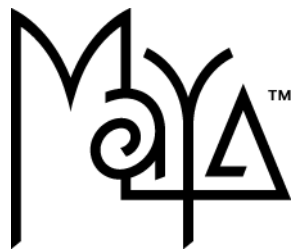


Rendering utilities

Version 6



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1 Small Utilities

About Rendering Utilities

blur2d

The blur2d utility applies a 2D motion blur on the input image based on saved motion vector information. In Maya, motion vectors are saved with the image during rendering when Keep Motion Vectors is turned on in the Motion Blur section of the Render Global Settings window. This utility is not available for Mac OS X.

To use blur2d

From a IRIX or Linux shell, or DOS window, type:

```
blur2d [-h] [-l blurLength] [-s blurSharpness]
[-m smoothValue] [-n start end step] [-f inputFileName]
[-r smoothColor]
```

Option	Description
-h	Displays the help file.
-l <float>	Blur length. The value must be greater than 0. The default value is 1.
-s <float>	Blur sharpness. The value must be greater than 0. The default value is 1.
-m <int>	Smooth value. The value must be greater than or equal to 0. The default value is 2.
-r <boolean>	Whether to smooth color (1) or not (0). The default setting is 0.
-n	Animation start frame, end frame, and step.
-c <string>	Name of the image file , for example, picNoBlur.iff
-v <string>	Name of the image file, for example, picmotionVector.iff.
-f <string>	Name of the image file containing motion vectors.
-p <int>	Frame padding to the maximum number of leading zeros. The default is none.

1 | Small Utilities

About > FieldAssembler

Option	Description
-o memLimit	Maximum allowed memory usage in MB.

Note When using the -c and -v options, the image files must be the same size or the results may be unpredictable.

Examples

```
blur2d -f sphere.iff
```

The blurred image is saved as `sphere_blur.iff`.

```
blur2d -l 4 -f sphere.iff
```

The image is blurred with a blur length of 4 and saved as `sphere_blur.iff`.

```
blur2d -n 1 10 1 -f sphere.iff
```

The input image sequence being `sphere.iff.1 ... sphere.iff.10`, the output sequence would be `sphere_blur.iff.1 ... sphere_blur.iff.10`.

To blur an animation sequence, the sequence files have to be named as `name.ext.#` or `name.#`.

The command to blur the `name.ext.#` sequence is:

```
blur2d -n start end by -f name.ext
```

The command to blur the `name.#` sequence is:

```
blur2d -n start end by -f name
```

FieldAssembler

Note FieldAssembler is only available for Windows. Use interlace for IRIX or Linux. Use a non-linear editor or compositing application for Mac OS X. See "interlace" for details.

The FieldAssembler utility interlaces rendered field images. Fields are images made up of alternate lines as displayed on NTSC devices.

Each field image, contains only half of a full frame, and each field is stored in a separate file. Rendering images in this manner can be helpful when designing animations that will be played back on NTSC devices.

However, to view these images on a computer screen, or to transfer them to certain other computer programs, such as compositing software, you need to reassemble them into full images. When this happens, you have half as many files, and each file has twice as much data.

To open FieldAssembler

- Do either of the following:
 - From a command prompt, type `fieldassembler`.
 - In `C:\Program Files\Alias\Maya6.0\bin`, double-click `FieldAssembler.exe`.

For information on FieldAssembler, select Help > Help from within the FieldAssembler window.

from100to97

The `from100to97.exe` program is an Alias Wire file translator. It will convert Studio 10 wire files to Studio 9.7 wire files.

interlace

Note `interlace` is only available for IRIX and Linux. Use `FieldAssembler` for Windows. See "FieldAssembler" on page 81 for details. Use a non-linear editor or compositing application for Mac OS X.

The `interlace` utility is used to interlace field rendered images. Field rendered images are images in a sequence of images designed for video playback on NTSC devices. Each field, or image, contains only 1/2 of a full frame, and each field is stored in a separate file. Rendering images in this manner can be helpful when designing animations that will be played back on NTSC devices. However, to view these images on a computer screen, or to transfer them to certain other computer programs, you need to reassemble them into full images. When this happens, you end up with half as many files, and each file has twice as much data.

To use interlace

- From a IRIX or Linux shell, type:

```
interlace [-a # # #] [-d] [-e #] [-r] [-t str] base_image_name
```

1 | Small Utilities

About > filePaste

Option	Description
-a [# # #]	Specifies an animation to be interlaced the three numbers are start frame, end frame and by frame. The start end and by frame must be integers currently.
-d	Specifies the even field to be the first field; otherwise, the odd field is the first field. This option should agree with the field option in Render Global Settings windows.
-e	Specifies the padding length of the extensions.
-r	Deletes the original field images.
-t	Specifies the file extension trailer (for example, <code>sgi</code>).
-u	Unlaces frames into fields.
-help	Displays the help file.

filePaste

The `filePaste` utility takes a list of image files and pastes the image files together in horizontal pieces to form a larger image.

This is very useful when rendering a single large resolution image, wherein a group of machines is used for computing resources. With render region capabilities in Maya's renderer, each machine resource can render a portion of the image. At the end of the renderings, use `filePaste` to concatenate the rendered images.

To use filePaste

From a IRIX and Linux shell, type:

```
filePaste <inputImage1> <inputImage2> <inputImage...> <outputImage>
```

fileStats

The `fileStats` utility takes a list of image files and outputs resolution information in terms of:

- header resolution: this is the resolution as specified in the header of the image file.
- actual resolution: this is the actual resolution of the image file. This is only different from the header resolution if the image is incomplete.

The actual resolution is a good mechanism for render farms to detect if the rendering actually completed this frame (sometimes the uncompleted file is due to disk space shortage situations, or NFS problems, and the renderer may not be able to know about the problems to tell the render farm).

To use `fileStats`

From a IRIX or Linux shell, type:

```
fileStats <image1> <image2> <image...>
```

`imconvert` (Image Magick)

The `imconvert` utility can process images, convert images from one format to another, and join images. For a list of options, type `imconvert -h` in a shell window.

`imgcvt`

The `imgcvt` utility converts images or sequences of images from one image format to another.

In a shell window, enter `imgcvt` followed by the name of the image you want to convert. The input and output image formats are usually determined by the filename extension or image content. However, when the input or output image has no extension, or cannot be identified, the `-f` and `-t` options can be used to indicate the desired formats. You can use the following options:

```
imgcvt <options> input_image output_image
```

Example 1

```
imgcvt -f sgi -t tiff input_image output_image
```

This command converts the image named `input_image` that is in the Silicon Graphics format to the TIFF format and saves the image out to a different name, `output_image`.

Example 2

```
imgcvt -f tiff -t iff input_image output_image
```

This command converts an tiff image to the IFF file format.

1 | Small Utilities

About > imgcvt

Options

Command line options	Description
-f input_image_extension	Identifies the specific image format that you are converting from. For example, <code>-f sgi</code> means that only files matching the Silicon Graphics image format are accepted as input.
-t output_image_extension	Identifies the specific image format that you are converting to. For example <code>-t tiff</code> means that files will be converted to the TIFF image format only. For the list of possible extensions, see "Image extensions".
-n start end step	Is the start, end and step of an input image sequence (only whole numbers are accepted).
-N start end step	Is the start, end and step of an output image sequence (only whole numbers are accepted).
-r range	In an input image sequence, selects the range of images to be converted from. For example: <code>imgcvt -r 1-5 ...</code> <code>imgcvt -r 1-5x2 ...</code> <code>imgcvt -r 1-5,10-20x2,50 ...</code> A sequence specifier is a list of single frames or ranges separated by a comma or a slash. For each range, an optional step can be specified after a <i>x</i> . Sequences can be reversed and offsets can be added to the input or output frame number: <code>imgcvt -r 100-1 -R 1-100 in.#.rgb out.#.rla</code> <code>imgcvt -r 1-100 in.#.rgb out.#+100.rla</code> These are individual sequentially numbered image files.
-R range	In an output image sequence, selects the range of images to be converted to.
-h	Provides a brief description of each option.

Rendering Utilities

Command line options	Description
-s	Silent mode.
-v	Verbose mode.
-V pal/ntsc	Video mode for yuv files.
-C compress	TIFF compression types: LZW (this is the default) or NONE.
-q N	JPEG quality (0..100; 75 default).
-m	Explore map format.

When you are working on a sequence of images, the # and @ symbols are used to reference the current frame number. The hash (#) indicates a four-digit padded number, whereas @ symbol indicates a non-padded number. The following converts a sequence of 100 frames:

```
imgcvt -n 1 100 1 image_in.iff.@ image_out.#.rla
```

For more precise control of the frame number format, use either multiple @ symbols to set a specific padding or use the standard printf(3S) notation:

```
imgcvt -n 1 100 1 image_in.@@@.rgb image_out.#.rla
imgcvt -n 1 100 1 image_in.%03d.rgb image_out.#.rla
imgcvt -n 1 100 1 image_in.%.2f.rgb image_out.#.rla
```

Image extensions

Use the following extensions to convert images from one image format to another. In the -f option, you specify the extension of the image format you are converting from. In the -t option, you specify the extension of the image format you are converting to.

Image format	Extension
Abekas NTSC or PAL	.yuv
Alias	.als
Explore	
GIF	.gif
JPEG	.jpg

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About > imgcvt

Image format	Extension
Kodak Cineon	.cin
Lucas Film	.lff
Pixibox PXB and SCN	.pxb or .scn
PPM raw/ascii	.ppm
Prisms	.pri
Quantel	.qtl
SGI	.rgb, .sgi or .bw
Softimage	.pic
Targa RGB/BW	.tga
TIFF 6.0	.tif or .tiff
Vista	.vst
Wavefront RLA	.rla

2 Dispatcher

About Rendering Utilities

Dispatcher

Overview of Dispatcher

Note Dispatcher is only available for IRIX.

The **dispatcher** utility is used to distribute rendering and post-production jobs across a network of computers.

The Dispatcher distributes the execution of rendering and post-production jobs over the network. Important features include:

- handling job priorities
- providing you with overall job control from a central menu
- notifying you when any job is completed and performing further actions depending on how you choose the configuration settings
- distributing jobs on any number of workstation processors

Since the Dispatcher executes frames in parallel with other frames (multiplying the execution rate), it can complete rendering jobs much quicker than a traditional render command line that executes all the frames on a single machine.

The Dispatcher can run in several environments—Maya, Studio, and IPR.

Who uses Dispatcher?

Two kinds of professionals use the Dispatcher: end users and network administrators.

End users need to understand pools, how to add a machine to a pool, and how to submit jobs to the Dispatcher. See "For end users" on page 35. (Most end users will not be concerned with the installation and configuration settings that are described in "For network administrators" on page 16.)

Network administrators are responsible for installing and configuring the Dispatcher. See "For network administrators" on page 16.

2 | Dispatcher

About > Before you install

For network administrators

Before you install

This is intended for network administrators who install the Dispatcher and assist end users. Before end users can start the Dispatcher, the program must be installed and running on the machine(s).

The Dispatcher starts a master job known as the spooler on one machine. This is the central controlling job that decides where to allocate the jobs you submit. Each machine that will be able to execute submitted jobs must be running a client—a job that sleeps most of the time and periodically checks the status of the machine and any job it may be running.

The Dispatcher is composed of three cooperating programs:

- `dispatcherSpool` resides on the machine that you choose to act as the spooler or server.
- `dispatcherClient` resides on each machine used to run jobs you submit.
- `dispatcher` is the program that end users interact with.

Each time you start the Dispatcher, the program looks for `dispatcherSpool` and `dispatcherClient`. These two components become active upon machine restart and keep track of dispatched jobs, the machines being used, and other details. If either of these two components is not monitoring the dispatching activity, end users may have trouble dispatching jobs.

Note The `MAYA_PROJECT` environment variable must be set. The `MAYA_PROJECT` environment variable specifies where to find the Maya data files. This environment variable can be set either in your `.cshrc` file or in the scripts used for starting rendering jobs in Maya.

Set up before installing the Dispatcher

As part of setting up the Dispatcher, here are some things you need to look at before end users run the program.

Include the executables in the `$PATH`

Make sure the path of the executables, such as Maya, is in the `$PATH` of each ordinary Dispatcher user. Otherwise, you need to modify the `.cshrc` file of each Dispatcher user according to the product she or he plans to use.

Product Environment	Add this to the .cshrc of every user
Maya 5.0	<code>set path = (/usr/aw/maya5.0/bin \$path)</code>
Studio	<code>set path = (/usr/aw/alias9.5/bin \$path)</code>
IPR	<code>set path = (/usr/aw/EXP4.3.3/bin \$path)</code>

For example, in the Maya environment, this means the Dispatcher can locate the `Render` command when users type `Render` without giving the full path of the executable in the Submit Job window. For other environments, also make sure that the rendering commands are in the `$PATH` of each end user's machine.

Test access between networked machines

Make sure any disks Dispatcher end users are likely to write to or read from over the network can be accessed. This means NFS must be installed on your machine. You can find out whether NFS is installed by examining the output from the following command.

```
versions | grep nfs
```

The following shows typical output.

Installed	Subsystem	Date	Description
I	nfs	08/28/97	Network File System, 6.3
I	nfs.man	08/28/97	NFS Documentation
I	nfs.man.nfs	08/28/97	NFS Support Manual Pages
I	nfs.man.relnotes	08/28/97	NFS Release Notes
I	nfs.sw	08/28/97	NFS Software
I	nfs.sw.nfs	08/28/97	NFS Support
I	nfs.sw.nis	08/28/97	NIS (formerly Yellow Pages) Support

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About > Set up before installing the Dispatcher

```
I          nfs3          08/28/97  Network File System
          Version 3, 6.3

I          nfs3.sw       08/28/97  NFS Version 3 Software

I          nfs3.sw.nfs3  08/28/97  NFS Version 3 Support
```

To find out whether NFS is actually running on a machine, type the following command:

```
chkconfig
```

By examining the output from this command, you will see whether `nfs` is set to `on` or `off`.

To be sure NFS is active, type the following command:

```
ps -aef | grep nfsd
```

This is typical output from this command.

```
root      180      1      0      Aug 21 ?        0:00  /usr/etc/nfsd 4
root      181      180    0      Aug 21 ?        0:00  /usr/etc/nfsd 4
root      182      180    0      Aug 21 ?        0:00  /usr/etc/nfsd 4
root      183      180    0      Aug 21 ?        0:00  /usr/etc/nfsd 4
myname    887      27388  1      19:07:16 pts/3  0:00  grep nfsd
```

Example—setting up for dispatching

The following list of network machines are connected by Ethernet:

- machine1
- machine2
- machine3
- machine4

On each of these machines, suppose that you create a login named `myname`. The project is stored on the disk shared by all these machines. The images rendered on the machines will also be stored on this disk. For the Dispatcher to work properly, you need to have the same login available on all the machines and set it up as a shared login.

Share an account

You must set up each account so that it can be shared on the networked machines as opposed to creating a separate account with the same name on each machine. You can do this by defining a mount point so that each user name is connected to the same mount point on remote machines as on the local machine.

To share an account

Assume that the account named `myname` was set up on `machine1` under the `/usr/people` directory. On `machine1`, do the following:

- 1 Log in as root.
- 2 In the `/etc/passwd` file, you may find a line such as:

```
myname:password:userid:group_userid:description:/usr/people/myname:/bin/csh
```

A typical line in the `passwd` file resembles the following line.

```
username:password:userid:group_userid:description:home_directory:/bin/csh
```

The part `/usr/people/myname` is local to `machine1`. Now define how this location is recognized on the network. For example, you can decide that it is recognized by the other machines as `/mount_machine1/myname`.

On all the other machines (`machine2`, `machine3`, and `machine4`), do the following:

- 3 Log in as root.
- 4 Edit the `/etc/passwd` file and add the following line:

```
myname:password:userid:group_userid:description:/mount_machine1/myname:/bin/csh
```

For other machines to recognize the `/mount_machine1/myname` mounting point, you need to do two more steps on `machine1`:

- export the disk so that all machines are allowed to write data to it
- mount the directory

In the example, the login was set up under `/usr/people`, so this partition needs to be recognized by the other machines.

Check the `/etc/exports` file and make sure the `/usr/people` (or `/usr`) directory is defined.

If the entry point is not defined

- 1 Edit the `/etc/exports` file and add the line:

```
/usr/people
```

- 2 Enter the following line:

```
/usr/etc/exportfs -a -v
```

2 | Dispatcher

About > Set up before installing the Dispatcher

On all other machines

- 1 Log in as root.
- 2 Create the mounting point named `/mount_machine1`. Enter:

```
mkdir /mount_machine1
```

- 3 Edit the file `/etc/fstab` and add the following line:

```
machine1:/usr/people /mount_machine1 nfs rw,bg,soft  
0 0
```

- 4 Enter the following line:

```
mount /mount_machine1
```

You can log in as `myname` now on all these machines.

Export a disk

The following example shows how to share a disk named `DiskA` mounted on `machine1` so the disk can be accessed from the other machines.

To export a disk

- 1 Log in as root.
- 2 Edit the file `/etc/exports` by adding `/DiskA` to the file. The file `/etc/exports` describes the filesystems that are being exported to NFS clients.

- 3 Enter the following line:

```
/usr/etc/exportfs -a -v
```

`Exportfs` makes a local directory (or file) available for mounting over the network by NFS clients.

- 4 On each of the other machines (`machine2`, `machine3`, and `machine4`), create a directory named `/DiskA`.

- 5 Edit the file `/etc/fstab` by adding the line:

```
machine1:/DiskA /DiskA nfs rw,soft,bg 0 0
```

Each time these machines are rebooted, the `/DiskA` directory is automatically mounted allowing access to the `DiskA` disk.

- 6 To see the list of accessible partitions, enter:

```
/etc/mount -p
```

On `machine1`, the following line should be displayed:

```
/dev/dsk/dks1d7s7 /DiskA efs raw=/dev/rdisk/  
dks1d7s7 0 0
```

On the other machines, the following line should be displayed:

```
machine1:/DiskA          /DiskA   nfs  rw,soft,bg  0
0
```

In this example, the /IMAGES directory was created on /DiskA for storing projects.

The /DiskA disk has the following permissions:

```
drwxrwxrwx   9 root    sys          512 Aug  8
05:55 DiskA/
```

The /IMAGES directory has the following permissions:

```
drwxrwxrwx   4 root    sys          512 Aug 10
02:59 IMAGES
```

Sign on to different accounts

A security mechanism prevents remote users on the network from submitting jobs to machines without being set up to do so. However, Dispatcher end users cannot submit a job to the Dispatcher unless they can login (rlogin) to the other machines without supplying their password. This means that the network administrator must configure the machines so that end users don't have to type their password every time they want to dispatch a job to another machine.

To sign on to a different account

- 1 Edit the file named /etc/hosts.equiv by adding the names of the machines that Dispatcher end users need to access. In this example, add the following machine names to the contents of this file: machine1, machine2, machine3, and machine4.

under machine1	under machine2	under machine3	under machine4
machine2	machine1	machine1	machine1
machine3	machine3	machine2	machine2
machine4	machine4	machine4	machine3

This means the Dispatcher end users can rlogin to these machines without having to type a password. A convenient feature of the Dispatcher is that users can execute jobs over networked machines regardless of the group id they belong to.

- 2 Copy /etc/hosts.equiv under the home directory of each machine. For example, under machine1, enter:

```
cp /etc/hosts.equiv /usr/users/myname/.rhosts
```

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The owner of the `.rhosts` file must be the root or the user in whose home directory it resides. The contents of an user's `.rhosts` file will be disregarded if it is owned by another user or if its permissions allow anyone who is not the owner to modify the file. Use the `chmod` command to add the proper protection:

```
chmod go-w .rhosts
```

Similarly, the file named `/etc/hosts.equiv` must be owned by and writable only by the super-user.

For more details on the `.rhosts` file, type:

```
man rhosts
```

Set up the Dispatcher: other recommendations

Make sure that:

- the Dispatcher program is shared so that Dispatcher end users can run the program.
- the machines Dispatcher end users will need are running.
- the applications (for example Render) that end users are likely to use with the Dispatcher can execute jobs on each machine. To do this, log onto each machine and enter, for example:

```
Render myscene.ma
```

The `Render` command shown here is valid in Maya, but in other environments, you must replace `Render` with the appropriate command for rendering.

If the `Render` command runs, this means the application and its keys are recognized by this machine. If you receive the message `Render: command not found`, look under the `/usr/aw/maya5.0/bin` directory to see whether the program is installed.

Make sure the path is correct by typing:

```
which Render
```

or, while logged onto the spooler, enter the following lines:

```
foreach i ( `cat /etc/dispatch.hosts` )
echo "-----"
echo HOST: $i
rsh $i which Render
end
```

- the `.cshrc` of your login lets you submit jobs in batch mode. You can test whether the correct path to an application is found by entering, for example, for Maya:

```
rsh machine which Render
```

Run the installation script

To install the Dispatcher

- 1 Login as root.
- 2 Choose a machine on which you want the spooler to run.
- 3 Note its host name.
- 4 Go to the subdirectory that contains the `dispatcher_install` script.

```
cd /usr/aw/COM/bin
```

- 5 Run the installation script as root on each machine that you wish to use as a client by entering:

```
./dispatcher_install
```

This script locates the Dispatcher binaries, keeps track of the machine you are using as your spooler, and sets up a shell script named `dispatcher` in the `/etc/init.d` directory to control how the Dispatcher is executed. The dot in the command stands for the working directory you went to in step 4. It is easier than typing the full pathname.

To find out whether you have already run the `dispatcher_install` script, type the following command:

```
chkconfig
```

If the `dispatcherClient` is not set to on in the list of options that you can set, run `dispatcher_install` on that machine.

- 6 Follow the instructions on the screen (the script shown as follows includes explanations of what each section of the script tells the Dispatcher to do).
- 7 If the automount feature is on, specify the default path `/usr/aw/COM/bin`. Always express the path relative to the symbolic link of the mount point. For instance, if the directory `/usr/aw` is automounted and is a symbolic link to `/tmp_mnt/usr/aw`, give the path `/usr/aw` rather than `/tmp_mnt/usr/aw`.
- 8 Answer Yes whenever possible, especially to the e-mail questions, because this makes it easier to troubleshoot any configuration problems in your scripts or the scripts of end users.
- 9 When the installation is complete, enter the following to start the Dispatcher:

```
/etc/init.d/dispatcher start
```

An alternative to this command is to shut down and restart your machine.

2 | Dispatcher

About > Run the installation script

- 10** As root, log into each client machine (you can also do an rlogin to each client machine), then enter:

```
./dispatcher_install
```

and answer the questions presented on the screen. Each time you install a spooler, you must re-install all the clients. Previously installed clients cannot be used.

Example installation script

When you install the Dispatcher, the script prompts you for information, as shown in this section. The replies display in bold on your machine. Go to the proper directory as described earlier (step 4).

Dispatcher	You
Installation script prompt:	Take the action listed in the right-hand column; bold entries indicate the reply you should type:
Start installing	./dispatcher_install
By default, the name of the directory containing the Dispatcher is <code>/usr/aw/COM/bin</code>	/usr/aw/COM/bin
This script installs the Dispatcher software package properly on each site. Before installation, decide on which machine to run the central spooler.	
Note the name of the machine as reported by the <code>hostname</code> command, then execute this script on every machine that is to handle a dispatched job.	

2 | Dispatcher

About > Run the installation script

When automount is running on the machine you are using, you should express the path relative to the symbolic link of the mount point.

For instance, if the directory `/usr/aw` is automounted and is a symbolic link to `/tmp_mnt/usr/aw`, you should give the name

`/usr/aw` rather than `/tmp_mnt/usr/aw`

Anomalies may occur at reboot time if this is expressed relative to the mount point of an automounted directory.

What is the proper name?

(default: `/usr/aw/COM/bin`)?

What is the name of the machine that will be the spooler?

Instead of typing the name of the machine, you can type a single dot: `'.'` to indicate this machine.

Do you want verbose client listings in

`SYSLLOG` (yes | no)?

Do you want e-mail notification of execution errors (yes | no)?

`/usr/aw/COM/bin`

whatever the name of the spooler is, for example, `machine1` or `.`

yes

yes

Installing the Dispatcher....

Do you want verbose spooler listings in `SYSLLOG` (yes | no)?

Should the spooler notify of job termination by e-mail (yes | no)?

Should the notification be verbose (yes | no)?

After the installation of the Dispatcher is complete, restart the Dispatcher in order for the newly installed program to take effect. To start the Dispatcher without rebooting, enter:

yes

yes

yes

`/etc/init.d/dispatcher start`

2 | Dispatcher

About > Troubleshooting dispatcher installation

From now on, the Dispatcher starts at reboot depending on your `chkconfig` settings. You can set command line variables for:

- `dispatcherClient` in the `/etc/config/dispatcherClient.options` file
- `dispatcherSpool` in the `/etc/config/dispatcherSpool.options` file

For example, on a spooler machine named `machine1`, type what appears in bold after the prompt:

```
machine1#  
/etc/init.d/dispatcher start
```

The Dispatcher is now ready for use, as you can see after you enter the following:

```
ps -ef | grep dispatcher
```

If the Dispatcher is properly installed and running, these lines should display:

```
root 21454    1  0 15:04:57 pts/4    0:00 /usr/aw/COM/bin/dispatcherSpool -v -M  
root 21455    1  0 15:04:57 pts/4    0:00 /usr/aw/COM/bin/dispatcherSpool -v -M  
root 21458    1  0 15:05:00 pts/4    0:00 /usr/aw/COM/bin/dispatcherClient -  
smachine1 -v -E
```

To make the Dispatcher more secure, there are always two `dispatcherSpool` processes running. This means that end users can continue to use the Dispatcher even if one of the `dispatcherSpool` processes was disabled.

Troubleshooting dispatcher installation

This section contains troubleshooting tips for installing the Dispatcher and therefore concerns network administrator only. One of the quickest methods to get an explanation for a message and, if necessary, a course of action to correct the error is to figure out whether the problem is caused by a poorly installed or configured Dispatcher or by an error in the end user's job.

- Problems concerning the `dispatcherSpool` or the `dispatcherClient` are reported as messages in the Console window (also sometimes in the shell window where the dispatcher is started), not as e-mailed messages to end users.
- Problems caused by errors in jobs submitted to the Dispatcher are reported to end users by e-mail. Examples of these kinds of problems are a mistyped directory path or an invalid script.

End users are advised to first look at their mail to determine the cause of a problem. If the e-mail is not working, the next best place to look for possible clues is under the directory `/var/spool/dispatcher`. All the messages from the individual machines are collected here and are

normally e-mailed to end users. The full trace of all messages can be found in the file named SYSLOG (also oSYSLOG) under the /var/adm/ directory, but you must look in the SYSLOG of every machine.

If a Component is missing

Once you have installed the Dispatcher on all participating machines, you can use the `chkconfig` command to turn the Dispatcher on or off at the next reboot.

- 1 Check to see if all is correct by typing:

```
ps -ef | grep dispatcher
```

You should find one instance of the dispatcherClient running on each client machine and two instances of the dispatcherSpool running on the spooler. If this is not so, especially on the spooler machine, try to start the missing component manually as follows. Open the Console window because it shows messages.

- 2 Change to the directory where your programs are installed.
- 3 Make sure that the dispatcherSpool is active on the spooler machine before you start any dispatcherClient.
- 4 Start the dispatcherSpool without any command line parameters:

```
dispatcherSpool
```

The advantage of doing this is that any error messages are immediately displayed.

- 5 On the command line, start the dispatcherClient using the `-s` option:

```
dispatcherClient -s <spool_machine>
```

Tip For Steps 4 and 5, it is often quicker just to type the following line, but any problems occurring will not be indicated:

```
/etc/init.d/dispatcher start
```

If the dispatcherSpool fails

The probable cause is poorly installed keys.

To find out what problem the Dispatcher has encountered, look in the file named /var/adm/SYSLOG. The Dispatcher generates many messages when it encounters a problem. Once you have done this (normally only once at configuration time, then you can ignore it), you can start configuring your pools and machines. The Dispatcher correctly sets the HOME and USER environment variables.

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About > Troubleshooting dispatcher installation

If a Frame is skipped

The Dispatcher dismisses the frame if it cannot execute on three different machines in your pool. It also refuses to re-execute a frame on a machine where it terminated in error. The most common cause of this is a typo in your script. Frames sent to a machine that is not working correctly (for example, a machine was rebooted) are re-routed to other machines.

How do you suspect that there is an error?

If the Dispatcher runs through the whole frame range too quickly, you can suspect that an error has occurred. This can also happen if your job is too long and loops endlessly.

How do you figure out what went wrong?

Encapsulate the script you wrote in another script you wrote and redirect the error stream to a temporary file:

```
#!/bin/csh -f
# on the next line I call up the script and redirect the error # output to a
suitably named file that I can analyze at leisure # later
/usr/home/mydir/mysubmitscript $1 >& /usr/home/mydir/USED_`hostname`
```

If you do not receive e-mail

If the user doesn't receive a report about a job, look in the `/var/spool/dispatcher` directory. Either the e-mail is not working or there is an error in the job. Normally, all the messages stored in that directory are e-mailed to the user. Also make sure that the spooler is not disabled.

Nothing seems to happen after submitting a job

After an end user submits a job, sometimes it may remain pending indefinitely in the bottom panel of the main Dispatcher window.

- 1 Check to see if each client, is running by entering on each client machine:

```
ps -ef | grep dispatcher
```

Although the list of available machines appears in the Host Configuration window (you can see this by clicking to the right of the Host item), the dispatcherClient may not be running on one of these machines.

- 2 If the dispatcherClient is not running on a particular machine, do a login (or do an rlogin) to that machine and type the following line:

```
/etc/init.d/dispatcher start
```

- 3** Cancel the job that you previously submitted and resubmit it in the Submit Job window. If the problem persists, continue with these steps.
- 4** Look in the `/var/spool/dispatcher` directory. Normally, messages appear here providing you with details about the jobs currently being executed.
- 5** Because the settings in the Hosts Configuration window are important, make sure that the host is enabled and the Maximum Jobs is greater than 1. Also increase the Maximum Load even as high as the maximum of 10 in case any non-Dispatcher jobs are also running on a heavily loaded CPU.

Path is not the expected path of the Dispatcher

Avoid typing the NFS part of the path to the dispatcher binary because typing the full remote path can cause problems.

In the `dispatcher.home` file (found under the `/etc/config/` directory of each machine the Dispatcher is installed on), the path identifying the location of the dispatcher, `dispatcherSpool`, and `dispatcherClient` binaries is possibly preceded by a NFS segment such as `/tmp_mnt/`. For instance, if the directory `/usr/aw` is automounted and is a symbolic link to `/tmp_mnt/usr/aw`, you should type the name `/usr/aw`, not `/tmp_mnt/usr/aw`. This means that you should type the path that is relative to the symbolic link of the mount point.

To see the contents of the `dispatcher.home` file, type:

```
more dispatcher.home
```

The path for the Dispatcher is given, for example, `/usr/aw/COM/bin`. To see what is stored under this directory, type:

```
ls /usr/aw/COM/bin
```

This directory contains the dispatcher, `dispatcherSpool`, and `dispatcherClient` binaries.

Console window error messages

Message

When you try to install the Dispatcher, an error message says:

```
"dispatchhost: Program not registered"  
"machine: Program not registered"
```

Action

Make sure the network is alive and well by issuing a `/usr/etc/ping` command. Also make sure the spooler is running on the named machine by entering:

2 | Dispatcher

About > Troubleshooting dispatcher installation

```
ps -ef | grep dispatcherSpool
```

This message also appears when you type `dispatcher` and no `dispatcherClient` is running on that machine. Type:

```
ps -ef | grep dispatcherClient
```

You may also get this message if the Dispatcher is not installed on the machine where you tried to start the dispatcher. Make sure the machine where the spooler is installed is keyed for Alias software.

Note Make sure that the `$HOST` environment variable is set. For example, add the following line to your `.cshrc` if `$HOST` is not already set:

```
setenv HOST `usr/bsd/hostname`
```

Message

```
164 The subprocess is not active.
```

Action

The dispatcher processes are out of sync. You must stop the existing dispatcher process before starting a new dispatcher process as follows:

```
/etc/init.d/dispatcher stop  
/etc/init.d/dispatcher start
```

Message

```
spooler: Timed out
```

Action

Make sure that `dispatcherSpool` is running on the spooler. On the spooler, enter:

```
/etc/init.d/dispatcher start
```

This command makes the `dispatcherSpool` run.

Message

```
"dispatchhost: Unknown host"
```

Action

Make sure:

- the Dispatcher is installed on your system
- the client machine is attached to a spooler (enter `dispatcher -s spooler_name` on the command line to start the Dispatcher)

- the environment variable DISPATCHCHHOST is defined in your environment
- a machine is called or aliased as dispatchhost

Progress window error message

Message

```
exec failed: No such file or directory
```

Action

The job you submitted was not found. Make sure the job can run when submitted directly in your shell; in particular, check that no argument is missing.

Change the configuration

After you use the Dispatcher for a while, you may decide that the options you chose at installation time are no longer exactly what you want. To make changes to the configuration settings, reset their values in files as described in this section.

Turn the Dispatcher on and off

Once you have run the installation script, the Dispatcher starts at machine reboot time. However, the network administrator, as root, can start or stop the Dispatcher at any time on any machine that has the Dispatcher software installed by entering:

```
/etc/init.d/dispatcher {start|stop}
```

Change the spooler

You can change the choice of spooler you supplied when prompted by the `dispatcher_install` script by designating another machine. An example is when you need to bring down a spooler to add more memory to it. Switching only affects the dispatcher component, not the `dispatcherSpool` or `dispatcherClient` components. In other words, when you switch a client machine to a different spooler, you are not stopping the original spooler.

There are two ways to change a spooler.

- One is to enter the following at the command line every time you start the Dispatcher:

```
dispatcher -s<spooler_host>
```

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About > Change the configuration

Replace `spooler_host` with the name of the machine that you want to become the spooler. If you do not set the `-s` option on the command line, the `dispatcherClient` looks for the setting of the environment variable named `DISPATCHHOST`. You can also manually reset this environment variable by typing:

```
setenv DISPATCHHOST <hostname>
```

- Another way to change the spooler is to edit the `dispatcherClient.options` file that contains the spooler to be used by the client machines. This file is described in the next section.

To change the spooler

- 1 Edit the file by entering:

```
jot dispatcherClient.options
```

- 2 Change the spooler designation using the `-s` option. In this example, replace `machine1` with `machine2`.

The original line is: `-smachine1 -v -E`

The new line is: `-smachine2 -v -E`

The Dispatcher gets the name of the spooler from this file.

- 3 Re-save the file.

- 4 Type the following line

```
/etc/init.d/dispatcher stop
```

- 5 Type the following line so the change you made in Step 2 takes effect.

```
/etc/init.d/dispatcher start
```

- 6 To make sure the change is in effect, enter:

```
ps -ef | grep dispatcher
```

The `dispatcherClient -s` with the name of the spooler you designated in Step 2 should be displayed.

All client machines must have a spooler so end users can start the Dispatcher.

Tip To start the Dispatcher on a machine where the Dispatcher is not installed, you can type:

```
dispatcher -smachine
```

where machine is the name of another machine acting as the spooler. You can thus run the dispatcher component on a machine with none of the Dispatcher components installed on that machine.

Use Dispatcher files

There are a number of files the Dispatcher needs to use in processing your jobs. The two most essential files are *dispatcherClient.options* and *dispatcherSpool.options*.

You don't have to edit these files very often. When you run the `dispatcher_install` script and use the default replies, many of these files are automatically specified for storing the Dispatcher's data.

`/etc/config/dispatcherClient.options`

This file stores information about which settings are in effect (for example, the e-mail settings) and how detailed the e-mail messages are. You can edit the file using the editor of your choice, for example, `jot`. To display the file, type the following:

```
jot /etc/config/dispatcherClient.options
```

After the installation of the Dispatcher, this file contains values that were set depending on your replies to questions asked during the installation.

Option	Description
<code>-v</code>	provides detailed messages in verbose mode
<code>-e</code>	provides limited reporting
<code>-E</code>	provides full error reporting by e-mailing any error messages to the client
<code>-s<spooler host></code>	determines which machine is the spooler

Be careful about capital versus small letters. The capital E has a different effect than its smaller counterpart. A typical line in this file is:

2 | Dispatcher

About > Use Dispatcher files

```
-smachine1 -v -E
```

This means that machine1 is currently the name of the spooler host, detailed messages are produced, and full error reporting is requested.

/etc/config/dispatcherSpool.options

This file contains options that tell the Dispatcher whether to send an e-mail message upon job termination. The values are set with the reply you gave when prompted by the dispatcher_install script, but you can change these values. To edit this file, you must be logged into the spooler. When you enter the following line on the spooler:

```
jot /etc/config/dispatcherSpool.options
```

you can specify the following options as a single line in the file.

Option	Description
-m	provides a brief notification
-M	provides verbose notification including run times on each machine; useful for accounting purposes

/var/adm/SYSLOG

This standard IRIX file keeps several types of error messages, particularly if the dispatcherSpool fails. First, look at any e-mailed messages from the super-user, as these are more readable than the contents of the SYSLOG.

/var/spool/dispatcher

Like SYSLOG, this file also logs error messages.

/etc/dispatch.hosts

This file contains a list of the machines used by the Dispatcher and is for viewing only.

/etc/dispatch.pools

This file contains a list of the pools used by the Dispatcher and is for viewing only.

`/etc/dispatch.host.data`

This file contains a list of the values per machine and is for viewing only. The values shown are those that you can set in the Host Configuration window, corresponding to Maximum Load, Minimum Idle Time, Maximum Jobs, Execution Priority Offset, hours during which rendering is allowed, and any days on which rendering is not allowed.

Remove a client machine from a spooler

A situation may arise when you want to rename a client machine or remove one from your site. If the dispatcherClient program is running on each of these machines, you may want to update the list of machines appearing in the Host Configuration menu next to the Host item.

To remove client machines from the spooler

- 1 Log onto the spooler as root, and type the following line:

```
/etc/init.d/dispatcher stop
```

- 2 Then type:

```
jot /etc/dispatch.hosts
```

- 3 In this file, either delete the name of the machine you want to remove or remove all the names of the client machines from the file.

- 4 Save the file.

- 5 Type the following line:

```
/etc/init.d/dispatcher start
```

If you removed all the names in Step 3, the Dispatcher will automatically update the list.

Tip Steps 2 and 5 ensure that the changes you make to a file will take effect when you restart the Dispatcher. Otherwise, you will see no change in the list of machines viewable in the Host Configuration window and wonder why things didn't work.

For end users

Start the Dispatcher

If the Dispatcher is not installed at your site, ask the network administrator to install and configure the software for you.

2 | Dispatcher

About > Start the Dispatcher

Setting up the Dispatcher is an important process that must precede using the Dispatcher for everyday operations since the setup involves making a number of important configuration decisions concerning the product and access to the product. See "For network administrators" on page 16.

To start Dispatcher within Maya

- 1 Once the Dispatcher is installed, select Render > Distributed Render. The Distributed Render window appears from which you can select the Maya scene file you want to dispatch. You are prompted to save the scene file under the name of your choice.
- 2 Click Distribute Render. The Dispatcher window and the Submit Job windows display. Use the Dispatcher by choosing items in the File, Hosts, Jobs, and Pools menus.

When working with the Dispatcher, you create a pool, configure hosts for that pool, and then submit a job to the Dispatcher for execution. The job is distributed to the machines you allot to your pool. Each works on its part; the Dispatcher picks up the results from the machines as they finish their individual sections. For details on how to submit jobs, see "Submit a job".

To start Dispatcher from a shell

When working in environments other than Maya, or if you want to dispatch without Maya's graphical user interface, you should type the following in any shell:

```
dispatcher
```

The Dispatcher window appears. Once you have set up a pool and configured hosts, you can submit jobs.

To accommodate different styles of working, the Dispatcher lets you submit jobs to a wide variety of applications.

For details on how to submit jobs, see the sections appropriate for your work environment.

- Maya – "Submit a Maya rendering job" on page 45.
- Studio – "Submit a Studio job" on page 53.
- IPR – "Submit an IPR rendering job" on page 54.
- Script – "Submit a script via the Dispatcher" on page 54.
- Dispatcher command line – "Submit a job from a IRIX shell" on page 56.

Quit the Dispatcher

To end the current Dispatcher session

- Select File > Quit (Ctrl-q).

Dispatcher window

As an alternative to clicking the left mouse button or the middle mouse button, you may prefer to use the following keyboard shortcuts:

Keyboard shortcuts

Left arrow	Moves one position to the left
Right arrow	Moves one position to the right
Up arrow	Moves one line upwards
Down arrow	Moves one line downwards
Enter	Validates and exits the window (same effect as clicking OK in windows)
Esc	Same effect as clicking Cancel in windows
F4	Displays the menu for the active panel in the Dispatcher screen (tab to the panel you want)
Tab	Steps forward to the current item you want
Shift+Tab	Steps backward to the current item you want
Ctrl-s	Equivalent to selecting Jobs > Submit
Ctrl-i	Equivalent to selecting Jobs > Info
Ctrl-q	Leaves the Dispatcher (equivalent to selecting File > Quit)

Opening Dispatcher displays a window divided into three sections: File List, Contents Area, and View Area.

2 | Dispatcher

About > Dispatcher window

Top panel

host

Displays the machines on which jobs are currently being executed.

job

Displays the name of the job.

image

Displays the frame number being executed to indicate the progress of the rendering or compositing.

Middle panel

This panel displays information about jobs currently being rendered or composited.

job

Displays the name of the job.

priority

This is the scheduling priority (the higher the number, the faster the job executes).

total

Displays the number of frame requested.

done

Displays the number of frames completed.

active

Displays the number of frame currently running

pool

Displays the pool (a machine can belong to a named pool or to a system-wide pool named WholeSystem).

Bottom panel

job

Displays the names of the jobs waiting to be rendered or composited (including suspended jobs)

priority

Displays the order in which the jobs are to be rendered or composited; a job of 10 gets the most resources.

pool

Displays the set of machines on which this job can be rendered or composited.

To use the Dispatcher window

- Double-click on the active machine in the top panel to display the View Progress window for the machine.
- Double-click on the active machine in either the middle or bottom panel to display the Job Information window for the selected job.

Tip Press the right mouse button over any active panel to see the pop-up menu.

Configure a host

Before you submit your first job to the Dispatcher, you need to tell it how each machine in a pool is to be used. You enter this information in the Host Configuration window. Change this information only when you change your pool or the machines included in a pool. Dispatcher retains settings of machines between sessions.

Configure each machine to tell it how many jobs to accept, how low the load average must be for it to accept a new job, and how long it must be idle before accepting a new job.

Click the OK button to confirm your modifications for each machine; otherwise, you lose them.

To configure a machine

- 1** Select Hosts > Configure in the main window to see the Host Configuration window.
The settings shown in the window can vary according to the name of the host. Each new host is automatically added to the list.
- 2** Select the machine you want to configure by clicking in the scroll list to the right of Host.
- 3** Fill in the details for the host machine.
- 4** When you finish entering the settings for the host, click OK to validate. Otherwise, click Cancel to discard the settings.
- 5** Repeat Steps 2 through 4 for each machine that you want to include in the pool.

2 | Dispatcher

About > Configure a host

Set Host Configuration options

In the Host Configuration window, you can set configuration options for machines by selecting the machine or machines you want to configure from the Host panel.

Extend or remove a selection

Two useful shortcuts:

- To extend a selection of hosts, Shift-click.
- To remove hosts from your selection, Ctrl-click on the host names.

The Shift and Ctrl keys let you configure machines quickly. When you don't use these keys, you have to select a host, then set the Minimum Idle Time, Maximum Jobs, Execution Priority Offset, Maximum Load, and so on—repeating the process for each machine in the pool.

If you need to change the Execution Priority Offset and you don't use the Shift and Ctrl keys, you have to go back and change the Execution Priority Offset of each host.

If you do use Shift and Ctrl, you can just redefine that particular setting and the program updates all the appropriate hosts for you. For instance, you can change Maximum Idle Time to 2 instead of 5, and every host that you select with Ctrl or Shift changes that setting to 2.

Use	To
Shift-click	Add to the list of hosts being selected
Ctrl-click	Remove one or more hosts from the list of hosts being selected

Enabled or disabled

To enable a machine, choose Enabled.

To disable a machine, Disabled. Turning on Disabled terminates any job currently running on that machine.

Restrict rendering times

Instead of dispatching jobs while you or your colleagues are using the machines in the pool, you can schedule jobs to run during your lunch hour or even after you leave for the day.

Minimum Idle Time

Sets the number of minutes a machine is inactive before it can accept a dispatched job. Move the slider to 0 for no idle time (this is the default value), and move it to any other value up to 30 minutes to lengthen the period of inactivity.

Be particularly careful about the idle time. Pressing a key or moving the mouse sets the idle time of the machine to 0.

Maximum Jobs

Sets the maximum number of jobs you can input from this machine to the Dispatcher. The value ranges from 1 to 20 and is usually a even number. If the machine has lots of memory, increase the value you choose. Also, make sure that the number of jobs matches the number of processors on the workstation. For example, on a multiprocessor workstation, choose a value corresponding to the number of processors (this is usually a multiple of 4). The default value is 1.

Execution Priority Offset

Lets you assign a lower priority to a job relative to other jobs running on this machine only. The lower the value, the higher the priority of the Dispatcher job you are submitting. The default value is 0. For more details, see the `man` entry for the `nice` IRIX command by typing `man nice`.

Maximum Load

Corresponds to the average number of jobs in the run queue. Because this number includes any non-Dispatcher jobs running on the machine, this makes the CPU less available to the Dispatcher jobs. If you start non-Dispatcher jobs while the Dispatcher jobs are active, set a high enough value for the Maximum Load to include all jobs. You can set a decimal value. Maximum Load is the same as the load average in the `uptime` IRIX command; type `man uptime` for more details. You may also find the `top` IRIX command relevant; type `man top`. The default value is 1.

Tip Avoid setting too low a value for Maximum Load, as this can prevent jobs from executing.

Create a pool

This step is optional. If you do not create a pool, all the machines in the network form the default pool and use the pool name `WholeSystem`.

2 | Dispatcher

About > Create a pool

Pools group similar machines for you to submit jobs to. For example, you can group machines with more than 512 megabytes of memory into a pool called BigMem. You can use BigMem for jobs needing that much memory. Another example is to have a pool for small rendering jobs and another for final rendering.

You can dynamically change the pool a job is assigned to as it is running. Select the job, then press Ctrl-i (you can also use Jobs > Info, or double-click the selected job). You can edit all of the nongray fields.

To create a pool

- 1 Select Pools > Create Pool in the main window. The Create Pool window appears.
- 2 Name the pool you want to create.
- 3 Click the Create button to create the pool, otherwise click Cancel. Immediately after you create a pool, the Configure Pool window (described below) appears. Once you create a pool, you can use it from session to session.

Configure a pool

Use the Configure Pool window to select the machines you want to include in a pool.

To configure a pool

- 1 Select Pools > Configure Pool.
The Configure Pool window appears.
- 2 Choose the pool you want to configure.
- 3 Select the machines to include in the pool. When a machine is selected, its name is highlighted by a black dashed outline.
- 4 Click the OK button to validate the pool; otherwise, click Cancel to cancel any changes you made to the pool configuration.

Deleting a pool

To delete a pool

- 1 Select Pools > Delete Pool.
- 2 The Delete Pool window appears.
- 3 To select a pool for deletion, select the name of the pool in the list. The name highlights.

- 4 Click the Delete button to delete the pool; otherwise, click Cancel to cancel the deletion of any pools. Any jobs in the queue of the deleted pool are automatically transferred to other machines in the default pool called WholeSystem.

Submit a job

After you supply the necessary information for the machines in the Host Configuration window, you can submit jobs to be rendered or composited. When you select Jobs > Submit, the Submit Job window appears. This is the centerpiece of the Dispatcher because it is the window most often used. Choose the settings you want used when a job is executed.

The job is put in a queue and run when system resources allow. You can submit jobs for several applications to the Dispatcher and are not limited to rendering.

Although you can usually submit jobs from the Submit Job window, you can also submit them from a IRIX shell. Choose any of the following ways to submit jobs to the Dispatcher.

From the Submit Job window:

- Use the `dispatch_maya_render` command
- Use the Maya Render command
- Submit a Studio job
- Submit an IPR rendering job
- Submit a script via the Dispatcher
- Submit an `imgcvt` job
- Submit a `di` job

From a IRIX shell window:

You can submit jobs using the Dispatcher command line in a IRIX shell.

Shell scripts are usually created when you want to perform a series of actions to each frame. Using this way to submit jobs is useful as you continue to learn the Dispatcher.

See "Submit a job from a IRIX shell" for details.

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About > Submit a job

Enter commands

Type the commands you want the Dispatcher to execute in the Command box. You can enter a variety of commands from different Alias applications. The commands you can enter are described for each environment.

In the Command box, you indicate which file will be executed upon submitting the job. Although the Dispatcher gives you the flexibility to read and write files from any location, it is important that you correctly specify the locations when entering job-submission commands.

In the box labeled Name, the name of each job you submit to the Dispatcher appears. Typically, this is named after the scene file you select in the Command box.

Start

Indicates the starting frame in a frame sequence. For example, in a scene file with 50 frames, you can make the render begin at frame 9 if you select a range within the scene file.

End

Indicates the ending frame in the frame sequence.

Step

Sets the increment for the number of frames to advance through a frame sequence.

Specifying the rendering order

To make the Dispatcher render frames in a certain order, select one of these options:

Incremental

Renders the frames from the highest to the lowest

Decremental

Renders the frames from the lowest to the highest

Binary descent

Renders the frames starting from the halfway point in a frame sequence, then which half of that half, and so on. This halving process is continued until all the frames are rendered.

Choosing a pool

WholeSystem

Makes the job eligible for execution on all machines across the system (this is the default).

List of pools

Makes the job eligible for execution only on the pool that you have selected.

Tip You can temporarily remove a machine from a pool by clicking the machine name in the list of machines in the Host Configuration window (Hosts > Configure) and turning on Disabled.

Set the scheduling priority

Scheduling Priority

Sets the order in which the job will be executed. The higher the value, the sooner the job is executed. To change the scheduling priority, drag the slider to set a value from 0 (lowest) to 100 (highest). This is the urgency of a job relative to other jobs. In the bottom panel of the main Dispatcher window, jobs are arranged according to this number.

Submit jobs

When you have completed filling out the Submit Job window, you are ready to submit the job. Click Submit to submit it or Cancel if you want to exit the window.

Even after you submit a job, you can continue to change settings in several windows, such as the Host Configuration window and the Submit Job window (keyboard shortcut Ctrl-s). These changes take effect immediately for the jobs already submitted.

Submit a Maya rendering job

You can submit rendering jobs to Maya in two different ways:

- using the `dispatch_maya_render` command
- using the Maya Render command

The `dispatch_maya_render` command is often the most suitable for Maya users.

2 | Dispatcher

About > Submit a Maya rendering job

dispatch_maya_render

Note `dispatch_maya_render` is only available for IRIX.

`dispatch_maya_render` is a script used in conjunction with `dispatcher` to distribute rendering jobs across a network of computers.

Use the `dispatch_maya_render` command

The `dispatch_maya_render` command is included with Maya. This command speeds up rendering by dispatching packets of frames to a single machine via the `packet` parameter. Frames are collected into packets that allow optimized data access, eliminating multiple dispatches of each frame across several machines. This means that more time is spent rendering the data rather than ping-ponging each frame across several machines. A packet usually contains several frames (the default is 10).

To use `dispatch_maya_render`:

- 1 Select Render > Distributed Render. The Distribute Render window appears so that you can select an existing scene file to render.
- 2 Click Distribute Render.

You are prompted to save the scene file under the name of your choice or overwrite the original scene file. By default, the path displayed is relative to your current project, but you can change this to any path you want. Most users, however, will want to set a project so the data is more manageable (File > Project > Set).

The Dispatcher window and the Submit Job window display. By default, the `dispatch_maya_render` command appears in the Command entry of the Submit Job window. A typical line is something like the following:

```
dispatch_maya_render # 1000 100 -proj /u/myname/maya/projects/Prod  
myanimation.ma
```

You must specify the hash sign (#). During execution, the hash symbol is replaced with the number of the current frame, repeated until all frames are rendered. The hash sign is followed by two numbers—one corresponds to the last frame, and the other corresponds to the number you specify in the Step field. Both numbers are required.

The Dispatcher uses the current project as set using File > Project > Set. With a current project set, the files are read from the scenes directory of the current project and are saved to the images directory of the current project. Assuming the current project is Prod, you can see that the part after the `-proj` option takes the name of the current project.

- If you do not provide a path for the Maya file, it is read from the following directory:
\$HOME/maya/projects/default/scenes (IRIX)
Users/*username*/Documents/maya/projects/default/scenes (Mac OS X)
- If you do not provide a path for the rendered images, they are stored in the following directory:
\$HOME/maya/projects/default/images (IRIX)
Users/*username*/Documents/maya/projects/default/images (Mac OS X)

The last part in the Command entry is the name of the job being submitted. For example, `anim.ma` is the file containing the animation that you want to render.

Users submitting jobs from an IRIX shell/Terminal or in scripts should see Effects of \$MAYA_PROJECT settings on locating Dispatcher files.

View the Submit Job window the first time

The first time you click Distribute > Render, the Submit Job window appears with a Command entry line filled out. The `-proj` option is used so the Dispatcher can figure out the file locations.

Change items in the Command entry

The file to be submitted is specified without the path of the project. The Dispatcher searches for and finds the file in the scenes directory of the default project.

The settings in the Submit Job window are preset to those used for the most recently submitted job, but the Start, End, and Step values automatically correspond to those set in Render Global Settings window (select Window > Rendering Editors > Render Globals) or on the time bar for the script about to be submitted. You can control the animation range in the Animation section of the Render Global Settings window by toggling between Start/End and Render Globals.

Display the Start and End frames

The Start, End, and Step values initially displayed in the Submit Job window are derived from the settings in the Animation section located under the Render Global Settings window.

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About > Submit a Maya rendering job

Include Maya Render command options

You can use Maya's `Render` command options as arguments of the `dispatch_maya_render` as you would using the `Render` command.

`dispatch_maya_render` options

Specifying `dispatch_maya_render` options

Jobs can be dispatched using the following line:

```
dispatch_maya_render # <endframe> <packet> <Render_options> scene
```

where:

`#`

Holds a place for the frame number; must be specified as is. (The Dispatcher uses the hash sign (#) to indicate the current frame.)

`endframe`

Indicates the last frame in the animation as it appears in Render Global Settings window under the Animation section.

`packet`

Defines the size of the packets into which you are dividing your scene file for dispatching. The default is 10. Packets may have different number of frames. You do not enter the word `packet`, just a number that is the same value as `Step`. You should define the packet size in relation to the number of frames in your animation. For example, if you have a 600-frame animation, you can set the packet size to 20 or 30.

`Render_options`

are the command-line options for Maya's `Render` command; you must at least give the name of the Maya file to render. To see these options, type the following in any shell:

```
/usr/aw/maya5.0/bin/Render -help
```

For example, the `-proj` option is set by default to the images directory and the scenes directory of the current project. The paths are displayed in the Command entry automatically when you select `Jobs > Submit` but you can change these if you prefer. The default structure in Maya uses the subdirectory names `images` and `scenes`, but you can also change these. The `-proj` is a command-line option for Maya's `Render` command.

You use the Start, End, and Step settings to control the sequence of images to be rendered. Make sure to enter the starting and ending frames as defined in the scene file.

Start

Indicates the starting frame in a frame sequence.

End

Indicates the ending frame in the frame sequence. You must place this number immediately after the hash sign.

Step

Sets the increment for the number of frames to advance through a frame sequence; must be the same value as the packet size (this is the second number after the hash sign).

Example of a Maya rendering job

In the following example, images are rendered in five-frame packets (the Step, and therefore the packet, is 5). In the Submit Job window after the word Command, enter the following:

```
dispatch_maya_render # 50 5 -rd /u/yourname/outdir/ /u/  
yourname/maya/myproject/scenes/myanim
```

50 is the last frame in the animation and the Dispatcher step frame is 5 (as opposed to the Step Frame in the Render Global Settings window).

In this example, the `-rd` option overrides the `-proj` option.

You can see the separate packet streams in the Progress window (Hosts > View progress). Once you set up the Dispatcher correctly and test your command, you will see that the `dispatch_maya_render` command is an efficient way to render images. The Dispatcher runs in the background and does not require the Maya interface. To see the full list of `dispatch_maya_render` options that are available to you, type in a shell:

```
dispatch_maya_render -help
```

Note The `dispatch_maya_render` command can be used only in the Submit Job window.

Use the Maya Render command

You can dispatch rendering jobs using the `Maya Render` command and specifying all the usual batch rendering command-line options.

This is for Maya users only.

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About > Submit a Maya rendering job

To submit a job:

- 1 Select Jobs > Submit (Ctrl-s). The Submit Job window appears.
- 2 Fill in the name of the job you want to submit to the Dispatcher. This can be the name of a scene file that you want to execute. Names separated by empty spaces are not accepted.
- 3 Enter the syntax of the command that you want to input to the Dispatcher.

What you type for this entry changes according to the type of command you want to execute. For a `Render` command (similar to the Maya `Render` command line), you must enter the hash character (`#`) after the `-s` and `-e` options. During execution, the hash symbol is replaced with the number of the current frame, repeated until all frames are rendered. This convention allows the Dispatcher to run a rendering job without knowing anything about the actual data to be rendered.

The Dispatcher is designed for post production jobs as well as rendering jobs. When using the `Render` command, don't confuse the hash characters with the execution of a sequence of images in `Render`.

Tips	<ul style="list-style-type: none">• Normally, the <code>Render</code> command is in your path (the network administrator arranges that the command points to the correct location). If not, instead of typing <code>Render</code>, you should type: <code>/usr/aw/maya5.0/bin/Render</code>• To see the full list of options that are available to you when you are using the <code>Render</code> command, type <code>Render -help</code> in a shell.• For <code>Render</code> commands only, always specify the <code>-s # -e # -b 1</code>.
-------------	---

- 4 Indicate the Start, End, and Step values as desired. Make sure to enter the starting and ending values as defined in your script. Otherwise the last frame is repeated until the ending number you choose is reached.

The Dispatcher executes a series of frames, beginning at the starting frame and executing frames based on the Step counter until the ending frame is reached (the Start or End do not necessarily correspond to an image).

For example, if you have a 100-frame rendering job and you enter the command `Render -s # -e # -b 1 myscene`, then specify a starting frame of 10, an ending frame of 100, and a step of 1, all the frames between 10 and 100 are processed.

The Dispatcher controls frame execution using the hash character (`#`).

First frame 10 is passed to:

```
-s # -e # -b 1
```

which is filled in as:

```
-s 10 -e 10 -b 1
```

then frame 11 is passed to:

```
-s # -e # -b 1
```

which is filled in as:

```
-s 11 -e 11 -b 1.
```

This continues until `-s 100 -e 100 -b 1` is executed. Of course, if you specify a step of 2, only half the frames between 10 and 100 are executed.

Tip Avoid pressing Enter to confirm a value in the Step or End boxes as it is interpreted as meaning OK, causing the job to be submitted immediately.

- 5** Re-arrange the order in which you want frames to be rendered by clicking the Order button.
- 6** For Pool, select WholeSystem (this is the default) or any pool you have defined.
- 7** Choose a number for the scheduling priority by moving the slider. The scheduling priority range is from 0 (lowest) to 100 (highest).
- 8** Click Submit to validate the job; otherwise, click Cancel.

Tip Avoid specifying the `/usr/tmp` directory as the output destination for your images because the images may be stored locally in the `/usr/tmp` directory of each machine used by the Dispatcher instead of in the `/usr/tmp` directory of the submitter's machine.

Effects of \$MAYA_PROJECT settings on locating Dispatcher files

The following table shows how changing the \$MAYA_PROJECT environment variable affects where files are read from and where they are saved.

The following table shows appears how to keep track of files. This can be especially useful when entering commands from the command line or running scripts in the Dispatcher.

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About > Submit a Maya rendering job

(For Maya users only.)

\$MAYA_PROJECT	Means
Is not set	Sample command: <code>Render myscene.ma</code>
	File is read from: <code>\$HOME/maya/projects/default/scenes/</code>
	Resulting images are stored in: <code>\$HOME/maya/projects/default/images/</code>
Is set in the <code>.cshrc</code> or <code>.tcshrc</code> or in a shell	Sample command: <code>Render myscene.ma</code>
	File is read from: <code>\$MAYA_PROJECT/scenes/</code>
	Resulting images are stored in: <code>\$MAYA_PROJECT/images/</code>
Is set in the <code>Render</code> command only, overriding any other settings such as those in the shell window	Sample command: <code>Render -proj \$HOME/maya/projects/New myscene.ma</code>
	File is read from: <code>\$HOME/maya/projects/New/scenes/</code>
	Resulting images are stored in: <code>\$HOME/maya/projects/New/images/</code>
	Sample command: <code>Render -proj \$HOME/maya/projects/New /usr/tmp/myscene.ma</code>
	File is read from: <code>/usr/tmp/myscene.ma</code>
	Resulting images are stored in (as defined by <code>-proj</code>): <code>\$HOME/maya/projects/New/images/</code>

\$MAYA_PROJECT	Means
Is overridden by absolute pathnames	Sample command: Render -proj \$HOME/maya/projects/New -rd /usr/tmp myscene.ma
	File is read from: \$HOME/maya/projects/New/scenes
	Resulting images are stored in: /usr/tmp/
	Sample command: Render -rd /usr/tmp/ /usr/tmp/ myscene.ma
	File is read from: /usr/tmp/
	Resulting images are stored in (even if the \$MAYA_PROJECT is set): /usr/tmp/

Submit a Studio job

Use the Dispatcher to render images in the Studio environment using the `dispatch_render` command. This program is provided in Studio for rendering a sequence of frames defined with the `stepvalue` parameter. The Dispatcher will replace the hash character (#) with the current frame number by the Dispatcher at runtime.

Use the following line to set the parameters:

```
dispatch_render # stepvalue renderer options [startFrame endFrame byFrame]
startFrame, endFrame and byFrame are only needed when the byFrame has a value other than 1.
```

This line produces a system call to one of the renderers.

In the following example, the `byFrame` is 1, meaning the last three optional parameters are not needed in the command. In the Submit Job window after the word `Command`, enter the following:

```
dispatch_render # stepvalue raytracer "-p OUTPUTFILE SDLFILE"
```

This results in a system call to perform the following:

```
raytracer -sX -eY -p OUTPUTFILE SDLFILE
```

where:

X = current frame as passed on by the Dispatcher

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About > Submit a Maya rendering job

$$Y = X + (\text{stepvalue} - 0.05)$$

You use the Start, End, and Step settings to control the sequence of images to be rendered. Make sure to enter the starting and ending frames as defined in the script.

In the script, you can specify the directory where the scene files are stored by typing:

```
$ALIAS_WORKENV/sd1/scene1
```

To make the script more useful:

- Specify an output directory for storing the final rendered images. For example, enter:

```
-p$ALIAS_WORKENV/pix/rendered_images
```

- Keep a log of the images being rendered by redirecting the output of the Renderer to a file. In your script, include the following line (you must type the following two lines as a single line without pressing the Enter key after the first line):

```
renderer -s$1 -e$1 -b1 -p$ALIAS_WORKENV/pix/rendered_images $ALIAS_WORKENV/sd1/  
scene1 >>& $ALIAS_WORKENV/rendering_trace
```

Once you set up the Dispatcher correctly and test your script, you will find that the Dispatcher is an efficient way to render images regardless of the environment you are using.

Submit an IPR rendering job

Use the Dispatcher to render a sequence of images in the IPR environment using the `render` program provided in IPR.

For example, if you have a 100-frame rendering job and you enter the command `render -n # # 1 myjob`, then specify a starting frame of 10, an ending frame of 100 and a step of 1, all the frames between 10 and 100 are executed.

The Dispatcher controls frame execution using the hash character (#). First frame 10 is passed to `-n # #`, which is filled in as `-n 10 10 1`; then frame 11 is passed to `-n # #` which is filled in as `-n 11 11 1`. This continues until `-n 100 100 1` is processed. Of course, if you specify a step of 2, only half the frames between 10 and 100 are executed.

Submit a script via the Dispatcher

You can use the Dispatcher to execute scripts that contain any commands you want. For example, you can use scripts for compositing tasks by incorporating a command in the script. The following three scripts for Maya, Studio, and IPR provide instructive examples for rendering images.

Sample script for running in Maya

This sample script contains the following lines for running in Maya.

```
#!/bin/csh -f
setenv MAYA_PROJECT /u/robert
Render -s $1 -e $1 -b 1 -p Test Scene.ma
```

The convention of using a dollar sign followed by 1 is normal after the `-s` and the `-e` options. A fast way to create a script is to modify an existing one.

The output images are named Test as indicated by `-p Test`.

Maya assumes the `Scene.ma` file is located in the scenes directory of the current project. The `MAYA_PROJECT` variable defines the directory where the scene is stored. The `MAYA_PROJECT` variable is set to the `/u/robert` directory.

Sample script for running in Studio

This sample script contains the following lines for running in Studio.

```
#!/bin/csh -f
setenv ALIAS_WORKENV /v/pierre
setenv ALIAS_PROJECT world
set projpath = $ALIAS_WORKENV/user_data/$ALIAS_PROJECT
# sdl name
set SDL = star
# renderer or raytracer
set R = renderer
${R} -s $1 -e $1 -b 1 $projpath/$SDL
```

In the script, you can specify the `ALIAS_WORKENV` and `ALIAS_PROJECT` variables to define where the project data is stored. Doing this overwrites the settings of your `.cshrc` file. You can also define the scene you want to render, as well as the rendering program you want to use.

You can make the script more useful if you:

- Specify an output directory for storing the final rendered images. For example, add the following:
`-p /a/stockImages`
- Keep a log of the images being rendered by redirecting the output of the Renderer to a file. In your script, include the following line (you must type the following two lines as a single line without pressing the Enter key after the first line).

```
${R} -s $1 -e $1 -b 1 -p /a/stockImages $projpath/sdl/scene1 >>&
$ALIAS_WORKENV/rendering_trace
```

Sample script for running in IPR

IPR users would write a script such as the following:

2 | Dispatcher

About > Submit a Maya rendering job

```
#!/bin/csh -f
setenv MY_OUT /a/stock1
render -v -A -I -l 768 576 -n $1 $1 1 -i $MY_OUT/my_outimage
my_scene_file
```

You can also specify the `-w` and the `-P` options when working in the Explore environment.

To run a script via the Dispatcher

- 1 Create a script acceptable to your environment. See the preceding sample scripts for Maya, Studio, and IPR users.
- 2 Save the script under a name such as `myrender1`. Make a note of where you save it. In this example, the directory is called `/u/robert` but you can choose any directory you want.
- 3 Set the protection for the file named `myrender1` to make it executable by entering:

```
chmod a+x myrender1
```

- 4 In the Submit Job window in the Dispatcher, enter the following:

```
/u/robert/myrender1 #
```

Make sure to give the path of the directory where your script to be executed is stored. The hash sign (`#`) in the command line will be replaced by the number of the frame you are rendering. In the script you have just written, this is the argument number 1 (the references to `$1` in the script).

Use the Start, End, and Step settings to control the sequence of images to be rendered. Make sure to set the starting and ending frames so that they match those defined in the script.

- 5 Click Submit.

Submit a job from a IRIX shell

Submitting jobs from a IRIX shell refers to dispatching jobs using previously set options, such as the pool, without entering the Dispatcher user interface. For example, typing the following command in a shell lets you submit a job.

```
dispatcher -n 1 10 1 -j myjob -c "sleep 5 ; echo Frame.#"
```

The Dispatcher processes the job, and when it is completed, sends e-mail confirming the results. The job is completed without any of the Dispatcher-related windows being displayed. This is a more effective way of working. If you write your own scripts for dispatching jobs, you will find this feature useful.

Typing the following command in a shell and specifying the `-g` option lets you display the Dispatcher window and the Submit Job window in case you want to make changes before submitting the job.

2 | Dispatcher

About > Submit a Maya rendering job

```
dispatcher -n 1 10 1 -j myjob1 -g -c "sleep 5 ; echo
Frame.#"
```

All items immediately following the `-c` option up to the end of the line correspond to the actual command issued to the Dispatcher. In the above example, this part of the line corresponds to issuing the following commands:

```
sleep 5 ; echo Frame.#
```

You can use the `echo Frame.#` command to display additional information in the Progress Window. To render a Maya script called `/u/alain/MyMaya` for the first hundred frames, do the following:

```
dispatcher -n 1 100 10 -c dispatch_maya_render # 100 10 -proj /u/alain/ MyMaya
```

For this command to work, it is assumed that you can run Maya. Also, the number after the hash (100 in this example) is the same as the end frame number (`-n 1 100 10`) and the second number after the hash (10 in this example) is the same as the step number (`-n 1 100 10`).

To edit the settings in the Submit Job window before submitting the job, enter the following line:

```
dispatcher -g -n 1 100 10 -c dispatch_maya_render # 100 10 -proj /u/alain/
MyMaya
```

You can even use these lines in a script to dispatch jobs.

Specify Dispatcher command-line options

Use the following line at the Command prompt in any shell on a machine that has the Dispatcher program installed:

```
dispatcher <options>
```

where `<options>` is one or more of the options in the following table:

Use...	For...
<code>-help</code>	listing a summary of the syntax.
<code>-vers</code>	finding out which version of the Dispatcher you are running.
<code>-banner</code>	preventing the banner from displaying.
<code>-s <spooler_name></code>	specifying the spooler you want to connect to.
<code>-p <poolname></code>	specifying the pool you want to use.
<code>-j <jobname></code>	specifying the job name.

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About > Submit a Maya rendering job

Use...	For...
<code>-n <start> <end> <step></code>	defining the starting and ending frame in a script as well as the number of frames the script is incremented by. For example, specifying <code>-n 1 10 1</code> means start at frame 1, and go to frame 10 in steps of 1.
<code>-g</code>	displaying the Dispatcher graphical user interface. For example, when you are dispatching jobs in batch mode, you may need to display the Submit Job window to change parameters before submitting a job.
<code>-c <command></code>	indicating that everything immediately following the <code>-c</code> option up to the end of the line is the actual command that will be submitted to the Dispatcher. The <code>-c</code> option must be the last option you specify.

Submit a non-rendering job

Choose a command to enter in the Command-line entry. For example:

- The IRIX command `sleep 12` is entered as the command (you can enter any IRIX command you want).
- The job contains five frames: Start is 1 and End is 5.
- The order in which the job was submitted is *incremental*.
- The pool is named *WholeSystem*,
- The scheduling priority is 1.
- Click Submit to submit the job.

Tip An effective way to test the Dispatcher is to submit simple IRIX commands such as `sleep`.

Submit an imgcvt job

This example is of an `imgcvt` job to convert images from one file format to another. The single-line command entered in the Command entry is:

```
imgcvt -f sgi -t jpg /u/robert/maya/projects/New2/images/my_images.sgi.# /u/  
robert/maya/projects/New2/images/my_images.jpg.#
```

Submit a di job

This example is of a `di` job to resize images. The single-line command entered in the Command entry is:

```
di -s 768 576 -w /u/robert/maya/projects/New2/images/resized_image.# /u/robert/  
maya/projects/New2/images/initial_image.#
```

View progress

Once you have submitted jobs for execution, follow these steps to monitor useful information about jobs running on hosts.

To view progress

- 1** Select Hosts > View progress. A window appears showing the progress of the rendering or the compositing.
- 2** Select File > Save As to save the contents of the window to a file of your choice. This allows you to keep a trace of important messages.
- 3** Select Display > Filter Error Messages to filter out anything beginning with a warning. This allows you to focus on critical events.
- 4** Select File > Close to exit.

Get job information

Select Jobs > Info (Ctrl-i) to display an information window with a description of the job. The Dispatcher opens the window so you can still change the scheduling priority and the pool while you work. In the window, the Pool and Priority settings appear in white, meaning that you can change them. The ability to change the Pool and Priority settings is especially important here as the new settings have an immediate effect. For example, you can process jobs faster by moving the slider to change the Priority.

Setting the priority to 0 suspends a job, whereas setting the priority to any other value will restart the job.

Get an e-mailed report

As soon as a job is completed, you receive an e-mail message informing you that it has finished. For this to work, your network administrator must ask for e-mail notification of job termination as described in “Run the installation script”.

The example shown here works in the Maya environment only. the following is the command that was entered in the example (all on a single line).

```
Render -s # -e # -b 1 -x 100 -y 100 -rd /u/myname -cam persp -p perspImage /u/  
myname/scenes/myanim.ma
```

This is the report produced after the job named myjob was submitted.

2 | Dispatcher

About > Suspend or restart a job

This report was generated by filtering the log of your job with the program /var/spool/dispatcher/dispatcher_format. You can copy this file into your own directory, edit it, and call it .dispatcher_format to make it your own.

```
requested 1 to 20 by 1
job status OK 1 successful frame, aggregate time 419 seconds total
accumulated time: 14 seconds of which 0 in error
job status OK 20 successful frames, aggregate time 138 seconds
total accumulated time: 396 seconds of which 0 in error
```

Machine	OK_Frame	Errors	Total Time (secs)	Error Time (secs)
corona	5	0	23	0
grenade	8	0	68	0
navet	3	0	79	0
potiron	2	0	133	0
raisin	2	0	93	0

Suspend or restart a job

You can put a job you are running on hold until you resume its execution. You can do this by selecting Jobs > Suspend/Restart. This gives the job a scheduling priority of 0.

You can resume a suspended job by selecting Jobs > Suspend/Restart, which sets a priority other than 0 for that job.

Test a job

You can test your user environment, your machines, and the commands to be passed from one machine to another by typing the following line in a shell window.

```
rsh <machine> which <command>
```

where <machine> is the name of a machine at your site and <command> can be any of those listed in the following table.

This test checks your environment where the Dispatcher is to run, whether your jobs coming across the network are accepted on a remote machine, and whether a particular command can be successfully used. By changing the name of the machine (you can also change the command), you can test a job on different machines that have the Dispatcher installed on them.

Environment	Command	Remarks
Maya	rsh machine which Render	
	rsh machine which maya	
	rsh machine which dispatch_maya_render	
	rsh machine maya -h	also checks whether the key exists
Studio	rsh machine which dispatch_render	
	rsh machine renderer -i	also checks whether the key exists
IPR	rsh machine which render	

Important

To be sure the Rendering or compositing programs are installed on each machine in the pool you are using, you should ask your network administrator. Otherwise, you will not get expected results when you run the command or script via the Dispatcher.

Cancel a job

You can permanently remove a job from the list of jobs to run. To do this, select Jobs > Cancel.

In some situations, you may want to terminate a job before it is completed, no matter what its status is. For example, you might suspect that there is something wrong with the job (it is consuming too much CPU time) or that it requires resources that you know are not available. You can cancel a job at any time.

2 | Dispatcher

About > Cancel a job

3 FCheck

About FCheck

Overview of FCheck

FCheck is an image and sequence viewer that caches images in RAM so you can play back and scrub images in real time. Color correction, image editing and error checking can be done in FCheck using tools that can:

- display emboss, the negative, and image borders
- adjust luminance, gamma, saturation, and offset settings
- change size, resolution, and magnification
- switch between RGB channels

FCheck is installed with Maya and works on all supported platforms. Maya uses FCheck as an image previewer to display intermediate results of a rendering. It can be invoked directly from Maya or standalone.

FCheck features can be enabled through command line options, hotkeys, the playback windows menus, mouse usage and the FCheck Info window on Mac OS X.

For more information on hotkeys and command line usage, see "FCheck features" on page 65.

For more information on mouse usage, see "FCheck Mouse controls" on page 90.

For a lists of FCheck command line options, see "FCheck" on page 77

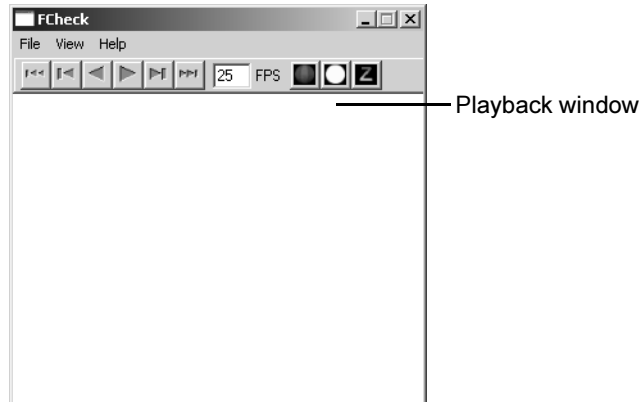
Note The offset, bump, color and negate commands are not available for FCheck on Mac OS X.

FCheck windows

FCheck displays two windows. The FCheck Playback window appears on all platforms and displays images or sequences you open. Depending on the platform, the menu items in the Playback window are different.

3 | FCheck

About > FCheck windows



For information on the menu items of Windows and Mac OS X, see "Windows and Editors" on page 77.

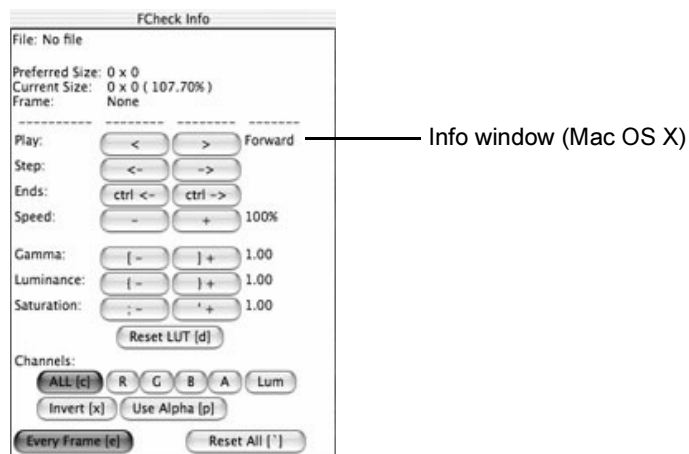
For information on viewing options and adjusting settings, see "FCheck" on page 77.

Windows/Linux/IRIX

Along with the playback window, a FCheck command prompt window appears to display image information. Image information is displayed on Linux and IRIX in the shell window used to open FCheck.

Mac OS X

The FCheck Info window is unique to Mac OS X. Use it to control and modify the image or animation.



For information on mouse controls, see "FCheck Mouse controls" on page 90.

FCheck features

Overview of FCheck features

You can use FCheck to alter the view and look of a pre-rendered image or animation sequence. For example, you can adjust luminance, gamma, and saturation. FCheck has features that can be accessed through:

- command line options. See "FCheck options" on page 65.
- hotkeys. See "Hotkeys" on page 66.
- using the mouse. See "FCheck Mouse controls" on page 90.
- toolbar buttons. See "FCheck Control Bar" on page 90
- the menu interface on some platforms. File menus in Windows and Mac OS X versions let you open and save images or sequences.
- the info window on Mac OS X. It is used to apply features that are otherwise unavailable on Mac OS X. See "Mac OS X" on page 64

FCheck options

Using options

FCheck options are a set of FCheck features operated using command lines. The options are typed into the command prompt window/shell window when FCheck is executed.

Note When re-opening FCheck, please note that FCheck does not remember options set in previous executions. An image must be written to disk to retain image modifications and adjustments executed in FCheck. See "Save images or sequences" on page 74.

The standard convention to enter a command line is given below:

```
fcheck -<option> <spec> myimage.ext
```

<option>

The FCheck option letter.

See "FCheck options list" on page 77.

<spec>

Option-specific parameters.

3 | FCheck

About > Hotkeys

`myimage.ext`

The name of the file to load. You must be in the current directory in the command prompt to open the file. When using IRIX or Linux, you must include the filename to the command line. Otherwise, when using Windows or Mac OS X, you can omit the filename from the command line. to start FCheck with certain settings without opening a file.

For example:

```
fcheck -r 15
```

Where `r` specifies the frame rate option and 15 is the number of frames per second.

You can combine some options together in one command line using the following convention:

```
fcheck -<option> <spec> -<option> <spec> ... myimage.ext
```

For example,

```
fcheck -B -G 1 -r 15 myimage.ext
```

`-B`

Turns on border around the image.

`-G 1`

Sets gamma value to 1

`-r 15`

Sets frame rate to 15 frames per second.

For the list of options with full descriptions, see "FCheck options list" on page 77.

Hotkeys

Hotkeys refers to the combinations of keyboard keys that perform a program feature.

The categories of features provided using hotkeys are: display keys, image adjustment keys, and animation playback control keys.

Some hotkeys are not available in the Mac OS X version of FCheck.

Display keys

Display keys let you change the view of the image displayed in the FCheck playback window. Using display keys, you can: display different color channels, display borders of image tiles, zoom in and out, and display the image mask.

For a full list of display keys, see "Display keys" on page 80.

Image adjustment keys

Image adjustment keys allow you to modify the properties of an image. Some useful image adjustment keys are: increasing and decreasing luminance, saturation, gamma, and offset values.

For a full list of image adjustment keys, see "Image adjustment keys" on page 82.

Animation playback control keys

Use animation playback control keys to control the playback of animation/sequences of files. Some features you can perform using animation playback control keys are: forward play, reverse play, pause, adjusting the speed of playback, and toggling to the first frame.

For a full list of animation playback control keys, see "Animation playback control keys" on page 85.

Frame numbering and padded numbers

Understanding the concept of frame numbering and padded numbers will assist you in knowing the conventions for file opening and saving when dealing with an image sequence or animation.

Whenever a sequence of images is generated, a numbering convention is used to number frames. Padded numbers are frame numbers that have a specified number of digits, where 0s are used to fill the unused digits.

For example,

5 digit padding

```
myimage00002.ext
```

Unpadded

```
myimage2.ext
```

FCheck uses different conventions when opening and saving files with padding.

Convention for opening files

When opening files using the command line, a different convention is used to specify a file sequence.

Depending on the position of the frame number in the filename, a different convention is used to indicate the file you are opening.

3 | FCheck

About > Frame numbering and padded numbers

@ and # symbols are used to specify the position of frame numbers in filenames. The number of @ is parallel to the amount of padding in the file name.

@
 padded one digit

@@
 padded to 2 digits (e.g., 1 becomes 01, 10 remains 10)

@@@
 padded to 3 digits.

 is a shortcut for @@@@

The following is a list of sequence formats you can open. @ represents the position of the frame number:

```
myimage@.ext  
myimage.@.ext  
@myimage.ext  
myimage.@  
myimage.ext.@
```

For example, if you want to open a sequence of files beginning with `myimage.001.iff`. You would enter the following command line:

```
fcheck -<option> myimage.@@@.iff
```

For details on how to open image sequences, see "Open image sequences" on page 72.

Convention for saving files

By default, FCheck saves sequences of images without padding, counting from 1 to the number of frames. For example, FCheck names a 10-frame sequence from `myimage1.iff` to `myimage10.iff`.

Using the # symbol, you can indicate the position and the amount of padding in the frame number when saving a sequence of images.

You can save sequences using the following frame/animation formats:

```
myimage#.ext  
myimage.#.ext  
#myimage.ext
```

Use multiple #s, to set the number of padding in the frame number. One # represents one digit in the frame number. For example, `myimage##.ext` applies two number padding to the sequence.

For details on how to save files, see "Save images or sequences" on page 74.

How do I? Use FCheck

Start FCheck

To start FCheck on Windows

Do one of the following:

- From the Start menu, select Start > Programs > Alias > Maya 6.0 > FCheck.
- Open <drive>\Program Files\Alias\Maya\bin folder and double-click the FCheck application.
- Open the command prompt and enter `fcheck`.

The FCheck playback window and command prompt window appears.

To start FCheck on Mac OS X

- In the `/Applications/Alias/maya6.0` folder, double-click FCheck.

The FCheck Playback Window and FCheck info window appears.

Tip You can click-drag the FCheck icon from a Finder window to the Dock to create a shortcut to the application.

The FCheck info window and keyboard shortcuts listed in the tables at the end of this chapter allow you control the image or animation in the FCheck Playback window.

To start FCheck on Linux or IRIX

- In a shell window, type FCheck followed by the name of the image you want to display:

```
fcheck -<option> myimage
```

For a list of options, see "FCheck options list" on page 77

You can display several images at once using wildcards (that is, *). Enter the following to displays all images whose names begin with the characters mytest:

```
fcheck mytest*
```

Each image appears in a separate window.

3 | FCheck

How do I? > Open a file in FCheck

For an animation, you can use the dot extension (.) and FCheck automatically finds the start, end and step values for the sequence. Enter the following to display all images whose names begin with the characters mysequence in a single window:

```
fcheck mysequence.
```

On IRIX and Linux, you must specify a file to open.

For information on using the command line with a sequence filename, please see "Convention for opening files" on page 67.

Open a file in FCheck

To open a file in FCheck on Windows

- 1 Start FCheck.
For more information, see "To start FCheck on Windows" on page 69.
- 2 In the Playback window, choose either File > Open Image or File > Open Sequence.
A file browser appears.
- 3 In the file browser, select an image or the first frame of the animation sequence you want to view and click Open.
The image or animation appears in the FCheck Playback window.
- 4 Manipulate the image or sequence using keyboard commands.
For more information on keyboard commands, see "FCheck" on page 77.

Tip You can also open a file in Windows using the command line. Follow the steps in "Opening an animation using the -n option" on page 72, for more details

To open a file in FCheck on Mac OS X

- 1 Start FCheck.
For more information, see "To start FCheck on Mac OS X" on page 69.
The FCheck Info window and the FCheck playback window appear.
- 2 In the File menu, choose either Open Images or Open Sequence.
A file browser appears.
- 3 In the file browser, select an image or the first frame of the animation sequence you want to view and click Open.
The image or animation appears in the FCheck Playback window.

- 4 Manipulate the image or sequence by clicking on the options in the FCheck Info window or using keyboard commands.

For more information on keyboard commands, see "FCheck" on page 77.

Note The FCheck Info window numbers the selected image as 1, and all following frames in the animation accordingly. This numbering may not be the same as the numeric part of the image's filename. For example, if you select frame 4 of an animation as the start frame in the FCheck window, the FCheck info window identifies frame 4 as frame 1. See "Image adjustment keys" on page 82.

To open a file in FCheck on Linux or IRIX

- 1 Start FCheck with an image or a sequence.
For more information, see "To start FCheck on Linux or IRIX" on page 69.
- 2 Manipulate the image using keyboard commands.
For more information on keyboard commands, see "FCheck" on page 77.

Tip Using FCheck, you can open and view renderings in progress. To update a partially completed image in the FCheck Playback window, use the "u" hotkey. See "Use FCheck with Maya" on page 76 for using FCheck with Maya.

You can display your image at full screen size by choosing View > Full Screen.

Control animation playback in FCheck

To play animation in FCheck

- 1 Start FCheck
For more information, see "Start FCheck" on page 69.
- 2 Open an animation or a sequence of images
For more information, see "Open a file in FCheck" on page 70.
- 3 Press any of the following to control animation playback:

. <period>	forward play
------------	--------------

3 | FCheck

How do I? > Open image sequences

, <comma>	backward play
<space>	pause playback
Ctrl + left arrow	return to the first frame
+ and -	speed up and slow down the playback of the sequence.

In addition, Mac OS X allows playback control using buttons within the Info window.

Tip You can drag the mouse left and right using the left mouse button in the Playback window to scrub through a sequence. For more information on mouse controls, see "FCheck Mouse controls" on page 90.

For more information on sequence playback controls, see "Animation playback control keys" on page 85.

Open image sequences

Opening an animation using the -n option

The option `-n` allows you to open an animation, while specifying the start and end frames, and the intervals of frames.

- 1 With FCheck closed, open a command prompt window.
- 2 Determine what the start frame, end frame, and interval you want to open the animation with.
- 3 Find out the format of the animation's filename.

See "Convention for opening files" on page 67 to understand how FCheck specifies padded numbers for opening files.

- 4 Type the following:

```
fcheck -n <start> <end> <interval> <filename>
```

<start> is the number of the first frame to load.

<end> is the number of the last frame to load.

<interval> is the interval step to load by.

<filename> is sequence filename. The filename must follow guidelines set in "Convention for opening files" on page 67.

- 5 Press Enter.

A FCheck Playback window displays the animation according to the specifications entered.

Creating a sequence of unrelated images.

Using the `-s` option, you can display a list of unrelated images.

- 1 With FCheck closed, open a command prompt window.
- 2 Determine the images you want to make into a sequence.
- 3 Type

```
fcheck -S <filename1> <filename2> <filename3>...
```

`<filename1,2,3,...>` represents the images you want to display as a sequence in FCheck. The first image in the list is the start frame, and the last image is the end frame.

A FCheck Playback window will appear displaying the sequence.

Adjust color values

Tip The luminance, saturation, gamma, offset, animation speed control, bump gain, and bump color keyboard keys can be used with Shift, Alt and Ctrl keys. Hold down Shift, Alt or Ctrl keys while pressing the function key to increase the variations. Shift = 10%, Alt = 50%, and Ctrl resets the value.

For more information and a full description of these keys, see "Image adjustment keys" on page 82.

Adjusting luminance

Luminance is the intensity of glowing or reflective light on a given image. The range of luminance settings in FCheck is between -100 and +100.

Use the following keys to increase and decrease the luminance.

- = Increasing luminance causes images to glow brighter.
- Decreasing luminance causes images to dim.

(Mac OS X) You can also use the Info window to adjust the values.

Adjusting saturation

Saturation is the amount of color vibrance in the image. The range of saturation settings in FCheck is between -100 and +100.

Use the following keys to increase and decrease saturation.

3 | FCheck

How do I? > Save images or sequences

- ' (apostrophe) Increasing saturation increases the shine of the color tones in the image by taking existing colors in the image and adding more of the same colors. The more saturated the image, the more it looks like a child's color painting.
- ; (semicolon) Decreasing saturation increases the amount of black and white tones in the image. When an image is totally desaturated (-100), the image appears in black and white.

(Mac OS X) You can also use the Info window to adjust the values.

Adjusting gamma

Gamma is the overall brightness of an image. Changes to gamma not only adjusts the brightness, but also adjusts ratios of colors in the image. The range of gamma settings in FCheck is between -100 and +100. Use the following keys to increase and decrease gamma.

-] Increasing gamma will make the image brighter and paler. A "bleached out" effect occurs.
- [Decreasing gamma darkens the color tones in an image. Overall brightness is also decreased.

(Mac OS X) You can also use the Info window to adjust the values.

A specific gamma value can also be entered by typing `fcheck -G <gamma>` into the command prompt and opening an image/sequence. `<gamma>` represents the gamma value wanted.

Note Images have an initial gamma value, but sometimes it is not the one you want. Programs such as Matador change the gamma value in RLA files because Matador writes a 2.2 gamma while storing the image in gamma 1.0 and the image looks washed out when you display it using FCheck or a compositing software.

By supplying the correct gamma value using the -G option on the command line, you can display the image as intended. This is one of the most useful command line options in FCheck acting as a gamma repair tool.

Save images or sequences

For information on supported file formats, see "Supported save formats" on page 87.

To save an image on Windows or Mac OS X

- 1 Select File > Save Image to save the current frame as an image.

- 2** In the file browser, enter a name and extension for your file, select a format and destination for the file, and click Save.

Your file is saved to the specified folder.

To save an image using hotkeys (Linux/IRIX)

Do one of the following.

- If you do not want to overwrite the current filename, press `w` to save the file as `fcheck.out.1`. The file will be numbered 1 if it is not already numbered. If it is already numbered, it will number the file with the same frame number as before.
- If you want to overwrite the current filename, first press `F11` to turn on file overwriting, then press `w` to save the file. The old file is replaced with the newly saved file.

Your file is saved in the same directory where the file was opened.

To save a sequence on Windows

- 1** Select File > Save Animation to save the animation as a sequence of images.
- 2** In the file browser, enter a name and extension for your file, select a format and destination for the file, and click Save.

For information on frame numbering and padding numbers, see "Frame numbering and padded numbers" on page 67.

Your file is saved to the specified folder.

To save a sequence on Mac OS X

- 1** Select File > Save As Sequence to save the animation as a sequence of images.
- 2** In the file browser, enter a name and extension for your file, select a format and destination for the file, and click Save.

For information on frame numbering and padding numbers, see "Frame numbering and padded numbers" on page 67.

Your file is saved to the specified folder.

To save a sequence using hotkeys (Linux/IRIX)

Do one of the following.

- If you do not want to overwrite the current sequence filenames, press `Shift + w` to save the files as `fcheck.out.1, 2, . . .`. The files will be numbered according to its original frame number in the sequence.

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How do I? > Use FCheck with sound

- If you want to overwrite the current sequence filenames, first press F11 to turn on file overwriting, then press Shift + w to save the files. The old files are replaced with the newly saved files.

Your files are saved in the same directory where the sequence was opened.

To save as QuickTime movie on Mac OS X

- 1 Select File > Save As Movie to save the animation as a QuickTime movie.
- 2 In the file browser, enter a name and extension for your file, select a format and destination for the file, and click Save.

Your file is saved to the specified folder.

For information on supported file formats, see "Supported file formats" on page 86

Use FCheck with sound

FCheck can import sound files, associate them with an image sequence, and play them back in sync with your image sequence. To import a sound file, select File > Import Sound. To turn sound on or off, select File > Toggle Sound.

Use FCheck with Maya

You can now launch FCheck from within Maya by selecting File > View Image or File > View Sequence.

Maya uses FCheck as an image previewer to display intermediate results of a rendering. FCheck can be opened within Maya when using these tools.

Playblast

Uses FCheck to externally preview the current animation.

See "Playblast" in the Animation guide on how to use FCheck with playblast.

Hardware Render Buffer

Uses FCheck to externally display an animation rendering rendered using your computer's display graphics card.

See "Use the hardware render buffer" in the Rendering guide on how to use FCheck with hardware render buffer.

Batch Render

The “Show Batch Render” function uses FCheck to preview the latest rendered image when batch rendering.

See “Show Batch Render” in the Rendering guide on how to open FCheck when batch rendering.

Reference Windows and Editors

FCheck

FCheck options list

Note The FCheck Info window on Mac OS X contains options you can set. The following options are not available: offset, bump, color, negate.

For information on how to use FCheck options, see “FCheck options” on page 65.

Windows/ Mac OS X	Linux/IRIX	Description
-a	-a	Displays all blocks, giving the coordinates and weight of each tile (to be used with the -c option). Note: Blocks and tiles are image spaces Maya uses in its process of rendering an image.
	-B	Turns off the border around an image.
	-C <x> <y> <width> <height>	Crops an image. <x> and <y> represents the bottom left starting plane points. Use <width> and <height> to size the image.

3 | FCheck

Reference > FCheck options list

Windows/ Mac OS X	Linux/IRIX	Description
-c	-c	Checks completeness of the .iff tags present in a sequence. If the sequence is incomplete or corrupted, FCheck prints out an error. This is done without opening the sequence.
	-D	Sets up your machine for stereo mode. However, if stereo mode is not activated, you need to quit FCheck so that the video mode is restored.
-d	-d	Runs in demo mode using a full screen window.
-F	-F	Displays images in full resolution preventing automatic rescaling of large images.
-f	-f	Finds the first available image in an animation.
-G <gamma>	-G <gamma>	Sets the gamma value in RLA images. Use <gamma> to specify value.
-g	-g	Initial gamma correction, which you can change at any time.
-h	-h	Lists FCheck feature commands (Help).
-K	-K	Does inverse Kodak Cineon color correction (log to linear).
-k <mem>	-k <mem>	Stores or keeps images in memory, using the amount of memory defined in <mem> as a percentage of available memory. A value of 1 means that 100% of memory is allocated.
-l <level>	-l <level>	The level of analysis for complex IFF (Image File Format) style files.

Windows/ Mac OS X	Linux/IRIX	Description
-m <mag>	-m <mag>	Magnifies an image. <mag> is an integer specifying the factor of magnification
-n <start> <interval> <end> <filename>	-n <start> <interval> <end> <filename>	Opens animations, indicating the start, end and step of the file (whole numbers). If you give a name ending with a period, FCheck automatically finds the start, end, and step of the corresponding animation. See "Opening an animation using the -n option" on page 72 for more details.
-p	-p	Pads frame numbers with zeros, needed for some image formats.
-r <rate>	-r <rate>	The rate at which animations are displayed. The default is ntsc, but you can also specify pal, film, or an integer number of frames per second (i.e., 15)
	-R <x> <y>	Changes the resolution of an image by reducing image size. <x> and <y> represent the new width and height values respectively.
-s <shrink>	-s <shrink>	Reduces an image. <shrink> is an integer specifying the factor of reduction.
-S	-S	Displays a sequence of images that are not arranged in any particular order, creating a loop of images, animations and sounds.
-T <timer>	-T <timer>	Sets the number of seconds each frame is displayed. This option is used in combination with the -s option.
-v	-v	Verbose mode allows the maximum information output.

3 | FCheck

Reference > Display keys

Windows/ Mac OS X	Linux/IRIX	Description
-w	-w	Waits until the image has finished rendering. The image is displayed only after the rendering is completed.
-z	-z	Prevents Z-depth information from being loaded for images. This is useful when you do not have much memory.
-Z	-Z	Loads Z-depth information for images in animation mode.

On Windows, you can access keyboard short cuts by selecting Help > Keyboard from the FCheck window.

Display keys

When you have an image displayed using FCheck, you can use the following keys or the FCheck info window to control the display.

Windows/ Linux/IRIX	Mac OS X	Action
a		Displays the alpha bitplane channel in an image.
b	b	Displays the blue bitplane channel in an image.
c	c	Displays an image by combining the color values contained in the three RGB planes.
f		Switches between single and double buffer mode. Default mode depends on machine's graphics card.
g	g	Displays the green bitplane channel in an image.
k		Turns on and off Kodak Cineon correction.

Windows/ Linux/IRIX	Mac OS X	Action
m		Displays the mask in an image.
P		Prints out the current luminance, gamma, and saturation values.
	p	Displays the alpha bitplane channel.
r	r	Displays the red bitplane channel in an image.
x	x	Displays the negative.
Shift + x		Reverses the mask displayed from using "x".
z		Displays the Z-depth information in gray levels.
Shift + z		Displays the logarithm of the Z-depth values.
F5		Toggles on and off a cross-hair cursor and tracking while in tracking mode.
F6		Displays all tracking points made in the same window FCheck started from.
Shift + F6		Writes a composer curve.
F8		Turns luminance curve on and off.
F12		Displays the borders of image tiles.
		Use the numeric pad keys for the following
0	0	Zooms in.
. (numpad period)	. (numpad period)	Zooms out.

3 | FCheck

Reference > Image adjustment keys

Windows/ Linux/IRIX	Mac OS X	Action
1 to 9	1 to 9	Press the number between 1 and 9 to scroll over the current image. To scroll faster, press Shift and Alt in combination with the number.

Image adjustment keys

Use the following keys to change the luminance, gamma, saturation or offset in images as well as change channel and manipulate colors.

Please note that an image must be written to disk to retain image modifications and adjustments executed in FCheck. See "Save images or sequences" on page 74 for more details..

Windows/ Linux/IRIX	Mac OS X	Action
	`	Resets all FCheck info window options.
d	d	Resets the image to the state it was in before you made changes to the luminance, gamma and saturation.
i		Displays the inverted bump; Similar to pressing n except that shows a negative gain.
l		Controls the luminance in an image, based on the weighted RGB. To toggle between line drawings and points, press L while holding down Shift.
n		Displays the normal bump. Increase depth by pressing ↑ and ↓ keys.
u		Updates or reloads the image.
w		Saves current image.
Shift + w		Saves entire animation.
=	}	Increase the luminance by 1%.
Shift + =		Increases the luminance by 10%.

Windows/ Linux/IRIX	Mac OS X	Action
Alt + =		Increases the luminance by 50%.
- (keyboard, not numeric pad)	{	Decreases the luminance by 1%.
Shift + - (keyboard, not numeric pad)		Decreases the luminance by 10%.
Alt + - (keyboard, not numeric pad)		Decreases the luminance by 50%.
Ctrl + =/-		Pressing either Ctrl - or Ctrl + restores image to original luminance value.
]]	Increases the gamma by 1%.
Shift +]		Increases the gamma by 10%.
Alt +]		Increases the gamma by 50%.
[[Decreases the gamma by 1%.
Shift + [Decreases the gamma by 10%.
Alt + [Decreases the gamma by 50%.
Ctrl +]/[Pressing either Ctrl] or Ctrl [restores image to original gamma value.
/		Increases the offset by 1%.
Shift + /		Increases the offset by 10%.
Alt + /		Increases the offset by 50%.
\		Decreases the offset by 1%.
Shift + \		Decreases the offset by 10%.
Alt + \		Decreases the offset by 50%.
Ctrl + \ or /		Restores image to original offset value.

3 | FCheck

Reference > Image adjustment keys

Windows/ Linux/IRIX	Mac OS X	Action
'	'	Increases the saturation by 1%.
Shift + '		Increases the saturation by 10%.
Alt + '		Increases the saturation by 50%.
;	;	Decreases the saturation by 1%.
Shift + ;		Decreases the saturation by 10%.
Alt + ;		Decreases the saturation by 50%.
Ctrl + '/;		Pressing either Ctrl ' or Ctrl ; restores image to original saturation value.
F1		Switches to red bitplane channel control.
F2		Switches to green bitplane channel control.
F3		Switches to blue bitplane channel control.
F4		Switches to all colors (RGB) bitplane channel control. This is the default channel control in FCheck.
Shift + F1		Switches to cyan bitplane channel control.
Shift + F2		Switches to magenta bitplane channel control.
Shift + F3		Switches to yellow bitplane channel control.
F11		Allows images to be overwritten.
<i>Use the numeric pad keys for the following</i>		
/	/	Decreases the percentage of color added to the bump image.

Windows/ Linux/IRIX	Mac OS X	Action
*	*	Increases the percentage of color added to the bump image
Ctrl + /	Ctrl + /	Undoes any color changes made by resetting value to zero
Ctrl + *	Ctrl + *	Undoes any color changes made by resetting value to 100%

Animation playback control keys

Use the following keys to control animation playback in FCheck.

Windows/ Linux/IRIX	Mac OS X	Action
comma	comma	Plays animation backwards continuously.
period	period	Plays animation forwards continuously.
space	space	Pauses the animation. Press again to resume.
Shift + ,		Sets current frame the starting frame in the animation.
Shift + .		Sets current frame the ending frame in the animation.
Alt + ,		Plays animation backwards once.
Alt + .		Plays animation forward once.
-	-	Slows down the playback speed of animation.
+	+	Speeds up the playback speed of animation
right arrow	right arrow	Proceeds to the next frame after animation is paused.

3 | FCheck

Reference > Supported file formats

Windows/ Linux/IRIX	Mac OS X	Action
left arrow	left arrow	Recedes to the previous frame after animation is paused.
Ctrl + right arrow		Proceeds to the last frame in the animation.
Ctrl + left arrow		Returns to the first frame in the animation.
s		Cycles through animation forwards and backwards continuously. (Swinging)
t		Plays animation in real time, skipping images if necessary.

Supported file formats

The file format native to FCheck is Maya Image File Format (IFF). When a file is not in IFF format, FCheck uses an external converter called toimg to convert the images or animation. The conversion allows FCheck to display the image or animation in its playback window. The following is a list of FCheck supported file formats.

Format	Extension
Abekas NTSC or PAL	.yuv
Alias	.als
Explore	
GIF	.gif
JPEG	.jpg
Kodak Cineon	.cin
Lucas Film	.lff
Pixibox PXB and SCN	.pxb or .scn
PPM raw/ascii	.ppm
Prisms	.pri

Format	Extension
Quantel	.qtl
SGI	.rgb, .sgi or .bw
Softimage	.pic
Targa RGB/BW	.tga
TIFF 6.0	.tif or .tiff
Vista	.vst
Wavefront RLA	.rla

Supported save formats

FCheck is also able to save in multiple file formats. In addition to the formats available, FCheck is able to save an image or sequence in QuickTime .mov file format on Mac OS X. The following is a list of supported save formats in FCheck.

Format	Extension
Maya IFF	.iff
Silicon Graphics	.rgb, .sgi or .bw
Adobe Photoshop	.ps
Targa	.tga
TIFF	.tif
GIF (Windows/Linux/IRIX)	.gif
JPEG	.jpg
JPEG-2000 (Mac OS X)	.jp2
PNG	.png
Apple PICT	.pict
Windows 16- or 32-bit bitmap	.bmp
MacPaint	.pntg

3 | FCheck

Reference > FCheck File menu

Format	Extension
QuickTime Image	.qtif

FCheck File menu

About fcheck (Mac OS X)

Opens a window with a description of FCheck.

Open Image (Windows/Mac OS X)

Loads image into FCheck playback window.

Open Animation (Windows)

Open Sequence (Mac OS X)

Loads animation/ sequence into FCheck playback window.

Revert (Windows/Mac OS X)

Reloads the image or animation to the status of the most recent save on disk.

Import Sound

Imports sound into the FCheck viewer so you can play back sound and animation.

Toggle Sound

Toggles sound on and off.

Save Image (Windows/Mac OS X)

Enter a filename to save the image. By default, the file is saved as `.iff`.

Save Animation (Windows)

Save As Sequence (Mac OS X)

Enter a filename to save the animation/ sequence. By default the file is saved as `.iff`.

Save As Movie (Mac OS X)

Select a location and enter filename to save file as a QuickTime `.mov`.

Exit (Windows)

Quit (Mac OS X)

Exits the program.

Fcheck View menu (Windows)

Select to view specific channels from the View menu. By default, the display is set to All Channels.

The following is a list of channels available in the menu.

Red Channel

Displays the red channel.

Blue Channel

Displays the blue channel.

Green Channel

Displays the green channel.

Alpha Channel

Displays the alpha channel.

All Channel

Displays RGB channels.

Luminance

Displays the image in black and white.

Control Bar

Toggles the control bar on and off.

Full Screen

Displays the image or animation full screen.

Full Resolution

Displays the image or animation at full resolution.

FCheck Help menu (Windows)

Select an item to open a window which displays a number of help items, including keyboard controls, command line options, etc.

For information on commands, see "FCheck" on page 77.

The following is a list of choices available in the menu:

- Manipulations
- Opening/Saving Images
- Animation Controls
- Command Line




3 | FCheck

Reference > FCheck Mouse controls

- Mouse Controls
- Keyboard
- About

FCheck Mouse controls

The following table describes the mouse controls used in FCheck:

Mouse button	Description
	Hold the left mouse button to scrub through sequence of frames. Drag the mouse while holding the left mouse button to the left to reverse and to the right to advance.
	(Windows, Linux, and IRIX) Press the middle mouse button over the playback window to display coordinates of the pixels under the cursor. The coordinates appear in the command-line window.
	(Windows, Linux, and IRIX) Pressing the right mouse button activates the dot drawing tool in image plane. Drag the mouse while holding the right mouse button to create a flowing line. (Mac OS X) Pans the image in the playback window.

FCheck Control Bar



Use the Control Bar buttons for the following:



Go to first frame.



Go back one frame.



Play backwards. (Changes to Stop when playing backwards.)



Play forward. (Changes to Stop when playing forward.)

3 | FCheck

Reference > FCheck Control Bar



Go forward one frame.



Go to last frame.



Shows frames per second.



Show alpha channel.



Show all channels.



Show Z buffer.

You can toggle the Control Bar on and off using the View > Control Bar menu item.

3 | FCheck

Reference > FCheck Control Bar

4 Render

About Rendering Utilities

Batch renderer

Overview of batch rendering

Batch rendering allows you to render a series of images in an animation. Use the batch render option when you are ready to render an entire animation using the full power of your workstation. The batch renderer does not require the use of Maya's user interface.

Since batch rendering consumes memory, we do not recommend that you perform batch rendering concurrently with an interactive Maya session.

You can batch render within Maya or from the command line. You can specify the number of processors that the batch renderer uses. For more information, see the Rendering guide.

Batch rendering from the command line

Ideally, perform your batch rendering on a dedicated machine from the command line. This allows you to continue working in Maya on another machine while you perform the batch render. You can specify a number of options from the command line.

❖ "Batch render flags" on page 94

Render tiles

The renderer renders an image as a series of tiles. The renderer tries to use a tiling configuration that ensures memory is optimized. Thus, the tiles are smaller in the regions of the image where the geometry is dense. The renderer tries to ensure that the memory cap specified in Render Global Settings window is respected.

❖ "Batch render flags" on page 94

❖ "Troubleshooting Render tiles" on page 100

Start a Batch render

To batch render from the command line

- At the command prompt, type:
`Render <options> <filename>`

4 | Render

About > Stop a batch render

<filename> is (generally) a Maya ASCII or Maya Binary file, and <options> is one or more of the options.

- ❖ "Batch render flags" on page 94

Stop a batch render

You may occasionally need to stop a batch render before it has finished.

To stop a batch render on Mac OS X

- You can quit a batch render from the dock. Right-click the Maya Batch Renderer application in the dock and select Quit from the pop-up menu.

To stop a batch render on IRIX or Linux

- 1 From a shell or DOS prompt, list the top processes by entering:

```
top
```

- 2 Note the batch render process ID.

- 3 To stop the process, enter:

```
kill -9 <process ID>
```

To stop a batch render on Windows

- 1 Open the Task Manager by doing one of the following:

- Press Ctrl-Alt-Delete and click the Task Manager button.
- Right-click an empty space on the taskbar and choose Task Manager from the menu that appears.

- 2 Click the Processes tab.

- 3 Select the Render.exe process.

- 4 Click the End Process button.

Batch render flags

- Type `Render -help` in a shell window to see a full list of commands.
- For the renderer to continue even if it hits errors, type `Render -cont`.
- Type `-keepPreImage` to keep renderings prior to a post-processing step (such as glows, lens flare, etc.).
- If you try to render a scene in your project's render directory, and a scene with the same name exists in your project's scenes directory, the scene in the scenes directory will render, unless you specify the scene in the render directory using an explicit path (for example, `Render render/rocket`).

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About > Batch render flags

- Remember to place a space between option flags and their arguments.
- Any boolean flag will take on, yes, true, or 1, as TRUE, and off, no, false, or 0 as FALSE. For example:

```
Render -x 512 -y 512 -cam persp -im test -of sgi  
-mb on -sa 1 80 file.ma
```

Flag name	Short form and options	Definition
startFrame	-s <float>	Start frame for an animation sequence
endFrame	-e <float>	End frame for an animation sequence
byFrame	-b <float>	By frame (or step) for an animation sequence
startExtension	-se <int>	Starting number for the output image frame file name extensions
byExtension	-be <int>	By extension (or step) for the output image frame file name extension
extensionPadding	-pad <int>	Number of digits in the output image frame file name extension
project	-proj <dir>	Project directory to use
renderDirectory	-rd <path>	Directory in which to store image file
image / pix	-im <filename> or -p <filename>	Image file output name
mayaExtension	-me <boolean>	If true, append maya file name to image name
mayaFormat	-mf <boolean>	If true, append image file format to image name

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About > Batch render flags

Flag name	Short form and options	Definition
cameraOverride	-cam <name>	All subsequent -im -p -ar or -sa flags apply only to <camera_name> (specifying '-cam <camera_name>' enables rendering for that camera). If '-cam <camera_name>' is on the command line, then only the camera(s) specified on the command line will be rendered.
gamma	-g <float>	Gamma value
ignoreFilmGate	-if <boolean>	If false, use the film gate for rendering
imageHeight	-ih <int>	Height of image in pixels
imageWidth	-iw <int>	Width of image in pixels
aspectRatio	-ar <float>	Aspect ratio for the rendered image
maximumMemory	-mm <int>	Renderer maximum memory use (in megabytes)
motionBlur	-mb <boolean>	Motion blur on/off
motionBlurByFrame	-mbf <float>	Motion blur by frame
shutterAngle	-sa <float>	Shutter angle for motion blur (1-360)
motionBlur2D	-mb2d <boolean>	Motion blur 2D on/off
blurLength	-bl <float>	2D motion blur length
blurSharpness	-bls <float>	2D motion blur blur sharpness
smoothValue	-smv <int>	2D motion blur smooth value
smoothColor	-smc <boolean>	2D motion blur smooth color on/off
keepMotionVector	-kmv <boolean>	Keep motion vector for 2D motion blur on/off
useFileCache	-uf <boolean>	Use the tessellation file cache
optimizeInstances	-oi <boolean>	Dynamically detects similarly tessellated surfaces

Rendering Utilities

Flag name	Short form and options	Definition
reuseTessellations	-rut <boolean>	Reuse render geometry to generate depth maps
useDisplacementBbox	-udb <boolean>	Use the displacement bounding box scale to optimize displacement map performance
enableDepthMaps	-edm <boolean>	Enable depth map usage
enableRayTrace	-ert <boolean>	Enable ray tracing
reflections	-rfl <int>	Maximum raytracing reflection level
refractions	-rfr <int>	Maximum raytracing refraction level
shadowLevel	-sl <int>	Maximum raytracing shadow ray depth
edgeAntiAliasing	-eea <quality>	Anti-aliasing quality of EAS (Abuffer). One of: highest, high, medium, or low
useFilter	-ufil <boolean>	If true, use the multi-pixel filtering; otherwise, use single pixel filtering
pixelFilterType	-pft <filter>	When useFilter is true, identifies one of the following filters: box, catmullrom, triangle, sinc, gaussian, quadraticbspline, or plugin
shadingSamples	-ss <int>	Global number of shading samples per surface in a pixel
maxShadingSamples	-mss <int>	Maximum number of adaptive shading samples per surface in a pixel
visibilitySamples	-mvs <int>	Number of motion blur visibility samples
maxVisibilitySamples	-mvm <int>	Maximum number of motion blur visibility samples
volumeSamples	-vs <int>	Global number of volume shading samples
particleSamples	-pss <int>	Number of particle visibility samples

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About > Batch render flags

Flag name	Short form and options	Definition
redThreshold	-rct <float>	Red channel contrast threshold
greenThreshold	-gct <float>	Green channel contrast threshold
blueThreshold	-bct <float>	Blue channel contrast threshold
coverageThreshold	-cct <float>	Pixel coverage contrast threshold (default is 1.0/8.0)

Flag name	Short form and options	Definition
outputFormat	-of <format>	<p>Output image file format. One of:</p> <ul style="list-style-type: none"> • si soft softimage (IRIX, Linux and Windows) • gif (IRIX, Linux and Windows) • rla (IRIX, Linux and Windows) • wave wavefront (IRIX, Linux and Windows) • tiff tif • tiff16 tif16 • sgi rgb • sgi16 rgb16 (IRIX, Linux and Windows) • alias als pix (IRIX, Linux and Windows) • iff tdi explore maya • jpeg jpg • eps • maya16 iff16 • cineon cin fido (IRIX, Linux and Windows) • qtl quantel (IRIX, Linux and Windows) • tga targa • bmp • sgimv mv (IRIX and Linux) • qt Quicktime QuickTime (IRIX, Linux, and Mac OS X) • AVI avi (IRIX and Windows)
shadowPass	-sp <boolean>	Generate shadow depth maps only
abortOnMissingTexture	-amt	Abort renderer when encountered missing texture
dontReplaceRendering	-rep	Do not replace the rendered image if it already exists

4 | Render

About > Troubleshooting Render tiles

Flag name	Short form and options	Definition
verbose	-verbose <boolean>	If true, perform the render verbosely
iprFile	-ipr	Create an IPR file
xResolution	-x <int>	Set X resolution of the final image
yResolution	-y <int>	Set Y resolution of the final image
xLeft	-xl <int>	Set X sub-region left pixel boundary of the final image
xRight	-xr <int>	Set X sub-region right pixel boundary of the final image
yLow	-yl <int>	Set Y sub-region low pixel boundary of the final image
yHigh	-yh <int>	Set Y sub-region high pixel boundary of the final image
displayLayer	-l <name>	One or more displayLayer names to render
numberOfProcessors	-n <int>	Number of processors to use. 0 indicates use all available.
tileWidth	-tw <int>	Force the width of the tiles. Valid values are between 16 and 256.
tileHeight	-th<int>	Force the height of the tiles. Valid values are between 16 and 256.

Troubleshooting Render tiles

There are flags to force the tile sizes for use in certain circumstances.

There are two cases where the tiling the renderer chooses may not be optimal.

Case 1: Over an animation texture, chattering can occur because the tiling configuration changes. This does not happen very frequently but if you have a noise-based texture on an object that is not moving and you have another object (highly tessellated) that is moving you can sometimes see texture crawl because of tiling changes. The way to check if forcing tile

sizes will alleviate the problem is to observe if over the animation the texture shift is occurring in a rectangular region (aligned to tile boundaries).

Case 2: Sometimes the memory estimation is wrong and your rendering job can't finish. If you see something like:

```
Error: Free memory is low. Memory exception thrown
```

you can try to force the tile sizes to be smaller so the rendering job fits into memory.

To force the tile sizes

- When using batch rendering, use the flags `-tw` and `-th`. The valid value range is between 16 and 256.

4 | Render

About > Troubleshooting Render tiles

5 mayaVectorRender

About

Rendering Utilities

mayaVectorRender

Overview of the Vector Renderer

You can use the Maya Vector renderer to create stylized renderings (for example, cartoon, tonal art, line art, hidden line, wireframe) in various bitmap image formats (for example, IFF, TIFF, and so on) or in the following 2D vector formats:

- Macromedia Flash (non-interactive) version 3, 4 or 5 (SWF)
- Adobe Illustrator version 8 (AI)
- Encapsulated PostScript Level 2 (EPS)
- Scalable Vector Graphics (SVG).

Note The Maya Vector renderer cannot render certain Maya features (see the Rendering online information for more details).

Using the command line vector render

To use the command line Maya Vector renderer

- 1 From a DOS window or Mac OS X terminal window type:

```
mayaVectorRender -file Scene -proj Project -log Log
```

where *Scene* is the name of the Maya scene file to render, *Project* is the name of the scene's project, and *Log* (Windows only) is the name of the render log file.

Note For a complete list of options, type:
`mayaVectorRender -help`

5 | mayaVectorRender

About > Using the command line vector render

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