Remote Directory'.

NOTE: installation from a locally connected CD-ROM (connected through the external SCSI port of the Octane) can, at times, run into problems. These problems manifest themselves as 'Panics' or as 'Exceptions' at installation time, causing the system to crash. Effectively this situation rules out the possibility to make an installation from an externally connected CD-ROM drive, at least at the present.

PROM patch #2504 (15/12/97) seems to solve this bug (citing from the SGI description of this bug):

```

Allow cdrom(##,##) to alias dksc(##,##) standalone,
prom(1M), environment (bug 489745).

```

At the time of writing this manual, we have not been able to test the patch described above; also, SGI was looking into this problem (of crashes at installation time, when using locally connected, external CD-ROM drives);

- When installing using a locally connected or internal CD-ROM drive, please choose 'Local CD-ROM', and omit the steps in the following instruction referencing to the network or a to remote host;

- You will be prompted for the remote host name; in this example, it is 'RES'; click the 'Accept' button to input this name into the system;
- You will be prompted for the Remote Directory; in this example, it is '/CDROM/dist'; click the 'Accept' button to input this path into the system;
- Now, click the 'Install' button; the system will show two messages ('Obtaining Installation Tools from: RES:/CDROM/dist' and 'Copying Installation Tools to Disk') during the initial phases of setting up the Installation Tools, and then will reboot automatically;
- After this reboot, during the creation of the miniroot, some more messages will come up, like 'Creating miniroot device', 'Mounting File Systems', with the last message being 'Invoking Software Installation';
- You will be prompted to give the hostname of this machine; in this example, it is 'JEVA';
- You will be prompted to enter the network address of this machine (JEVA); just enter the IP address now (something like aaa.bb.cc.ddd - please consult your system administrator);
- Automatically, the installation program 'inst' will be started. After this has been invoked, you should get the inst prompt, looking like 'Inst>'. Within inst, whatever the prompt, you can get a list of available command by just typing <Enter> (that is, just hit the <Enter> key);
- Enter the administration menu of inst by typing 'admin <Enter>' at the inst prompt. The prompt will change into 'Admin>'.
Now start cleaning up the system disk by typing 'mkfs <Enter>' at this prompt. You will be prompted if you really want to clean up your disks; answer: Y <Enter>. You will be prompted if you want to make a new file system ('Make new file system on /dev/dsk/dks0d1s0 ?'); answer: Y <Enter>;
- After creating the new filesystem, effectively wiping the system disk clean, the following message will be shown: 'Re-initializing Installation database';
- Now, you will be prompted to enter the network address of the remote machine: 'What is the network address of RES:'.
Enter this address in the format of the IP address of the remote machine; please consult your System Administrator to obtain such an address.
After entering the IP address, the 'Admin>' prompt will return;
- Return to the main inst prompt by typing 'return <Enter>' at the prompt. The prompt will change into 'Admin>'.
At this prompt, type: 'from <Enter>'. This will show you the location(s) available to install software from. In our example:

Previous Installation Sites:

1: RES:/CDROM/dist
2: none
3: quit

- You will be prompted to enter the installation site, actually meaning the place where the software distribution (SGI jargon for the IRIX 6.4 installation CD(s)) are located. The default distribution will already be filled out. In this example (meaning the CD-ROM on the remote machine named 'RES'):

Install software from: [RES:/CDROM/dist]

In this example we can accept this location by just pressing the <Enter> key; if the location is not correct, change it accordingly, and press <Enter> ;

- Now, the Product Descriptions on the CD will be read. As this CD is part of a two-CD set, inst should prompt you, after the reading is completed, for the second CD. It does *not*. This makes it necessary to do some extra work, outlined in the procedure below.
- After the inst prompt has returned (Inst>), type in the following (the Inst> prompt is shown as well):

```
Inst> set rulesoverride true <Enter>
Inst> view target <Enter>
Inst> remove i <Enter>
Inst> go <Enter>
```

You should now get an error:

ERROR: Nothing selected for Installation

- At the inst prompt (Inst>), type in the following (the Inst> prompt is shown as well):

```
Inst> view distribution <Enter>
Inst> install default <Enter>
Inst> go <Enter>
```

- The installation of the first part of the IRIX operating system will now take place. After some time, a message will come up:

You may continue with installations or Quit now.

Also, the inst prompt (Inst>) will return.

- Now, change CD's in the CD-ROM drive: eject the first CD, and put the Applications CD in (IRIX 6.4 Applications, February 1997, SGI part no. 812-0617-002, 02/97).

- At the inst prompt, type in 'from <Enter>'.
The software distribution location will be shown ([RES:/CDROM/dist]), just confirm it by pressing the <Enter> key.
The Product Descriptions will be read from the Applications CD. When this is finished, the inst prompt will return (Inst>);
- After the inst prompt, type in 'go <Enter>'.
The installation of the second part of the IRIX operating system will now take place.
After some time, a message will come up:

You may continue with installations or Quit now.

Also, the inst prompt (Inst>) will return;

- After this, we will install some non-default parts of the operating system, being the xlv subsystem and the 32 bit Inventor libraries. To do this first change CD's in the CD-ROM drive: eject the Applications CD, and put in the first IRIX 6.4 CD (IRIX 6.4 for Origin, Onyx2 and Octane; SGI part no. 812-0616-002, 02/97);
- At the inst prompt (Inst>), type in the following
(the Inst> prompt is shown as well):

Inst> from <Enter>

- Confirm the distribution directory [RES:/CDROM/dist] by pressing <Enter>
The Product Descriptions will be read; the inst prompt will return;
- At the inst prompt (Inst>), type in the following
(the Inst> prompt is shown as well):

Inst> keep * <Enter>

Inst> install eoe.sw.xlv <Enter>

Inst> install eoe.sw.xlvplex <Enter>

Inst> go <Enter>

The xlv subsystem will be installed; the inst prompt will return;

- At the inst prompt (Inst>), type in the following
(the Inst> prompt is shown as well):

Inst> keep * <Enter>

Inst> install inventor_eoe.sw32.lib <Enter>

Inst> go <Enter>

The 32 bit Inventor libraries will be installed; the inst prompt will return;

- Next, we will install the Digital Media software. Eject the CD inside the CD-ROM drive, and put in the Digital Media software CD (Digital Media 3.0, SGI part no. 814-622-001, 04/97);

- At the inst prompt (Inst>), type in the following (the Inst> prompt is shown as well):

Inst> from <Enter>

- Confirm the distribution directory [RES:/CDROM/dist] by pressing <Enter>
The Product Descriptions will be read; the inst prompt will return;
- At the inst prompt (Inst>), type in the following (the Inst> prompt is shown as well):

Inst> go <Enter>

The dmedia software will be installed; the inst prompt will return;

- Next, ONLY IF REQUIRED (for this network installation this *is* required), the NFS networking software will be installed. To be able to do this, eject the current CD from the CD-ROM drive, and put in the NFS software CD (ONC3/NFS Version 2 for IRIX 6.2/6.3/6.4, SGI part no. 812-0305-009, 02/97).

PLEASE DO NOT USE:

ONC3/NFS for IRIX 6.2/6.3/6.4, SGI part no. 812-0305-008, 11/96);

- At the inst prompt (Inst>), type in the following (the Inst> prompt is shown as well):

Inst> from <Enter>

- Confirm the distribution directory [RES:/CDROM/dist] by pressing <Enter>
The Product Descriptions will be read; the inst prompt will return;
- At the inst prompt (Inst>), type in the following (the Inst> prompt is shown as well):

Inst> go <Enter>

The NFS software will be installed; after installation, the inst prompt will return;

- At the inst prompt (Inst>), type in the following (the Inst> prompt is shown as well):

Inst> quit <Enter>

You will see a message: 'Requickstarting ELF files'; this can take a while.
After some time the system will prompt you if you want to restart the system.
Confirm this by typing 'Y <Enter>'; the system will now reboot.

III.1.2 STEP 2: networking the system

In this step you will bring the system into the network, actually giving the system a name and configuring some networking parameters. Since network setup is very much dependent on the site and its requirements, we can only give some rough guidelines - network setup should be done by an experienced Network Administrator. This person will be able to interpret the steps given in this section, and adapt them to the situation at hand.

For non-network installations you may use the default name (IRIS) SGI assigns to new machines; also, you may want to set the proper timezone.

Once again, network setup should only be attempted by an experienced person; he or she will be able to adapt the following instructions:

- After reboot, log in as root. Open a shell window;
- Give in a super-user password using the command `'passwd <Enter>'`; we will need this later on to be able to use ftp to this machine. It is anyway a good idea to issue a super-user password;
- Give the system a name: `jot /etc/sys_id` ; we will use 'JEVA' in this example; save the file;
- Set the proper time zone: `jot /etc/TIMEZONE` ; add a line: `TZ=GMT0DST`
Use an appropriate Time Zone setting for your geographical location; save the file;

The following steps are dependent on the network environment:

- Edit the following files (do NOT type the ' , *only* type what is in between):
 - `/var/yp/ypdomain` ; we use 'JALEO' as the NIS domainname;
 - `/var/Cadmin/clogin.conf` ; change the line reading 'home directory must be local' into 'home directory can be anywhere'; change the line reading 'use small window' into 'use large window';
 - `/etc/hosts` ; add a line like `'aaa.bb.cc.ddd JEVA'`, reflecting the IP address of this machine and its name; this line must replace the line with the 'default address for a new IRIS', with 'IRIS' being the default, pre-assigned name for a new SGI machine;
 - `/etc/hosts.equiv` ; add a line with a single '+' (that is: one plus) at the end of this file;
 - `/etc/passwd` ; add a line with `'+:::::::'` (that is: one plus and six colons) at the end of this file;
 - `/etc/group` ; add a line with `'+:'` (that is: one plus and one colon) at the end of this file;
 - `/etc/config/automount.options` ; add a line with `'/- auto.direct'` ;

- `/etc/config/timeslave.options` ; add a line with `'-H name_of_timehost'` ;
- Check the configuration of the system by issuing the command `'chkconfig'` from within a shell. This will give a listing of the system configuration variables. From the variables listed we will change some; these changes are (also) network environment dependent. Please check with your network administrator before attempting these changes.
To do so, from the shell, type the following commands (the prompt is shown as well):
 - `# chkconfig autofs off`
 - `# chkconfig automount on`
 - `# chkconfig timed off`
 - `# chkconfig timeslave on`
 - `# chkconfig yp on`
- After issuing these commands, check the setting of the variables by issuing the command `'chkconfig'` again.
- Make the machine (in our example: JEVA) known to the network by issuing the following commands at the yp-server:
 - Do a remote login into the yp-server: `'rlogin yp_servername -l root'` ;
 - Edit the file `/etc/hosts` : add the name of the machine(JEVA) and its IP address;
 - Execute the command: `'/var/yp/ypmake hosts'` on the yp-server;
 - Close the remote login on the yp-server;
- ONLY NOW reboot the machine (JEVA). It should reboot cleanly, not giving any error messages on reboot. The machine will now be in the network.

NOTICE: the instructions given in this step (STEP 2) of the installation process ONLY serve as an example on how to set up network connectivity for a SGI Octane machine. Please consult a knowledgeable UNIX Network Administrator to setup site-specific networking, adapting the information given in this step.

III.1.3 STEP 3: installation of SGI patch 2105

In this step we will install SGI patch 2105.

This patch will enable working with the contents of a remotely mounted ISO9660 CD-ROM. In other words: this is needed to see the contents of the Jaleo for Octane distribution CD through the network.

Remember that in this example, we are installing an Octane named JEVA from a machine named RES. RES has the CD-ROM drive attached.

- Put the Jaleo for Octane version 2.7 distribution CD inside the CD-ROM drive;
- On RES, login as root. Open a shell.
Issue the commands (the prompts are shown as well):
 - # cd /CDROM/extern/patches <Enter>
 - # ls <Enter>
- In the listing presented you should see: ptch2105.tar ;
- Start a ftp-session to JEVA:

ftp JEVA
- When prompted for the user, type in 'root <Enter>';
- Give in the root password. If JEVA does not have a root password, ftp will not work.
- The prompt will change to: 'ftp>'
- Now, transfer (copy) the file ptch2105.tar to the /usr/tmp directory on JEVA by issuing the following ftp commands (the ftp prompt is shown as well):

ftp> cd /usr/tmp <Enter>
ftp> lcd /CDROM/extern/patches <Enter>
ftp> bin <Enter>
ftp> hash <Enter>
ftp> put ptch2105.tar
- After the transfer, quit the ftp-session by typing 'quit <Enter>'. The super-user prompt will return. Log out.

We are now going to install this patch.

- On JEVA, log in as root. Untar the patch by issuing the following commands (the prompt is shown as well):
 - # cd /usr/tmp <Enter>
 - # tar -xvRf ptch2105.tar <Enter>
- Start the inst program, and actually install the patch, as follows:
 - # inst <Enter>

- The prompt will change to 'Inst>'. From this prompt issue the command (the prompt is shown as well):

```
Inst> from <Enter>
```

- You will be prompted for the location of the software. Type in:

```
/usr/tmp <Enter>
```

- From the inst prompt issue the command (the prompt is shown as well):

```
Inst> install patchSG0002105
```

```
Inst> go <Enter>
```

- The patch will be installed. After installation, the inst prompt will return;
- From the inst prompt issue the command (the prompt is shown as well):

```
Inst> quit <Enter>
```

- Some exit commands will be run. The super-user prompt will return;
- From this prompt, clean up as follows (the prompt is shown as well):

```
# cd /usr/tmp <Enter>
```

```
# rm p*2105* <Enter>
```

- Reboot the machine. It should reboot without error messages during reboot.

At the time of writing this manual, the Octane we are installing (IRIX 6.4 - NFS client) needed SGI patch 2105, as described above.

The NFS *server* should be patched as well: if running IRIX 6.2, patch it with SGI patch 2104; if running IRIX 6.3, patch it with SGI patch 2106; and if running IRIX 6.4, patch it with patch 2105. These are all NFS3 Roll-up Patches; installation of these patches is through inst.

Also, there is a newer patch out, SGI patch 2366, for IRIX 6.3, actually replacing 2106. We have been testing with the 2105/2104/2106 patched operating systems, and found no problems, seeing ISO9660 CDROM contents over NFS3; at the moment of writing this manual, we have not been testing the SGI 2366 patch yet.

III.1.4 STEP 4: installation of the SGI September 1997 Recommended Patch Set

In this step we will install the SGI September 1997 Recommended Patch Set. Installation of this set is mandatory. The patch set should be installed as ONE set. No other patch sets have been tested for use with Jaleo Octane.

Although it is possible to use the SGI distributed 'IRIX 6.3 and 6.4 Recommended/Required Patches September 1997 (SGI part no. 812-0688-006, 09/97)' CD, this CD can be very hard to locate. So, we included the necessary patches from this CD on the Jaleo for Octane distribution CD-ROM. They are located in the directory /CDROM/extern/patches.

(NOTE: If you want to install from the SGI distribution CD, use the command 'install A' from the distribution '/CDROM/dist/OCTANE', using the 'inst' installation tool.)

- In the description that will follow we describe the situation, actually installing from the Jaleo distribution CD;
- The Jaleo for Octane distribution CD should be inserted into the CD-ROM drive on the remote machine (named RES in this example);
- On the machine to install (here: JEVA), log in as root;
- If automounting is on, you will be able to access the CDROM through the command (the prompt is shown as well):

```
JEVA 1# cd /hosts/RES/CDROM/
```

- If the (remote) CD-ROM is mounted on a different mount point, change directory to that mount point. Do a listing; you should see:

```
JEVA 2# ls
extern      install.sh  jaleo
```

- Change directory to the patches directory, and list it:

```
JEVA 3# cd extern/patches/
JEVA 4# ls
patches.tar  ptch2105.tar  readme
```

- Change directory to /usr/tmp, and list it. It should look like:

```
JEVA 5# cd /usr/tmp
JEVA 6# ls
.Xsgishm
```

- Untar the patches from CD-ROM into the /usr/tmp directory:

```
JEVA 7# tar -xvf /hosts/RES/CDROM/extern/patches/patches.tar
x .IM, 195 bytes, 1 block
x .IM_870, 195 bytes, 1 block
x .distribution, 0 bytes, 0 blocks
x CDgrelnotes, 90 bytes, 1 block
x CDrelnotes, 3218 bytes, 7 blocks
x README, 5595 bytes, 11 blocks
x RELEASE.info, 5024 bytes, 10 blocks
x dist/.iscd, 0 bytes, 0 blocks
x dist/.related_dists, 135 bytes, 1 block
x dist/6.4_OCTANE/inst.README, 812 bytes, 2 blocks
```



```

x dist/6.4_OCTANE/inst.init, 1187 bytes, 3 blocks
x dist/6.4_OCTANE/patchSG0001765, 4487 bytes, 9 blocks
x dist/6.4_OCTANE/patchSG0001765.dmedia_dev_man, 13707 bytes, 27 blocks
x dist/6.4_OCTANE/patchSG0001765.dmedia_dev_src, 20820 bytes, 41 blocks
x dist/6.4_OCTANE/patchSG0001765.dmedia_dev_sw, 2433254 bytes, 4753 blocks
x dist/6.4_OCTANE/patchSG0001765.dmedia_eoe_man, 34406 bytes, 68 blocks
x dist/6.4_OCTANE/patchSG0001765.dmedia_eoe_sw, 5109772 bytes, 9981 blocks
x dist/6.4_OCTANE/patchSG0001765.eoe_sw, 48131 bytes, 95 blocks
x dist/6.4_OCTANE/patchSG0001765.idb, 15700 bytes, 31 blocks

```

.....

```

x relnotes/patchSG0002370/TC, 42 bytes, 1 block
x relnotes/patchSG0002370/ch1.z, 8992 bytes, 18 blocks
x relnotes/patchSG0002389/TC, 42 bytes, 1 block
x relnotes/patchSG0002389/ch1.z, 30967 bytes, 61 blocks

```

- Check the contents of /usr/tmp by listing it:

```

JEVA 8# ls
.IM                .Xsgishm          CDgrelnotes       INSTALL-LOG       RELEASE.info
htdocs
.IM_870            .distribution     CDrelnotes        README            dist
relnotes

```

- Now, start the Software Manager:

```
JEVA 9# swmgr
```

- Once inside the Software Manager, in the ‘Available Software’ field, type:

```
/usr/tmp/dist
```

- Click the ‘Customize Installation’ button; after reading the introductory statements (click ‘Dismiss’ once read) you will be prompted to open a distribution (the location where the software (here: patches) resides);
- Click the distribution ‘/usr/tmp/dist/6.4_Octane’; click ‘OK’;
- You will be asked if any additional patch-set needs to be selected; since we do not want this, click ‘Done’;
- If you have installed SGI patch 2105 (see “STEP 3: installation of SGI patch 2105” on page 16), you will now encounter two installation conflicts. If you did not install this patch, you can skip the rest of this paragraph.
To resolve the conflicts, click ‘Conflicts’; you will see details of the conflicts. Basically the patch no. 2205, part of the September 1997 Recommended Patch Set, is older than patch no. 2105, which we installed in STEP 3.
We can safely click ‘Do not install’ (two times), as to keep the newer patch;

- You will see a message: ‘No conflicts’. To start the installation, click ‘Start’. The installation of the September 1997 Recommended Patch Set will take place; this will take some time. After installation, choose ‘File > Exit’ from the menu to exit the Software Manager;

- Reboot the machine:

```
JEVA 11# reboot
```

- At boottime, you should see a message stating: Reconfiguring new kernel; the machine should boot without error messages;

- Log in as root; open a shell;

- Issue the command ‘versions -nb’ to check the installed software so far:

```
JEVA 1# versions -nb
```

I = Installed, R = Removed

Name	Version	Description
I 4Dwm	1263561138	Desktop Window Manager, 6.4 for Origin, Onyx2, and OCTANE
I InPerson	1253422520	InPerson Desktop Conferencing, 2.2.1
I PeoplePages	1253233734	PeoplePages - The Indigo Magic Phonebook, 1.2
I Register	1263594620	Customer Registration, 1.3.2
I SoftWindows95	1253400000	Insignia SoftWindows95 1.01
I ViewKit_eoe	1263561138	ViewKit Execution Environment, Version 1.5.0
I Welcome and OCTANE, Feb. 97	1263594620	Customer Welcome to 6.4 for Origin, Onyx2, and OCTANE, Feb. 97
I acrobat	1022740120	Adobe Acrobat Reader, 2.1
I annotator	1253422520	IRIS Annotator 1.2
I arraysvcs	1263561138	Array Services 2.1
I c++_eoe	1263370535	Standard Execution Environment (C++, 7.1)
I c_eoe	1263370535	Standard Execution Environment (C, 7.1)
I cms_eoe	1263370532	Color Management 1.0.3
I compiler_eoe (Base Compiler, 7.1)	1263370535	IRIX Standard Execution Environment,
I cosmoplayer	1273547420	Cosmo Player, version 1.0.1
I custlink	1263594620	CustomerLink Client Software, Release 2.2
I demos	1263561138	Demonstration Programs, 6.4 for Origin, Onyx2, and OCTANE
I desktop_base for Origin, Onyx2, and OCTANE	1263561138	Indigo Magic Desktop Base Software, 6.4
I desktop_eoe	1263561138	Indigo Magic Desktop, 6.4 for Origin, Onyx2, and OCTANE
I desktop_tools	1263561138	Desktop Tools, 6.4 for Origin, Onyx2, and OCTANE
I dmedia_data and OCTANE	1263561138	Digital Media Data, 6.4 for Origin, Onyx2, and OCTANE
I dmedia_eoe	1263561138	Digital Media Execution Environment, 6.4 for Origin, Onyx2, and OCTANE
I dps_eoe	1263561138	Display PostScript/X, 2.0.7 based on PostScript Level 2
I dynaweb	1263370534	IRIS Insight Dynaweb Server, 3.0.1
I elec_svcs	1253190220	Customer Support Services Base Software, Rel. 2.2
I eoe	1263561140	IRIX Execution Environment, 6.4 for Origin, Onyx2, and OCTANE

I ftn77_eoe 77, 7.1)	1263370535	Standard Execution Environment (Fortran
I ftn90_eoe 90, 7.1)	1263370535	Standard Execution Environment (Fortran
I gateway 2.0.1	1263594620	Internet Gateway Execution Environment,
I goldengate	1263370532	GoldenGate Data Conversion Service, 1.2
I ifl_eoe Environment, 1.1.2	1313561138	Image Format Library Execution Only
I il_eoe Environment, 3.1.2	1313561138	ImageVision Library Execution Only
I imgtools	1313561138	ImageVision Tools, 3.1.2
I impactcomp Environment 6.4	1263829720	OCTANE and IMPACT Compression Execution
I impactdm Execution Environment, 6.4	1263829720	OCTANE and IMPACT Digital Media Base
I impactvideo Environment, 6.4	1263829720	OCTANE and IMPACT Video Execution
I impr_base	1263370532	Impressario 2.1.3 Base
I impr_scan	1263370532	Impressario 2.1.3 Scanner Software
I impr_server	1263370532	Impressario 2.1.3 Print Server
I infosearch Environment, 6.4 for Origin, Onyx2,	1263561138	Information Searching Execution and OCTANE
I insight	1263370534	IRIS InSight Viewer, 3.0.3
I insight_base	1263370534	IRIS InSight Base Software, 3.0.3
I insight_gloss	1263370532	IRIS InSight Online Glossary, 2.3.2
I inventor_eoe 2.1.3	1253233735	Inventor Execution Only Environment,
I java_eoe 1.0.2)	1023473010	Java Execution Environment 2.1 (Sun JDK
I kernLM_eoe	1263561138	kernLM 1.2 Execution Environment
I license_eoe	1263561138	License Tools 3.1.3
I macromedia	1253393920	Macromedia Movie Player, 1.4.1
I media_warehouse	1263370532	Indigo Magic MediaWarehouse 1.2
I motif_eoe (based on OSF/Motif 1.2.4)	1263370532	IRIX IM Execution Only Environment, 6.4
I nedit	1253394220	NEdit V4.0.2 - GUI style editor
I netscape_gold	1263370535	Netscape Navigator Gold Client, 3.01S
I nfs and OCTANE	1263561138	Network File System, 6.4 for Origin, Onyx2,
I ns_admin	1263370534	Netscape Administration Server, 2.12
I ns_fasttrack	1263370534	Netscape Fasttrack Personal Server, 2.0P
I outbox	1263370532	OutBox Personal Web Site, 1.4
I patchSG0001765 dmedia_dev patch for 6.4	1269999940	Patch SG0001765: dmedia_eoe and
I patchSG0001820 6.4	1269999907	Patch SG0001820: specfs patch for IRIX
I patchSG0001827 Keyboard Support	1269999903	Patch SG0001827: Improved X Server
I patchSG0001831 OCTANE digital media products	1269999906	Patch SG0001831: XTALK GIO support for
I patchSG0001841 Performance/Rollup	1269999906	Patch SG0001841: XLV Large System
I patchSG0001847 serial number with the incorrect prefix	1269999903	Patch SG0001847: CustLink displays wrong
I patchSG0001894 Support	1269999922	Patch SG0001894: Server-based X Num Lock
I patchSG0001902 SoftWindows	1269999902	Patch SG0001902: mount_iso9660 patch for
I patchSG0001908 Card Support and audio bug fixes	1269999924	Patch SG0001908: 6.4 PCI Audio Expansion
I patchSG0001944 improvements	1269999903	Patch SG0001944: ef driver performance
I patchSG0001953 fixes	1269999966	Patch SG0001953: 6.4 Impact Graphics

I patchSG0001963 rollup for IRIX 6.4	1269999906	Patch SG0001963: xfsdump/xfsrestore
I patchSG0001968 #1	1269999903	Patch SG0001968: IRIX 6.4 STREAMS Rollup
I patchSG0001975	1269999902	Patch SG0001975: gmemusage security hole
I patchSG0001984 link counts, pathconf)	1269999903	Patch SG0001984: fixes to hwgfs (mount,
I patchSG0002001	1269999905	Patch SG0002001: OCTANE firmware patch
I patchSG0002019 Kernel Patch	1269999919	Patch SG0002019: IRIX 6.4 Networking
I patchSG0002024	1269999915	Patch SG0002024: CacheFS bug fixes #1
I patchSG0002044 6.3, and 6.4: pthreads+security	1269999905	Patch SG0002044: rld rollup #7 for 6.2,
I patchSG0002057 S2MP+O	1269999912	Patch SG0002057: libc fixes for 6.4-
I patchSG0002061	1269999916	Patch SG0002061: PCI Rollup
I patchSG0002073	1269999920	Patch SG0002073: SCSI tape
I patchSG0002076	1269999910	Patch SG0002076: Ioconfig update
I patchSG0002078	1269999903	Patch SG0002078: runpriv security hole
I patchSG0002091	1269999904	Patch SG0002091: xlock security fix
I patchSG0002105 6.4	1269999925	Patch SG0002105: NFS rollup #3 for IRIX
I patchSG0002107 Irix 6.4	1269999907	Patch SG0002107: General Motif fixes for
I patchSG0002127 IRIX 6.4	1269999904	Patch SG0002127: icrash rollup #2 for
I patchSG0002151	1269999910	Patch SG0002151: serial driver update
I patchSG0002162 (6.4)	1269999903	Patch SG0002162: Pthread library fixes
I patchSG0002173	1269999909	Patch SG0002173: Hinv rollup for 6.4
I patchSG0002211	1269999924	Patch SG0002211: 6.4 kernel rollup
I patchSG0002222	1259999914	Patch SG0002222: OutBox security fix
I patchSG0002280 fixes for 6.4	1269999903	Patch SG0002280: Status monitor and lockd
I patchSG0002287 6.4	1269999912	Patch SG0002287: XFS rollup #5 for IRIX
I patchSG0002290 Octane	1269999909	Patch SG0002290: X server fixes for
I patchSG0002305	1269999904	Patch SG0002305: 6.4 SCSI rollup
I pcnfsd	1232792120	PC-NFS 2.0.2 Server Components
I performer_data Files	1263561138	Performer2.0.4 Execution Environment Data
I performer_eoe	1263561138	Performer2.0.4 Execution Environment
I print	1263561138	Printing Tools, Release 1.6.1
I sgips	1253422520	Adobe Photoshop Performance Package, 1.1
I sgitcl_eoe	1232792120	SGI Tcl Execution Environment, 1.1
I sgsearch 1.1	1263561138	Fulltext Indexing & Search Environment,
I showcase	1232252420	IRIS Showcase 3.4.1
I sysadmdesktop for Origin, Onyx2, and OCTANE	1263561138	Indigo Magic System Administration, 6.4
I sysmon	1263561138	Desktop System Monitor, 2.1.1
I tooltalk_eoe	1232792120	ToolTalk 1.3 Execution Only Environment
I webmagic	1253233734	WebMagic Web Authoring Environment, 2.0.2
I websetup	1263594620	Web Setup and Administration, 2.0.1
I websupport_eoe	1263355420	WebSupport 1.2 eoe
I webviewer environment, 2.1	1263370533	WebViewer library execution only
I x_eoe X11R6.1	1263561138	X11 Execution Environment, 3.7 based on
I xing_streamworks_player	1223210220	Xing Streamworks Player , 2.01.1
I xlators_3d	1022505020	3D File Translators 1.1.1

- Closely study this list, and compare it to the list printed above. Although differences will be possible, the lists should essentially be the same, especially with regards to the installed subsystems and the patches.

III.2 Additional Machine Configuration

In the next paragraphs we will describe the steps needed to do some additional machine configuration.

III.2.1 Setting up extra swap space

It is highly recommended to set up some extra swap space for stable operation of the Jaleo for Octane software:

- Open the Swap Manager from the Toolchest (Toolchest > System > System Manager > System Performance > Swap Manager);
- First, ‘Add’ some real swap space; you will be guided through this process. For a system with 256 MByte of RAM we advise a real swap space of 256 MByte. The file system to create this real swap space is on ‘/dev/root’ (you will be prompted to enter these values);
- Second, add some virtual swap space. You do this by choosing ‘Task > Add Virtual Swap Space’ from the menu from within the Swap Manager. You will be guided through the process. For a system with 256 MByte of RAM we advise a virtual swap space of 512 MByte. You will be prompted for this value;
- Quit the Swap Manager;
- Switch on System Virtual Swap Space. From the prompt, issue the command:

```
JEVA 1# chkconfig vswap on
```

- To facilitate verification of the correct booting of the Octane, viewing of the messages coming from the boot process is very handy. To switch this on, from the prompt, issue the command:

```
JEVA 2# chkconfig verbose on
```

- Reboot the machine. You should now be able to follow the different phases the boot process goes through by watching the messages on the monitor screen. On this occasion you will actually see the swap spaces being added during booting;
- After rebooting, log in as root, and open a shell. From the prompt, check the swap space by issuing the command:

```
JEVA 1# swap -l
```

You should see something like:

lswap	path	dev	pri	swaplo	blocks	free	maxswap	vswap
3	/vswap/vswap1	0,601	5	0	0	0	0	1048576
2	/swap/swap1	0,601	2	0	524288	524288	524288	0
4	/.swap.virtual	0,601	2	0	0	0	0	80000
1	/dev/swap	0,606	0	0	262144	262144	262144	0

- Check the listing you get against the list above; essentially, the list should be the same, apart from possible deviations in the device numbers.

Of course, you may set up additional swap space as a result of the complexity of your jobs: with increasing complexity, and with increasing resolution (= file size of the image material), you may need more swap space. The best choice however is to prevent swapping, as this will inevitably slow the system down - if your system becomes very slow, AND you can detect grinding noises from your system disk, it definitely is swapping. The way to prevent it, is to add main memory.

To monitor memory usage, you may want to use 'gr_osview -a', issued as root: this will give you interesting feedback on the usage of your system resources.

III.2.2 Installing a Wacom Tablet Driver

Step1: Installation of the Wacom driver software.

Only if you have a Wacom tablet attached (through the **second** serial port on the Octane), the following description may apply to you.

To install a Wacom Tablet driver, you can use the software that is included on the Jaleo for Octane distribution CD-ROM. Or, you can download the newest driver from the Wacom website, at www.wacom.com.

Also, you need to install an optional IRIX subsystem, called `oe.sw.optinput`.

The following installation is done through using the 'inst' installation tool, going from the Jaleo distribution CD-ROM. The driver software is located in the directory: `/CDROM/extern/wacom`, and has the name `wacom.tar`. First of all, untar this software in a temporary directory:

```
JEVA 1# cd /usr/tmp <Enter>
```

```
JEVA 2# tar -xvRf /CDROM/extern/wacom/wacom.tar <Enter>
```

This will create the installable distribution in the directory: `/usr/tmp/REL6.4/dist`

Now, start the inst installation tool, and follow the transcript given below (for a more detailed discussion on the usage of the inst tool, please also see "STEP 3: installation of SGI patch 2105" on page 16):

JEVA 3# inst

Default distribution to install from: RES:/CDROM/dist/6.4_OCTANE/
For help on inst commands, type "help overview".

Inst Main Menu

- | | |
|-------------------------------|---|
| 1. from [source ...] | Specify location of software to be installed |
| 2. open [source ...] | Specify additional software locations |
| 3. close [source ...] | Close distributions |
| 4. list [keywords] [names] | Display information about software subsystems |
| 5. go | Perform software installation and removal now |
| 6. install [keywords] [names] | Select subsystems to be installed |
| 7. remove [keywords] [names] | Select subsystems to be removed |
| 8. keep [keywords] [names] | Do not install or remove these subsystems |
| 9. step [keywords] [names] | Interactive mode for install/remove/keep |
| 10. conflicts [choice ...] | List or resolve installation conflicts |
| 11. help [topic] | Get help in general or on a specific word |
| 12. view ... | Go to the View Commands Menu |
| 13. admin ... | Go to the Administrative Commands Menu |
| 14. quit | Terminate software installation |

Inst> 1

Previous installation sites:

- 1 RES:/CDROM/dist/6.4_OCTANE/
- 2 RES:/CDROM/dist
- 3 .
- 4 RES:/CDROM/dist/dist6.4
- 5 none (no distribution, view installed products)
- 6 quit (no action)

Now, give the location of the distribution software, here: /usr/tmp/REL6.4/dist

Install software from: [RES:/CDROM/dist/6.4_OCTANE/] /usr/tmp/REL6.4/dist

Reading product descriptions .. 100% Done.

Inst> list

View: distribution

Status: N=new, U=upgrade, S=same, D=downgrade

Selection: i=install, r=remove, k=keep

Subsystem Types [bdrpc]: b=reBoot needed, d=Default, r=Required, p=patch,
c=Client only

N wac_cp.man.manpages	20+ Man Pages
N wac_cp.sw.base	1380+ Base Software
N wac_drv.man.manpages	40+ Man Pages
N wac_drv.sw.base	228+ Base Software

Disk space summary (Kbytes):	/
Current free space	3063516
- Selections net change	0
- Temporary inst overhead	0
= Minimum free during install	3063516
Final projected free space	3063516

Inst> install A

Inst> list

View: distribution

Status: N=new, U=upgrade, S=same, D=downgrade
 Selection: i=install, r=remove, k=keep
 Subsystem Types [bdrpc]: b=reBoot needed, d=Default, r=Required, p=patch,
 c=Client only

```
i N wac_cp.man.manpages      20+  Man Pages
i N wac_cp.sw.base           1380+  Base Software
i N wac_drv.man.manpages     40+  Man Pages
i N wac_drv.sw.base          228+  Base Software
Disk space summary (Kbytes):      /
Current free space              3063536
- Selections net change         1672+
- Temporary inst overhead      712+
= Minimum free during install   3061152
Final projected free space      3061864
```

```
Inst> go
Pre-installation check .. 8%
Checking space requirements .. 16%
Installing/removing files .. 16%
Installing new versions of selected wac_cp.man subsystems
Installing/removing files .. 22%
Installing new versions of selected wac_cp.sw subsystems
Installing/removing files .. 78%
Installing new versions of selected wac_drv.man subsystems
Installing/removing files .. 86%
Installing new versions of selected wac_drv.sw subsystems
Installing/removing files .. 94%
Running exit-commands .. 99%
Checking dependencies .. 100% Done.
Installations and removals were successful.
You may continue with installations or quit now.
```

Step 2: Installation of eoe.sw.optinput.

Now, you must install the (optional) IRIX 6.4 subsystem called: eoe.sw.optinput. Using the inst tool, installation of this subsystem is done as follows:

```
JEVA 339# inst

Inst> 1
Previous installation sites:
 1 /usr/people/jose/WACOM_6.4/REL6.4/dist
 2 RES:/CDROM/dist/6.4_OCTANE/
 3 RES:/CDROM/dist
 4 .
 5 RES:/CDROM/dist/dist6.4
 6 none (no distribution, view installed products)
 7 quit (no action)
```

Put the first IRIX 6.4 distribution CD-ROM into the drive. When prompted, type in the proper path to this distribution, in this example: /hosts/RES/CDROM/dist :

```
Install software from: [/usr/people/jose/WACOM_6.4/REL6.4/dist]
/hosts/res/CDROM/dist
```

Inst will now generate a lot of messages, starting with:

```
Irix 6.4 for Origin, Onyx2, and OCTANE README
```


Silicon Graphics, Inc.
 This is the IRIX 6.4 for Origin, Onyx2, and OCTANE CD.
 It contains the base software for the IRIX 6.4 for Origin,
 Onyx2, and OCTANE release.

After all the messages, the inst prompt will return; then, give the following commands:

```
Inst> view distribution

View:      distribution

Inst> list

View:      distribution
Status:    N=new, U=upgrade, S=same, D=downgrade, P=patch upgrade
Patches:   A=installable patch, X=uninstallable (missing base product)
Selection: i=install, r=remove, k=keep
Subsystem Types [bdrpc]: b=reBoot needed, d=Default, r=Required,
p=patch,c=Client only

.....

N  eoe.man.optinput                8+  Optional Input Devices Man Pages

.....

N  eoe.sw.optinput [b]             668+ Optional Input Devices

.....

Disk space summary (Kbytes):      /
Current free space                2798868
- Selections net change           0
- Temporary inst overhead        0
= Minimum free during install    2798868
Final projected free space       2798868
```

In the listing, you will see the subsystem to be installed. Now, do the following:

```
Inst> keep all

Inst> install eoe.sw.optinput

Inst> go

Reading fileset information .. 8%
Pre-installation check .. 16%
Checking space requirements .. 24%
Installing/removing files .. 24%
Installing new versions of selected eoe.sw subsystems
Installing/removing files .. 94%
Running exit-commands .. 94%
`local.otr' is up to date.
`install.otr' is up to date.
`system.otr' is up to date.
`default.otr' is up to date.
Running exit-commands .. 99%
Checking dependencies .. 100% Done.
Installations and removals were successful.
You must restart your system to complete the installation.
```

You may continue with installations or quit now.

```
Inst>
Inst Main Menu
 1. from [source ...]          Specify location of software to be
installed
 2. open [source ...]         Specify additional software locations
 3. close [source ...]        Close distributions
 4. list [keywords] [names]    Display information about software
subsystems
 5. go                         Perform software installation and
removal now
 6. install [keywords] [names] Select subsystems to be installed
 7. remove [keywords] [names] Select subsystems to be removed
 8. keep [keywords] [names]    Do not install or remove these
subsystems
 9. step [keywords] [names]    Interactive mode for
install/remove/keep
10. conflicts [choice ...]     List or resolve installation conflicts
11. help [topic]              Get help in general or on a specific
word
12. view ...                  Go to the View Commands Menu
13. admin ...                 Go to the Administrative Commands Menu
14. quit                      Terminate software installation

Inst> 14
Requickstarting ELF files (see rqsall(1)) .. 100% Done.
```

After this installation, reboot the machine. Log in as root, and open up a Unix shell. Check the installation through the command 'versions -nb'. You should have the following lines in the listing:

```
I  wac_cp          1  Wacom Control Panel
I  wac_drv         1  Wacom Device Driver IRIX6.4
```

A 'versions -v' will produce a listing of all subsystems installed; one of these should be:

```
I  eoe.sw.optinput [install_date] Optional Input Devices
```

Current version of this driver is: Wacom 3.1 for IRIX 6.4.

Step 3: Configuring the serial ports.

Using the Toolchest -> System -> System Manager -> Hardware Manager -> Configure Serial Ports menu:

- Add Serial Device Wacom to serial port 2;
- Delete any devices from serial port 1, so it becomes 'Available';
- as root, issue the command from a shell:

```
# chmod 777 /dev/ttyd1
```

(this will actually be needed for step 4);

- use the Wacom control panel to test and configure the tablet.

Step 4: Changing the port for VLAN operation.

Please now change the port for interfacing to the VLAN unit from 2 (two, the default) to 1 (one). For information on how to do this: see “RtVideo Setup” on page 60.

NOTE:

This is the REAME file that comes with the Wacom software:

```
This is a preliminary upgrade release for IRIX6.4; it is not complete, and
requires SGI optional software to be installed first.
Installation instructions:
```

```
1) Unpack the Wacom distribution.  E.g.,
% tar xvf Wacom3.1-IRIX6.4.tar
This will create several files, and a "dist" directory.
```

```
2) Read the license agreement; installation of the software implies
acceptance of the license terms and conditions.
```

```
3) Attach Wacom tablet to serial port 2 (for O2, Octane that is the serial
port directly under the mouse connection; the left serial port when
facing the back of the machine).  See notes below for using serial
port 1.
```

```
4) You must be root to perform the following steps:
% su
```

```
5) Using swmgr(1M) or inst(1M), install the eoe.optinput.sw package from
the SGI distribution CD that came with your machine (or an OS
upgrade CD from SGI, if applicable).
```

```
# swmgr
Select CDROM media
Select Customize Installation
Select eoe.optinput.sw from the package list
Click Start
You need not reboot after installing.
```

```
6) Using swmgr or inst, install the upgrade:  E.g.,
From the directory containing the Wacom LICENSE.TXT file, do
```

```
# swmgr -f dist
Select Customize Installation
Select the two Wacom packages: wac_drv is the driver upgrade, and
wac_cp is the control panel.
Click Start
You must reboot after installing to use the new driver.
```

```
7) Using the System:System Manager:HW Manager:Configure Serial Port menu,
Add Serial Device Wacom to serial port 2.
```

```
8) Use the control panel to test and configure the tablet.
```

Trouble Shooting:

```
1) Pointer does not move.
% grep -i wac /var/adm/SYSLOG
Failure to load the driver is a major problem.  Send the messages,
and the output from hinv(1), to support@wacom.com.
If the driver loaded (no obvious errors from above), then check
power to the tablet (LED is lit), serial port correct, cableing.
```

We advise to use serial port 2 for the Wacom tablet, and port 1 for the VLAN unit: we found this to be working fine, while reversing the ports simply didn't work. If no tablet is used, you can safely use the VLAN on port 2.

III.2.3 Configuring a 24 inch Monitor for use with Jaleo

To set the resolution of a 24 inch monitor use the following commands (as root):

```
# cd /usr/gfx
# ls -R ucode
```

The last command will display the available resolutions/frequencies.

For a 24 inch monitor, you can set up: 1600x1200, but normally you would like to select the highest resolution as 1280x1024 @ 72 Hz. You do this with the command:

```
# ./setmon <lineofres/displayfrequency>
```

Some of the icons will be placed differently on the desktop and/or there will be a black boarder on the sides of the display, depending on the resolution chosen. This is not a Jaleo problem.

Important note:

To be able to render in real-time the real-time DVE uses the graphics hardware for rendering acceleration. For this it uses a memory area in this graphics hardware that is called an "offscreen area" - an area situated "behind" your desktop, being completely independent of it.

Unfortunately, this offscreen area is available only in resolutions up to 1280x1024 pixels - in higher resolution modes the graphics hardware simply runs out of memory to provide this feature. As a consequence, the DVE-RT can not work in these higher monitor resolutions.

When trying to use these higher monitor resolutions, you may want to switch off the hardware acceleration feature in Jaleo, forcing all rendering to be done in software. This can be useful forcing effects normally using the hardware for acceleration NOT to do so.

You do this by setting the flag `GL_RENDER_FLAGS` in the `.jaleorc` setup file to 99 (default is 35), and restarting Jaleo (please also see "The main Jaleo Configuration File: `.jaleorc`" on page 52).

III.3 Disk Array Setup

III.3.1 Some general information

In this step, we will setup the disk array on which the video materials will be stored. Basically this array can be:

- a number of UltraSCSI disks, housed in one or more physical storage systems, connected to the Octane through two or more UltraSCSI channels. The disks are individually partitioned, and then striped together as a so-called logical volume, using the xlv software that comes with the IRIX operating system; the resulting disk subsystem can be typified as RAID 0 (no data redundancy); examples we have tested:
 - Megadrive Ultra E-8 Modular Storage System - Dual Differential, Ultra Wide/Enhanced for SGI, Megadrive part no. ET-8UWD-SGI, with 8 to 16 7200 rpm Ultra Wide SCSI Hard Drive Modules (4 and 9 GB Seagate Barracuda);
 - Eurologic Voyager Storage Array (JBOD), single ended, Eurologic part no. VSA-401TU-2 (Single Tower Dual Bus) or VSA-402T-2 (Dual Tower Single Bus per side), with 8 to 12 7200 rpm Ultra Wide SCSI Seagate Barracuda disks;
- a number of RAID3 disk arrays, each array housed in a separate physical housing; these arrays must be identical. They are connected to the Octane through two or more UltraSCSI channels, with each array using *one* channel. The arrays are each partitioned as a whole (using fx - each array actually presenting itself as *one* big disk), after which the arrays are striped together as one logical volume, using xlv. The resulting disk subsystem can be typified as RAID3, offering data redundancy; examples we have tested:
 - Ciprico model 6500 and 6900 differential disk arrays; Ciprico part numbers SGI6512SD (50 GByte model) and SGI6912SD respectively. The model 6500 array features Quantum Fireball SE ATA drives, the type 6900 array features UltraWide Seagate Barracuda disks. Both feature hardware RAID 3, and differential UltraWide SCSI buses.

III.3.2 Hardware setup

- Power off the Octane (you can use the command 'halt -p', issued as root, or push the button on the front of the Octane; remove the AC power cable from the machine;
- Assemble the arrays; set up SCSI-id's: use id's 1 and up; disks connected to different SCSI controllers may occupy the same SCSI-id. Connect the arrays to the MSCSI card. Use the shortest possible, high quality UltraSCSI cabling. Use active termination - please do not forget to setup proper termination on the UltraSCSI bus;

- The first port on the MSCSI card is auto-sensing, and can be used as a differential bus, or as a single ended bus. The built-in UltraSCSI controller for connecting external devices is single ended. The three remaining ports on the MSCSI card are differential only;
- So, to set up a configuration with two single ended UltraSCSI channels, use the built-in external controller of the Octane, plus port one of the MSCSI card;
- We have seen some problems with the autosensing port on the MSCSI card, refusing to recognise a single ended array. In these cases please use a high quality single ended to differential converter, for example from Paralan;
- To set up a configuration with (up to four) differential buses, use the ports on the MSCSI card.
- RAID 3 arrays should always be differential.
When Ciprico arrays are used, on the model 6500 array, Data Streaming mode should be disabled. From the front panel of the array, to disable Data Streaming on the 6500, please follow the sequence below:
 - 1] From Front panel menu, STATUS OK, press down key;
 - 2] press right key until you reach ARRAY OPTIONS;
 - 3] press down key;
 - 4] press right key until you reach STREAM READ;
 - 5] press down key;
 - 6] press right key until you reach OFF;
 - 7] press SELECT key.

This holds true for Ciprico 6500 arrays with version 4 firmware. In later versions firmware the value of 'Data Streaming' is of no consequence to operation within the Jaleo for Octane environment.

- Please also study the documentation that comes with this hardware, especially the layout of the Y-shaped connectors on the MSCSI card, and the SCSI-id and termination setup for the different arrays. Be extremely careful with the high density Y-shaped connectors that connect to the MSCSI card: do not force these, and do not try to insert them with an improper orientation.

Now, check if the system 'sees' the hardware.

- Connect AC power to the arrays and to the Octane;
- Power up the arrays, and give these some time to initialize. Only then power up the Octane;

- Immediately when the system shows ‘Running Power-On Diagnostics’ press the the ‘Escape’ key, or, when the system shows ‘Starting Up the System’ click the button ‘Stop for Maintenance’; you will now enter the Maintenance menu;
- Enter the PROM monitor by clicking on it, or just type ‘5’;
- Once inside the PROM monitor, after the prompt, type:

```
hinv
```

- The output will allow you to check if all hardware is seen by the system, and should look like:

```
>hinv
2 195 MHZ IP30 Processors
CPU: MIPS R10000 Processor Chip Revision: 2.7
FPU: MIPS R10010 Floating Point Chip Revision: 0.0
Main memory size: 256 Mbytes
Instruction cache size: 32 Kbytes
Data cache size: 32 Kbytes
Secondary unified instruction/data cache size: 1 Mbyte
Integral SCSI controller 0: Version QL1040B (rev. 2)
  Disk drive: unit 1 on SCSI controller 0
Integral SCSI controller 1: Version QL1040B (rev. 2)
Integral SCSI controller 2: Version QL1040B
  Disk drive: unit 5 on SCSI controller 2
  Disk drive: unit 6 on SCSI controller 2
  Disk drive: unit 7 on SCSI controller 2
  Disk drive: unit 8 on SCSI controller 2
Integral SCSI controller 3: Version QL1040B
  Disk drive: unit 1 on SCSI controller 3
  Disk drive: unit 2 on SCSI controller 3
  Disk drive: unit 3 on SCSI controller 3
  Disk drive: unit 4 on SCSI controller 3
Integral SCSI controller 4: Version QL1040B
Integral SCSI controller 5: Version QL1040B
IOC3 serial port: tty1
IOC3 serial port: tty2
IOC3 parallel port: plp1
Graphics board: MXI
Integral Fast Ethernet: ef0, version 1
Iris Audio Processor: version RAD revision 12.0, number 1
Digital Video: unit 1, revision 4.2, TMI: revision 2, CSC: revision 1
```

- In this example, you will actually see that we have connected 8 disks to two of the four UltraSCSI ports from the MSCSI board; this board is actually seen as controllers number 2, 3, 4 and 5;
- Quit the PROM-monitor by clicking the button ‘Done’ or by typing ‘exit’; you will re-enter the Maintenance menu;

III.3.3 Logical volume setup

The disk drives should be partitioned first. After checking that all disks can actually be seen through 'hinv', partition and label each disk, using the utility fx:

- In the following discussion, DO NOT type in the quotes (");
- <Enter> means: press the Enter- key once.
- If you are not sure about what to do, please let your dealer perform the next steps.
- Log in as root, open a Unix shell window;
- To open the fx disk maintenance utility type in:

```
fx -x <Enter>
```

- The question asked will be: fx: "device-name" = (dksc) ;
- To indicate a SCSI controller/disk(s) chain just type a

```
<Enter>
```

- The next question will ask for the controller number: fx: ctrl# = (0) ;
- here type in:

```
2 <Enter>
```

- The third question will be to identify the drive to be processed: fx: drive# = (1) ;
- To indicate the first disk of the array, as it is located at SCSI-id number 5 (in our example; change this to reflect your actual setup of disks and SCSI-id's), here type in:

```
5 <Enter>
```

- The fourth question will ask for the logical unit number: fx: lun# = (0) ;
- Here, accepting the default, type in a

```
<Enter>
```

- After this the fx utility will do a test, and it will give a message about a missing valid SGI volume label. This is correct, as we are about to make one.
- Now fx will create a default volume label, and will come up with its main menu. It looks like this:

```
----- please choose one (? for help, .. to quit this menu)-----  
[exi]t           [d]ebug/           [l]abel/           [a]uto  
[b]adblock/      [ex]ercise/         [r]epartition/     [f]ormat
```


fx>

- From the main menu choose the option "repartition" by typing

r <Enter>

- The next menu will emerge, it looks like this:

```
----- please choose one (? for help, .. to quit this menu)-----
[ro]otdrive          [o]ptiondrive      [e]xpert
[ul]srootdrive       [re]size
fx/repartition>
```

- Now choose the option "optiondrive" by typing

o <Enter>

- You will be asked if you want to create a XFS data partition;
- If you now confirm the choice given to you (you should, to go on), THERE IS NO WAY OUT. ALL EXISTING DATA ON THE DRIVE WILL BE LOST.
- To confirm, just type a

<Enter>

- A optiondrive will be created, with a single usable partition spanning the whole disk.
- Now go back to the fx Main Menu. You do this by typing:

".." (that is two dots) <Enter>

You are at the Main Menu level if you see something like:

```
----- please choose one (? for help, .. to quit this menu)-----
[exi]t              [d]ebug/              [l]abel/              [a]uto
[b]adblock/         [ex]rcise/            [r]epartition/        [f]ormat
fx>
```

- Go to the "label" submenu by typing:

l <Enter>

- You should see something like this:

```
----- please choose one (? for help, .. to quit this menu)-----
[sh]ow/             [sy]nc              [se]t/              [c]reate/
fx/label>
```

- Now choose the "sync" option, by typing:

sy <Enter>

- This will write the label to the disk;
- Go back to the Main Menu of the fx utility by typing:

.. <Enter>

- You are at the Main Menu level if you see something like:

```
----- please choose one (? for help, .. to quit this menu)-----
[exi]t           [d]ebug/           [l]abel/           [a]uto
[b]adblock/      [ex]ercise/        [r]epartition/     [f]ormat
fx>
```

- From here, once again type:

.. <Enter>

- The fx utility will now ask you for the next disk to process. In our example, this is the disk on SCSI-controller (dksc) number 2, with SCSI-id number 6. Repeat all the steps as per the disk with SCSI-id number 5.

Also repeat all steps for the disks with SCSI-id numbers 7 and 8, on controller 2, respectively.

Also repeat all steps for the disks with SCSI-id numbers 1, 2, 3, and 4 on controller 3, respectively.

- If your setup has different SCSI-id's assigned (that is, different from our example), and/or different controller numbers, adapt the preceding steps as appropriate for your situation. After processing all disks, partitioning and writing labels to each one of them, go back to the Main Menu of the fx utility.
- Quit fx by typing:

exi <Enter>

The next step is to create a logical volume from the eight disks, through striping the disks (you do all this logged in as root):

- Basically the xlv_make command is used to create the striped volume;
- Create a configuration file /var/tmp/array.config containing the following:

```
vol xlv0
data
plex
ve -stripe -stripe_unit 128 /dev/dsk/dks3d1s7 /dev/dsk/dks2d5s7
/dev/dsk/dks3d2s7 /dev/dsk/dks2d6s7 /dev/dsk/dks3d3s7 /dev/dsk/dks2d7s7
/dev/dsk/dks3d4s7 /dev/dsk/dks2d8s7
end
show
exit
```

- You create such a file by opening the JOT editor, and entering the lines EXACTLY as shown above. Each command should be on a separate line; the ve command should be one ONE line (that is: **ALL** /dev/dsk/dksXdYs7 entries **MUST** be on **ONE** line, and this line is the line on which the ve command is; just keep on typing ...; only for displaying here on paper we have put them on three lines);

- The file should end with an <Enter>
- Save the file from the jot editor with 'Save as', and then enter the filename: /var/tmp/array.config ;
- Now issue the command by typing (from a Unix shell):

```
xlvmake /var/tmp/array.config <Enter>
```

- After this the striped volume, named 'xlv0' will be created, and you will be informed of its completion. You should see something like:

```
VOL xlv0 (complete)                (node=JEVA)
VE xlv0.data.0.0 [clean]
    start=0, end=67941375, (stripe)grp_size=8, stripe_unit_size=128
    /dev/dsk/dks3d1s7 (8492788 blks)
    /dev/dsk/dks2d5s7 (8492788 blks)
    /dev/dsk/dks3d2s7 (8492788 blks)
    /dev/dsk/dks2d6s7 (8492788 blks)
    /dev/dsk/dks3d3s7 (8492788 blks)
    /dev/dsk/dks2d7s7 (8492788 blks)
    /dev/dsk/dks3d4s7 (8492788 blks)
    /dev/dsk/dks2d8s7 (8492788 blks)
Vol: 1; Standalone Plex: 0; Standalone Ve: 0
```

If your setup goes from different SCSI-id numbers, please adapt the lines in the xlv_make script accordingly, where /dev/dsk/dksXdYs7 means: all of the usable area (s7) on disk with SCSI-id 'Y' on SCSI-controller 'X'. If this is the case, the final output when completing the creation of the logical (striped) volume will differ as well.

NOTES:

- that you should stripe in a way that disks are used in an 'interleaved' way on different controllers. That is, make the order of the drives so that, for example with two controllers used, first disk 1 is accessed on controller 1, then disk 1 on controller 2, then disk 2 on controller 1, then disk 2 on controller 2, and so forth. In this way performance is distributed in an optimally.
- If striped arrays of normal disk drives are used, the stripe_unit value should be 128.
- For arrays that appear as a single SCSI device, for example RAID arrays, please ask the array vendor for more information on striping sizes. For Ciprico 6900 and 6500 arrays a stripe_unit value of 4096 should be used.
- The xlv Manager is a system utility that may come in handy. You may start it, logged in as root, by issuing the command 'xlv_mgr' from the prompt. Subsequently, the prompt will change in the xlv Manager prompt: xlv_mgr> .
Some uses:

- show all information about a logical volume:

```
JEVA 4# xlv_mgr
xlv_mgr> show -long all
VOL xlv0 (complete) (node=JEVA)
VE xlv0.data.0.0 [clean]
    start=0, end=67941375, (stripe)grp_size=8, stripe_unit_size=128
    /dev/dsk/dks3d1s7 (8492788 blks)
    /dev/dsk/dks2d5s7 (8492788 blks)
    /dev/dsk/dks3d2s7 (8492788 blks)
    /dev/dsk/dks2d6s7 (8492788 blks)
    /dev/dsk/dks3d3s7 (8492788 blks)
    /dev/dsk/dks2d7s7 (8492788 blks)
    /dev/dsk/dks3d4s7 (8492788 blks)
    /dev/dsk/dks2d8s7 (8492788 blks)
Vol: 1; Standalone Plex: 0; Standalone Ve: 0
```

- Show all available commands in xlv Manager:

```
xlv_mgr> help
show [-long][-verbose] all - Display all known objects.
show [-verbose] kernel [?name?] - Display the kernel volume table.
show [-long] [-verbose] labels [dks?d?vh]
    - Display XLV disk labels. The long option
    display the secondary label.
show config - Display XLV software configuration.
show [-verbose] object ?name? - Display named object.
show stat [?subvol?] - Display subvolume(s) statistics.
attach ve ?src? ?dst_plex? - Append ve object "src" to "dst_plex".
insert ve ?src? ?dst.N? - Insert ve object "src" into "dst" object.
detach [-force] ve ?plex.N? ?name?
    - Remove specified ve from its parent object
    and save it as "name".
detach [-force] plex ?subvol.N? ?name?
    - Remove specified plex from its parent object
    and save it as "name".
delete object ?name? - Delete the named object.
change name ?oldname? ?newname? - Rename object "oldname" to "newname".
change nodename ?name? ?object? - Change the nodename associated with object.
change online|offline ?ve? - Take the specified ve online|offline.
change type ve|plex|vol ?object? - Change the type of the object.
change ve_start ?start_blk? ?ve? - Change the standalone ve start block.
reset - Reset data; reread all disk labels.
script [-write ?filename?] object ?name?
script [-write ?filename?] all
    - Generate the required xlv_make(lm) commands to
    create the named object or all objects.
sh - Fork a shell.
help or ? - Display this help message.
quit - Terminate session.
```

- If disks, forming a logical volume, come from a different machine than the current one, the logical volume will refuse to assemble (normally this is done automatically at boottime). Then, log in as root, start the xlv Manager software, and proceed as follows:

```
JEVA54# xlv_mgr
xlv_mgr> show -long all
VOL xlv0 (complete) (node=WARA)
VE xlv0.data.0.0 [clean]
    start=0, end=67941375, (stripe)grp_size=8, stripe_unit_size=128
    /dev/dsk/dks3d1s7 (8492788 blks)
```

```

/dev/dsk/dks2d5s7 (8492788 blks)
/dev/dsk/dks3d2s7 (8492788 blks)
/dev/dsk/dks2d6s7 (8492788 blks)
/dev/dsk/dks3d3s7 (8492788 blks)
/dev/dsk/dks2d7s7 (8492788 blks)
/dev/dsk/dks3d4s7 (8492788 blks)
/dev/dsk/dks2d8s7 (8492788 blks)
Vol: 1; Standalone Plex: 0; Standalone Ve: 0

xlv_mgr> change nodename JEVA xlv0
set node name "JEVA" for object "xlv0" done

```

- After changing the nodename for a logical volume, you can assemble the volume by rebooting, or by the following command (from the root prompt, not from within the xlv Manager):

```

JEVA 7# xlv_assemble -a
VOL xlv0          flags=0x1, [complete]          (node=JEVA)
DATA  flags=0x0()  open_flag=0x0() device=(192, 4)
PLEX 0  flags=0x0
VE 0  [active]
      start=0, end=67941375, (stripe)grp_size=8, stripe_unit_size=128
      /dev/dsk/dks3d1s7 (8492788 blks)
      /dev/dsk/dks2d5s7 (8492788 blks)
      /dev/dsk/dks3d2s7 (8492788 blks)
      /dev/dsk/dks2d6s7 (8492788 blks)
      /dev/dsk/dks3d3s7 (8492788 blks)
      /dev/dsk/dks2d7s7 (8492788 blks)
      /dev/dsk/dks3d4s7 (8492788 blks)
      /dev/dsk/dks2d8s7 (8492788 blks)
xlv_assemble: Checking for Disk Plexing Option ... done
xlv_assemble: Setting kernel configuration ... done

```

III.3.4 Mounting the disk array and configuring Jaleo

After creating a logical volume, make an XFS file system on the disk and mount it at any mount point you desire. A good point would for example be /MATERIAL.

You do this as follows:

- Log in as root (you probably still are logged in). Open a shell. At the prompt, type:

```
# mkfs_xfs /dev/rxlv/xlv0 <Enter>
```

A XFS file system will be made on the logical volume named xlv0.

- Edit the file /etc/fstab (using jot); add a line in the file (and do not forget to save it afterwards !):

```
/dev/xlv/xlv0 /MATERIAL xfs rw,raw=/dev/rxlv/xlv0 0 0
```

```
JEVA 8# jot /etc/fstab
```

You should see the contents of the file /etc/fstab :

```
/dev/root / xfs rw,raw=/dev/rroot 0 0
/dev/xlv/xlv0 /MATERIAL xfs rw,raw=/dev/rxlv/xlv0 0 0
```

- Make a directory that will serve as a mount point for the array:

```
JEVA 10# mkdir /MATERIAL
JEVA 11# chmod 777 /MATERIAL
```

- The changes in /etc/fstab will enable automatic mounting of the XFS storage array at each reboot of the machine. Alternatively, you can mount the array now through the command:

```
JEVA 11# mount -a
```

Once the XFS storage is configured and a file system made (and mounted), Jaleo must be informed where the real time storage is. For this purpose edit the file:

```
/usr/people/jaleo27/JALEO-ENV/etc/devices/Xfs.dev
```

Set the PATH value to the mountpoint of the XFS volume, e.g.

```
PATH      /MATERIAL
```

Of course, you can only edit this file once the Jaleo software is installed. If you choose to mount the XFS volume at /MATERIAL, you do **not** need to edit the file, as this is the default.

III.3.5 Testing the XFS Volume for Throughput

After the XFS volume has been configured and mounted, and *after* the Jaleo for Octane software is installed, the throughput of the volume can be tested. For this, use the Jaleo utility ‘xfstest’. It will allow for read and write testing.

As a rule of the thumb, you should have 25 MByte/sec throughput minimum for writing, and 25 MByte/sec minimum **per stream** for reading. Below are some examples for an array with four 7200 rpm drives on one controller (that is roughly equal to one stream):

Writing 300 YUV PAL-sized images:

```
cata 43% xfstest -w -n 300
Direct I/O Information:
  alignment = 32
  miniosz = 4096
  maxiosz = 4194304
Image size adjusted to: 700416
Direct IO
Duration writing 300 images: 7270 msec [27.56 Mb/sec]
```

Default write location is /MATERIAL , default filename is 'cosa', and default resolution is PAL:

```
cata 44% ls /MATERIAL/cosa
-rw-r--r--    1 jaleo27  user  209424384 Feb  4 15:58 /MATERIAL/cosa
```

Reading 300 images from the default file in the default location:

```
cata 45% xfstest  -n 300
Direct I/O Information:
  alignment = 32
  miniosz = 4096
  maxiosz = 4194304
Image size adjusted to: 700416
Direct IO
Duration reading 300 images: 6960 msec [28.79 Mb/sec]
```

For eight disks, you should get something between 50 and 60 MByte/sec. But for 12 or 16 disks, throughput will not scale linearly: more disks will mean more throughput (if striped correctly), but for reasons beyond the scope of this manual, you will probably see some form of 'flattening' of the curve giving throughput versus the number of disks/channels.

You must use this utility logged in as the Jaleo user. Please also see "Disk Utilities" on page 72 for more information.

III.4 Jaleo for Octane Software Installation

III.4.1 The Jaleo Software Installation

To install the software, insert the CD and change to the CD directory. Run the script `install.sh` from the CD root directory.

To run the install script,

- log in as root;
- insert the Jaleo for Octane distribution CD in the CD-ROM drive;
- Open a shell and change `directory` to the CDROM directory:

```
# cd /hosts/RES/CDROM
```

- From the shell start the Jaleo installation program:

```
# ./install.sh
```

We will present you now with what you will see during the installation process, going from a default Jaleo for Octane software installation:

```

JEVA 5# cd /hosts/RES/CDROM/

JEVA 6# ls
extern      install.sh  jaleo

JEVA 7# ./install.sh

=====
==
== JALEO Digital Video Postproduction System ==
==
== Version 2.7 ==
==
== Installation Script ==
==
=====
Jaleo 2.7 Installation Script, 970805
This script will install and configure Jaleo
in a new user home directory
You can interrupt the installation at any time
by pressing <ctrl>-c. Note that while the system
is waiting for input on a prompt, you may have
to press <enter> before the script reacts on
the interruption
Almost all input prompts have default values.
If you are in doubt what to do, just press return
Do you want to continue? [y/n]:

```

- Answer: y <Enter>

```

Found Jaleo tar archive file, installing from archive file jaleo.tgz
/tmp_mnt/hosts/RES/CDROM/jaleo/jaleo.tgz
Create an initial Jaleo user
Jaleo needs a "base user" account to be installed to.
You must select an account name that does not exist yet.
Enter a new user name to install Jaleo to
User names must not have more than 8 characters, all
lower case.
User Name [jaleo27]:

```

- Answer: <Enter>

```

You have chosen "jaleo27" - do you want to
create this user?
Enter:
[1] to proceed, creating a new user(DEFAULT),
[2] to select another user name and
[q] to abort installation
Please enter your choice [1/2/q]:

```

- Answer: <Enter>

```

Jaleo requires 115 megabytes of disk space
You currently have the following resources mounted locally:
Mounted as:                               Free Space (MB):
=====
/                                           3053
On which of the above filing systems do you want to
place the home directory for the new user?

```


The user name you entered above will be appended to the path you enter here to make the new users home directory
In case you do not have a separate disk for your users home directories, you propably want to stay with the default location, that is
/usr/people
Installation Path [/usr/people]:

- Answer: <Enter>

You have chosen "/usr/people" - do you want to set "/usr/people/jaleo27" as the home directory for the Jaleo base user account?
Enter:
[1] to proceed (DEFAULT),
[2] to select another directory
[q] to abort installation
Please enter your choice [1/2/q]:

- Answer: <Enter>

Making installation base directory
Please enter a password for the account:

- Give in a password for the Jaleo account, possibly just an <Enter>

New password:
Re-enter new password:

- Give in the password for the Jaleo account a second time;

Fixing account directory owner to jaleo27
Jaleo requires a license server to run
Do you want to install the license server on this machine, or do you have planned to run the license server on another machine?
You should not install the license server on two machines at the same time.
If you do not install the license server on this machine, you must install it on another machine on your network before you can use Jaleo.
Enter:
[1] to install license server (DEFAULT)
[2] to not install license server
[q] to abort installation
Please enter your choice [1/2/q]:

- Answer: <Enter>

After all these choices, finally we will load Jaleo
You can always press <ctrl>-c to interrupt
Changing to base directory: /usr/people/jaleo27
Loading files: INSTALL LICENSE PLUGIN_EXAMPLES JALEO-ENV from archive file
x INSTALL/...Version:_JaleOctane_2.7, 27 bytes, 1 block
x INSTALL/...Compile_Time:_Jan_19_1998_10:57:46_Build:_1.1990, 52 bytes, 1 block
x INSTALL/Background.template, 1132 bytes, 3 blocks

```

x INSTALL/DOT.Sgiresources, 246 bytes, 1 block
x INSTALL/DOT.Xdefaults, 109 bytes, 1 block
x INSTALL/DOT.acrorc, 1246 bytes, 3 blocks
x INSTALL/DOT.auxchestr, 2492 bytes, 5 blocks
x INSTALL/DOT.cshrc, 1108 bytes, 3 blocks
x INSTALL/DOT.desktop/4DWm, 109 bytes, 1 block
.....

x JALEO-ENV/utils/Backuplist, 20668 bytes, 41 blocks
x JALEO-ENV/utils/JaleoSetup, 144944 bytes, 284 blocks
x JALEO-ENV/utils/chkRate, 14892 bytes, 30 blocks
x JALEO-ENV/utils/compact, 63996 bytes, 125 blocks
x JALEO-ENV/utils/grex, 711 bytes, 2 blocks
x JALEO-ENV/utils/imgcomp, 102172 bytes, 200 blocks
x JALEO-ENV/utils/input_process, 632 bytes, 2 blocks
x JALEO-ENV/utils/install_tutorial, 18464 bytes, 37 blocks
x JALEO-ENV/utils/jDiagnostics, 7691 bytes, 16 blocks
x JALEO-ENV/utils/jcombine_audio, 854 bytes, 2 blocks
x JALEO-ENV/utils/link/linkDoc, 2506 bytes, 5 blocks
x JALEO-ENV/utils/link/linkFile, 2840 bytes, 6 blocks
x JALEO-ENV/utils/makeEnv, 11363 bytes, 23 blocks
x JALEO-ENV/utils/output_process, 642 bytes, 2 blocks
x JALEO-ENV/utils/palconv, 155068 bytes, 303 blocks
x JALEO-ENV/utils/printdevs, 14744 bytes, 29 blocks
x JALEO-ENV/utils/targz, 1200 bytes, 3 blocks
x JALEO-ENV/utils/xfsinfo, 14988 bytes, 30 blocks
x JALEO-ENV/utils/xfstest, 14972 bytes, 30 blocks

```

Running License Setup

```

=====
Jaleo 2.1 Licensing Script, 062095
=====

```

```

    Creating license directory structure...
    =====

```

```

    Creating jaleolcd boot files ...
    =====

```

```

    Starting daemon ...
    =====

```

/usr/people/jaleo27

Reminder:

=====

Before you can run Jaleo you must add a license. Run the script addLicense to add licenses to your system. To run the script, after finishing the installation, type:

```

    JALEO-ENV/extern/license/addLicense

```

or log out and log in as jaleo27,

open a shell window and type

```

    addLicense

```

Press <enter> to continue:

- Type an <Enter>

Setting up installation

```

=====
Jaleo 2.7 Setup Script, 970805
=====

```

User set to jaleo27

Home set to /usr/people/jaleo27

/usr/people/jaleo27

```

    Setting up login files...

```

```

=====
Setting up Manual files...
=====
Creating default desktop configuration
=====
Copying Jaleo Icons
=====
Installing Color Database
=====
Setting up desktop integration
=====
Copying icon files...
Changing to /usr/lib/filetype/install
=== Please wait while I update your desktop files...
=== This might give some warnings on files that are not part of Jaleo
Changing to /usr/lib/filetype
=== Still updating desktop files. Please wait
`local.otr' is up to date.
`system.otr' is up to date.
`default.otr' is up to date.
/usr/sbin/fftr local/local.otr install/install.otr system/system.otr
default/default.otr -o desktop.otr
Creating /usr/lib/mime.types and /usr/lib/mailcap ...

Done building the .otr files.
    Creating Jaleo Work Directory
    =====
    Checking libraries
    =====
23728 blocks
/usr/lib/libInventor.so.3 present
/usr/lib/libInventorXt.so.3 present
/usr/lib/libc1.so present
/usr/lib/libc1.so.1 present
/usr/lib/libv1.so present
/usr/sbin/dmconvert present
/usr/lib/libv1.so.1 present
    /etc/magic
    =====
    Done....
    Fixing Ownership
    =====
/usr/people/jaleo27
Cleaning Up...

Installation has finished successfully
Please do not forget to do the mandatory configurations
as described in the installation guide
After you have configured Jaleo, you can install the
Jaleo tutorial data as follows:
- Log in into your Jaleo user account
- From the toolchest menu Jaleo select the Utils submenu
- In the Utils submenu, select Install Tutorial

```

As you can see, you are guided through the installation process, with questions asked about the name of the Jaleo account you want to create, and some fairly obvious questions about installation location, password, and so on. In most cases, the default values will be adequate; just accept these by typing <Enter> when prompted for input.

III.4.2 Some remarks about using remotely mounted CD-ROM drives

Remote CD's sometimes are not displayed properly when mounted over NFS.

At the time of writing this manual, on a Octane client (IRIX 6.4 - NFS client) you may need to install SGI patch 2105 (Please also see "STEP 3: installation of SGI patch 2105" on page 16).

The NFS *server* should be patched as well: if running IRIX 6.2, patch it with SGI patch 2104; if running IRIX 6.3, patch it with SGI patch 2106; and if running IRIX 6.4, patch it with patch 2105. These are all called 'NFS3 Roll-up Patches'; installation of these patches is through `inst`.

Also, there is a newer patch out, SGI patch 2366, for IRIX 6.3, actually replacing 2106. We have been testing with the 2105/2104/2106 patched operating systems, and found no problems, seeing ISO9660 CD-ROM contents over NFS3; at the moment of writing this manual, we have not been testing the SGI 2366 patch yet.

NOTE:

When using a remote CD-ROM drive on Octane, assume that the machine you are going to install on is JEVA, and the machine on which a CDROM drive is available is RES. In case of problems seeing (and installing from) an ISO9669 CD-ROM, and *before* actually installing the patches mentioned before, try the following work-arounds:

- First work around: on JEVA, `rlogin` to RES as root. Issue the commands:

- `# eject`
- `# killall mediad`
- `# mediad`
- now, insert the CD-ROM again;

This should give you, on JEVA, after a couple of seconds waiting, a directory `/CDROM` (or: `/hosts/RES/CDROM` if automounting is enabled) containing files and directories.

- Second work around.
If the previous step does not work, add the line

```
/CDROM -anon=root,ro  
to the file /etc/exports on the server (RES);  
After this, issue the command:  
# exportfs /CDROM on the server (RES);
```

- On JEVA issue the commands:

- `# mkdir CDROM_RES`
- `# mount -o ro RES:/CDROM /CDROM_RES`

- `# cd /CDROM_RES`
- `ls`

You should now be able to see a file `install.sh` and a directory `jaleo`. Also, you should now be able to install the software using the command:

```
./install.sh
```

If none of these work arounds help, you should install the afore mentioned 'NFS3 Roll Up' patches - we have found them to work.

IV. CONFIGURATION OF THE JALEO SOFTWARE

IV.1 Installing a License for your Jaleo for Octane software

IV.1.1 Installation of the license

- Log in as root. Open a Unix shell. At the prompt, issue the command:

```
# date
```

Set the date, and time, to reflect the current date.

Also, make sure the TIMEZONE variable is set correct for your machine (see “STEP 2: networking the system” on page 15 for details).

- Log in as the Jaleo user (usually called ‘jaleo27’). Open a Unix shell. At the prompt, type the commands:

- `su <Enter>`
you will be prompted for the root password;

- `addLicense <Enter>`
You will see the following:

```
=====
==
== Jaleo License Entry Script
==
=====
This script is used to enter Jaleo licenses
It must be run on the machine that is your designated license
server.
It will prompt you for the number of redundant servers you want
to use. Normally, you will enter 1 at the prompt or just press
return.
The system will then print out a server code. In case you have not
already received a password based on the license server sysid and
IP address, please give this server code to your dealer or distributor
who will provide you later on with a key to enable Jaleo.
If your dealer can not provide you with a key immediately, you can
interrupt this script by pressing <ctrl-C> and re-run it whenever
you receive your key numbers.
BEFORE YOU ARE ENTERING A KEY, MAKE SURE YOUR MACHINE DATE IS SET
PROPERLY
As you do not run this script as root you will not see the
new license immediately with jlicadmin -l. The license will
```

be available for clients immediately though, unless an error occurs.
After a certain delay or after the first request for the
license it will also be visible to jlicadmin -l.
Elan License Manager - Copyright 1989-1996 Elan Computer Group, Inc.
On how many hosts will you run the license server? (default=1):

- Answer: <Enter>

Code for "JEVA" is: 1262/4681 6932 1119 5432

Through your Jaleo dealer, obtain a license key. To obtain such a key, provide your dealer with the code printed above.

- After obtaining the code, (possibly) run ‘addLicense’ again. At the prompt ‘Please enter your key, consisting of a long string of digits, separated by spaces.

Please enter your key: aaaa bbbb cccc

- You will now see:

```
Feature name: JaleoOctane [5000]
  Number of licenses: 1
Successfully installed key for feature JaleoOctane (/usr/lib/elm/jaleo/
5000.lic).
  Feature name: JaleoOctaneMTrack [5001]
  Number of licenses: 1
Successfully installed key for feature JaleoOctaneMTrack (/usr/lib/elm/
jaleo/5001.lic).
  Feature name: JaleoOctanePaint [5002]
  Number of licenses: 1
Successfully installed key for feature JaleoOctanePaint (/usr/lib/elm/jaleo/
5002.lic).
  Feature name: JaleoOctaneIO [5003]
  Number of licenses: 1
Successfully installed key for feature JaleoOctaneIO (/usr/lib/elm/jaleo/
5003.lic).
  Feature name: JaleoOctaneRender [5004]
  Number of licenses: 1
Successfully installed key for feature JaleoOctaneRender (/usr/lib/elm/
jaleo/5004.lic).
  Feature name: JaleoOctaneHR [5005]
  Number of licenses: 1
Successfully installed key for feature JaleoOctaneHR (/usr/lib/elm/jaleo/
5005.lic).
  Feature name: JaleoOctaneIORT [5006]
  Number of licenses: 1
Successfully installed key for feature JaleoOctaneIORT (/usr/lib/elm/jaleo/
5006.lic).
```

IV.1.2 Solving license conflicts

At startup time of the Jaleo software (or of any of its modules), the module started will try to obtain a license, enabling it to run. Because the Jaleo software uses a floating licensing scheme, obtaining a license will be done, looking all over the network. In certain situations this may lead to erratic behaviour of the Jaleo software: if more than one seat of Jaleo

software is setup, connected to the same network, the software may try to 'steal' licenses from the other seat. This is called a 'licensing' conflict; such a conflict can easily be diagnosed, and cured.

To diagnose a license conflict, just disconnect the Jaleo machine behaving erratically from the network. Now stop and restart Jaleo. It should work fine.

The easiest way to solve a license conflict is to add the following line to the file `.cshrc` of the Jaleo account (`/usr/people/jaleo27/.cshrc`):

```
setenv JALEO_ELMHOST @JEVA
```

This will force the Jaleo for Octane software to obtain its licenses from the machine named 'JEVA', in our example the local machine. Since the Jaleo software run on JEVA will not attempt to obtain its licenses from remote machines, the license conflict will probably be solved.

In the same way, you can force machines to obtain their licenses from one, central license server. This setup, and its implications, is beyond the scope of this manual - but a complete description of this setup can be found in the on-line documentation.

The completed `.cshrc` file will look as follows:

```
# This is the default standard .cshrc provided to csh users.
# They are expected to edit it to meet their own needs.
#
# The commands in this file are executed each time a new csh shell
# is started.
#
# $Revision: 1.2 $
#
# list directories in columns
alias ls 'ls -FC'
# Remember last 100 commands
set history = 100
set filec
# For interactive shells, set the prompt to show the host name and event
number.
if ( (! $?ENVONLY) && $?prompt ) then
if ( -o /bin/su ) then
set prompt="`hostname -s` \!# "
else
set prompt="`hostname -s` \!% "
endif
endif
endif
#
# Settings for Jaleo
#
# Do not remove these settings, or you will jeopardize Jaleo operation
# Set file search path to the Jaleo directories
set path = ($HOME/JALEO-ENV/bin $HOME/JALEO-ENV/utils $HOME/JALEO-ENV/
extern/license $HOME/JALEO-ENV/extern/license/daemon $path)
# Set X default search path
if ( $?XUSERFILESEARCHPATH ) then
setenv XUSERFILESEARCHPATH "$XUSERFILESEARCHPATH":"$HOME/JALEO-ENV/etc/app-
defaults/%N"
```



```

else
setenv XUSERFILESEARCHPATH "$HOME/JALEO-ENV/etc/app-defaults/%N"
endif
# Limit Core Size
limit coredumpsize 1
setenv JALEO_ELMHOST @JEVA

```

Now, please go on to the next section, and do the rest of the configuration of the Jaleo software.

IV.1.3 Setting the Correct StartUp Image

Log in as the Jaleo user. Open a Unix shell. Change directory:

```
cd /usr/people/jaleo27/JALEO-ENV/etc/pixmap/startupimage
```

Now copy the proper startup image in place:

PAL users:

```
cp jaleoLogoPAL.vst start.vst
```

NTSC users:

```
cp jaleoLogoNTSC.vst start.vst
```

IV.1.4 The main Jaleo Configuration File: .jaleorc

You will find this file (a hidden file) in the directory /usr/people/jaleo27/JALEO_ENV ; the command 'ls -al' will actually list hidden files (as well as normal files and directories). To edit this file, use the commands (logged in as the Jaleo user):

```

JEVA 1% cd
JEVA 2% cd JALEO-ENV
JEVA 3% jot .jaleorc

```

You will see something like:

```

/* JALEO */
NUMLEADZEROS          5
TIMESAVE               300
EXPIRATIONWARNING     10
GL_RENDER_FLAGS       35
MAXMEM                4
RENDERPARTIAL         Xfs.dev
CACHEDEVICE           Xfs.dev
PARALLEL              2

/* Configuration for PAL images */
STANDARD              PAL

/* Configuration for NTSC DROP FRAME images */
/*
STANDARD              NTSC
*/

```

```
/* *****DO NOT UNCOMMENT THIS SECTION *****
There are other variables you could setup in case you want an advanced
configuration; check in your manual for more information:
```

```
STANDARD          PAL NTSC NTSC_D NTSC_ND FILM
```

```
LOWRESRATIO
IMAGESIZEX
IMAGESIZEY
FRAMESSEG
NTSCFIELDS
SCREENRATIO
```

```
RENDERPARTIAL
CACHEDEVICE
```

```
*/
```

- In most situations, leave the setting of the variables in this file as is; this will provide good performance in the majority of cases;
- A combination of `/* */` works like a set of parentheses, and is called ‘comment’. ‘Commented’ lines actually do **not** set a variable, or do anything, but stating a comment. So, in the example above, the system is set up for standard PAL. To set it up for NTSC, comment the line:

```
STANDARD          PAL
```

so it looks like:

```
/*
STANDARD          PAL
*/
```

and uncomment the lines:

```
/*
STANDARD          NTSC
*/
```

so it looks like:

```
STANDARD          NTSC
```

This will make the file `.jaleorc` look like:

```
/* JALEO */
NUMLEADZEROS      5
TIMESAVE           300
EXPIRATIONWARNING  10
GL_RENDER_FLAGS    35
MAXMEM             4
RENDERPARTIAL      Xfs.dev
```

```

CACHEDEVICE          Xfs.dev
PARALLEL             2

/* Configuration for PAL images */
/*
STANDARD             PAL
*/

/* Configuration for NTSC DROP FRAME images */
STANDARD             NTSC

/* ***** DO NOT UNCOMMENT THIS SECTION *****
There are other variables you could setup in case you want an advanced
configuration; check in your manual for more information:
STANDARD             PAL      NTSC      NTSC_D      NTSC_ND      FILM

LOWRESRATIO
IMAGESIZEX
IMAGESIZEY
FRAMESSEG
NTSCFIELDS
SCREENRATIO

RENDERPARTIAL
CACHEDEVICE

*/

```

- The STANDARD variable can have the following values:
 - PAL : standard PAL setup;
 - NTSC: NTSC Drop Frame setup;
 - NTSC_D: as NTSC;
 - NTSC_ND: NTSC Non Drop Frame setup;
 - FILM: 2048x1536 resolution, at 24 fps; the variable LOWRESRATIO (giving the ratio of the resolutions of the high res material and the associated low res proxies) will be set to 8 as well;
 - For setting up any other working resolution: set the STANDARD variable to the STANDARD most akin to the wished resolution, and then uncomment the variables IMAGESIZEX and IMAGESIZEY, giving them the appropriate values;
 - Any variables set at the end of the .jaleorc file will override a possible value set earlier in the file. As an example, the variable LOWRESRATIO is set to 4 for any of the video standards assigned to the variable STANDARD. Uncommenting the variable LOWRESRATIO, and giving it the value 2, like in:

```

LOWRESRATIO          2

```

will actually override the default value of LOWRESRATIO (=4), as set by the value of the STANDARD variable; and set it to 2.

- The following variables are available:

TIMESAVE	sets autosave time in seconds
EXPIRATIONWARNING	sets license expiration advance warning time in days
GL_RENDER_FLAGS	35: hardware assisted rendering enabled 99: hardware assisted rendering disabled
PARALLEL	set to number of processors available in the Octane. This value should be 2 for a normal, real-time capable Jaleo Octane system
LOWRESRATIO	sets/overrides ratio of resolutions of high res material to resolution of proxies; default values are 4 for video resolutions, and 8 for film resolutions
IMAGESIZEX	sets/overrides x-size of images
IMAGESIZEY	sets/overrides y-size of images
FRAMESSEG	sets/overrides frames/second imagerate
NTSCFIELDS	sets/overrides field order NTSC: true, PAL:false
SCREENRATIO	sets/overrides output material aspect ratio PAL/NTSC: 4:3 = 1.333333 e.g. 16:9 format = 1.777778

The variables LOWRESRATIO, IMAGESIZEX, IMAGESIZEY, FRAMESSEG, NTSCFIELDS and SCREENRATIO are set to their correct values through the STANDARD variable, and should only be needed for overriding these default values.

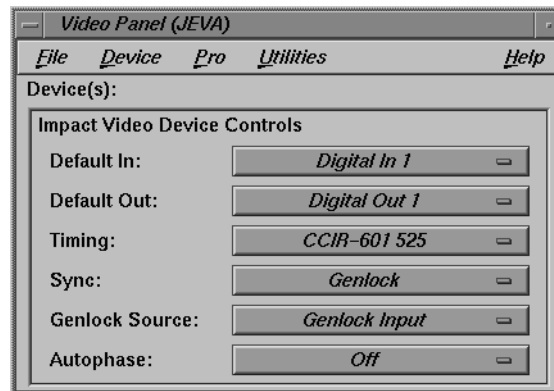
Please **do NOT change** any of the variables not explicitly described.

IV.1.5 The Video Control Panel setup

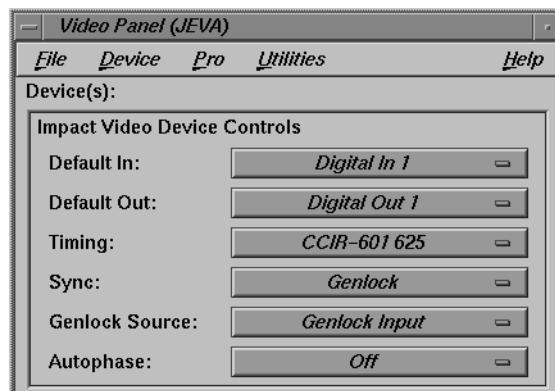
Although the Video Control Panel is part of the IRIX operating system, its setup is described as part of the Jaleo configuration process.

- Open the Video Control Panel by typing 'vcp <Enter>' in a Unix shell, logged in as the Jaleo user. Set the vcp up so it reflects the following settings:

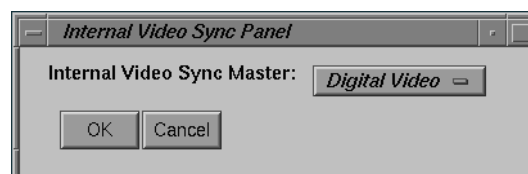
- for NTSC users:



- for PAL users:



- Through the menu selection Pro > Digital Out1 > Signal Controls bring up the following setup, and adjust it as follows:



- Through the menu selection Pro > Impact Video Device Control > Signal Control bring up the following setup; it should look like this:



- After these settings, Save the setup of the Video Control Panel: File > Save.

NOTE:

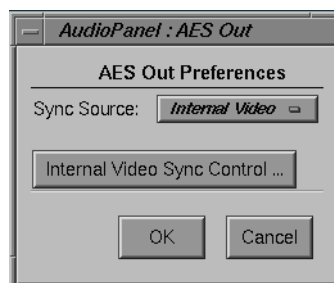
After making these settings, through the menu choice ‘Utilities > Live Video Output’ and you should be able to generate a signal on the digital video output, displaying a part of the desktop. This signal can be useful for checking connections, etcetera, *outside* of Jaleo. Also, through the menu choice ‘Utilities > Live Video Input’ you should be able to monitor a incoming digital video signal, in a window on the desktop. It is suggested here that you perform both tests, *before* actually starting the Jaleo software, to ensure digital video I/O through the system, *outside* of Jaleo.

Please close the Live Video Input and Live Video Output window after these tests have been done; keep these windows open only when needed.

IV.1.6 The Audio Control Panel setup

Although the Audio Control Panel is part of the IRIX operating system, its setup is described as part of the Jaleo configuration process.

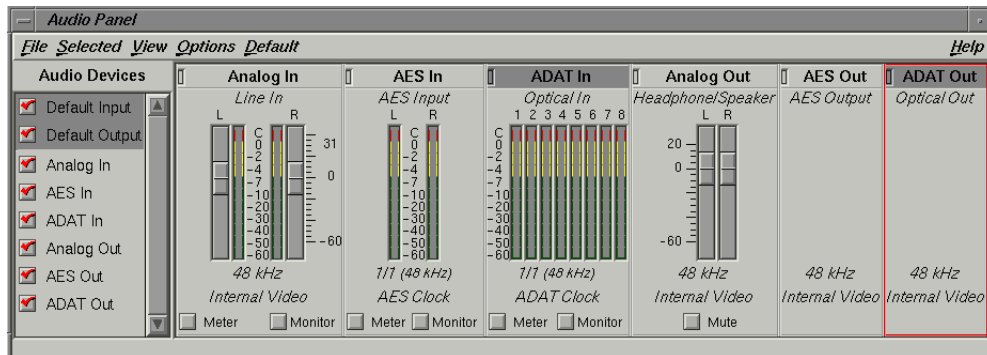
- Open the Audio Control Panel by typing ‘apanel <Enter>’ in a Unix shell, logged in as the Jaleo user;
- Before any adjustments, choose ‘Options > Professional Mode’, choose ‘Options > Decibel Scale’ and choose ‘Options > Show Quick Help’;
- From the View menu in the apanel, choose ‘Show Device List’, and then click *all* devices in this list. The audio devices on Octane are: Analog In, AES In, ADAT In, Analog Out, AES Out and ADAT Out (there are also two devices called Default Input and Default Output, respectively; these are not really important in this discussion).
- For the Analog In, the Analog Out, the AES Out and the ADAT Out device, choose from the menu the option ‘Selected > Preferences’; set it as follows (shown are the settings for one of the devices, the AES digital output; for the other devices, settings will be similar):



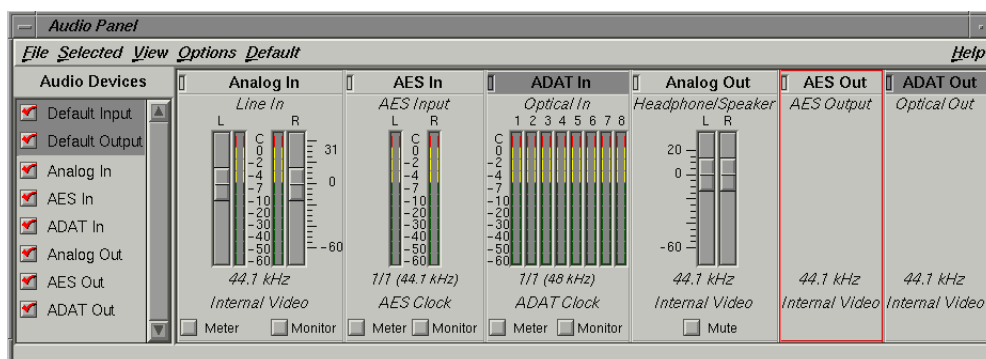
- Also, for each of these four devices, in the interface shown above, click the button ‘Internal Video Sync Control’. Another setup interface will show up; set it as follows:



- For each of the four devices listed above, choose the menu option 'Selected > Sample Rate', and set this rate to 48 kHz (on some devices, this choice may be greyed out);
- You will notice that the Selected > Preferences for the AES In device will remain set at AES Clock; for the ADAT In, it remains at ADAT Clock. This should be interpreted as follows: both of these digital audio inputs will synchronize to the clock-rate of the incoming bit stream; the derived 'clock' is named AES Clock and ADAT Clock, respectively;
- The Audio Control Panel should now look like:



- For each of the audio devices, repeat the steps described above, (re-)setting their respective Sample Rate; now choose 44.1 kHz as the sample rate. After these adjustments, the Audio Control Panel should look like the following (please note the ADAT In device -erroneously- shows 48 kHz; this is a bug in the apanel - it will always say 48 kHz, whatever the clock-rate of the incoming signal):



- You will note that the AES input will always sync to 'AES Clock', that the ADAT input will always sync to 'ADAT Clock', and that the other devices will sync to the so-called Internal Video Clock, which in turn is slaved to the Digital Video. It can be argued that in some setups, especially using only analog audio I/O, the sync reference can be taken from the built-in crystal oscillator ('Internal' clock). Setups can greatly vary, and as such a discussion of all variations is beyond the scope of this manual;
- We got good results, using the setup as shown on page 58, with the above settings of sync sources, master sync, and both sample rates (44.1 and 48 kHz). We slaved the O3D to one of its digital inputs, synchronising from the (coaxial) AES or from the (optical) ADAT input.
But, once again, different setups may require different settings of the apanel;
- Sample rates differing from an accurate 48 kHz -often seen in NTSC digital video/ audio setups- may be set in the Jaleo Audio Setup panel. Please see "Audio Setup" on page 67 for details; also see "Audio Utilities" on page 73 for a description on how to determine the clock rate of an incoming digital audio signal using one of the Jaleo utilities;
- After setting the Audio Control Panel, make sure you save its settings by 'File > Save'.

IV.1.7 Starting and Stopping the Jaleo Software

After installation and configuration, log in as the Jaleo user.

You will be presented with a desktop environment, of which the jaleo-icon represents the main interface, called the Reel.

Open the Console window, and start the Reel by double-clicking its icon. In the console you should see:

```
JEVA 1%
*** JaleOctane (Version 2.7) ***
OffScreen::createPBuffer: #config: 1
Multiproc is 1209
Backload is 1210
Connected with License Server "JEVA".
A license 5000 has been granted.
A JALEO GENERIC license has been granted.
License Server has granted a license (5000).
A license 5005 has been granted.
A JALEO HIGH RESOLUTION license has been granted.
jaPlayerJaleo: player PID: 1211
jaPlayerJaleo: loader PID: 1212
plugin name: [AutoMosaic]
plugin name: [AutoPaint]
plugin name: [CentBlur]
plugin name: [Channels]
plugin name: [DirBlur]
plugin name: [Equalize]
plugin name: [Halo]
```



```

plugin name: [Kaleido]
plugin name: [NewBump]
plugin name: [Outlines]
plugin name: [QuadTree]
plugin name: [SlopeBlur]
plugin name: [SlopeDistort]
plugin name: [SpotPosterize]
plugin name: [TrueMosaic]
plugin name: [Morph]
plugin name: [PaintPlug]
plugin name: [Title]
plugin name: [Circle]
plugin name: [colFil]
plugin name: [hotCol]
plugin name: [xdso]
plugin name: [ColorCorrectRT]
plugin name: [ColorVectorRT]
plugin name: [CompositeChroma]
plugin name: [CompositeKey]
plugin name: [DVE-RT]
A license 5004 has been granted.
A JALEO RENDER license has been granted.
Message from Bool jVideoDevice::SetSource(): source is 1

```

Exiting the main Jaleo application (the Reel) will give the following console output:

```

Sub-process termination: PID: 1211 (1)
Sub-process termination: PID: 1212 (1)
Sub-process terminated: PID: 1211 (18)
Player terminated: EXITED: 0
Closing video out
SIGHUP in process 1209
SIGHUP in process 1210
Returning 4 features to the free license pool.
A license 5000 has been returned.
A license 5005 has been returned.
A license 5004 has been returned.

```

Compare the listings above with the output you get to ensure correct operation of the software.

IV.2 RtVideo Setup

IV.2.1 Important Setup Note

Proper sync setup of the video equipment is absolutely essential. Make sure that VLAN, VTR and Octane are properly synchronized, and that a GPI trigger cable (see below) is set up. Please refer to the schematic showing the Audio/Video/Synchronisation setup, as well as to the previous discussion on the setup of the Video Control Panel and the Audio Control Panel.

Furthermore, the serial port where the VLAN unit is connected should be:

- ‘Available’, when seen from Toolchest -> System -> System Manager -> Hardware Manager -> Configure Serial Ports menu (delete any devices from the serial port used, so it becomes ‘Available’);
- with the correct permissions: as root, issue the command from a shell:

```
# chmod 777 /dev/ttydx
```

where x stands for 1 or 2, depending on the serial port used.

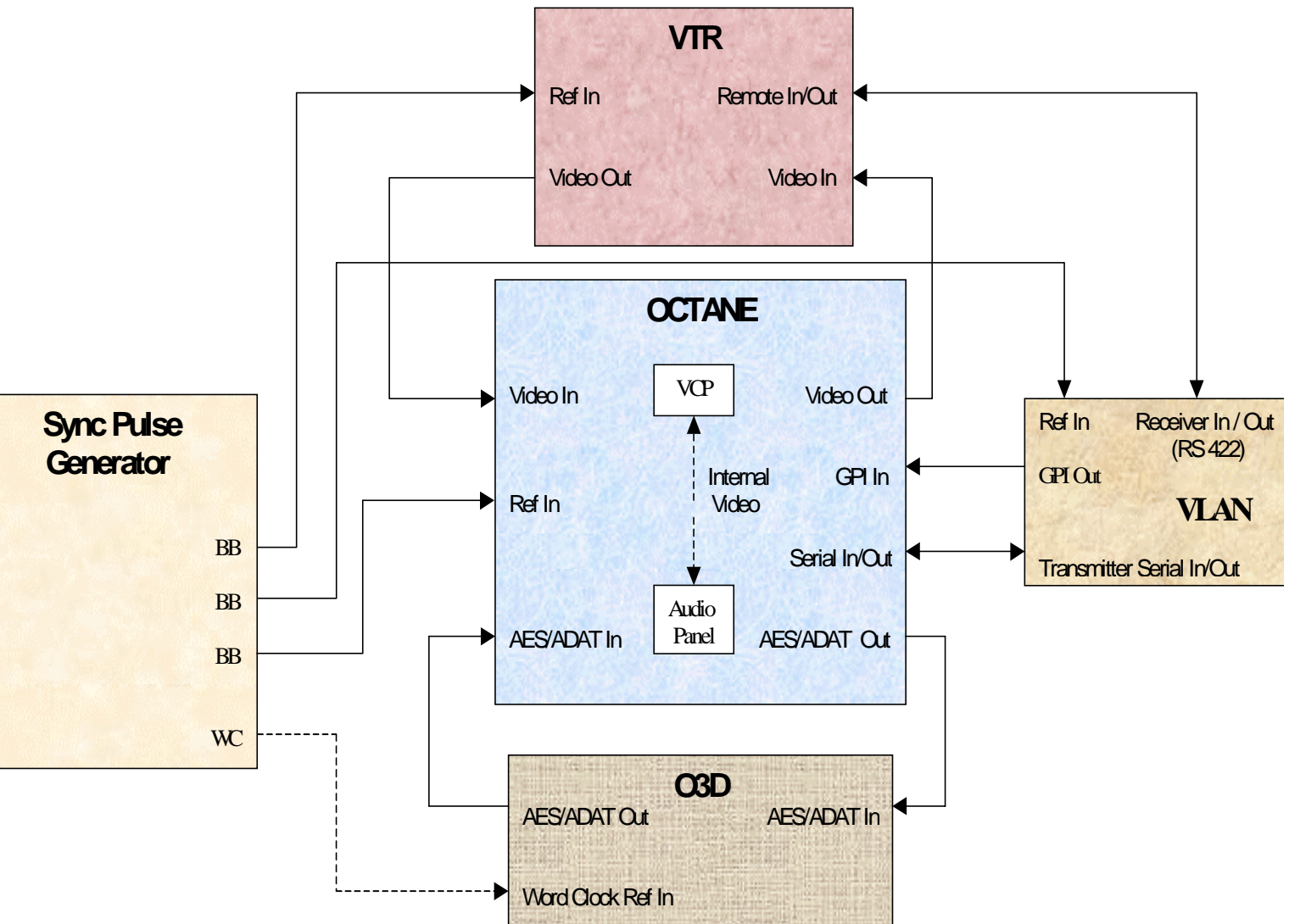


Fig. 1: Audio/Video/Synchronisation setup for Jaleo for Octane

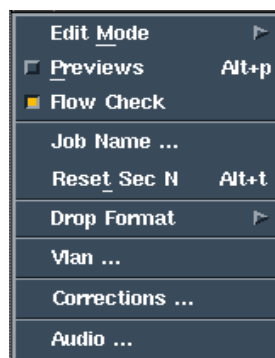
IV.2.2 Basic Configuration for RtVideo

Before you use the new RtVideo for the first time, you should configure it using the Setup menu options. There is no configuration file for the new RtVideo any more. You must set up:

- Vlan Node (normally 1);
- Time Out (normally 20);
- Preroll (normally 4:00 seconds);
- Port (normally `/dev/ttyd2` , in case a tablet is used: `/dev/ttyd1`) ;
- Trigger. Here you have the choice between serial and GPI. Normally, GPI trigger tends to be more reliable, but it requires an *additional* cable to be connected between the VLAN trigger output and the trigger input of the Octane digital video card;
- The correction values necessary depend on the machine. On our Octane/Betacam combination, we use in NTSC:
 - 1, 0 for capture
 - -9, 0 for playout

Please also see “Corrections” on page 66 for details on the setup procedure for these corrections.

IV.2.3 Setup Menu



This is the Setup Menu, as found in the Jaleo RtVideo module. As mentioned before, RtVideo should be set up, before trying to use it for the first time. In the following paragraphs a detailed description will be given of the setup variables and the setup procedures.

Edit Mode

Submenu to choose the edit mode for the list. A list always is in one of three different edit modes:

- Normal. In normal mode, each entry can be changed completely independently.
- Ripple. In ripple mode, changes in inpoint applied to one entry are propagated to the inpoints of all entries following the entry modified (example: if you move back the inpoint of an entry by 1 second, all following entries are also moved by 1 second). In capture mode, rippling does only affect entries with the same reel ID as the one modified. Contrary to this, in playout mode, *all* of the list will change.
- Consecutive. In consecutive mode, you can only edit the in-point of the first entry. All other entries are automatically positioned to be consecutive. Please note that this mode is only active for playout.

Previews

This toggle determines if RtVideo creates preview images on capture. If this is deactivated, RtVideo will not create low res proxy clips for imagery captured. This results in faster capture operation. Jaleo will then create previews on the fly whenever they are used. Also, in Jaleo you can create proxies in a file on demand.

Flow Check

With this option enabled, RtVideo will check during capture and playout operations for errors associated with disk operation getting to slow for whatever reason. Jobs where such an error occurs will be marked in the status field of the job list with an Underflow or Overflow message, after execution.

In some cases, ignoring this type of errors will give perfectly usable results. If you experience underflow or overflow errors, you should try the entries that failed again with Flow Check disabled.

Normally, Flow Check should be enabled.

Job Name...

Opens up a dialog to enter a base name for automatic clip naming. If you enter a clip name here, new capture list entries created will have a name preset in the name field, consisting of the name you entered plus a number. Numbering will start with 1. If you use `my_clip` as base name, clips will be named `my_clip1`, `my_clip2` and so on.

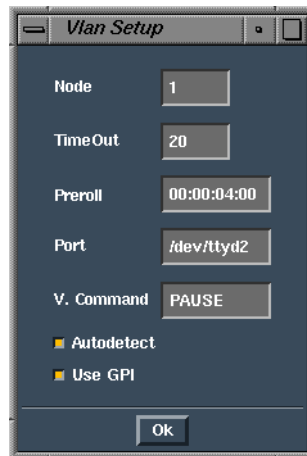
Reset Seq N

resets the numbering of the clip auto-naming. After selecting this command, clip numbering will again begin at 1.

Drop Format

With the this submenu, you can choose if dots (.) or semicolons (;) are used as delimiter for drop frame timecodes.

Vlan



The following settings must be made to run RtVideo successfully:

- **Node:** The VLAN node to be used. Set this to the node number assigned to the VLAN receiver you use. Normally 1.
- **Timeout:** The delay after which RtVideo assumes a communication error to the VLAN has occurred. Some devices connected to VLANs react very slowly; in this case, larger timeout values than the default may be desirable.
- **Preroll:** Set this to the preroll required for your VTR. Must never be shorter than 3 seconds.
- **Port:** The serial port of your machine where the VLAN is connected. Note: Make sure the port has the right permissions set; please also see “Step 3: Configuring the serial ports.” on page 29 and see “Step 4: Changing the port for VLAN operation.” on page 30 for details.
- **V. Command:** This field is the status message that RtVideo expects the VTR to send after a tape change. Normally this should not need change. On an exotic device, a different status might be set automatically after a tape change; in this case set this to the value used by the device.
- **Autodetect:** Determines if RtVideo attempts to detect tape changes automatically.
- **GPI Trigger:** Normally this should be activated. Determines if the GPI trigger from the VLAN is used to obtain frame accurate results.

Corrections



The correction values are used to adapt for machine dependant delays in the system. You can move audio and video back and forth about the given point, to adjust that both begin at exactly the right frame (the inpoint on tape).

A good way of testing this is to create a clip using rotopaint which has numbered frames, for example from 1 to 50. Then add visible flashes to the first and last frame. Now, add short audio “pings” or clicks to the first frame, frame 25 and the last frame. Render the result to a single clip with audio.

In RtVideo, first adjust playout. If the correction settings are correct, the played out clip should start exactly at the inpoint with the frame you painted a 1 on, and it should end at the out point with the last frame you painted. The audio pings should be at the right spots when listening to video.

If the playout result is not OK, you can use the correction dialog to shift video and/or audio. Before you do so you should check playout a few more times to see if the error is fixed or variable. If the error is variable, it is extremely likely that you have not connected proper sync signals to VLAN, Octane or VTR, or that some other setup is incorrect. See the Installation and Setup Guide for more information on proper video and synchronisation setup.

Start with finding correction values for video.

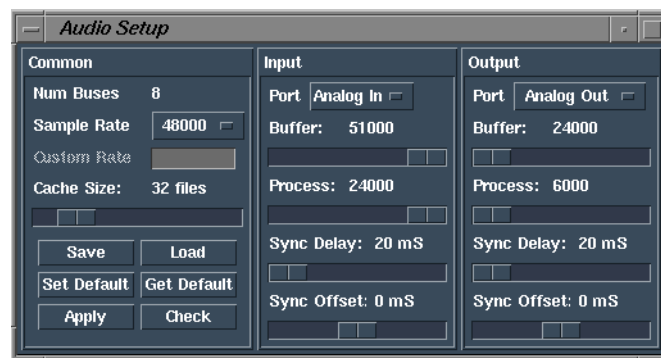
- If video is late, you will see a number of green frames before the clip starts. Count the green frames, and put the same number, but negative in the Playout Image correction field. If for example you get 4 green frames, put -4. This will shift video to begin earlier.
- If video is early, you will see that at the inpoint (on tape) you do not have the first, but a later frame. To correct for this, count how many frames video is early and enter the appropriate number in the correction field. In case of the clip with the numbered frames, if you for example get 5 as the first number, video is four frames early (if the first frame was painted with 1), so you would enter four in the box.

Once you get repeatedly correct results for video, adjust audio using the same technique.

If you are done with adjusting the values for playout, proceed to adjust capture. To do so, simply try to recapture the “correct” version of the clip played out. Load the result clip in the Reel or the Loader and compare it with the original played out. To compare audio it is often useful to break the audio away from the video and to compare the icon representations of the audio frame by frame. Short clicks are normally well visible that way.

IV.2.4 Audio Setup

The new audio subsystem can be configured from the Setup menu in both Jaleo and RtVideo. The setup dialog looks like this:



The screen shot shows the dialog as visible in RtVideo; in the Reel, the input section is not applicable and thus not visible.

The audio setup dialog offers parameters in three categories: common parameters, input and output settings. Also buttons are provided for managing various configurations.

Managing Configurations

Using the Save and Load buttons you can create any number of audio setups.

Get and Set Defaults allows you to define a setting as a default. Set Default will cause your settings to be written to a default file (JALEO-ENV/etc/audio/default.acf). Get Defaults will read the contents of this file. The defaults will also be set at startup time.

Apply will make the current setting active in Jaleo. If you wish to save your current settings as the default, do not forget to use Set Default.

Check performs a number of test to see if your setup is valid. Note however that not all inconsistencies with the SGI Audio Panel settings can be caught.

Common Settings

Common Settings displays the number of buses. This is currently always 8 and can not be changed.

The next parameter is the *Sample Rate*. The standard predefined sample rates are listed in a pop up box, but **you can also enter a specific sample rate of your own choice**. Note that there are limits which sample rates are supported by various parts of the SGI hardware.

Careful: please make sure that the sampling rate set here is identical with the sampling rate set up in the SGI apanel application. You will get improper audio behaviour if sample rate settings do not match.

Also, it is extremely important to take into account that digital audio inputs like AES/EBU synchronize their sampling rate to whatever arrives at the input. That is, if you set up the Jaleo software for a sampling rate of for example 48 KHz, but supply the input with a signal sampled at 47532 KHz (a sample rate provided by some NTSC video equipment), you will discover failure in the audio/video synchronisation in Jaleo. The reason is that record and playback record sample rate do not match. The cure is to have **all** of the system run at the same sample rate.

From the incoming bitstream, it is not possible to automatically check for the sample rate - AES/EBU digital audio does not have a way to signal non-standard sample rates to an application. As a consequence, it is of uttermost importance to make sure that your input sample rates match the output rate. If necessary, employ sample rate converters in your setup.

The *Cache Size* parameter is the amount of open files that is cached. In normal situations, you will not need to adjust this parameter. Only if you are working with a large number of very short files to create an audio piece, you might want to raise this parameter.

Input Settings

The most important input setting is the choice of input port. Here, you can select between the Analog input of the machine **or** the AES/EBU input **or** the ADAT input. With the ADAT input selected, RTvideo allows you to capture up to 8 tracks of audio within a clip. Typically, when using the ADAT IO, you will want to work with an external mixer that routes your VTR connectors to the ADAT bus.

The AES/EBU or Analog inputs allow you to capture in stereo only.

The rest of the settings allow for a very precise control of the audio subsystem. Only change these parameter if absolutely necessary.

- **Buffer Size:** The amount of samples that are buffered. The largest value is a bit over a second. On input, you always want this number to be as big as possible to ensure stable recording during capture.
- **Process:** A number of samples processed in a single processing step. Again, during capture you want this value to be as high as possible.

- **Sync Delay:** A delay value to account for SGI hardware latencies, on record. This (delay) time is needed to enable synchronisation upon entering the recording mode. It's default is set to 20 mS; if, for example when capturing with RtVideo, you encounter the message: 'No time to sync', you may want to increase this value.
- **Sync Offset:** A delay to shift audio capture in millisecond resolution, relative to video capture. As with all Jaleo sliders, you can adjust step by step using the cursor keys (mouse cursor should be over the slider to enable cursor keys control).

Output Settings

The output port can be set to Analog, **or** AES/EBU, **or** ADAT. In ADAT mode, the signals from the 8 buses are directly output to the optical interface. If one of the other modes is selected, the bus signals are mixed down to stereo as determined by the Jaleo Mixer.

The rest of the settings allow for a very precise control of the audio subsystem. Only change these parameter if absolutely necessary.

- **Buffer Size:** The amount of samples that are buffered. The largest value is a bit over a second. For output, the buffer size should be smaller than for capture, to make reaction times faster. However, if audio playback becomes unstable, you should raise this parameter.
- **Process:** A number of samples processed in a single processing step. On the output side, the smaller this number, the faster the system reacts on stopping and other reel operations. Unfortunately, this also means stronger CPU utilization. If audio playback becomes instable, you may raise this parameter.
- **Sync Delay:** A delay value to account for SGI hardware latencies, on playback. This (delay) time is needed to enable synchronisation upon entering the playback mode. It's default is set to 20 mS; if, for example when outputting with RtVideo or from the Reel, you encounter the message: 'No time to sync', you may want to increase this value.
- **Sync Offset:** A delay to shift audio playback in millisecond resolution, relative to video playback. As with all Jaleo sliders, you can adjust step by step using the cursor keys (mouse cursor should be over the slider to enable cursor keys control).

Connection to external audio hardware

Some general guidelines can be given on how to set up connections with an external digital mixer, using the 8-channel ADAT input/output.

As an example of such a setup may serve the following: using the Yamaha O3D, we created a good working setup.

For this setup you need:

- A Yamaha O3D digital mixer;

- An optional Yamaha ADAT digital interface card for O3D;
- ADAT audio cables;

The O3D provides full routing between its inputs and outputs so that digital and analog sources can be connected permanently without re-cabling or the need for patching.

Another digital mixer that should work fine with Jaleo Octane systems (although we have not tested it) is the Korg R168C.

Please note that we just present the products from Yamaha or Korg as examples. We have no official relationship with these companies and take no warranty on any of the products sold by these vendors.

V. AFTER THE INSTALLATION AND CONFIGURATION

1. We advise you, after installation and configuration, to make a backup of the installed system drive. Ideally, this would be a bit-by-bit copy of the complete systemdisk on a identical, spare disk.

Such a disk can be made inside the PROM monitor: right after (re-) booting, ‘Stop for Maintenance’, and enter the ‘PROM’ monitor.

From its prompt, simply issue a copy command like:

```
cp -b 16k dksc(0,1,10) dksc(0,2,10)
```

meaning: make an exact, bit-by-bit copy of all of the disk (partition 10) in the internal SCSI bus (0) at SCSI-id 1 to its twin disk at SCSI-id 2 on the same bus; use a block-size of 16 k for transferring the data.

In case of a failure, simply swapping the systemdisk will allow you to work on, although some form of recover/restore should then be done with regard to the data contained in the JALEO WORK directory.

2. Run the diagnostics utility `jDiagnostics`, and save its output; preferably even printing it. This output will give the status of the machine when freshly installed. Any runs of `jDiagnostics` after this initial run can be compared to the first one, possibly detecting changes.
3. Also, regularly checking the contents of the SYSLOG file (`/usr/adm/SYSLOG`) will be beneficial to troublefree operation.

VI. UTILITIES

Jaleo for Octane version 2.7 comes with a number of utilities.

As a Jaleo User you will be able to execute all the utilities located in `~$HOME/JALEO-ENV/utls` because this directory is included in your PATH environment variable.

This is a listing of `$HOME/JALEO-ENV/utls` (UNIX long version (`ls -l`)):

```
JEVA 12% ls -l $HOME/JALEO-ENV/utls/

total 1216
-rwxr-xr-x  1 jaleo27      user      20668 Jan 23 19:11 Backuplist
-rwxr-xr-x  1 jaleo27      user     144944 Jan 23 19:11 JaleoSetup
-rwxr-xr-x  1 jaleo27      user      14892 Jan 23 19:11 chkRate
-rwxr-xr-x  1 jaleo27      user     63996 Jan 23 19:11 compact
-rwxr-xr-x  1 jaleo27      user        711 Jan 23 18:24 grex
-rwxr-xr-x  1 jaleo27      user    102172 Jan 23 19:11 imgcomp
-rwxr-xr-x  1 jaleo27      user        632 Jan 23 18:24 input_process
-rwxr-xr-x  1 jaleo27      user    18464 Jan 23 18:24 install_tutorial
-rwxr-xr-x  1 jaleo27      user      7691 Jan 23 18:24 jDiagnostics
-rwxr-xr-x  1 jaleo27      user       854 Jan 23 18:24 jcombine_audio
drwxr-xr-x  2 jaleo27      user        42 Jan 26 18:03 link
-rwxr-xr-x  1 jaleo27      user    11363 Jan 23 18:24 makeEnv
-rwxr-xr-x  1 jaleo27      user       642 Jan 23 18:24 output_process
-rwxr-xr-x  1 jaleo27      user   155068 Jan 23 19:11 palconv
-rwxr-xr-x  1 jaleo27      user    14744 Jan 23 19:11 printdevs
-rwxr-xr-x  1 jaleo27      user     1200 Jan 23 18:24 targz
-rwxr-xr-x  1 jaleo27      user    14988 Jan 23 19:11 xfsinfo
-rwxr-xr-x  1 jaleo27      user     14972 Jan 23 19:11 xfstest
```

The following is a description of some of these utilities, ordered to function. Please do not try to use utilities that are not described below: these are used by the Jaleo software, and should **not** be called on their own.

VI.1 Disk Utilities

```
JEVA 31% xfstest -h
Use: xfstest [-x 'sizeX'] [-y 'sizeY'] [-b 'bytes_per_pixel'] [-n
'numimages'] [-d 'device'] [-w 'for_writing_test']
```

The 'xfstest' utility will allow for the testing of the throughput of a XFS volume. Testing can be done in both read and write mode. As a rule of the thumb, you should have 25 MByte/sec throughput minimum for writing, and 25 MByte/sec minimum **per stream** reading. Below are some examples for an array with four 7200 rpm drives on one controller.

Writing 300 YUV PAL-sized images:

```
cata 43% xfstest -w -n 300
Direct I/O Information:
  alignment = 32
  miniosz = 4096
  maxiosz = 4194304
Image size adjusted to: 700416
Direct IO
Duration writing 300 images: 7270 msec [27.56 Mb/sec]
```

Default write location is /MATERIAL , default filename is 'cosa', and default resolution is PAL:

```
cata 44% ls /MATERIAL/cosa
-rw-r--r-- 1 chema  desarolo 209424384 Feb  4 15:58 /MATERIAL/cosa
```

Reading 300 images from the default file in the default location:

```
cata 45% xfstest -n 300
Direct I/O Information:
  alignment = 32
  miniosz = 4096
  maxiosz = 4194304
Image size adjusted to: 700416
Direct IO
Duration reading 300 images: 6960 msec [28.79 Mb/sec]
```

Two more XFS utilities:

```
JEVA 30% xfsinfo
Usage: xfsinfo file_name
```

This utility will give information on a file residing on the XFS volume.

```
JEVA 16% compact
Usage: compact [-s steps] [-m maximum_file_size] [-h this_help] file_names
```

This utility will compact files residing on the XFS volume.

VI.2 Audio Utilities

```
JEVA 14% printdevs

JEVA 15% chkRate
```

The procedure to determine the clock rate of an incoming digital audio signal, coming in through either AES or ADAT, is as follows:

a) First, list the devices on the machine:

```
$ printdevs

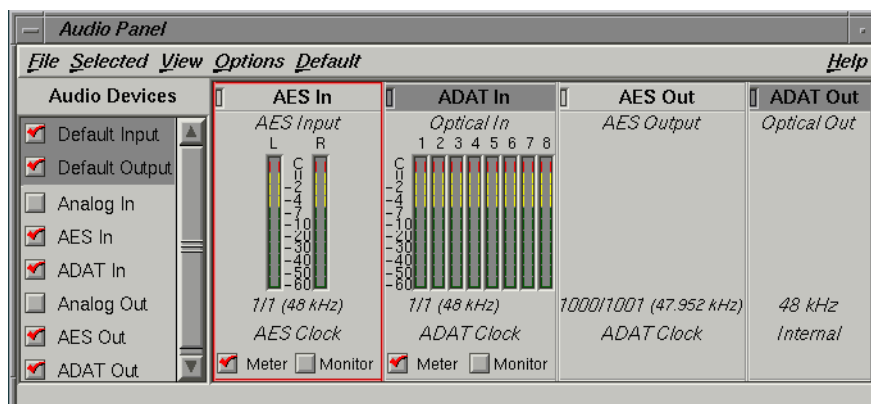
Devices and Interfaces on this system:
Device name 'RAD1.ADATOut' label 'ADAT Out':
    Interface name 'RAD1.ADATOut' label 'ADAT Output':
Device name 'RAD1.ADATIn' label 'ADAT In':
    Interface name 'RAD1.ADATIn' label 'ADAT Input':
Device name 'RAD1.AESOut' label 'AES Out':
    Interface name 'RAD1.AESOut' label 'AES Output':
Device name 'RAD1.AESIn' label 'AES In':
    Interface name 'RAD1.AESIn' label 'AES Input':
Device name 'RAD1.AnalogOut' label 'Analog Out':
    Interface name 'RAD1.LineOut' label 'Line Out':
    Interface name 'RAD1.Speaker' label 'Headphone/Speaker':
Device name 'RAD1.AnalogIn' label 'Analog In':
    Interface name 'RAD1.Microphone' label 'Microphone':
    Interface name 'RAD1.LineIn' label 'Line In':
```

What you need to spot here is the name between quotes following 'Device name'. This value is to be used for the next step; it can either be `RAD1.ADATIn` or `RAD1.AESIn`;

b) Then, run 'chkRate' with one of the arguments, found in the previous step. You can only use one of the values showing an 'In', like `RAD1.AESIn` for example. Note also that if there is no signal coming into the digital inputs, the 'chkRate' program is likely to freeze until something happens at these inputs.

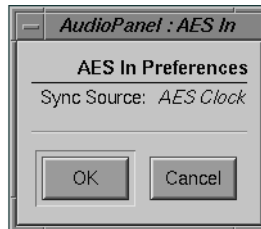
An interesting experiment will shed some more light on the usage of `chkRate`.

- on an Octane, connect the optical (ADAT) output with the optical input;
- on the same machine, connect the coaxial (AES) output with the coaxial input;
- set up the apanel as follows:



- you do this by setting the following:

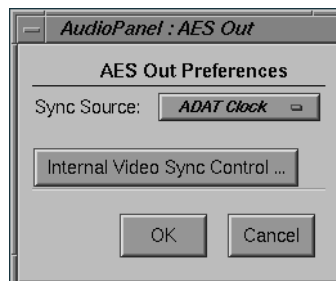
- AES In Preferences:



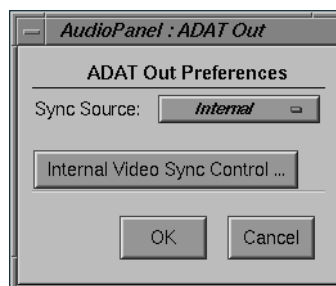
- ADAT In Preferences:



- AES Out Preferences:



- ADAT Out Preferences:



- for both AES and ADAT Out:



- now, logged in as the Jaleo user, run 'printdevs' and 'chkRate':

```
JEVA 47% printdevs
Devices and Interfaces on this system:
Device name 'RAD1.AnalogIn' label 'Analog In':
    Interface name 'RAD1.Microphone' label 'Microphone':
    Interface name 'RAD1.LineIn' label 'Line In':
Device name 'RAD1.AnalogOut' label 'Analog Out':
    Interface name 'RAD1.LineOut' label 'Line Out':
    Interface name 'RAD1.Speaker' label 'Headphone/Speaker':
Device name 'RAD1.AESIn' label 'AES In':
    Interface name 'RAD1.AESIn' label 'AES Input':
    Interface name 'RAD1.OpticalIn' label 'Optical In':
Device name 'RAD1.AESOut' label 'AES Out':
    Interface name 'RAD1.AESOut' label 'AES Output':
    Interface name 'RAD1.OpticalOut' label 'Optical Out':
Device name 'RAD1.ADATIn' label 'ADAT In':
    Interface name 'RAD1.OpticalIn' label 'Optical In':
    Interface name 'None' label 'None':
Device name 'RAD1.ADATOut' label 'ADAT Out':
    Interface name 'RAD1.OpticalOut' label 'Optical Out':
    Interface name 'None' label 'None':
```

The ADAT Out is in this example functioning as a generator (of digital silence), locked to an internal crystal oscillator. As such the ADAT Out is providing a 48 kHz clock signal to the Optical Output.

This is fed back into the Optical Input, being the ADAT In in this example. The ADAT In device will lock to the incoming clock, that is 48 kHz.

We can check this rate:

```
JEVA 57% chkRate RAD1.ADATIn
Input rate: [RAD1.ADATIn]: 48000.000000: samples: 480000
MULTI: READING: frames: 480000 (inc: 48000)
Grabbed 480000 frames in 9999948 uS
Rate: SET: 48000.000000Hz: REAL: 48000.249601Hz
JEVA 58% !!
chkRate RAD1.ADATIn
Input rate: [RAD1.ADATIn]: 48000.000000: samples: 480000
MULTI: READING: frames: 480000 (inc: 48000)
Grabbed 480000 frames in 9999974 uS
Rate: SET: 48000.000000Hz: REAL: 48000.124800Hz
JEVA 59% !!
chkRate RAD1.ADATIn
Input rate: [RAD1.ADATIn]: 48000.000000: samples: 480000
MULTI: READING: frames: 480000 (inc: 48000)
Grabbed 480000 frames in 10000024 uS
```

Rate: SET: 48000.000000Hz: REAL: 47999.884800Hz

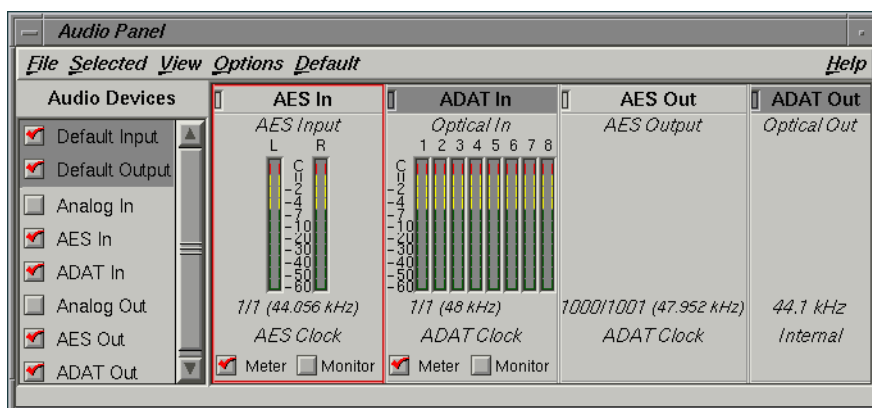
(You should run this command at least 3-5 times, and then get an average).
So, it seems the ADAT In is indeed running at a frequency very near 48 kHz.
As such, a so-called ADAT Clock will exist, running at 48 kHz.

Now, we coupled the AES Out device through a fraction of 1000/1001 to the 48 kHz ADAT Clock. AES Out will thus run at 47.952 kHz.

This clock is available at the AES Output; because it is fed back into the AES Input, the AES In device should now also be running at 47.952 kHz (although the apanel states 48 kHz exactly). Let's measure it:

```
JEVA 60% chkRate RAD1.AESIn
Input rate: [RAD1.AESIn]: 48000.000000: samples: 480000
MULTI: READING: frames: 480000 (inc: 48000)
Grabbed 480000 frames in 10010016 uS
Rate: SET: 48000.000000Hz: REAL: 47951.971306Hz
JEVA 61% !!
chkRate RAD1.AESIn
Input rate: [RAD1.AESIn]: 48000.000000: samples: 480000
MULTI: READING: frames: 480000 (inc: 48000)
Grabbed 480000 frames in 10009971 uS
Rate: SET: 48000.000000Hz: REAL: 47952.186874Hz
JEVA 62% !!
chkRate RAD1.AESIn
Input rate: [RAD1.AESIn]: 48000.000000: samples: 480000
MULTI: READING: frames: 480000 (inc: 48000)
Grabbed 480000 frames in 10010016 uS
Rate: SET: 48000.000000Hz: REAL: 47951.971306Hz
```

Now this seems fairly OK, and we can live with the AES In not displaying the correct value. But now change the clock of the ADAT Out to 44.1 kHz; the apanel will now look as follows:



- The ADAT Out device shows, correctly, 44.1 kHz and Internal;
- This clock, fed back into the ADAT In, shows 48 kHz (incorrect) and ADAT Clock;

- Let's measure the ADAT In:

```
JEVA 63% chkRate RAD1.ADATIn
Input rate: [RAD1.ADATIn]: 48000.000000: samples: 480000
MULTI: READING: frames: 480000 (inc: 48000)
Grabbed 480000 frames in 10884016 uS
Rate: SET: 48000.000000Hz: REAL: 44101.368465Hz
JEVA 64% !!
chkRate RAD1.ADATIn
Input rate: [RAD1.ADATIn]: 48000.000000: samples: 480000
MULTI: READING: frames: 480000 (inc: 48000)
Grabbed 480000 frames in 10884000 uS
Rate: SET: 48000.000000Hz: REAL: 44101.433297Hz
JEVA 65% !!
chkRate RAD1.ADATIn
Input rate: [RAD1.ADATIn]: 48000.000000: samples: 480000
MULTI: READING: frames: 480000 (inc: 48000)
Grabbed 480000 frames in 10884045 uS
Rate: SET: 48000.000000Hz: REAL: 44101.250960Hz
```

- It seems the ADAT In device is indeed running at 44.1 kHz. To this ADAT Clock is coupled, through a fraction 1000/1001, the AES Output device. And although it displays its fraction correctly, and the fact it is synced to ADAT Clock is clear as well, it shows the wrong frequency (=47.952 kHz);
- The correct frequency should be something like 44.056 kHz. This also becomes clear when looking at the AES In device: this now states the clock rate embedded in the signal it receives - from the AES Output. Let's measure it:

```
JEVA 66% chkRate RAD1.AESIn
Input rate: [RAD1.AESIn]: 44056.000000: samples: 440560
MULTI: READING: frames: 440560 (inc: 44056)
Grabbed 440560 frames in 9999978 uS
Rate: SET: 44056.000000Hz: REAL: 44056.096923Hz
JEVA 67% !!
chkRate RAD1.AESIn
Input rate: [RAD1.AESIn]: 44056.000000: samples: 440560
MULTI: READING: frames: 440560 (inc: 44056)
Grabbed 440560 frames in 9999986 uS
Rate: SET: 44056.000000Hz: REAL: 44056.061678Hz
JEVA 68% !!
chkRate RAD1.AESIn
Input rate: [RAD1.AESIn]: 44056.000000: samples: 440560
MULTI: READING: frames: 440560 (inc: 44056)
Grabbed 440560 frames in 10000022 uS
Rate: SET: 44056.000000Hz: REAL: 44055.903077Hz
```

Going from the above examples, it is wise to be careful with the SGI apanel. Perhaps rather measure with this 'chkRate' utility first

The 'chkRate' command should spot fairly easily excursions of more than a few Hertz, like shown in the examples above. The crystal accuracy for professional systems should be of 10ppm, leading to an excursion of less than 1Hz at 48kHz (actually 47999.52 to 48000.48).

VI.3 Miscellaneous Utilities

JEVA 29% targz

Usage: targz [-h] [-l] [-e] <filename.tgz>

-h Prints this help.

-l Lists the contents of a .tgz file.

-e Extracts contents of a .tgz file in local file.

VII. DIAGNOSTICS

VII.1 The jDiagnostics Tool

The diagnostics tool 'jDiagnostics' will allow you to gather system information, system setup information, and Jaleo setup information. It will measure the throughput of the XFS storage. It will capture any error messages outputted to the console during the execution of the tool.

```
JEVA 21% jDiagnostics
Please execute this utility as root !
Exiting jDiagnostics v0.1a ...

JEVA 22% su
Password:

JEVA # jDiagnostics
Jaleo Diagnostics Tool v0.1a
-----
Note: This utility only makes sense for XFS systems
      and for Jaleo 2.7 versions
With this script, the following information will be retrieved
from your system:
- Hardware inventory (hinv)
- Configuration status (chkconfig)
- Complete system identification (uname -a)
- Installed versions by internal number (versions -nb)
- Status of all the swap areas (swap -l)
- Contents of your .jaleorc file
- Contents of your Xfs.dev file
- Contents of your .RTvideoSetup file
- Index of /usr/local
- Output of the following commands:
  * jaleo -V
  * xfstest (write) |
  * xfstest (read)  | on Xfs Systems
- Console output, if an error occurs
Please hit Return to continue...
```

The 'jDiagnostics' tool should be run as root. Once the tests are at the end, it will allow you to output the gathered information to a file, or to email it.

Please have this information at hand when contacting Jaleo Support for any technical support on your Jaleo for Octane / SGI Octane / peripherals system.

When diagnosing problems, also take a look at the /var/adm/SYSLOG file, and look for errors, like SCSI-errors. Anything happening inside the system of any importance will end up in this SYSLOG file, for you to check later on.

VII.2 Output of chkconfig for JEVA

This is the output of the command 'chkconfig', on our Octane (shown as a reference):

```
JEVA 14# chkconfig
```

Flag	State
====	=====
array	off
autoconfig_ipaddress	off
autofs	off
automount	on
cacheefs	on
desktop	on
fontserver	off
gated	off
jaleolic	on
lockd	on
lp	on
mediad	on
mrouted	off
named	off
network	on
nfs	on
noiconlogin	off
nostickytmp	off
ns_admin	off
ns_fasttrack	on
pcnfsd	on
pppstartup	off
privileges	on
proclaim_relayagent	off
proclaim_server	off
rarpd	off
routed	on
rsvpd	off
rtmond	off
rwhod	off
sar	off
savecore	on
sdpd	on
sendmail	on
snetd	on
soundscheme	on
timed	off
timeslave	on
verbose	on
videod	off
visuallogin	on
vswap	on
webface	on
windowssystem	on
xdm	on
xlsv	on
yp	on
ypmaster	off
ypserv	off