

mental ray Installation Notes for Windows NT

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1 Introduction

This document describes installation of mental ray. For the installation of the SPM licensing software look in the document **SPM Installation Manual**.

NOTE

We strongly recommend that installation will be performed by the systems administrator, as it requires administrator privileges and involves changing of system files.

Installation is straightforward with the exception of licensing and network parallelism. For the former, a network daemon (the Software Protection Manager) must be installed. For the latter, a network daemon is required on every machine which is to be used as a rendering server.

The Software Protection Manager (SPM) protects mental ray from unauthorized use. While executing, mental ray communicates with the SPM daemon to verify authorization. Since communication may take place over the network, mental ray may run on a host other than the one which runs the SPM. Thus, the software may be copied for backup or may run on any host which has access, via the network, to the SPM.

Note that when running mental ray in the network mode, one license is required for each CPU mental ray runs on. These licenses can be obtained from a single or from multiple SPM daemon(s), and these may be located anywhere in the network.

Before you begin the installation, you have to decide on which machines you will run the Software Protection Manager daemons, that is, on which machines you will store your licenses. An SPM host should be fast (the SPM daemon should be able to respond quickly to the protected software, although it does not consume much CPU time).

mental ray can be run in network mode. That means you can run it as client and server application. Clients will be invoked from the command line and servers from the network daemon as a service.

The smallest configuration will use one machine with an SPM daemon and a ray client; on larger sites, you'll have a bunch of machines both as client and server, and some of them running also the SPM daemon.

2 Software Installation

Insert the CD and the mental ray installation screen appears. If it does not simply click `startup.exe`. Setup will guide you through the whole installation. Additionally there is an online HTML documentation available. Valid license are necessary to get the protected software running. When the installation is finished the SPM License Tool is available, that will make the license management easy for you.

The SPM utilities will always be installed in `%SystemRoot%\system32\spm`.

The default location for mental ray is `%SystemDrive%\Program Files\mental images`.

ray Client Installation

1. The protected software mental ray needs to know where in the network the SPM License Server can be found. Verify that the environment variable SPM_HOST is set to the correct machine name. Set SPM_HOST by calling the Control Panel and the System menu. It can be set at command prompt with set SPM_HOST=pollux:castor. If you start mental ray and get the error message:

```
SPM_WARNING (ray21-spm): pollux is an unknown host
SPM_FATAL ERROR (ray21-spm) at 04/28/00 11:45:18 :
Can't connect to any SPM license server.
```

Verify that pollux is known to any particular render machine. (ping pollux)

2. In order to find shaders mental ray will look for a file rayrc.

mental ray will use the following search path:

current directory

%SystemDrive%

%SystemDrive%\Program Files\mental images

The default location is the parent directory of the mental ray executable. If the mental ray default location was changed verify that the environment variable MI_ROOT is set to the new new location.

The syntax of this rayrc file is mi Syntax. An example for a rayrc file could be:

```
link "/usr/local/mi/shaders/softimage.so"
```

The extension .so will be substituted automatically to .dll on Windows NT.

If rayrc was not found no shaders will be found by mental ray and you will see black tiles or even a black image.

3. Execution of mental ray should be possible at this point. It has to be executed from a command prompt. Clicking in the Windows Explorer will do nothing because input parameters are required for mental ray to run.

4. To use dynamic linking for your own user-defined shaders, you need a C compiler and linker which are unbundled from the operating system. However, shaders distributed in DLL form by a shader vendor can be used without having a C compiler.

For shader compilation the file shader.h must be publicly accessible on each ray client and server. We recommend to put it into

```
%SystemDrive%\usr\local\mi\rayinc
```

As a minimal configuration, the program ray may be run by itself with an appropriately formatted input file. Typically, however, ray is called from a client application. Also, one or more translator programs be used to input data from other systems. The utility imf_disp may be used for displaying images and the utility imf_copy is used to convert image files to other formats including the format required to memory-map texture images into ray.

ray Server Installation

If ray is to be run concurrently over several loosely coupled systems (i.e., over FDDI or Ethernet), mental ray must be installed as a network server on each host where it is to be executed. Log in as administrator and insert the CDROM and install mental ray on all machines. The installation always includes the mental ray server installation.

In addition, the presence of a .rayhosts file is required on the machine you want to use as mental ray client (master). For further details, refer to *mental ray User's Manual and Reference*.

and is accomplished as follows:

1. An Internet service number has to assigned for the communication between server and client. Verify that the following line:

```
mi-ray      7002/tcp      # mental images ray tracer
```

was added to %SystemRoot%\system32\drivers\etc\services. If another service uses number 7002, any number is fine. But the number must be kept consistent on all render server machines.

2. A service called mental ray network server was installed which starts mental ray if there is a incoming request on the mi-ray port. Verify that the service was installed and is running.

To test the installation, in your home directory or in the current dir create (or extend) a .rayhosts file on the client host with the name(s) of the machine(s) on separate lines where the server was just installed. Now try to execute ray with the -verbose on option. If everything has been set up correctly, ray will tell you it is adding the host. For example, if the .rayhosts file contains three hosts, *castor*, *pollux*, and *bogus*, each on its own line, the following output of ray -verbose on:

```
MSG 0.0 info :   reading hosts file /your/homedir/.rayhosts
MSG 0.0 info :   adding new host 1 (castor:7002/-1)
MSG 0.0 info :   adding new host 2 (pollux:7002/-1)
MSG 0.0 info :   adding new host 3 (bogus:7002/-1)
MSG 0.0 error: cannot receive welcome message from host 3 (active)
MSG 0.0 error: cannot add host bogus:7002
MSG 0.0 info :   Total number of hosts:   3
MSG 0.0 info :   Total number of cpus :   3
```

indicates that *castor* and *pollux* are configured correctly but *bogus* failed to connect. For more information, use ray -verbose 7 to print more detailed debugging messages. Press Control-C to exit ray after this test.

If the loading fails, or ray is not even able to connect to the remote server, look at the remote host's event log for error messages. If it fails after connection was set up additional error messages can be found in %TEMP%\raylib.log.

For the installation of the licensing Software SPM please look into the document **SPM Installation Manual**.