

Jaleo 2.6 Installation Guide

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1. Overview

This guide is a condensed version of the full Jaleo Installation Guide for Jaleo 2.1, augmented by the release and installation notes for Jaleo 2.5 and 2.6. This guide does not go into details as deeply as the above mentioned documentation, which still is available, but instead offers a more streamlined approach to installation of Jaleo 2.6, either as Jaleo Composite or Jaleo for Impact.

Installation of Jaleo 2.6 involves:

- Checking and, if necessary, adapting the system configuration
- Making sure that the right operating system version and software subsets are installed
- Possibly configuring a raw disk
- Installing Jaleo
- Configuring the Jaleo system

2. Intended Audience

This manual does not explain in detail how SGI system installation and configuration is performed. To perform the basic SGI system configuration, you thus need a certain amount of SGI-specific installation knowledge, and you will need to know some of the tools SGI provides, for example for disk partitioning, software installation, swap space configuration and secondary disk installation.

If you do not have the knowledge as mentioned above, we recommend you to leave system installation and configuration to a competent dealer.

3. If Your Are Updating From Jaleo 2.1

If you are updating from Jaleo 2.1, make sure you read the “Jaleo 2.5 release notes and update installation guide” first. *It contains essential information for a safe update.*

4. Supported System Configurations

4.1 Jaleo Composite

Jaleo Composite 2.6 supports:

- All Indigo2 and Indy systems
- Galileo Video Hardware on Indigo2 XL, XZ and Extreme Systems
- Indy Video on Indy Systems

Cosmo Compress is not supported in this version of Jaleo 2.6. See the release notes for more information.

Jaleo Composite systems must have:

- At least 128 MB main memory
- A large system disk (2 or 4 GB)
- Additional disk space for imagery as desired. Normally, this would probably be at least a 9 GB drive, or a disk array with high capacity.
- An additional raw disk partition for caching is highly recommended. Raw disk partitions are special disk sections used completely by Jaleo without much operating system interference. Raw partitions for caching make Jaleo operation generally much smoother. For caching, a raw size of 512 MB to 1 GB is sufficient.

4.2 Jaleo for Impact

Jaleo for Impact supports:

- Indigo2 Solid, Killer or High Impact systems with R4K or R10K processor
- ImpactVideo
- A Ciprico 6900 disk array
- 4MB texture space extension on High Impact systems for hardware assisted rendering

Important note: Due to the limited expansion slot space, you can not run a Jaleo for Impact system configured for real time in a Maximum Impact system.

Jaleo for Impact Systems need:

- At least 128 MB of RAM
- A large system disk (4 GB recommended). As Audio data will typically be stored on the system disk, you may consider to have a larger secondary drive (for example a 9GB drive) for data storage.

4.3 For All Systems

You will need:

- A DAT drive for Jaleo software installation, unless you received Jaleo on CD-ROM media
- A CD-ROM drive for system software installation

5. Disk Space Considerations

5.1 Swap Space

Jaleo is a memory intensive application. To run Jaleo, you must have sufficient memory and you should have appropriate swap space configured. Swap space is a storage area on the disk that UNIX uses to temporarily store data if space in memory is full. Swapping is a comparatively slow process, and where possible a system is configured with a lot of memory to prevent it from occurring.

There are three types of swap storage:

- Specialized swap partitions. On IRIX 6.2, the default swap partition is 128 MB in size. If you install a 6.2 system from scratch, this is the default configuration for the system disk. Changing the swap partition normally requires a complete re-installation of the system disk. **Never trust on the default settings on any given installation; always check the swap space explicitly.** If you have a machine which is already installed, check with `/etc/swap -l` and make sure that you distinguish between real and virtual swap areas.
- Swap space in files. You can create special files in the normal file system area for swapping. These files are a bit slower than normal swap space, but they can be added or removed without re-configuring and re-installing the system disk from scratch.
- Virtual swap space. This is space that is not really available, but appears to be available to the operating system. Due to some technical reasons, applications under UNIX in some situations request storage space they never actually access. Virtual swap space can be a great help with this problem.

We give the following recommendations for swap space:

- The normal recommendation for swap space is to have at least the same swap space as your main memory size, better twice as much. If you have 128 MB of RAM, you can get by with the default swap space; if you have more memory, you should add more swap space.
- In most cases adding swap space as swap files is sufficient. This allows to add swap space when it really turns out to be necessary.
- If you have more memory than swap space, add a swap file to make up for the difference. For example, if you have 256 MB of RAM, add a swap file of 128 MB to the standard swap space of 128 MByte.
- If the system complains about missing swap space during operation, add swap space, for example in increments of 64 MB or 128 MB. If the system still complains, add more. If you already have added a lot of space and the system keeps complaining, even if you have significantly more swap space than memory, please get back to our support.
- Always add a large virtual swap space area to your system configuration. We recommend to have at least 256 MB of virtual swap space configured.

Swap space management is beyond the scope of this documentation. Please refer to the SGI documentation for more information.

5.2 File System Recommendations

On IRIX 6.2, we recommend to use the new `xfs` file system, as it is a bit faster and also offers better error recovery than the older `efs` filesystem.

5.3 Jaleo Composite

For Jaleo Composite, two more steps are generally recommended:

- You normally will wish a secondary disk drive for data storage. Please refer to the SGI documentation on how to add a secondary disk drive for data storage to your system.
- On Composite systems, a small raw partition for caching is highly recommended. Raw partitions are partitions without a filing system which are totally under control of Jaleo. A raw partition can be added in two different ways:
 - You can add a small additional disk drive for use as a raw partition.

- You can use any unused partition on a disk already available. For example, if you add a 9 GB drive for data storage, you might create an extra partition of 512 MB for raw caching.

Once you have designated a partition for raw use, be it on a disk drive of its own or as part of another drive, you do not need to do any further steps for configuration until after Jaleo installation.

Partitions on disk drives are created with the SGI utility `fx`. Please see the SGI documentation for more information.

Important Note on Raw Disks:

It is absolutely NOT recommended to use a raw partition for data storage on Composite systems, or on Impact systems without a Ciprico array for real time storage. On Composite systems, the only use of a Raw disk is for caching. Permanent storage on a raw disk, without the real time capabilities, does not have any advantage over file system storage, which is much easier to maintain.

5.4 Jaleo for Impact

Jaleo for Impact systems store video data on a Ciprico 6900 array. This array is normally used as one huge raw partition, i.e. a storage area that is directly controlled by Jaleo without the interference of a file system.

Additionally to the raw storage, Jaleo needs additional storage space for composition data you create, as well as for data files you may wish to store on a filing system for various reasons, for example to permit network sharing, or to create file types that can not be stored on raw disks, like movie files. Finally, audio is always stored on a normal file system.

Also you may store your Jaleo data on the system disk, the system disk typically is not very big (2 to 4 GB). You may thus wish to consider to add a secondary disk, for example a 9 GB drive for data storage. Alternatively, you may subdivide the storage space on the Ciprico array, into a raw space area for images and a normal file system partition for data storage.

The utility to partition the Ciprico array is called `cfxutil` and comes with the Ciprico array. Please refer to the array for more information.

6. Machine Preparation

All new SGI systems supported by Jaleo 2.6 by default are delivered with IRIX 6.2.

6.1 Jaleo Composite

Jaleo Composite requires:

- Irix 6.2
- A driver for the video board you have installed (if applicable)

You can check the operating system version by typing in a shell:

```
uname -a
```

If this does not print a string containing the word `IRIX 6.2` you have to upgrade your operating system version. If you have to upgrade your operating system, make sure you install the system so that swap space requirements as described above are met.

If you decide to reinstall your OS, this is an opportunity to:

- Change swap partition size to better meet Jaleo requirements. If you are re-installing IRIX 6.2, make sure that you create an appropriate partitioning of the system disk before you install the system software. That is, make sure there is a swap partition of an acceptable size.
- If you wish to have a raw partition on your system disk, this is the opportunity. Normally, you would rather add a raw partition to a secondary disk drive, but in case you wish to have it on your system disk, now would be the time to do it.

6.2 Jaleo for Impact

Jaleo for Impact requires:

- IRIX 6.2. There are at least two versions of IRIX 6.2 in the field; the version required must be capable to run Impact Digital Media 2.1. This version is labelled “Irix 6.2 with R10000”. This version of IRIX supports both the R10K and the R4K processor.
- Impact Digital Media 2.1. This CD contains drivers for Impact Video, as well as for the other video boards available from SGI.

You can check the version of your operating system as follows:

- To make sure you have IRIX 6.2, type in a shell:

```
uname -a
```

This should print out a string containing `IRIX 6.2`. If it does not, you will have to upgrade your operating system version.

- To check which version of IRIX 6.2 you have, type in a shell:

```
versions -nb
```

The result is a long list of subsystems installed. In the third column of each line there is a version number. Check that the versions of the following subsystems are at least those printed here:

```
I  dmedia_eoe          1233007733  IRIS Digital Media Exe-
cution Environment, 6.2 with IMPACT 10000
```

```
I  eoe                 1233007732  IRIX Execution Environ-
ment, 6.2 with IMPACT 10000
```

```
I  impactdm           1233007736  IMPACT Digital Media Com-
mon Execution Environment, 6.2
```

If the versions you have installed show lower version numbers you will have to contact SGI for a newer version. If you have to upgrade your operating system, make sure you install the system in a way that swap space requirements as described above are met.

If you decide to reinstall your OS, this is an opportunity to:

- Change swap partition size to better meet Jaleo requirements. If you are re-installing IRIX 6.2, make sure that you create an appropriate partitioning of the system disk before you install the system software. That is, make sure there is a swap partition of an acceptable size.

6.3 Jaleo Online Documentation Requirements

The Jaleo online documentation is stored in Adobe Acrobat 2.1 format. To read the documents, you need an Adobe Acrobat reader. Normally, the reader is installed with IRIX 6.2. You can check for the reader by typing in a shell:

```
versions -b
```

Check the resulting listing for a line saying Adobe Acrobat Reader. If you do not have one installed, you can either install it from the SGI system CDs, or you can download a copy from various websites, including Adobe's. If you download a version, please make sure that it is at least Acrobat Reader version 2.1. There is a new version coming out, 3.0, that should be able to read the Jaleo manual files just as well.

6.4 Checking Machine Configuration

If you find that the operating system installed on your machine is appropriate, you should check the following before you proceed:

- Make sure your machine has enough memory to run Jaleo. If you do not have enough memory, you may still run Jaleo, but the performance may be very slow.

- Make sure the swap space configuration matches Jaleo's requirements, as described above. You can check swap space by typing:

```
/etc/swap -l
```

If you do not have enough swap space:

- The total physical swap space (i.e. swap partition and swap files) must be at least equivalent to your system memory. Normally, it would be recommended that the swap partition alone has this size, but you can use swap files to add space if required. This will lower performance slightly, but saves you a re-installation of the operating system. Follow the SGI documentation to add the necessary swap file space, or on how to repartition your system disk to enlarge the swap partition.
- The virtual swap space should be around 256 MB, if you have less or none, just follow the SGI documentation and add sufficient virtual swap space.

6.5 Checking the system date

Make sure the system date is correct.

- From a shell, logged in as root, use the command `date`
- If the date is incorrect, use `date` to change the date:
- Type `date MMDDhhmmYYYY` to set the date, where MM stands for the month, DD for the day, hh for the hour in 24h notation, mm for the minute and YYYY for the year. For example:

```
date 112914001996 for Nov. 29, 2:00 pm 1996
```

- Make sure the time daemon is switched off. Type `chkconfig` and check the listing printed. If `timed` and/or `timeslave` are set to on, type:

```
chkconfig timed off
```

```
chkconfig timeslave off
```

6.6 Summary

At the end of this section, you should have an SGI system with appropriate operating system versions, memory, swap space and system date.

7. Installing a Secondary Disk

7.1 Jaleo Composite

To physically add a secondary disk drive to your system, you should follow the instructions of the drive manufacturer on how to connect the disk drive to the SGI machine.

If you plan to add a secondary disk, you should consider if you wish to use part of this disk as a raw partition for Jaleo Composite caching. If you wish to do so, please use the `fx` disk partitioning tool to subdivide the disks in two partitions, usually 0 and 6. Make partition 6 of a size suitable for caching, i.e. between 512 MB and 1 GB. See the SGI documentation for more information on using `fx`.

Once you have your secondary disk partitioned, you must make a file system on the partition you wish to use for data storage. Then, you must add the partition to the file system table (`/etc/fstab`) to make sure it gets mounted when you boot the system.

An example:

Let us assume you created two partitions on a 9GB drive, partition 0 with 8 GB, and partition 6 with 1 GB. To prepare partition 0 for use with a filing system, you would have to do the following steps:

- Log in as root
- Create a filing system on the partition. Type:

```
mkfs_xfs /dev/dsk/dksXdYsZ
```

where X is replaced by the SCSI controller ID (0 or 1), Y is replaced by the SCSI ID of the additional disk (typically 2 or 3) and Z is replaced by the partition number you want to use for the filing system. For example, if you made an 8 GB partition as partition 0 on a secondary disk drive connected externally to an Indigo2, with drive ID 4, you would type:

```
mkfs_xfs /dev/dsk/dks1d4s0
```

- Decide where to mount the new disk. This is the name where the disk appears in the file system tree. For a secondary disk, a good place is `/DISK2`. To be able to mount the new disk there, this directory must exist. Create it by typing:

```
mkdir /DISK2
```

- Add an entry to the mount table `/etc/fstab`. Edit this file by typing:

```
jot /etc/fstab
```

Then add a line:

```
/dev/dsk/dks1d4s0 /DISK2 xfs rw,raw=/dev/rdisk/dks1d4s0 0
0
```

to the file. Of course, if you used a different drive ID, controller or partition you have to change the `dks . . .` part accordingly. Also note that in the second part of the line the path goes `/dev/rdisk`, not `/dev/dsk`.

- Check if the mount works. Type:

```
mount -a
```

If there is no error message, type:

```
df -k
```

This should give you free space on all mounted disks, and thus should show you free space on `/DISK2`.

To prepare the raw partition for use with Jaleo, steps are much easier. You only have to change access permissions for the drive. To do so, you must know:

- The SCSI controller the drive is connected to (always 0 on an Indy, 0 for internal disks on an Indigo2, and 1 for external disks on an Indigo2).
- The SCSI ID of the drive
- The partition number on the drive. With this information, type:

```
chmod 777 /dev/dsk/dksXdYsZ
```

where X is replaced by the SCSI controller ID (0 or 1), Y is replaced by the SCSI ID of the additional disk (typically 2 or 3) and Z is replaced by the partition number you set up for the raw partition. For example, if you made a 1GB partition as partition 6 on a secondary disk drive connected externally to an Indigo2, with drive ID 4, you would type:

```
chmod 777 /dev/dsk/dks1d4s6
```

7.2 Jaleo for Impact

To physically add a secondary disk drive (other than the Ciprico array) to your system, you should follow the instructions of the drive manufacturer on how to connect the disk drive to the SGI machine.

Please follow the SGI documentation on how to create a filing system and how to setup the secondary disk on your system.

The normal reason to install a secondary disk would be to have additional storage space for your Jaleo data (environments, audio, images stored as movie files or for export purposes).

8. Installing a Ciprico Array (Jaleo for Impact only)

Jaleo for Impact systems need a Ciprico array for real time performance. Please see the Ciprico documentation for information on how to install the Ciprico controller, array and driver software.

The Ciprico setup is almost identical to the setup as required for a normal raw disk. There is one additional step necessary (a driver for the disk controller must be installed), and one step is slightly modified (partitioning of the disk).

Before you can configure the Ciprico for use with Jaleo, you must install the disk controller card and the appropriate driver software that is delivered with the array. The necessary documentation for board and driver installation is part of the Ciprico package. Once the hardware is running (as can be seen from the printouts delivered upon startup of the system), you can configure the array.

As any normal disk drive, the Ciprico array must be partitioned. The only difference in comparison with a normal disk drive is that you can not use the standard SGI disk preparation tool `fx`, but you must use the utilities delivered with the Ciprico. However, this even makes the task easier, as these have a graphical interface.

- Log in as root
- To prepare the Ciprico array, run the `cfxutil` utility program. Where this can be found depends on where you located the driver at installation time. After starting the program, you must select the drive to be prepared.
- To do so, select the `Open New Array` entry from the `Functions` menu.
- On the dialogue that appears, press the `Perform Scan` button. The software will scan your machine's disk controllers in search of a Ciprico drive. Once it has finished the search, a list of arrays will be shown in the list portion of the dialogue. Typically, this will only contain a single array, and this one should be selected automatically. If not, select it by clicking on it.
- Close the dialogue window.
- Select the entry `Volume Header` from the `Function` menu.

- In the dialogue that appears, you can set up the partitioning of the array. With a new array, you should see a default partitioning that roughly looks like this (for a 16 versus 32 GB array):

Partition	Size	Type
6	8/16 GB	EFS/XFS
7	8/16 GB	EFS/XFS
8	3/3 MB	Volume Header
10	16/32 GB	Entire Disk

As you can see, this is largely equivalent to the standard layout of an SGI drive:

- the Volume Header partition, that contains housekeeping information for the drive and *always* must be present.
- the Entire Disk partition, that covers every single block on the disk, including the volume header. This partition, although always present, must *never* be used, unless for one-to-one copies of a drive to an exactly equivalent one.
- A number of file system partitions. The default for the Ciprico has two partitions for efs (the older of the SGI filesystems) usage prepared.

For use with Jaleo, you typically want to have one large data partition.

The following steps explain how to delete one of the prepared default partitions and to change the size of the other one.

- Select the `Modify Partition` button. A dialogue pops up.
- In the dialogue, you will see two scroll-able lists. The left one is the list of partitions. Here, select partition 6. In the size fields, the size of the partitions will appear. Set the size and start block of partition 6 to 0 and press the `Write Change to Partition Table` button.
- Select partition 7. Make it the size of the full array minus the size of the volume header, that is, the size of the array in Megabyte minus 4. The start megabyte value *must not be smaller than 3 to prevent that the volume header is overwritten*. Set the partition type to “data” using the list box at the right. Write down on a piece of paper the size in blocks of the partition you just set up. You will need it later. Write the change to the partition table and exit the dialogue.
- In the volume table, make sure that the new full-size partition 7 is not starting below megabyte 3. It *must not overlap* the volume header partition.
- Write the volume header back to the disk using the appropriate button of the dialogue window.
- In the main window of `cfxutil`, make a note of the driver name that is written in the window. It should be something of the form:

```
/dev/rdisk/rfc0d0s0
```

The driver path to be used in the Jaleo raw disk configuration file is not quite this one; the last number in the name must be the partition you prepared for use as a raw disk partition. If you used partition 7, as in the example above, the path would be:

```
/dev/rdisk/rfc0d0s7
```

- You must give write access for everyone to this path. In a shell window, type
`chmod ugo+w /dev/rdisk/rfc0d0*`

Your drive is now ready for use with Jaleo.

9. Installing Jaleo

9.1 Deciding on an Installation Location

Before you start installation, please decide where to place the Jaleo home directory. The installation program will ask you for this location.

If you do not have a secondary drive, you should install Jaleo in the default location, which is in the `/usr/people` directory. If you do have a secondary disk, we recommend to install Jaleo there. This would, for example, be `/DISK2`, if you mounted your secondary disk as `/DISK2`.

9.2 Checking the date

Before you install Jaleo, make sure the system date is correct. Again, check and make sure that the `timed` and `timeslave` options are switched off (use `chkconfig` to check and change the options if necessary). An incorrect system date can cause Jaleo to malfunction and may even make a system reinstallation necessary.

9.3 Installing from Tape

To install Jaleo from a DAT tape, please do the following steps:

- Log in as `root`
- `cd` to `/usr/tmp` (type `cd /usr/tmp`)
- Read the installation program from tape. Type `tar xvf jaleo_install`
- Run the installation program. Type `./jaleo_install`

- Follow the instructions the installation program gives you. Note that you will be asked to confirm practically every response you give to the program. That way you almost always can back up if you made a mistake.
- Jaleo will ask for a name for the account to install Jaleo to. The default name is `jaleo26`. Do not change it unless you have a compelling reason.
- The default location for the Jaleo account is `/usr/people`. If you want a different account, for example because you have a secondary disk, enter it when prompted for the installation home directory.
- If you are asked if you wish to install the license server, please answer yes, unless you have another Jaleo license server already running in the network.

9.4 Installing from CD-ROM

If you received Jaleo on CDROM, installation works as follows:

On SGI machines, a CDROM is normally mounted at `/CDROM`. If you use a different mount point for CDs, please substitute `/CDROM` in the following with the location you use.

- `cd` to the CD directory. Type `cd /CDROM`
- Run the install program by typing `./install.sh`
- The installation program will come up in a separate window.
- Follow the instructions the installation program gives you. Note that you will be asked to confirm practically every response you give to the program. That way you almost always can back up if you made a mistake.
- Jaleo will ask for a name for the account to install Jaleo to. The default name is `jaleo26`. Do not change it unless you have a compelling reason.
- The default location for the Jaleo account is `/usr/people`. If you want a different account, for example because you have a secondary disk, enter it when prompted for the installation home directory.
- If you are asked if you wish to install the license server, please answer yes, unless you have another Jaleo license server already running in the network.

10. Post-Installation Configuration

The most important setup issues after installation are as follows:

- Installing a License
- Configuring a Raw Disk
- Configure the working resolution
- Configure caching
- Setting the work directory
- Creating a project
- Configure VLAN where applicable
- Configure a Backup device if so desired
- NTSC clients must setup the right startup image (Jaleo for Impact only)

After these steps, Jaleo normally is fully operable. This manual treats the necessary configuration for Jaleo. If you are interested in more advanced installation options, please consult the full installation manual and the add-on documentation / release notes for Jaleo 2.5 and Jaleo 2.6.

10.1 Installing a License

To run Jaleo, you need a license. To obtain a license, take the following steps:

- Log in to the Jaleo account created by the installation
- Open a shell window
- Type: `addLicense`
- `addLicense` will ask for the number of servers to use. Simply press return.
- `addLicense` will print out a machine code. Please send this machine code to CIC or to the dealer you bought Jaleo from.
- You can quit the account and work with your machine while you wait for a license; you do not need to leave the program open while waiting for a license.
- Once you receive your license key from CIC, log in to the Jaleo account again, open a shell and type `addLicense` again. Press return when asked for the number of servers.
- Enter the key you received at the appropriate prompt.
- Check the following messages for errors. If an error comes up, please contact CIC or your dealer or representative for help.

10.2 Configuring a Raw Disk or Ciprico Array with Jaleo

If you have connected a raw disk or Ciprico for use with Jaleo, now is the time to make Jaleo aware of this disk.

Jaleo Composite

Again, as a reminder: With Jaleo Composite, only set up a small raw partition for caching. Do *not* use raw mode for permanent data storage.

To install the Raw disk as a cache:

You first need to find out the exact size in blocks of the raw disk partition you have. To do so, use the `fdisk` tool and check the partitioning scheme of the disk you use. You need the size in blocks of the partition used for the raw device. Normally, the value you are looking for is about two times as large as the size in megabytes, as the typical block size for a disk is 512 bytes. A partition of 1 Gigabyte thus has roughly 2000 blocks.

To set up the Raw device for Jaleo, you have to:

- Log in to the Jaleo account and open a shell
- Open the file `JALEO-ENV/etc/devices/Raw.dev` in an editor.
Type: `jot JALEO-ENV/etc/devices/Raw.dev`
- Edit the `PATH` field in the file to correspond to the device file for the raw partition you intent to use. For example, if your Raw disk is to be partition 6 on drive 4 on SCSI controller 1, the path would be:
`/dev/rdisk/dks1d4s6`
- Edit the `SIZE` field to match the size of the partition in blocks.
- Save the file.
- Check if you set the permissions for the Raw disk properly. Type:
`ls -l /dev/rdisk/dks1d4s6`
Of course, change the controller, drive id and partition value according to your setting. If the resulting line start with something like:
`crwxrwxrwx`
you are done. If not:
 - Log out and log in as root
 - Open a shell
 - Type: `chmod 777 /dev/rdisk/dks1d4s6`
(again, change controller and SCSI id, as well as partition number as appropriate)
 - Check with `ls -l` on the same path for proper permissions.

Jaleo for Impact

First of all, you need the size of the Ciprico partition in blocks.

- If you did not write it down before, please open the `cfxutil` application again and look at the volume header table of the array. Write down the block size of the partition you are using.
- Now, tell Jaleo which partition and which size to use To do this, Log in to the Jaleo account and open a shell
- Open the file `JALEO-ENV/etc/devices/Raw.dev` in an editor.
Type: `jot JALEO-ENV/etc/devices/Raw.dev`
- Edit the `PATH` field in the file to correspond to the device file for the Ciprico drive you are using. Set the path to the path you used in the `cfxutil` application, for example:
`/dev/rdisk/rfc0d0s7`
- Edit the `SIZE` field to match the size of the partition in blocks.
- Save the file.
- Check if you set the permissions for the Raw disk properly. Type:
`ls -l /dev/rdisk/rfc0d0s7`
Of course, change the partition value according to your setting. If the resulting line start with something like:
`crwxrwxrwx`
you are done. If not:
 - Log out and log in as root
 - Open a shell
 - Type: `chmod 777 /dev/rdisk/rfc0d0s7`
(again, change controller and SCSI id, as well as partition number as appropriate)
 - Check with `ls -l` on the same path for proper permissions.

10.3 Setting Up Working Resolution

- Log in as Jaleo user
- Edit the file `JALEO-ENV/.jaleorc`. Type `jot JALEO-ENV/.jaleorc`
- `.jaleorc` is the main jaleo configuration file. It is described in full detail in the Jaleo 2.1 Setup Guide.
- In the file you will find two blocks of settings. The upper block is for PAL, the lower block is for NTSC. By default, the NTSC block is placed between a pair of `/*` and `*/`

This means, the NTSC block is commented out – by default Jaleo is configured for PAL. The working resolution of Jaleo is set to 720 by 576 pixels – standard CCIR 601 PAL. If you are happy with this, for now you are done. If you wish to work in PAL, but in a different resolution, change the X and Y resolution values as you desire.

If you wish to change the settings to NTSC, you have two options: You can place the PAL block between `/*` and `*/` and remove the comment signs from the NTSC block. Alternatively, you can change the following values in the PAL block to adapt them to NTSC:

- `IMAGESIZEX` – for NTSC CCIR 601, this value must be 720.
- `IMAGESIZEY` – for NTSC CCIR 601, this value must be 486
- `NTSCFIELDS` – for NTSC, set to `TRUE`
- `FRAMESEG` – for NTSC, set to 30.
- Save the file, but leave the editor open.

10.4 Configure caching

If you have closed the file `.jaleorc`, please open it again with an editor.

- Edit the file `JALEO-ENV/.jaleorc`. Type `jot JALEO-ENV/.jaleorc`
- `.jaleorc` is the main jaleo configuration file. It is described in full detail in the Jaleo 2.1 Setup Guide.

Jaleo Composite

If you do *not have a Raw Disk partition for caching*, make sure that all lines saying `CACHEDEVICE` are placed between comment signs (`/*` and `*/`). Also, in this case set the value of `MAXMEM` to about one third of your available main memory.

If you have a raw device for caching, make sure you have a line that says

```
CACHEDEVICE          Raw.dev
```

and that this line is not between comment signs.

Jaleo for Impact

Make sure that you have the following lines in a block that is not between comment signs (`/*` and `*/`).

```
CACHEDEVICE          Raw.dev
```

```
RENDERPARTIAL       Raw.dev
```

- Save the file `.jaleorc`.

10.5 Setting the WORK directory

By default, the Jaleo WORK directory is inside of your Jaleo account. If you followed this installation guide, you will have placed your Jaleo account on a disk with sufficient space. If you are happy with this, just skip this section.

If you feel there is a different location where you want the WORK directory, you can place it somewhere else. In this case, you should move the directory WORK to the desired location.

Also, edit the file JALEO-ENV/JALEO_WORK and change the path contained there to point to the new location.

Finally, make sure that permissions of the WORK directory and its content have not changed by moving it.

The best way to assure this is to issue a command like:

```
chmod -R 777 ...path to new location.../WORK
```

10.6 Creating a project

To work properly, Jaleo needs a project directory structure. The new installation procedure creates a project with the name JDEFAULT for you. If you prefer to work with a different project, open the project manager and create a different project.

To delete the default project, drag its icon from a file manager to the Jaleo dustbin application icon.

10.7 Configure VLAN and RtVideo (where applicable - Jaleo for Impact only)

- To configure VLAN, select the serial line where you want to connect it. We recommend serial line 2.
- Log in as root
- From the System Toolchest, open the System Manager (in the System submenu). Open the application to configure the serial ports. Make sure that the selected port (port 2) is available, and not set up to be connected to a terminal.

- Make sure the device file for the terminal is accessible.
Type `chmod 777 /dev/ttyd2`
- Log in as Jaleo
- Edit the file `RtVideo.cfg` in `JALEO-ENV/etc/devices`.
Type `jot JALEO-ENV/etc/devices/RtVideo.cfg`
- In the configuration file, set the following values:
 - The `CONNECTION` field specifies the physical connection of the VLAN device. Set it to `VLAN_SERIAL`.
 - The `PORT` parameter specifies the port actually used. Set it to `/dev/ttyd2`.
 - The `NODE` parameter determines the VLAN node address to be controlled. Any number between 1 and 16 can be specified.
 - The `TIMEOUT` parameter gives the interval (in milliseconds) after which the system assumes a timeout in the connection if no messages are received from the VLAN.
 - The `PREROLL` parameter determines the preroll time used in edits. The default value is 5 seconds.

10.8 Configure a Backup device

If you plan to work with the Jaleo Backup and Restore applications, you must configure the use of the tape drive.

- To do so, open the file `JALEO-ENV/.jaleorc` with an editor.

Local Tape Drive

- If you do not have a line `DATDEVICE` in the configuration block you are using (i.e. not between `/ * an */`, add a line

```
DATDEVICE                /dev/rmt/tpsXdY
```

where X is replaced with the controller id your dat-drive is connected to, and Y is the SCSI ID of the drive.

Remote Tape Drive

To backup to a remote tape drive, make sure that the remote machine has an account `guest` which can be used to access the tape drive.

- If you do not have a line `REMOTEACCOUNT` in the configuration block you are using (i.e. not between `/ * an */`, add a line

```
REMOTEACCOUNT            MACHINENAME
```

where MACHINENAME is replaced with the name of the machine you plan to use.

- Set up the DATDEVICE line as described for a local drive, making sure that you use the right path for the drive connected to the remote machine.

10.9 Jaleo for Impact: Startup Image

This step makes sure the right startup image is used. This step is *only necessary* for **NTSC users**. However, you may wish to replace the Jaleo startup image with your own. To do so, prepare an image in Vista format in 720*576 for PAL and 720*486 for NTSC. Copy this image instead of the NTSC logo as described below.

- Open a shell
- type `cd JALEO-ENV/etc/pixmap/startupimage`
- type `cp jaleoLogoNTSC.vst start.vst` to copy the NTSC version of the startup image to the right location. If you wish, you can also use a different image in Vista format and the right resolution, for example your company logo. See the description above for the resolution requirements.

11. Basic Video Hardware Setup for RtVideo Operation (Jaleo for Impact)

Correct video hardware setup is absolutely essential for frame accurate capture. This holds true especially for the systems using stand alone VLAN controllers, that is, for Jaleo Composite and Jaleo for Impact.

Unfortunately, there is virtually an unlimited number of variants of connections, devices, and setups. It is thus not possible for us to give a detailed setup description for every possible configuration. Instead, we have tried to collect some universal facts on the matter.

The central issue is:

- All video hardware must be properly synchronized using a stable reference signal

The components involved are the following:

- The SGI machine and its video hardware. Depending on the machine and video board, the video side may be analog or digital.
- A VTR capable of insert cuts. This again can either be digital or analog.
- A control monitor, either digital or analog
- A VLAN controller for machine control

- Optionally, there may be a digital-to-analog or analog-to-digital converter necessary to connect analog equipment of some kind to digital ones.
- Optionally, there may be a source for a studio reference signal.

The trick for successful operation is to keep all these components in sync on the video side.

A common necessity on the SGI side is **the proper setup of video inputs, outputs and synchronisation** using the `vcp` (video control panel) application. You can run the control panel from any shell by typing `vcp`. Although the `vcp` applications look slightly different, depending on the hardware capabilities of the boards, all permit to setup the video synchronisation. **Do not forget to set the board to the sync source used!**

11.1 A Note on VLAN

VLAN is a universal controller for video equipment. A VLAN system consists of two base components:

- A VLAN Transmitter. This device translates commands expressed as simple text into an internal protocol for video device control. Commands do look like “PY” for “Play” or “GT 00:00:12:22” for “Goto location...”. These commands typically are issued by a program or edit controller and sent to the transmitter via a serial interface. Sometimes, transmitters are also integrated in video equipment. As an example, the SIRIUS board from SGI has a VLAN transmitter on board.
- One or more VLAN Receivers. The receiver translates the internal protocol of the VLAN system into device specific remote control commands. The major strength of VLAN is that drivers for basically all common video devices are available.

A single VLAN transmitter can control up to 32 different devices at once. These devices are called “nodes”, each identified by a node number. For each node to be controlled, a separate receiver is required. Connections between transmitters and receivers are done via normal video BNC cables (75 Ohm).

11.1.1 VLAN Timeout Handling

The RtVideo (as well as the realtime backup applications for Jaleo Plus and Jaleo for Impact) will intent up to three retries if the VLAN times out during an operation. A timeout of a VLAN command might occur, for example, because the tape transport takes too long to position the tape appropriately.

11.1.2 VLAN Flavours

VLAN comes in various flavours:

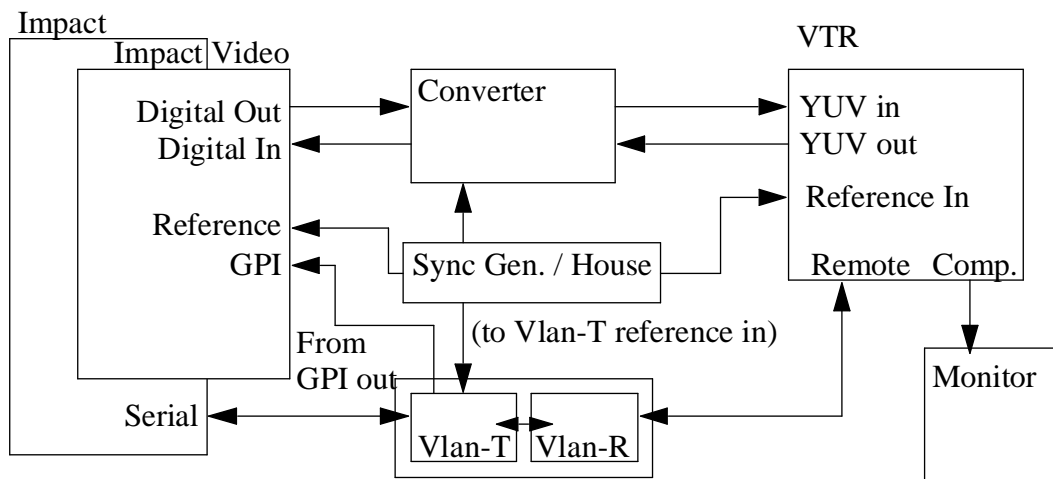
- There are the old small black plastic boxes that contain a single transmitter or receiver each.
- There are integrated transmitters on video boards.
- There are little metal boxes containing either a transmitter and a receiver, a single receiver or two receivers. The newest model, called VLXi, is of this type. For computer graphics operation, a VLXi configuration with one transmitter and one receiver, saving an explicit connection between transmitter and receiver, is the most common case.

11.1.3 VLAN and Frame Accuracy

Vlan controllers are absolutely frame accurate, provided the transmitter is supplied with a stable and reliable sync signal (the same of course that drives the rest of the video equipment). The transmitter is equipped with a diagnostic LED to show if a valid sync comes in through the Reference Input. **Without a proper sync, no frame accuracy can be achieved.**

11.2 Setup for Jaleo for Impact Systems

On Jaleo for Impact systems, another addition is necessary. The setup looks like this:



The essentials:

- The VLAN transmitter must be connected to a valid sync source. **Without that, no frame accurate operation is possible.** Again, the transmitter provides a diagnostic LED to check if a sync is present.
- The video control panel must be setup properly for external sync, and the reference sync must be connected to the reference input of the Impact Video.
- In case an analog/digital converter is used, the converter should also be synced to the common reference.

- Where no separate sync generator is available, most professional VTRs can be used as reference source, providing a separate reference output. The reference signal can then be daisy-chained to all the devices, the VLAN, the converter and the Impact.
- One additional cable is necessary to connect the GPI trigger output of the VLAN transmitter with the Trigger input of the Impact Video. The GPI (General Purpose Interface) of the VLAN gives trigger information that is necessary for synchronization on the Impact. **Do not omit the GPI connection, or RtVideo will not be able to capture with VTR control.**

11.2.1 Machine Synchronization Setup

Make sure that the Impact Video hardware is properly genlocked. To do so, open the `vcp` application (an SGI tool that comes with the system. In a shell, type `vcp`.

Make sure the machine is set to Genlock mode, and that the reference input is chosen as Genlock input.

11.2.2 Video Out with Impact Video

Live Video output with the Impact Video board does only work if Jaleo's working resolution is set to proper resolution settings. The `vcp` video resolution settings for the board must match the resolution chosen.

	PAL CCIR	NTSC digital
IMAGESIZEX	720	720
IMAGESIZEY	576	486
vcp mode	CCIR 625	CCIR 525

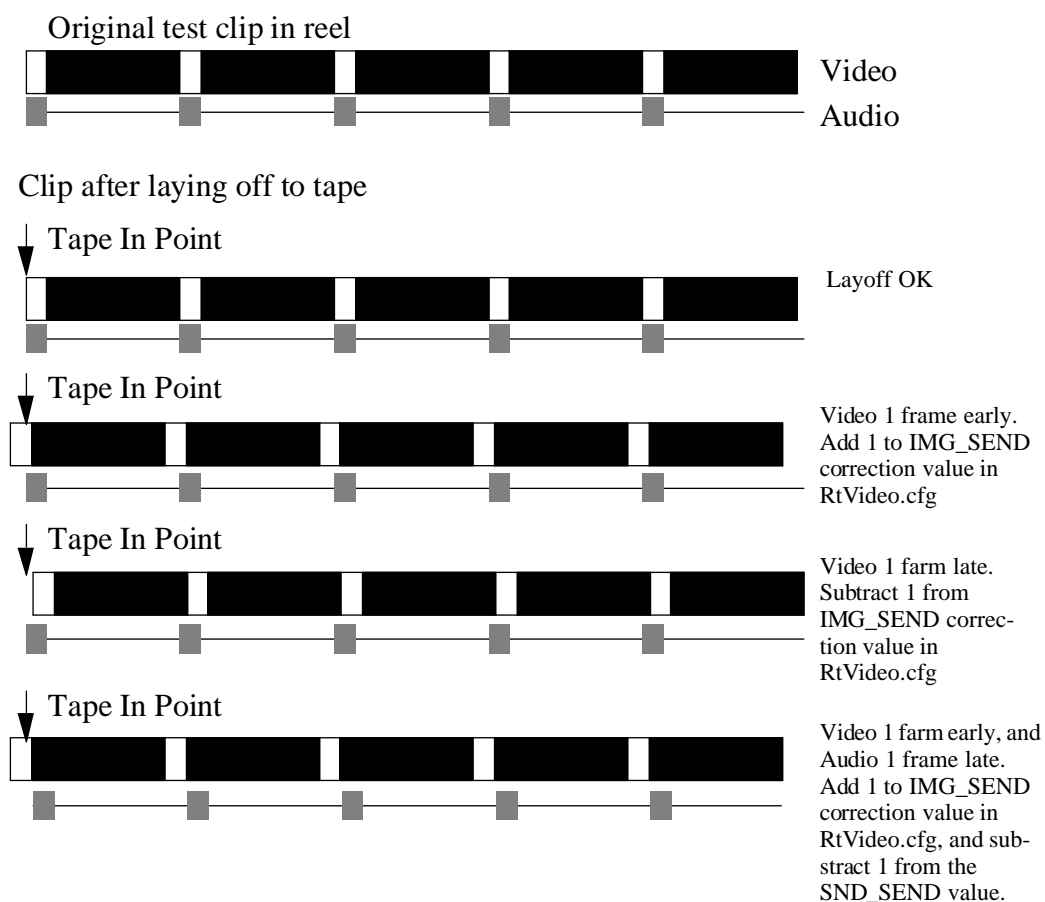
11.2.3 Calibrating Video/Audio Synchronization

A simple test procedure for Video/Audio synchronization is as follows:

- Create a clip consisting of one second of black frames, with the first two frames set to white. You could do this by using an Empty effect for the black frames and a RGB Filter without input for the white ones.
- Add Audio in a way that you have a test signal that takes exactly the time of the white frames, i.e. 2 frames in time. In PAL this would be 80 milliseconds. A good candidate is a square or sine wave signal, recorded over time. For the black frames put silence.
- Repeat that sequence so that it fills various seconds (at least 10 to 20), always being 2 frames white, then the rest of a second black, with sound placed exactly over the white frames.
- Render this sequence out to the raw disk.
- Use RtVideo to lay it off to video.

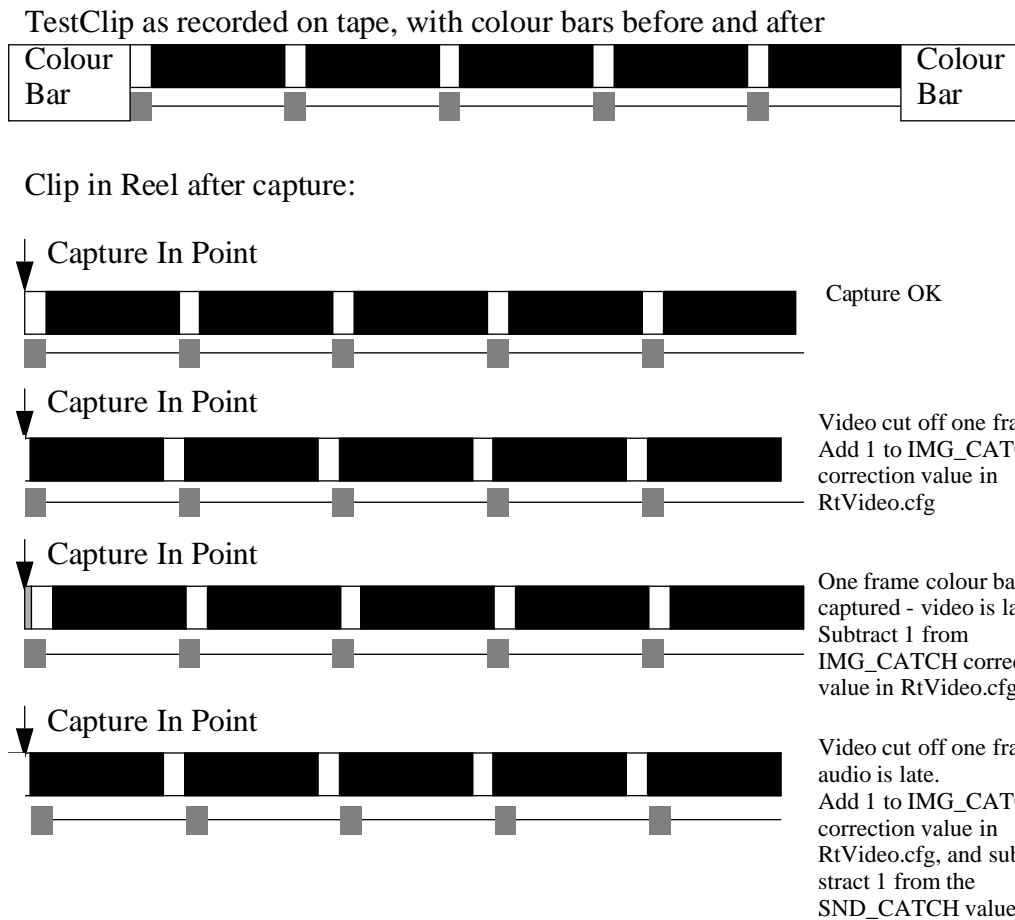
- Check if audio and video are in sync by playing back the video. If in doubt check with jog/shuttle.
- If there are any deviations, use the appropriate correction values in the RtVideo.cfg configuration file (IMG_SEND_CORRECTION, SND_SEND_CORRECTION) to get the tracks aligned. You can pull a track forward by subtracting from the default value. For example, if you change the IMG_SEND_CORRECTION from -1 to -2, the video track will start one frame earlier. See the Release Notes on Jaleo 2.5 for more information. The main reason for correction in the video track would be a delay in the AD/DA converter if you use one; do not use video track correction if the video starts at the right position on the tape, as specified in RtVideo. On the other hand, if the audio starts aligned properly to the record in point, do not adjust the audio, but the video track.

Examples:.



- Lay off again and cross check.
- Once you achieved proper sync, try to re-capture the sequence from the video tape.
- Check synchronization in the Reel.

- Use the `IMG_CATCH_CORRECTION` and `SND_CATCH_CORRECTION` to calibrate the capture as desired. Examples:



11.3 Audio

The sketches above have left out audio connection, for the sake of clarity. Audio must be connected straight from the VTR to/from the workstations audio in/outputs. The audio control panel can then be used to select the desired input, to control levels, etc.

In playback mode, you should switch off audio monitoring, to prevent feedback effects.

Audio Levels: Interface Amplifier

It is very important to note that Impact machines and Betacams have different input levels and impedances. To account for this, you may need an audio interface amplifier as an intermediate.

11.4 Summary

For proper and frame accurate video operation, the availability of a stable reference source is of uttermost importance. **Without syncing the VTR, the VLAN and the SGI Video to the same reference, no frame accurate operation is possible.** Also, you must make sure that the video control panel software settings for the video hardware you use in your SGI match the physical cabling.

Typically, you will either want to use a separate sync generator or the VTR as sync source (provided your VTR can be used that way). We do not recommend to use the SGI as sync source – always genlock the SGI video to an external reference.

12. Additional PlugIns for Jaleo

There is a large collection of third party PlugIns available, from 5D in London. The PlugIn software is actually on the Jaleo release media. To install it, however, you will need a license from 5D in London. Please contact 5D in London:

Steve Hayes; email sparks@five-d.com, Tel. + 44 1798 874425

Web site: www.five-d.com/5d

See the directory 5D-PlugIns in your Jaleo home directory for more information; there is a readme file with more information, on the PlugIns and international distributors.

13. Where to Find More Information

13.1 Online Manuals

All Jaleo Manuals are available online. The manuals are in Adobe Acrobat format. Normally, an Acrobat reader is installed by default on a 6.2 system. If you do not have an Acrobat reader installed, you can install it at any time from the SGI system CD, or you can download it from Adobes or SGIs website.

To access the manuals: In the toolchest, there is a new menu `Jaleo Docs`, which allows you to access all the books down to Jaleo 2.1. There is also a readme file to help you with Adobe Acrobat and the indexing of the manuals.

13.2 Installation, Raw Disk Setup, Setup Files and Setup Options

Setup files and options are described in the following documents:

- The original information can be found in:
Jaleo 2.1 Setup and Installation Guide
- Additional Information can be found in:
Jaleo 2.5 Release Notes
Jaleo 2.6 Release Notes

13.3 Raw Disk Management and Error Recovery (Jaleo for Impact)

See the Jaleo 2.5 Release Notes

13.4 License Management Tools

See the Jaleo 2.1 Documentation Addendum

See the Jaleo 2.5 Release Notes

13.5 Cabling and Setup

See the Jaleo 2.5 Release Notes

13.6 Other Documentation

Jaleo Operation is discussed in the following documents:

- Jaleo 2.1 Users Guide. This manual contains a very verbose introduction on Jaleo, the Loader, Flipbook and Gallery, as well as a reference of all menus and effects as present in Jaleo 2.1
- Jaleo 2.1 Addendum. Documents the license manager tools, as well as the RtVideo and other tools, like Project Manger and Dustbin.
- Rotopaint 2.1 Documentation. Describes the original Rotopaint for Jaleo 2.1. This manual is replaced by the Jaleo 2.6 RotoPaint and Morph Documentation.
- Jaleo 2.5 Documentation Update. Describes new features introduced in Jaleo 2.5, as well as new features in RotoPaint 2.5

- Jaleo 2.5 Release Notes. Describes new setup and configuration options for Jaleo 2.5, as well as the new raw disk management tools.
- Jaleo 2.6 Documentation Update. Describes new features of Jaleo 2.6
- Jaleo 2.6 RotoPaint and Morph. Describes the new RotoPaint PlugIn and the Morph PlugIn. Replaces RotoPaint 2.1 Documentation, and parts of the Jaleo 2.5 Update Documentation.