

3. Software Installation

3.1 Upgrades from Older Versions

Even if you already use Jaleo on your system, either any version 1.x or any of the beta releases of Jaleo 2, you will be required to do a full installation of the Jaleo 2 release version. Installing the release does not invalidate an older version, so you can continue to use the old one if so desired.

It is even possible to use Jaleo 1.x projects and work directory structures with Jaleo 2, although any data file (in opposition to the image files) written by Jaleo 2 will not be readable anymore for Jaleo 1.x.

3.1.1 Using Old Projects

In case the projects are from any 2.x version, you can use the projects as usual. A good method is to relocate either your work directory to the projects directory you want to use, or to create a link for each project that makes it accessible from your new project directory.

You can use the same approach with Jaleo 1.x projects, although this is only recommended if you do not need to use these projects with Jaleo 1.x anymore - Files written with Jaleo 2.x can not be read in Jaleo 1.x anymore.

3.1.2 No Automatic Project Creation

The Jaleo 2.1 installation does not create a project automatically. To do any useful work with Jaleo, you first must create a new project using the project manager. You may want to reconfigure your work directory before you do so. In case you already have projects from previous installations, it makes sense to reconfigure your work directory to point to these previous projects before you run Jaleo.

3.2 Jaleo Installation Concepts

Jaleo will be installed on your system inside of the home directory of a user. Jaleo can be used from other accounts as well, but these additional accounts need to be configured correspondingly. Jaleo provides a small program to do so that will be discussed in a separate manual section (see “Using Multiple Accounts” on page 35).

Talking about a Jaleo installation, it thus makes sense to distinguish the “base account”, i.e. the account Jaleo was installed to primarily, and any number of additional user accounts. These user accounts will use the same program files and libraries as the base account, but they may differ in configuration, work directories and peripheral setup.

We actually recommend to install the base account and to set it up to a suitable configuration for your environment. For actual production work, create independent user accounts for each Jaleo operator on your system. These users can be set up to have independent work directories and independent configuration settings, just as required for their respective projects. The base account should be used for demo and training purposes only.

The installation process involves a number of steps that can either be executed automatically by an

installation script or initiated manually:

- A user account has to be created, designated to function as the Jaleo base account
- Jaleo files need to be copied from the distribution media to the accounts home directory
- Some account setup files need to be modified
- Aside of that, for full desktop support Jaleo must install a set of icons and filetyping rules in a system directory. Filetyping rules are used by the SGI desktop to determine the proper action in response to drag&drop and double click actions with Jaleo data files or programs involved. Without installation of these files, Jaleo will be operating by itself, but it will not cooperate fully with the Magic desktop environment. If an error occurs during the installation of these files, please execute the steps described in “Desktop Integration” on page 29.
- The license server must be set up. See “License Management” on page 20 below and the Addendum to the Users Manual for more information.
- Jaleo operation must be configured according to your personal requirements
- Finally, additional user accounts must be configured to be able to use Jaleo if so desired

This installation chapter deals with all the steps except the last two; for these there are dedicated chapters.

3.3 Installation Strategies

Jaleo can be installed using one of two possible strategies:

- You can either extract an install script from the Jaleo tape and then install by executing this shell script, giving some answers to questions you are presented with.
- You can create a user account for the base Jaleo account using the SGI specific graphical system administration tools or the common UNIX commands. You can then load the distribution tape content into this directory and run a small setup script that comes with the installation.

Both methods are simple to complete; they differ a bit in flexibility. Whoever is familiar with the SGI graphical desktop tools and elementary UNIX commands will probably choose the second method, as it gives you a bit more flexibility and transparency with configuration of the Jaleo base account, as well as the graphical user interface of the desktop for some tasks. A user never exposed to this tools may prefer to use the install script, as this offers as little choices as possible. You will have to type a bit more, but we can tell you exactly what to type, so you actually need to know less. Read the description of both methods below and select the one that suits you most.

Note: If you are installing on a network using a name server like DNS or NIS (the service called Yellow Pages before), you may prefer to use the semi-manual installation method as this allows you to create your base account ready for nameserver access. On the other hand, you may wish to keep Jaleo accounts, especially the base account, private on the target machine.

3.4 Installation Tape Drives

Before you start installation, you must know how your tape drive can be accessed. If you are familiar with the UNIX tape identification and access mechanism, you may want to skip this section as you probably know how to find out about the tape driver that accesses your drive.

Normally, an SGI system with a single tape drive connected is at boot time set up automatically to use this single connected tape drive in the most simple manner. To find out if this is so, do the following steps. Remember: All the things you should type are set in a typewriter-style font, like this. Commands must be written exactly as specified here, without adding or leaving out spaces. Remember to press the <enter> key at the end of each command to execute it.

3.4.1 Single Local Tape Drives

- Log in as root.
- Open a shell window from the system toolchest.
- Type
`mt status`
- If this command returns a four-line description of your tape drive, including SCSI connection, drive type (the drive type may be specified as “unknown” but this can safely be ignored) and media status, you are all set: Your tape drive is configured as the default tape drive, to be accessed via the driver file `/dev/tape`.
- If you receive an error message, please proceed as described below
- Get a hardware inventory of your system by typing
`hinv`
From the list printed by `hinv`, find the entry describing the tape drive. If you do not see a tape drive in your list, your hardware is not configured properly.
- Find the controller number and the SCSI ID of the tape drive in the list entry. The driver name for the tape drive, as required for the installation below, is then:
`/dev/mt/tpsXdY`
where the X must be replaced by the controller number and the Y by the SCSI ID of the drive. For a drive with ID 3 on controller 0, the driver path would be
`/dev/mt/tps0d3`
The “mt”, by the way, stands for magnetic tape, the “tps” for SCSI tape streamer. The “/dev” directory is the general UNIX device driver directory.
- You can check if the tape drive is accessible by typing
`mt -t <drivername> status`
where <drivername> is the `/dev/mt/tps...` path found above.

3.4.2 Systems with Multiple Tape Drives

Proceed as described above, i.e. log in as root and open a shell window. You do not need to check for the default drive with `mt`. Just use the `hinv` command and try to find the streamer you want to use to read the distribution (probably a DAT streamer). If you are not sure which of multiple drives in the list printed by `hinv` is the DAT streamer, check the physical connections of the drive to find the controller. On an Indy, this is almost always 0, on an Indigo2 the external controller has number 1. The SCSI drive box itself typically has a set of DIP switches that show the drive SCSI id. If you know controller number and SCSI id of the DAT drive, the driver path is constructed as described above.

3.4.3 Remote Tape Drives

If you are not using a local tape drive, but a tape drive connected to another machine on a network, you should log in to the remote machine as described above, and then follow the steps described there to find out the local tape driver on this machine. Then you can construct the full remote path name as follows:

```
username@hostname:/dev/mt/tps...
```

That is, a remote tape driver name is made up from the local tape driver name as described above, with a presceding hostname. This is the network name of the machine the tape is connected to. The user name must be a valid user on this remote machine, i.e. a user that has permissions to use the tape. Normally, user guest will do. You can, as always, test the tape drive by typing for example

```
mt -t guest@salsa:/dev/mt/tps1d3 status
```

This example assumes that the remote host is called *salsa*, and that the tape is SCSI id 3 on controller 1 of this machine. The username is *guest*.

3.5 License Management

For a general introduction into the license management policy and software built into Jaleo 2.1, please see the Addendum to the Users Manual. Here we will only cover the topics immediately important for installation.

Since version 2.1, Jaleo relies on a license server for license management. A licensing model built around a license server permits applications to be licensed not to a single machine, but to any machine that is able to contact the license server. You thus are able to make use of the licenses you acquired in a more flexible way than with traditional node-locked license schemes.

As Jaleo 2.1 includes such a network based license management system, there are some additional concerns for installation. For a simple single-user-on-one-machine configuration, the license server will be run on the same machine and the process is largely transparent to the installation; the license server and its associated management software will simply be installed by the installation process without any further interaction.

In a network configuration though, where you want to allow a license to “float” in the network, i.e. to be usable from any machine or at least a collection of machines, you must designate one machine as a license server. Typically, the license server should be a stable computer that is very rarely turned off or rebooted, and that is connected via a reliable network. File servers for example make good candidates for this purpose. A workstation that runs Jaleo can run a license server for a network at the same time. It is, however, entirely your choice which machine you assign as a license server. It only is important that you do make a decision carefully, as it is not that easy later on to transfer licenses from one license server to another. If you have doubts, discuss your configuration with your dealer or distributor and ask for a recommendation.

For a network configuration, make sure not to install the license software on every computer you want to run Jaleo on, but on the machine that is intended to be the license server. This may of course be one of the workstations that also runs Jaleo, but it need not be. The installation guides below will tell you which steps you have to take if you do not want to install licensing software together with Jaleo. A separate section below (see “Separate License Server Installation” on page 25) will tell you how to install the license software on the computer designated to be license

server.

3.6 Using Script Installation

To install Jaleo using the installation script, perform the following steps. All the things you should type are set in a typewriter-style font, like `this`. Commands must be written exactly as specified here, without adding or leaving out spaces. Remember to press the `<enter>` key at the end of each command to execute it.

- Log in as root.
- Open a shell window from the system toolchest.
- Change to the temporary directory `/usr/tmp` by typing:
`cd /usr/tmp`
- Use the tape archiver command to extract the install script from the distribution media. Type:
`tar xvf <tape driver name> jaleo_install`
Replace the `<tape driver name>` with the path to the driver of your tape drive. For a default local drive, you might for example type:
`tar xvf /dev/tape jaleo_install`
or, for a remote tape drive
`tar xvf guest@salsa:/dev/mt/tps0d5`
See the section above for information on how to find out tape driver names.
Note for advanced users: For local default tape drives accessible via `/dev/tape`, you can just type:
`tar xv jaleo_install`, as tar assumes `/dev/tape` as its default driver.
As a result of the tar command, a line with a content similar to the following one will appear (the actual numbers may be different):
`x jaleo_install, 24985 bytes, 49 blocks`
After this line appeared on the screen, you can terminate the tar command by pressing `<ctrl>-c`, i.e. by pressing the `c` key while holding the `<ctrl>` key. You can also wait; the tar command will terminate itself after the whole tape content has been read (that might take some minutes).
- Run the installation shell script by typing
`./jaleo_install <tape driver name>`
where you again should replace `<tape driver name>` with the tape driver name used above. If you do not specify a tape drive to use, the script will ask you for a driver.

The installation shell script will ask you a number of questions:

1. If you have not specified a tape drive, you will be asked for a tape drive to use for the installation.
2. As Jaleo will be installed into a user account, as described above (see “Jaleo Installation Concepts” on page 17), you must give an account name. The installation script expects a name that is not yet used as a user name; in case you give a name already existing, it will ask you for another one. The default name is `jaleo2`, and this is our recommendation.

3. You will be presented with a list of available disk resources on your system. The installation program does only show file systems that are mounted locally on your machine; it does not permit installation on a network drive, as this does not make a lot of sense for running Jaleo. You can select any directory path for your home directory if the drive the path is on has at least the required minimum of free disk space (this number will be printed out by the installation program). If you specify a drive with insufficient space, you will have to select again. Note that by default Jaleo's work directory is also placed in the home directory, and that you for this reason probably want to select the path with the most disk space available. Depending on your configuration, you may later wish to reconfigure this location.

The default location for user home directories is `/usr/people`, but in case you have an additional disk drive with a more free space on its filing systems, you may wish to select another directory. It is *not* recommended to place a user directly in the `/usr` directory, in the root directory ("`/`") or in any directory with the name `tmp` or etc. In case you have a second disk, typical names would be `/disk2` or `/usr/local`. Ask your dealer or distributor if in doubt, or simply use the default (`/usr/people`).

The installation program will now load the Jaleo files into this home directory. A description of the Jaleo file tree is included below (see "File Locations and Explanations" on page 31).

4. You will be asked if you wish to install licensing software on your workstation. If you do have a single machine configuration, you **MUST** install the license software. If you have multiple machines and you do not want to use the current machine as license server, or if you have a separate server you would like to use as license server instead, do not install the licensing software. Instead, after finishing the installation and configuration process on the current machine proceed to "Separate License Server Installation" on page 25 for license server setup. Principally, you can install the license software on one of the workstations you are installing - a machine that runs Jaleo can at the same time run the license server. Just do not install the license software on two Jaleo workstations at the same time. As the licenses you will receive are dependent on the license server, you can not easily switch license servers after you received a permanent license.

The install program now configures the login files of the newly created user and properly sets up the Jaleo desktop integration. If you selected license server installation, licensing files will also be installed.

You will now almost certainly want to do some configuration of the system and finally add a license so the product can run. Please proceed with "Post-Installation Configuration" on page 24 and "Licensing Jaleo" on page 26 below to complete the installation.

Also, do not forget to create a project using the project manager before you start Jaleo

3.7 Using Semi-Manual Installation

To install Jaleo without the installation script, you first have to create a user account destined to be the Jaleo base account. In case you had a previous Jaleo installation, **DO NOT USE** an account previously used for Jaleo, no matter if the account is from version 1.x or a 2.x beta version. Please create a new account, what is very quick and easy to do using the SGI User Manager, available from the System menu of the toolchest.

- Log in as Root
- Open the User Manager from the Toolchest System menu
- Choose Add to create a new user
- As the name for the new user, select whatever you like as a name; we propose jaleo2
- Before you fill out the new user form, you may wish to open a shell window from the toolchest menu to find out about the disk space available on disks connected to your system. As the home directory by default will contain the Jaleo WORK directory as well, you should use a disk location with as much space as possible.
You can use the command `df -k` to get a listing of the disk resources. For choosing a directory or disk, make sure the drive is not a network drive. If there is enough space, use the default location `/usr/people` as your home directory.
- Once you have chosen a location for the users home directory, enter it in the new user form in the appropriate place - if you want to use the default location (i.e. if there is enough space) you do not need to change nothing.
- If you wish, you can change the default shell for your base account from `csch` to `tcsh` - it gives you some very practical and useful extensions when using a shell, like better command completion, cursor key command line editing and the like. See the man page on `tcsh` for more information.
- Once you have created the user, you need a shell window to read in the distribution tape content. If you are experienced with the graphical interface to tape drives and archives, you can also use the graphical interface. Note that the Jaleo files must be extracted to the user directory you just created. In a shell you would have to type as follows (note that we assume you have called your base account `jaleo2`; you must replace `jaleo2` with the name you chose wherever it appears in the following lines):
- Change to the home directory of the new user. Provided you have called the account `jaleo2`, type:
`cd ~jaleo2`
Note that the `~` character is no typo - it tells the shell to expand the name to the full home directory of the user of the name that follows. If you used `/usr/people` as the home directory for `jaleo2` for example, `~jaleo2` is a handy short-cut for `/usr/people/jaleo2`, and we do not even have to know where you placed the home directory to use it.
- Load the Jaleo files. What exactly you load depends on if you intend to run the license server on the same machine (always if you only have one machine), or if you want to place the license server on a separate machine. Remember that every machine, including the Jaleo workstations, can be license server; just make sure not to install the license software on more than one machine. For license server installation on a machine that is not installed with a complete Jaleo, see “Separate License Server Installation” on page 25.
It is *very* important to load the Jaleo files to the home directory of the target account. The setup scripts will not work properly if you fail to do so. Make sure you are in the correct location by typing:
`pwd`

For a single machine configuration, or if you want to use the machine your installing as license server, type:

```
tar xvf <tape drive name> INSTALL LICENSE JALEO-ENV
```

replacing the <tape driver name> with the path for your DAT drive, as explained above (see “Installation Tape Drives” on page 18).

For a multiple machine configuration where the currently installed machine is NOT to be used as license server, type:

```
tar xvf <tape drive name> INSTALL JALEO-ENV
```

replacing the <tape driver name> with the path for your DAT drive, as explained above (see “Installation Tape Drives” on page 18).

As usual, in case your tape is local and default, you can use

```
tar xv INSTALL LICENSE JALEO-ENV
```

or

```
tar xv INSTALL JALEO-ENV
```

instead.

- Run the program `jaleo_setup` located in the `INSTALL` folder, specifying the account name of the account you just created for Jaleo. If the account name for example was `jaleo2`, type:
`INSTALL/setup_jaleo jaleo2`

It is *very* important to specify the name of the account you have created for Jaleo correctly on the command line; if you fail to do so, the configuration will not work. You also must run the program from the home directory of the new account, just as specified above.

The setup program will configure the base accounts login files and install the necessary files for SGI desktop integration.

- If you installed the licensing software, run the licensing setup script. Do only perform this step if you wish to make the current machine a license server. Type:
`LICENSE/setup_license jaleo2`

Here, the same rules as above apply: On the command line the name of the account you are using as Jaleo base account must appear. You must run the install script from the account home directory.

If you do forget the login name on the command line above, license server files will be installed as if you were doing a separate server installation (see below). Although this does work, it is probably not the most convenient solution when installing Jaleo.

- If you wish, you can remove two directories created during installation; these will not be required any more. Type:
`rm -r LICENSE INSTALL`

You will now almost certainly want to do some configuration of the system and finally add a license so the product can run. Please proceed with “Post-Installation Configuration” on page 24 and “Licensing Jaleo” on page 26 below to complete the installation.

Also, do not forget to create a project using the project manager before you start Jaleo.

3.8 Post-Installation Configuration

The basic installation is now done and you can configure Jaleo to your particular needs.

Typical configuration chores you must or may wish perform are:

- Set up a disk drive as raw partition (see “Configuring Jaleo for Raw Device Operation” on page 53) and configure the Jaleo Raw Device configuration file appropriately (see “CACHEDEVICE” on page 47 and “Raw.dev” on page 65). In case you do not have a raw partition available, set up the DiskCache device description file (see “CACHEDEVICE” on page 47 and “DiskCache.dev” on page 64).
- Set up the main Jaleo configuration file for your system (configuration, i.e. PAL or NTSC, resolutions, caching (raw or file system based), etc. see “Configuring Jaleo Operation using the .jaleorc File” on page 45 for your configuration options.
- Set up the peripheral device files to match your available periphery.
- Relocate the work directory if so desired (see “Configuring Jaleo Work Directories” on page 42)
- *Before* you start Jaleo, create a new project with the project manager, or relocate the work directory to point to any available projects. Without at least an empty project you can not use Jaleo.

Set up additional accounts to use Jaleo (see “Using Multiple Accounts” on page 35). As said above, we strongly recommend setting up a separate user account for each operator of Jaleo on the given system and to use the base account for demonstration and training purposes only. Alone the possibility to have independent work directories and configurations for each operator is of enough value to justify the very little effort of user setup.

3.9 Separate License Server Installation

To install the licensing software on a separate server that does not have the full Jaleo software installed, follow these steps. You do not need to do these steps if you have installed Jaleo with licensing software on the given machine:

- Log in on the designated server as root
- Open a shell window
- Select a directory where you want to install the license software. A good place would be `/usr/local/jaleolic`
The licensing software is not big; it is less than a megabyte.
- Create the selected directory if it does not yet exist by typing
`mkdir -p /usr/local/jaleolic`
Of course, you have to substitute the path `/usr/local/jaleolic` by whatever path you have chosen. This holds true for all the following lines.
- Change to the new directory. Type:
`cd /usr/local/jaleolic`
- Load the licensing software. Type:
`tar xvf <tape driver name> LICENSE`
as usual replacing `<tape driver name>` with the path to access your tape drive.

- Run the license software setup script. Type:
`LICENSE/setup_license`
- If you wish to do so, add the path `/usr/local/jaleolic/bin` (substituting the `/usr/local/jaleolic` with whatever location you chose) to the search path of any user that you will use to maintain licenses on the given machine. You can do so by adding a line like
`set path = ($path /usr/local/jaleolic/bin)`
to the `.login` file in the respective users home directory, provided this user is using a C shell (`csh`), default for all users of SGI systems.
- If the user account you designate to maintain licenses is not `root`, then you have to change the owner of the license directory to guarantee access for this user. Type:
`chown <username>.user /usr/lib/elm/jaleo`
If your designated user is for example called `salsa`, you would type:
`chown salsa.user /usr/lib/elm/jaleo`
- You can test if the license server is running by typing
`/usr/local/jaleolic/utills/jlicadmin -l`
The license server should, after a short waiting period, respond with an appropriate message. If it does not, please see the section on license troubleshooting in the Addendum to the Users Manual.

3.10 Licensing Jaleo

To enter a license to Jaleo please use the command `addLicense`. This little utility must be run on the machine where you have installed the license software, *not* on the machine where you want to run Jaleo. You can run `addLicense` either logged in into the Jaleo base account, or logged in as `root`.

Operation of license entries depends on if you supplied information on your license server to your dealer or distributor when you ordered Jaleo. In this case, you should have received a separate paper with the license key for your Jaleo version.

3.10.1 Checking Machine Date

Before you enter a license key and attempt to run Jaleo, please make sure that the date is set properly on all machines on the network that in any way take part in Jaleo operation. This of course does apply in particular to the License Server and the machine(s) that you intend to run Jaleo on. An incorrect date will very likely prevent Jaleo to run correctly.

You can check the date by typing:

```
date
```

in any shell window. To change the date, in case the current date as printed by `date` is incorrect, you must be `root`. Type for example

```
date 072212551995
```

to set the date to July 22, 12:55, of the year 1995. Date expects the date in the format:

```
mmddHHMMyyyy
```

that is, two digits for the month, two for the day, two for the hour, two for the minute and four for the year.

Note: It is a very common mistake to have a proper day and month set, but unfortunately of the wrong year. When you check the date, make sure the year is correct.

On a network, time may, depending on your configuration, automatically be synchronized between machines if the time daemon is activated. See the UNIX manual page on date for more information.

3.10.2 Running (addLicense) on a Machine with Jaleo Installed

If a full Jaleo is installed on the machine you are using as license server, log in into your Jaleo base account and open a shell window.

Type:

```
addLicense
```

3.10.3 Running (addLicense) on a Separate License Server

If no Jaleo is installed on your license server, the way you run `addLicense` depends on if you have added the path to the licensing software to the search path of any account. If so, just log into this account, open a shell window and type:

```
addLicense
```

If you have not set up a search path, you must change to the directory where you installed the license software to, for example:

```
cd /usr/local/jaleolic
```

Then type:

```
bin/addLicense
```

3.10.4 Entering Licenses

The license program will first present you a question on how many license servers you want to use. Note that this is *not* the number of licenses you can run, but the number of servers that negotiate Jaleo licensing with your applications. In small networks, normally more than one server does not make sense. You will have to use the default answer here, i.e. 1. Redundant server licenses can be issued on request, but these are not covered here.

Then, the license server will print a server identification code. In case you have not received a password sheet with your system, based on a sysid and IP address you gave to your dealer or distributor before, you will have to give the number presented to your dealer or distributor so that he can apply for a key. If your dealer or distributor can not supply a key immediately, you can safely quit the `addLicense` program in the meantime by entering `<ctrl>-c`. Once you receive your key, you can rerun `addLicense` and enter the key when the system prompts you for it.

If you run `addLicense` without being logged as root, the newly entered license will not be visible immediately to `jlicadmin -l`. Jaleo, however, will be able to request a license immediately, provided the installation was successfully (check the messages printed out by

addLicense).

After Jaleo requested a license, or after a short delay, the license will also be visible to `jlicadmin -l`.

3.10.5 Relocating Jaleo or License Files

A note for experienced UNIX users: If you ever have to relocate a Jaleo account, or the license server tools in case of a separate server installation, you should edit the path entry in the `addLicense` script to reflect the new position because otherwise running this program will fail because it may not find the administration tools any more.

3.11 Licensing Configuration Options to Resolve Conflicts

There are basically two conflicts situations that can arise in networks with license servers:

- There can be two identical license servers maintaining different sets of licenses. If you for example install the Jaleo license server on two different machines, this would be the case - machines would not know for sure which license server is the right one to talk to in a particular situation. Having more than one Jaleo license server in the network is not recommended.
- There can be a conflict between the Jaleo license server and other applications that use the same communication port number. Communication ports are numbered and one port should always be used only by one service. Port numbers used by applications are unfortunately not necessarily unique so that principally conflicts are possible, although not too likely.

Resolving License Manager Access Conflicts

In case you must for some reason have two license servers that manage different licenses in your network, you should inform your Jaleo applications which server they should use. To do so, you can specify the environment variable `JALEO_ELMHOST` in your login files, giving it the name of the host the system should contact. The environment variable must be placed in the shell configuration files in the home directory of every Jaleo account. For C shell users (the default), place the following definition in the `.cshrc` file of your home directory:

```
SETENV JALEO_ELMHOST <hostname>
```

of course replacing the `<hostname>` field with the name of the license server host machines should contact when requesting a license.

Resolving Port Conflicts

To resolve port conflicts, you first must find an unused port number. Port numbers usable for applications will be in the range between 1025 and 65535. Unfortunately, there is no central register to find used port numbers. A good place to start is to look at the file `/etc/services` that lists a good number of common system services. If you can not find a number here, it is at least not used officially on your machine, although conflicts still might persist.

To configure the Jaleo license management system to use another port number, add an entry to the `/etc/services` file on *both* the license server and all clients that wish to access the license server. The entry must look like this:

```
jlicelmd          nnnnn/udp
```

where `nnnnn` is the port number you wish to use. For port number 1567 for example, an entry

would look like this:

```
jlicelmd          1567/udp
```

The default number currently used by the Jaleo licensing system is 1567. Please note that this default number has been assigned to us officially by the IANA; if your other applications do not use unregistered numbers, you should not experience problems.

3.11.1 More Information on Licensing

There are more tools to administer licenses on your system. See the Addendum to the user manual for more information. Specifically, the `jlicadmin` and `jlicusage` programs can present you with a lot of useful informations about the state of your licensing system.

3.12 Jaleo System File Descriptions

For those among the operators who wish or require more detailed insight into the installation process, here some additional insight to required modifications to account setup for Jaleo to run.

3.12.1 Program Search Path

To access Jaleo program files quickly and easily, without knowing their exact location, each Jaleo-prepared account will have a line added to the login files for the C-Shell, the Bourne-Shell and the Korn-Shell (`.cshrc`, `.profile`) that adds the following directories to the users file search path:

```
$HOME/JALEO-ENV/bin
```

```
$HOME/JALEO-ENV/utills
```

```
$HOME/JALEO-ENV/extern/license
```

```
$HOME/JALEO-ENV/extern/license/daemon
```

3.12.2 Application Settings

To run the applications, it is of uttermost importance that a search path for the application configuration files of XWindows/Motif is specified. Jaleo thus adds the following environment variable to the various shell login files (`.cshrc`, `.profile`)

```
XUSERFILESEARCHPATH
```

This variable points to the directory where Jaleo has stored its application default values and must not be changed, or Jaleo will not run properly. Its value should be

```
$HOME/JALEO-ENV/etc/app-defaults/%N
```

3.12.3 Window Icons

To give proper icons to iconified application windows, icon files are added to the `.icon` folder in the `$HOME` directory of each Jaleo prepared account.

3.12.4 Desktop Integration

The desktop integration files are copied to `/usr/lib/filetype/install` (the file with

behaviour rules) and `/usr/lib/filetype/install/iconlib` (the icon files). In case you have problems with Jaleo applications and files on the SGI desktop do only show standard SGI icons instead of the Jaleo icons, you can log in as root, open a shell, go to the directory `/usr/lib/filetype` (type `cd /usr/lib/filetype`) and type the command

```
make
```

This will rebuild the desktop files. In case this produces errors and the icons still do not appear (there may also be errors of different sources), please try the following more thorough method:

```
cd /usr/lib/filetype/install
rm *.otr *.ctr
make
cd ..
make
```

The two `make` commands may take a while. Note that it may not help if you only open a shell and change to root by using `su`. For these operations, it is highly recommended to properly log in as root.

3.12.5 License Server Files

On the machine that is your designated license server, boot files are installed that automatically will start up the license server when you boot the machine. It will also create a directory to maintain licenses, and it will write a log file to the `/usr/adm` directory.

Checking for License Server

Type

```
ps -e | fgrep jaleolic
```

on the machine running the license server to find out if a daemon is running. This can be used if `jlicadmin -l` can not access the server from a remote machine, for example because the network is down. If the result of this command is an empty line, i.e. a prompt without further comments, there is no server running. Try to run it manually as described below.

Bootfiles

The bootfiles are:

- `/etc/init.d/jaleolic`

This is a small shell script to start the Jaleo license server automatically at boot time. You can start the license server manually by typing

```
/etc/init.d/jaleolic start
```

and you can stop it by

```
/etc/init.d/jaleolic stop
```

Depending on your systems setup, you may have to be super user to run the script manually. Use the `su` command to become super user temporarily.

- `/etc/rc2.d/S98jaleolic` and `/etc/rc0.d/K98jaleolic`
These are two links that point to the `jaleolic` script in `/etc/init.d`. They are used when UNIX changes its `init` state, for example when you manually switch the machine to and from single user mode.
- `/etc/config/jaleolic`
This file is used to permit to switch on and off the automatic boot of the Jaleo license daemon using the SGI `chkconfig` command. Normally, this file contains the word `on` and is only manipulated using `chkconfig`. You can deactivate autoboot by typing
`chkconfig jaleolic off`
or you can reactivate it by typing
`chkconfig jaleolic on`
You must be super user to use `chkconfig`.

License Files

License files are stored in the directory

`/usr/lib/elm/jaleo`

You may look at the license files, as they are text files, but any change you make to it will invalidate the license. Again, you must *never ever* make changes to a license file.

Log file

The license daemon log file is stored in the directory `/usr/adm` and has the name `elm.log`. You can watch the file with a text editor, or you can use the program `jlicreport` to extract informations from the file.

See the Addendum to the Users Manual for more information.

Removal of License Server Files

In case you wish to de-install the license server files, you may wish to use the script `remove_license` to delete all the above mentioned license server files.

3.13 File Locations and Explanations

The following list describes the most important files in a Jaleo installation tree. In case you should find files not listed here, it is probably safest not to touch these files. In particular, do not modify files explicitly mentioned to be configuration files in this list.

3.13.1 Account Configuration Files

These files are placed in their respective positions by the installation scripts. The originals (or templates, in case they must be modified) are located in the `INSTALL` folder that is loaded onto disk for installation and that is deleted later.

- `.Sgiresources` - SGI specific X resources
- `.Xdefaults` - general X application defaults, here used for window manager adaptation
- `.auxchestrc` - Jaleo Toolchest configuration
- `.cshrc` - C shell login configuration

- `.login` - C shell login configuration
- `.profile` - Korn/Bourne shell login configuration

Configuration Directories

- `.desktop-hostname` - directory with various settings for the SGI desktop. Do not apply changes manually.
- `.icons` - Jaleo icons for iconified applications

3.13.2 Jaleo Work Directory

This directory contains Jaleo projects. It is initially empty, until you create projects or load the tutorial data.

- `WORK`

3.13.3 JALEO-ENV Directory

This directory contains the Jaleo program file hierarchy

- `.jaleorc` - the main jaleo configuration file
- `JALEO_PRJ` - the project list file. Normally, this file does not need to be touched manually
- `JALEO_WORK` - this file contains the path to the current Jaleo work directory. It can be edited manually if the work directory is to be relocated.
- `bin` - the Jaleo executables. There is normally no need to touch the content of this directory.
- `etc` - configuration files. As listed below, there are some files that can be configured to setup Jaleo.
- `extern` - external binaries, for example for the license management software. Normally, this directory will not need to be touched.
- `lib` - future location for PlugIn effects; currently empty. Normally, this directory will not need to be touched.
- `tmp` - a temporary directory for private Jaleo use. Normally, this directory will not need to be touched.
- `utils` - some utility programs. Normally, this directory will not need to be touched.

3.13.4 JALEO-ENV(/bin)

The various Jaleo executables. Note that not all of these programs ever are started manually. For example, the `cosmos_start` and `cosmos_send` applications are only run by the `rtvideo` application, never by hand. Usually, only programs documented in the Users Manual or the Addendum to the Users Manual should be started via the desktop or via a shell. These Programs are marked with a asterics (*) in the list below.

- `Flipbook*`
- `Gallery*`

- IO*
- Projects*
- cosmos_catch
- cosmos_send
- dustbin*
- io
- jaleo*
- loader*
- rtvideo*

3.13.5 JALEO-ENV(/etc)

- `app-defaults` - Jaleo application defaults for X windows. If you modify or delete any of the files in this directory, Jaleo operation will very likely fail.
- `config` - PRIVATE configuration. Do not manipulate any of the files in this directory.
- `curves` - PRIVATE effect specifications. Do not manipulate any of the files in this directory.
- `devices` - User configuration files. Files with the extension `.dev` and `.cfg` in this directory are configuration files that are used to customize Jaleo settings. See later sections of this guide for more information.
- `fonts` - Fonts used for Jaleo. Do not manipulate any of the files in this directory.
- `pixmap` - Some low resolution pixmaps for Jaleo buttons etc. Do not manipulate any of the files in this directory.

3.13.6 JALEO-ENV (/etc/devices)

Files in this directory are used to customize Jaleos interface to various peripherals. The `.dev` and `.cfg` files in this section can be adapted by the user, as described in later sections of this manual

- `Abekas.dev`
- `Accom.dev`
- `Clip.dev`
- `Disk.dev`
- `Disk2.dev`
- `DiskCache.dev`
- `Hp.dev`
- `IndyCam.dev`
- `Movie.dev`
- `Movie2.dev`

- Null.dev
- Quick.dev
- Quick.info
- Raw.dev
- Render.dev
- RtVideo.cfg
- ScrToVideo.cfg
- Sdl.dev
- Vlan.cfg
- VtrAccom.dev

3.13.7 JALEO-ENV(/extern)

- `libs` - some system libraries that are installed if not present in the target system
- `license` - license management tools as described in the Addendum to the Users Manual

3.13.8 JALEO-ENV(/utils)

Some small utilities for internal use by Jaleo or for the user. Only programs marked with an asterics (*) should ever be executed directly by the user.

- `compressRaw*` - raw device compression utility
- `edlconvert`
- `input_process` - user configurable process to be called by the IO subsystem after reading an image
- `lsRaw*` - raw device lister
- `lsRaw_script`
- `makeEnv*` - configuration program for additional Jaleo accounts
- `output_process` - user configurable process to be called by the IO subsystem after writing one image
- `rmRaw*` - raw device deletion program

4. Using Multiple Accounts

Jaleo offers the possibility to be run from various accounts. Each user can maintain a private software setup, but all users share the same software.

4.1 Description

A little utility program called `makeEnv` will perform the following operations (note that `makeEnv` is actually a shell script that can be changed to adapt to your particular needs, even though this should only be tackled by experienced UNIX users):

- It will create a directory `JALEO-ENV` in the home directory of the new account.
- It will copy all user configurable Jaleo files to this directory, enabling you to have your own private setup in this account. Note that the setup from the original user Jaleo will be copied, so that any customization you made there will be copied accordingly. Files that you may wish to customize are the following:
 - `JALEO_ENV/.jaleorc`
 - `JALEO_ENV/JALEO_WORK` (The Jaleo work directory. This will need to be configured if you wish to have a private work directory for the new account)
 - `JALEO_ENV/etc/devices/*.dev` (all files with the extension `.dev`)
 - `JALEO_ENV/etc/devices/*.cfg` (all files with the extension `.cfg`)
 - `JALEO_ENV/utils/*_process` (the files `input_process` and `output_process`)

You should never modify any other file in the `JALEO-ENV` directory, unless this is described in any of the Jaleo manuals.

- It will create links for all the non-customizable files (executables and so on). A link is a “pseudo copy” or an alias for a file, that is a new name that refers to the original file. An alias does practically not take disk space. There is one draw back, though: Should you ever want to move the original Jaleo installation to a different point on disk, the links will become invalid. You should then rerun the `makeEnv` program with the option `-u` to update only links (see below).
- It will add two configuration lines to the `.Xdefaults` file of the new users home directory. These are pure cosmetic changes that can be removed if so desired.
- Normally, Jaleo adds a Jaleo menu with some entries to the system toolchest to launch Jaleo applications. This toolchest configurations is accomplished via a file `.auxchestrc` in the users home directory. `makeEnv`, however, will not modify this file if it is already present in the new users account. Instead, it will then create a file called `.auxchestrc.jaleo`. You can then copy the content of this file to the already existing `.auxchestrc` file if so desired.
- The login shell scripts that configure each shell for the user are extended with appropriate entries, so that Jaleo programs with all the necessary utility files can be found and executed from the shell properly.

4.2 Preparing a New Account

To prepare Jaleo to run from another account, perform the following steps:

- If you have not done so before, create a new account. To do so, log in as root and use the SGI User Manager from the system toolchest. As a small configuration tip, use the `tcsh` shell instead of the standard `csch` - it is totally compatible, but offers comfortable commandline editing using the cursor keys and more. See the man page on `tcsh` for more details. The default shell is set using an option menu located in the lower right area of the User Manager window.
- Instead of creating a new account, you can also use any existing one. Jaleo will not modify your account settings, with one little exception:
 - Two lines are added to the `.Xdefaults` file of the new users home directory. These lines are not essential for Jaleo operation. They only modify the look of the Motif window decorations so that windows take up a little less space than normal. If you do not want this change, you can later (after completing the steps outlined here) comment out, change or delete the entries:
`*frameBorderWidth`
`*resizeBorderWidth`
in the file `.Xdefaults` of the new home directory. To comment out a line in an `.Xdefaults` file, place a “!” before the entry in the line.
 - There will be entries added to your shell configuration files `.cshrc`, `.login` and `.profile`. These entries are *mandatory* for Jaleo operation. If your account does not yet have any shell configuration files, they will be created.
- When preparing a new account for use with Jaleo, Jaleo will create a new directory `JALEO-ENV` in the new accounts home directory. This new directory will not contain large data or programs, but if this is not acceptable, you should not proceed.
- Log out and re-log in into the newly created account or the existing account you want to use.
- Run the `makeEnv` program that is located in the original Jaleo account. The precise command you have to type depends on your base installation. In general, you have to specify where your Jaleo 2 base installation is located. Open a shell window and type:

```
~<jaleoBase>/JALEO-ENV/bin/makeEnv -s ~<jaleoBase>
```

replacing the `<jaleoBase>` with the user name of your Jaleo base account, and press return. Note the `~` sign is no error, but it tells the shell to replace the sign and the following name as the home directory of the given user. This is a convenient short-cut for a users home directory. This does only work for `csch` and `tcsh` shells, but these are default anyway for a user. If you are for example using a default installation with the user named as `jaleo2`, this would be:

```
~jaleo2/JALEO-ENV/bin/makeEnv -s ~jaleo2
```

If you have installed Jaleo in a base account named `jaleo2` and that is located in `/usr/people` (i.e. that has the default home directory `/usr/people/jaleo2`), you can run `makeEnv` without the `-s` option, but this does only work in this case:

```
~jaleo2/JALEO-ENV/bin/makeEnv
```

- You should prepare a work directory for the account, unless you want to share the account of the original `jaleo2` user (a practise not recommended). See “Configuring Jaleo Work Directories” on page 42 for more information.
- After logging out, and re-logging in as the new user, the account is ready to use.

4.3 Options to makeEnv

`makeEnv` accepts a number of options to change its default behaviour. The default settings are as follows:

- Source Directory: `/usr/people/jaleo2`
- Target Directory: `$HOME` (home directory of the current user)
- Mode: Copy and Link

The source directory is the directory where `makeEnv` tries to find the original Jaleo files, as they were placed during installation. If it does not find a directory `JALEO-ENV` in the source direction, operation is aborted.

The target directory is the directory where the new account configuration is placed. Normally, to make sense this must be a home directory of an account.

Source and target directories may not be the same, for obvious reasons.

The operation mode determines if the `makeEnv` script expects to find a “fresh” Jaleo account or if it updates an existing one. In case of an update, only the links to executables are renewed, all configuration files, be them for the account or for Jaleo, are left untouched. This option is usable to rebuild a Jaleo account after you have moved the base account to a new place in the file system.

The options in detail are:

- `-s <sourcePath>`. Defines the location of the source directory (default: `/usr/people/jaleo2`)
- `-t <targetPath>`. Defines where to store the copied environment. Must not be the same as the source path (default: `$HOME`)
- `-u`: Switches to update mode. Skips all copies of configuration files and only relinks the non-configurable files. Can only be run if the target directory points to an existing Jaleo installation.
- `-h`: Print a help message.

