NVIDIA Iray Server User's and administrator's guide

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1 Preface

1.1 Purpose of this document

This document describes client-server setups where the client application and NVIDIA[®] Iray[®] Server seamlessly manage offline rendering to leave your machine resources available for other tasks.

1.2 Audience

This document is intended for the following user groups:

- Users of Iray-compatible applications¹ who want to offload batch or interactive rendering to Iray Server.
- Administrators who are responsible for managing settings, resources, and users.

1.3 How this document is organized

This document is organized as follows:

- Introducing Iray Server (page 2) describes what Iray Server is and what it is used for.
- Installing Iray Server (page 6) describes hardware, software, and configuration requirements as well as performance considerations.
- Starting Iray Server (page 9) describes how to start Iray Server from the command line as well as from a Windows desktop icon. It also describes how to log in to the browser-based UI for Iray Server. From this UI you manage the render queue and render results.
- Managing the queue for batch jobs (page 20) describes how to submit, stop, restart, re-order, edit, copy and delete jobs.
- Managing render results (page 31) describes how to view, download, archive, and delete results and resubmit archived render jobs.
- Iray Server administration tasks (page 36) describes how to customize settings, configure resources, and manage users. The pages where you perform these tasks are only visible to administrators and users with administrator rights.

1.4 Cover art

- Artist credit: Vincent Gault
- Product: Substance Designer

¹http://www.nvidia.com/object/iray-plugins.html

2 Introducing Iray Server

NVIDIA[®] Iray[®] Server is a multi-user, distributed rendering solution that focuses on flexibility and ease of use without sacrificing performance. You connect to Iray Server by using an Iray-compatible application².

You can use Iray Server for two purposes:

• *Queue Rendering:* To upload a scene from a client application to Iray Server for offline rendering.

Iray Server maintains a queue of rendering jobs. After a rendering job is uploaded to Iray Server it is added to the queue. All jobs in the queue are rendered, one after the other, without further involvement from the client application. A client application can, in fact, be disconnected from Iray Server after submitting jobs.

Rendering results are stored by Iray Server. You can retrieve these results from the file system or by using a web browser.

• *Streaming:* To offload interactive rendering from the client application to Iray Server. The client application performs no rendering operations. All rendering is performed on the machine where Iray Server is running. Images are streamed back to the client application.

Offload rendering makes sense when Iray Server is running on more capable hardware or when you want for free up GPUs and CPUs on your local machine. The only differences you may notice when offloading rendering is potentially faster rendering and less resource usage locally. Any changes you make to a scene from the client application are immediately reflected in the images streamed back from Iray Server.

All asset management is automatically performed by the client application and Iray Server. You do not need to manually upload any scene assets such as textures, materials, light profiles and so on. This is true, even when assets on the client are changed.

Iray Server is designed for efficient performance across a range of client-server configurations:

- When a client application is based in the same local area network (LAN) as the machine Iray Server is running on
- When Iray Server is running on a machine in a different network, or even in a different country. Both the upload of the scene and the streaming of the rendered images are designed to minimize the usage of your Internet bandwidth.

To minimize network and Internet usage, the client application analyzes the active scene when it connects to Iray Server. The client application only sends parts of the scene and scene assets which have not been rendered previously on this particular Iray Server installation. Uploads are independent of any naming, scene usage, or instancing conventions that are used.

This approach has a number of important benefits for you:

²http://www.nvidia.com/object/iray-plugins.html

- It minimizes upload times.
- It makes interactive usage quite fluid.
- It liberates you from asset management.
- It guarantees that what you render locally will match what you get from Iray Server.

2.1 Browser-based user interface

Iray Server uses a built-in HTTP server to provide a browser-based interface:

	Iray Server	- 40.00				
		Queue				
Ē	Queue	Welcome to I	Iray Server			
	Results	Jobs 1				Rendering II Stop Queue
ala	Resources	Priority	Owner	Job	Frames	Progress
23	Users		admin	cornell_box_2 active organized a minute ago	0/1	=
\$	Settings	Done 1				✓ Clear
1	Account	Priority	Owner	Job	Frames	Progress
?	About			cornell_box		
€	Logout		admin	done o added a minute ago	1/1	

The Iray Server browser-based user interface provides a minimalistic page design where highly visible links and switches are used to reveal secondary functionality

From the user interface you can inspect the render queue, change the order of the jobs in the queue, and configure Iray Server to suit your requirements.

For administrators, the user interface provides additional functionality to manage configuration settings, resources and users.

Ø	Iray [®] Server	Hosts						
	Queue	ID Hostnam	ie	Memory	CPU Cores	GPUs	Uptime	
	Results	1 master	staher-dt	12 GB			11 min	
•	Archive							
	Resources	Use CPU	•					
<u>1</u> 1	Users							
\$	Settings	1 GeForce GTX	5 9 GIR					
1	Account	Clock Rate Multiprocessors	876 MHz					
?	About	Display	Yes					
€	Logout							

From the Resources page, administrators can enable and disable CPU and GPU usage

2.2 Iray Server modes

Iray Server supports the following modes:

- *Queuing:* Offline batch rendering.
 - Supported render modes: Iray Photoreal and Iray Interactive
 - Supported configurations: Standalone, cluster, and VCA
 - Supported GPUs: All
 - Supported CPUs: x86-64

Iray Server 2.2 supports stereoscopic rendering in Queuing mode.

- *Streaming:* Rendering on an external machine while you edit locally.
 - Supported render modes: Iray Photoreal and Iray Interactive
 - Supported configurations: Standalone and VCA
 - Supported GPUs: Professional (Quadro, Tesla, and Grid)
 - *Supported CPUs:* Not applicable.

2.3 Render modes

Iray Server supports the following render modes for queuing and streaming:

- *Iray Photoreal* generates physically-based photorealistic imagery. Images are progressively refined to provide full global illumination including caustics, sun studies, and luminance distributions.
- *Iray Interactive* targets a look which is consistent with the physically-based results of Iray Photoreal but uses faster, less accurate rendering algorithms than Iray Photoreal. Iray Interactive is ideal when ray-tracing effects, such as reflections and refractions, are desired but limited photorealism is acceptable. An application submitting a job can set special options for Iray Interactive to more finely tune the balance between speed and rendering quality. If the application does not specify these settings, the default settings are used. The default settings target a look that is very close to Iray Photoreal, but global illumination effects and ambient occlusion are not enabled.

Note:

- *Multi-version support for Iray:* Iray Server 2.1 and later support Iray-enabled applications running Iray 2016.1, Iray 2016.2, and Iray 2016.3. The version of Iray used for rendering is chosen automatically; it matches the Iray version used by the client application. On Iray Server itself, each version of Iray that is launched is referred to as an *Iray Worker*.
- *Stereoscopic rendering:* Iray Server 2.2 supports stereoscopic rendering in Queuing mode only.

2.4 Configuration modes

Iray Server supports the following configuration modes:

- Standalone: Iray Server runs on a single machine. You can install Iray Server on:
 - The same machine as your Iray-compatible application
 - A separate machine
- *Cluster:* Multiple Iray Server instances are connected to each other in a local area network (LAN) and each host (unless disabled) participates in rendering. Iray Server supports multicast and TCP/IP.
- *VCA*: Iray Server connects to a VCA and offloads all rendering to a VCA or a cluster of VCAs.

Setting up a VCA or VCA cluster for rendering: For information about installing, using, and administrating a VCA or VCA cluster, download the VCA documentation from the NVIDIA Quadro VCA web page.

2.5 Licensing Iray Server

For information about licensing Iray Server and a 90-day free trial, see the appendix Iray Server License Manager (page ??).

3 Installing Iray Server

Iray Server runs under Windows and Linux. This chapter describes the requirements for installing Iray Server and performance considerations.

Iray Server updates and upgrades: When you update or upgrade Iray Server, passwords, the cache, and render results remain unchanged.

3.1 Supported operating systems

Iray Server runs under:

• Windows 7, 64-bit:

An installer is provided. By default, Iray Server is installed at:

C:\Program Files\NVIDIA Corporation\Iray Server

The default cache and image results directory is:

C:\ProgramData\NVIDIA Corporation\Iray Server

A desktop icon is installed on your desktop. Double-click this icon to start Iray Server.

Customizing default locations: After Iray Server is installed, you can copy the Iray Server folder from Program Files to a different location. When you start iray_server.exe directly from the new location, subfolders are created in the new location for caching and image results.

• *Linux*, 64-bit: A gzipped tar file is provided. Unpack with tar.

3.2 Hardware requirements

3.2.1 GPU requirements

Iray Server has specific GPU requirements for GPU acceleration and streaming:

- Fermi or later NVIDIA GPUs are required for GPU acceleration.
- Professional GPUs Quadro, Tesla, or Grid are required on the server side for streaming.

3.2.2 CPU requirements

x86-64 CPU processors are supported for sole operation or working together with GPUs.

3.3 Software requirements

Iray Server is a companion application for Iray-compatible client applications.

• No application other than Iray Server is required on dedicated rendering machines, also known as rendering nodes.

• Iray Server works with Iray-compatible applications³ that are based on the Iray Bridge versions supported by this release of Iray Server.

3.4 Configuration requirements

Note: The machine that clients connect to and send jobs to is called the *master node* while all other machines in the cluster are called *render nodes*.

Iray Server is designed to support a range of configurations with minimal restrictions:

- Heterogeneous client-server configurations are supported, for example: a Windows client and Linux rendering nodes.
- Heterogeneous server configurations are not supported. Every machine in an Iray Server cluster must run under the same operating system.
- At least 100-Mbit/s Ethernet is recommended between clustered machines. Between the client and a streaming server, 10-Mbit/s is acceptable.

3.5 Setting up Iray Server for distributed rendering

When configuring Iray Server for distributed rendering, only one node — the master node — can be used to receive jobs from client applications. This master node also provides the Web UI for Iray Server users. You specify the master node from the command line in a terminal window. Other nodes in an Iray Server cluster are rendering nodes only.

Sending a job "to the queue" outputs the required Iray render data to the Iray Server master node as a job for processing. Sending a job is usually quite quick, after which the client application is free to do other work. Any number of jobs can be sent to Iray Server before they are processed, without any performance impact to the master node. Submitted jobs can be managed and modified within the Queue Manager interface of Iray Server.

3.6 Performance considerations

3.6.1 Cluster configuration

Rendering efficiency is best when the performance of all machines in a cluster is similar. However, you can mix machines with different performance levels with fairly minimal impact. Slow machines will not hold back much faster machines in the same cluster; faster machines will simply contribute more iterations per minute than the slower machines.

When you add machines to the cluster over time, they will be included for use on the next frame. You can remove machines from the cluster without hurting an active job, other than losing the iteration a particular machine is currently rendering. A "dropped" iteration is made up by the next iterations sent to the master node.

3.6.2 Cluster size

An Iray Server cluster runs independently of any other Iray Server. If you have a large number of potential render farm machines, the decision about how large a cluster should be is usually one of efficiency and rendering job type. Tests show that more than 70 percent efficiency is

³http://www.nvidia.com/object/iray-plugins.html

possible with 20 similar machines running a complex render job, while very fast render jobs (those completing under a minute) may see less than 70 percent efficiency with just a few machines in the cluster.

4 Starting Iray Server

This chapter describes how to start Iray Server and log into the user interface from a browser. The following tasks are covered:

- How to start Iray Server from the command line and the command line options (page 9)
- The steps for starting Iray Server under Windows and Linux (page 14)
- Logging in to the Iray Server user interface from a browser (page 15)
- Logging out (page 18)
- Checking your Iray Server user profile (page 18)
- Changing your password (page 19)

4.1 Setting up Iray Server for distributed rendering

Any machine running Iray Server can process jobs sent to it for offline rendering. The machine that clients connect to and send jobs to is termed the master node while all other machines in the cluster are termed render nodes. In practice, the client (plug-in) first connects to the master node's address to verify the user has access to Iray Server. Sending a job "to the queue" outputs the required Iray render data to the Iray Server master node as a job for processing. Sending a job is usually quite quick, after which the client application is free to do other work. Any number of jobs can be sent to Iray Server before they are processed, without any performance impact to the master node. Submitted jobs can be managed and modified within Iray Server's Queue Manager interface.

4.2 iray_server command

Start Iray Server from the command line using the iray_server command. For an up-to-date list of command options, enter iray_server --help.

Most options described in the following sections are supported by all configuration modes:

- Standalone
- Cluster:
 - UPD
 - TCP/IP with Discovery
- VCA

4.2.1 General options

Option	Description
-v [version]	Displays the version and exits.
-h [help]	Displays the help and exits.
start-queue	Starts Iray Server with the queue running. If this option is not supplied, the queue will accept jobs but will not render them until you start the queue using the browser-based UI.
open-browser	At startup, the web interface of Iray Server is opened in the browser.

4.2.2 Path options

Option	Description
install-path arg	Installation path containing the html folder and the benchmarks folder. The default is the local working directory.
flexnet-path arg	Sets the expected FlexNet license path or server address.
plugin-path arg	Sets the plugin search path.
log-file arg (=iray_server.log)	Write log messages to this file. If empty, file logging will be disabled.

4.2.3 HTTP options

Option	Description
-p [port] arg (=9090)	HTTP port.
-l [listen] arg (=0.0.0.0)	Bind HTTP server to a specific IP address. Changing the setting is only required in rare cases for machines with multiple network interfaces.

4.2.4 Cluster options

To build a cluster and coordinate the machines' workload, Iray Server can use either UDP with multicast or TCP/IP.

Option	Description
multicast-address arg	Multicast address and port. In the UPD mode, a multicast address will be used to find all the hosts that should comprise a cluster. All Iray Servers using the same multicast address will connect to each other automatically.
	If no multicast address is specified, 239.0.0.1:11000 will be used. For a TCP/IP address, Iray Server will switch to TCP with discovery mode and use the given address to find other hosts.
-c [cluster] arg	Multicast increment (integer) or TCP/IP discovery address. For a multicast increment, this value will be added to the multicast address. For TCP/IP discovery mode, use the TCP/IP address of the master.
interface arg	Sets the interface to be used for outgoing packets. It will use the interface selected by the operating system according to the configured routing settings. The default should work in most cases.
	The string may end with : and a port number to select which port to listen to for UPD.
-m [master]	Starts Iray Server as master / with web interface to manage jobs.
	Other Iray Server nodes that were not started as master will participate in rendering but the database is stored on the master server. You can have only one master server in a cluster.

4.2.4.1 Establishing the master node of a cluster

The --master flag makes that machine the master node. The master node hosts the Queue Manager interface, maintains the cache of submitted jobs, and is the default location for image results.

Each cluster must have a master to operate, and each cluster can only have one master. If a cluster is formed without a master, the resulting pool of machines will wait for a master to join that cluster. If a machine is started with --master and there is a master already, Iray Server cannot be used until only one master remains.

4.2.4.2 Cluster formation with TCP/IP

Iray Server will use the TCP/IP protocol to form a cluster when the IP address of the master node is provided as a startup argument along with the --cluster argument (without a number).

For example, assuming that your master node has an IP address of 192.168.2.1, your startup arguments for forming a cluster would be:

```
iray_server --cluster 192.168.2.1 --master (on the master node)
iray_server --cluster 192.168.2.1 (on all render nodes)
```

Note: There is no cluster number with TCP/IP since the cluster is explicitly defined by the master's address

4.2.4.3 Cluster formation with multicast

Iray Server uses the multicast protocol to automatically locate machines with the same cluster number. Nothing more than the -c# options needs to be supplied for this to work. The -c option, followed by an integer argument, tells the machine what cluster number to join.

For example, to create cluster 1 :

iray_server -c1	master	(on	the	master	node)
iray_server -c1		(on	all	render	nodes)

While multicast is quite easy to setup, some networks may constrain multicast bandwidth, resulting in greater than normal file transfer times and poorer rendering efficiency. There also may be situations where different parts of a facility are on different multicast networks and so cannot see one another or where multicast is disabled in switches and routers. If you find one of these to be the case on your network, then you should probably switch to TCP/IP.

4.2.4.4 Iray Server on a single machine

When Iray Server is started without any cluster arguments, it defaults to running individually. As a cluster of 1 (one), it is automatically its own master node, so there's no need to supply a --master argument.

In this mode, Iray Server can be used for either streaming or queuing. If streaming, it will still accept jobs for later processing in its queue. This mode will also work on the same machine as an Iray Client to provide a background rendering capability. For example, you could be working with an Iray plugin, and output any number of jobs, keep working and then process them as you take a break from Iray authoring. If your machine has multiple GPUs, you may want to assign one for interactive authoring and others to process the Queue as you work.

4.2.5 Iray Bridge protocol options

Iray Server Version 1.2 supports multiple versions of the Iray Bridge protocol. This means that Iray Server will be able to support future releases of Iray-compatible applications that use difference versions of the Iray Bridge.

Note: Earlier versions of Iray Server and Iray-compatible applications, must continue to use the same version of the Iray Bridge in order to work together.

Option	Description
cm-address arg (=127.0.0.1:30300)	The address to listen on. Do not change it unless there is a conflict in the port usage.
cm-path arg (=cache)	The directory to be used by the cache manager to store its data.
cm-low-water arg (=0)	When memory usage (in MB) drops below this value, garbage collection is ended.
cm-high-water arg (=0)	When memory usage (in MB) exceeds this value, garbage collection is started. To disable garbage collection, set the value to 0.

neisi cache manager options	4.2.5.1	Cache manager	options
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Note: The ports for each worker are derived from the ports given to Iray Server by command line options. Iray Server increments these port numbers for each worker so they do not collide with each other.

4.3 Starting Iray Server under Windows and Linux

To start Iray Server under Windows:

1. Double-click the Iray Server icon on your desktop. A terminal window is opened and Iray Server is started.

[Wed,	06	Jan	2016	15:02:56]	Configuring database	
[Wed.	06	Jan	2016	15:02:56]	Database schema generated	
[Wed,	06	Jan	2016	15:02:561	Iray Server starting	
[Wed.	06	Jan	2016	15:02:56]	HTTP Port:	9090
[Wed,	06	Jan	2016	15:02:561	Install Path:	C:\Program Files\NUIDIA Corporation\Iray Server 2015
[Wed.	06	Jan	2016	15:02:56]	Disk Cache Location:	path:cache
[Wed.	06	Jan	2016	15:02:561	Log File:	iray server.log
[Wed.	06	Jan	2016	15:02:561	Plugin Search Path:	3
[Wed.	06	Jan	2016	15:02:561	Multicast Address:	
[Wed.	06	Jan	2016	15:02:561	Multicast Increment:	9
[Wed.	06	Jan	2016	15:02:561	TCP/IP Discovery Address:	
[Wed.	06	Jan	2016	15:02:561	Cluster Interface:	
[Wed.	06	Jan	2016	15:02:561	Head Node Address:	
[Wed,	06	Jan	2016	15:02:561	Loading neuray	
[Wed,	06	Jan	2016	15:02:56]	Loaded C:\Program Files\NUIDI	A Corporation\Iray Server 2015\libneuray.dll
[Wed.	06	Jan	2016	15:02:56]	Using license file: C	
[Wed,	06	Jan	2016	15:02:56]	[Streaming] session state cal	lback created
[Wed.	06	Jan	2016	15:02:56]	Configuring network	
[Wed,	06	Jan	2016	15:02:56]	Cluster manager connection en	abled
[Wed,	06	Jan	2016	15:02:56]	Connecting to cluster manager	'wss://8.36.120.201:443' with user 'Robert'
[Wed,	06	Jan	2016	15:02:58]	Connected to cluster manager	
[Wed,	06	Jan	2016	15:02:58]	[Mode] Switching mode to Stan	dalone
[Wed,	06	Jan	2016	15:02:581	Found pro GPU: [2] Quadro K60	
[Wed,	06	Jan	2016	15:02:581	Pro GPŪ is available (Quadro	or Tesla)
[Wed,	06	Jan	2016	15:02:58]	Streaming is supported: yes	
[Wed,	06	Jan	2016	15:02:58]	Local rendering is enabled	
[Wed,	06	Jan	2016	15:02:58]	Setting disk cache location t	o path:cache
[Wed,	06	Jan	2016	15:02:58]	Loading plugins	
[Wed,	06	Jan	2016	15:02:58]	Plugins loaded	
[Wed,	06	Jan	2016	15:02:58]	Starting neuray	
[Wed,	06	Jan	2016	15:02:58]	[Cluster_callback] this host	has the id 1
[Wed,	06	Jan	2016	15:02:581	Starting bridge	
[Wed,	06	Jan	2016	15:02:581	Enable streaming	
LWed,	60	Jan	2016	15:02:581	Created bridge application fo	r streaming at /bridge
LWed,	U 6	Jan	2016	15:02:581	Streaming has been enabled	
LWed,	60	Jan	2016	15:02:581	Created bridge application at	_/iray_server_bridge.ws
LWed,	06	Jan	2016	15:02:581	Bridge protocol version: 2460	00.2384
LWed,	6	Jan	2016	15:02:581		
LWed,	6	Jan	2016	15:02:581	Using trial license: 26 days	and 8 hours left
tWed,	60	Jan	2016	15:02:581		
LWed,	6	Jan	2016	15:02:581	Starting http server	
LWed,	66	Jan	2016	15:02:581	Hvailable network interfaces:	
twed,	96	Jan	2016	15:02:581	10.21.120.154 Intel(R)	Ethernet Connection (2) 1218-0
twed,	ЫР	Jan	2016	15:02:581	Tray Server started - listeni	ng on all network interfaces on port 9090

Iray Server running in a terminal window

If Iray Server fails to start, go to the terminal window and check the log for errors.

2. From a browser, enter the appropriate URL for your configuration. The login page for Iray Server is displayed.

Configuring command line options: You can configure command line options by editing the settings of the Iray Server desktop icon. Alternatively, you can configure command line options when you start Iray Server directly from the Windows command line.

To start Iray Server under Linux:

- 1. Open a terminal window.
- 2. From the command line, enter iray_server and the command options appropriate for the configuration mode that you want: Standalone, Cluster (UPD or TCP with Discovery), or VCA.

The following console message is displayed:

Iray Server is starting ...

To verify your configuration mode, check for the Mode message. For example:

[Mode] Switching mode to Standalone

When the start up process is successfully completed, the following console message is displayed:

Iray Server started - listening on [port]

Verifying the configuration mode: The selected mode configuration is also displayed on the Resources page. See Checking the server configuration (page 44).

4.4 Logging in to the Iray Server user interface

1. From a web browser, enter the appropriate URL for your Iray Server configuration. The Iray Server Sign In page is displayed:

VIDIA. Iray [®] Server	
Sign In Name	
Password	
Login	

The Iray Server Sign In window

After installation, the user name and password are admin. When you log in for the first time, you are asked to change your password.

2. Type your name and password and click Login. The Queue page is displayed:

	NVIDIA Iray Server	Queue					
Ē	Queue	Welcome to I	rav Server				
	Results	Jobs 1				Rendering II Stop Queue	
•	Archive	Priority	Owner	Job	Frames	Progress	
 23	Users		admin	cornell_box_2	0/1	_	
۵	Settings	Done 1				✓ Clear	
1	Account	Priority	Owner	Job	Frames	Progress	
?	About		admin	cornell_box			
퀸	Logout						

The Queue page

A list of jobs in the rendering queue is displayed in the Jobs list. A list of rendering jobs that were run is displayed in the Done list. This topic is covered in more detail in Managing the queue for batch jobs (page 20).

Recovering from login errors:

When you attempt to log in to a cluster, you may accidentally attempt to log in to a render node rather than a master node. Depending on the error, one of the following warning messages are displayed together with information about what to do next:

• A warning that contains the address of the master node:



Continue to master

Click Continue. You are re-directed to the master node where you can continue the log-in operation.

• A warning that the cluster has no master:



Waiting for master

Start a master server before continuing the log in operations.

In the rare case that you try to log in to a cluster with two masters, the following warning is displayed:

NVIDIA: Iray: Server	
Multiple masters There is more than one master server in the cluster. Please start only one Iray Server process as a master.	

Multiple masters

Restart the cluster with one master only before continuing the log-in operation.

4.5 Logging out

To log out:

1. Click Logout in the navigation panel. A confirmation window is displayed:

🔁 Logout	Cancel	Logout	Progress

The log out confirmation window

2. Click Logout. If the queue is running, any waiting jobs will continue to be rendered.

4.6 Checking your user profile

To check your user profile, open the Account page.

٥	Iray Server	A	ccount			
	Queue					
1	Results		Details		Settings	
-	Archive		Name	admin	Password	Change Password
	Resources		Max. Priority		Desktop Notifications	Disabled
11	Users		Permissions	Administrator		
۵	Settings		E-Mail			
1	Account		Image Storage Path	results		
?	About		Session ID	CC320000-6344-4440-9410-CD4412606/30		
	Logout					

The Account page

You can:

- Change your password (page 19)
- Enable desktop notifications (page 19)

You cannot edit any other fields displayed in your profile.

4.7 Changing your password

To change your password:

- 1. Click Account from the navigation panel. The Account page is displayed.
- 2. Under Settings, click the Change Password button. The Change Password window is displayed.
- 3. Type your current password, your new password, confirm, and click Save.
- 4.8 Enabling desktop notifications

Note: Desktop notifications are not supported by all browsers.

To enable desktop notifications:

1. Click Account from the navigation panel. The Account page is displayed.

😣 Iray Server	Account			
🖆 Queue				
Results	Details		Settings	
Archive	Name	admin	Password	Change Password
III Resources	Max. Priority		Desktop Notifications	Disabled
L Users	Permissions	Administrator		
Settings	E-Mail			
1 Account	Session ID	cc92d008-e944-4448-a41d-cb44f2e8e73d		
? About				
E Logout				

2. Under Settings, check the status of the Desktop notifications button. If disabled, click the button to enable it. If your browser does not support desktop notifications, an information message is displayed and this feature remains disabled.

Desktop notifications are sent to you when a job is completed. The first time that a notification is sent to you from Iray Server, a pop-up window is displayed. Click the Allow button if you want to receive desktop notifications.

5 Managing the queue for batch jobs

This chapter describes capabilities of the Iray Server queue mode and tasks that you can perform from the Queue page.

5.1 Introduction to the Iray Server queue

You submit jobs to Iray Server from Iray-compatible applications⁴. Submitted jobs are added to the Iray Server queue. On the Queue page, jobs are listed in the order they will be run.

If you have administrator privileges, you can view all jobs in the queue. Otherwise, you can view your jobs only. The queue can only be started and stopped by users with administrator privileges.

From the Queue page, you can perform the following tasks:

- View the queued and finished jobs lists (page 22)
- Move jobs (page 29)
- Delete jobs (page 29)
- Stop and restart jobs (page 24)
- Edit jobs (page 29)
- Create and submit copies of jobs (page 27)

⁴http://www.nvidia.com/object/iray-plugins.html

5.2 Submitting a job

Submit a job from an Iray-compatible application⁵. For more information, refer to the documentation of your client application.

When a job is successfully submitted it is displayed on the Queue render page under the heading Jobs.

	NVIDIA- Iray Server	Queue					
Ē	Queue	Welcome to Ir	ay Server				
9	Results	Jobs 1				Rendering	II Stop Queue
.lu	Resources	Priority	Owner	Job	Frames	Progress	
11	Users		admin	active added a minute ago	0/1	=	
۵	Settings	Done 1					✓ Clear
1	Account	Priority	Owner	Job	Frames	Progress	
? Э	About		admin	cornell_box done • ddded a minute ago	1/1		

The jobs list displayed on the Queue page

Note:

- The duration of time that has passed since the job was submitted is displayed to the right of the combined tool and status bar.
- The number of frames to be rendered is displayed in the Frames column.
- The current status of a job is displayed to the left of the toolbar (below the name of the job).

The toolbar enables you to perform a number of operations including stopping, running, editing, copying, and removing jobs in the queue.

You can change the order of your jobs in the render queue by dragging and dropping the priority icon. See Moving a job up or down the queue (page 29).

5.2.1 Setting gamma correction values

When a job is submitted, it includes a *gamma correction value*. This is a floating point value that describes a non-linear function, which is intended to correct for the non-linear response of display devices. A value of 1.0 leaves the image unchanged. Values higher than 1.0 raise the brightness of darker pixels.

There are two possible workflows regarding gamma correction:

1. Leave the stored image data untouched and apply the gamma correction when the image is displayed.

⁵http://www.nvidia.com/object/iray-plugins.html

2. Bake the gamma correction into the image, in other words, store the pixels values with the gamma correction applied.

Which workflow is adequate depends on the supported dynamic range (bit depth) of the image file format.

For image file formats such as PNG, which support a low dynamic range only, it is best to bake the gamma correction into the image. If gamma correction is applied when the image is displayed, detail in dark regions cannot be recovered and image artefacts may result. In fact, all applications commonly used to display PNG and JPEG images, for example web browsers, expect the image data for these file formats to be stored with a gamma of 2.2.

For image file formats such as EXR, which support a high dynamic range, it is best to leave the image data untouched, in other words, work with a gamma of 1.0. This approach is better for workflows that use the image for compositing or texturing. Most applications commonly used to view EXR files assume the gamma of the stored pixel values is 1.0 and apply a gamma correction when displaying.

Iray Server always honors the gamma setting by baking the gamma correction into the stored image. Therefore:

- 1. Supply a gamma of 2.2 when rendering low dynamic range formats such as PNG or JPG.
- 2. Supply a gamma of 1.0 when rendering high dynamic range formats such as EXR.

5.3 Viewing the queued and finished jobs lists

Two jobs lists are displayed on the Queue page:

- *Jobs list:* A complete list of jobs in the render queue. This list is described later in this topic.
- *Done list:* A complete list of rendered jobs. For a description of the list, see Viewing render results (page 31).

The following information is displayed for each job in the render queue:

• *Priority:* By default, a job's position in the queue is determined by its priority level. Zero (0) is the highest priority level. There is no minimum priority level. If jobs have the same priority level, their position in the queue is determined by waiting time.

The quickest way to change a job's position in the queue is by dragging and dropping the job's Priority icon. This operation may trigger a change in the job's priority level. During edit and copy operations, you can also change the priority level of a job. See Moving a job up or down the queue (page 29).

Note: As a user, you are assigned a priority level by the Iray Server administrator. This is the highest priority level you can assign to your jobs.

- *Owner:* The user ID of the person who submitted the job.
- *Job:* The name of the job, which is assigned by the person who submitted the job. To view the job description, click the name. If you have administrator privileges, you can

see the details of all jobs in the queue. Otherwise, you can see the details of your jobs only.

😣 İray Server					
	Quer				
	Welcom	e to Iray Server			
🖻 Results		1			Stopped > Start Queue
 Archive 	Prio	rity Owner	Joh	Frames	Progress
			cos		riogicos
🎎 Users		0 admin	waiting V		
Settings					
			Render mode Photoreal Path results/admin/cornell		
			Resolution 1920x1080		
원 Logout		Re	Iterations 0 / 1000 Index time limit 3600 Sec		
			Quality 0/1		
			Fastest frame 0 sec		
			Slowest frame 0 sec		
		Tot	al render time 0 sec		
		•			
		U			
	Prio	rity Owner	Job	Frames	Progress

A job description

A toolbar provides status information and action buttons:

Priority Owner	Job	Frames	Progress
= 50 robert	Diamonds (5) stopped 🖌 🕨 👁 🗙 added 6 minutes ago	10 / 60	

- Stopped/waiting/running: The current status of the job.
- *Edit:* Edit the job parameters. See Editing a job (page 29).
- *Start/Stop:* Toggle to start or stop the job. See Restarting a job (page 26) and Stopping a job (page 26).
- Copy: Create a copy of the job, edit it, and submit it. See Copying a job (page 27).
- *Remove:* Delete the job. See Deleting a job (page 29).
- *Time:* Elapsed time since the job was submitted.
- *Frames:* The number of frames already generated / the number of frames submitted.
- *Progress:* Two progress bars are displayed. The blue bar represents the percentage of the generated frame that is completed. The green bar represents the percentage of the generated animation, if any, that is completed. Progress calculations are based on user-specified completion criteria for iterations, render time (hh:mm:ss), and quality, and which criterion is expected to be satisfied first.

Note: You can change the values of these criteria from the Edit mode. See Editing a job (page 29).

5.4 Starting and stopping the render queue

Note:

- Only users with administrator privileges can start and stop the render queue.
- Streaming and queuing modes cannot run simultaneously. See Switching between streaming and queuing (page 25).

To start and stop the render queue:

1. *To start the render queue:* From the Queue page, click Start Queue. The render queue is started and the Stop Queue button is displayed.

If a connection to VCA Manager has been established, the Reserve Cluster window is displayed:

	J		
	8 9	Reserve Cluster	
	X	You have enabled the VCA connection in the settings. To start rendering on the VCA cluster specify the number of	
		nodes you want to reserve:	
		Nodes 0	
		Available 9	
		The reserved cluster will be released when the queue has been stopped and there are no active jobs left in the queue.	
		Cancel Reserve	

The Reserve Cluster window

Specify the number of VCA nodes you want to reserve for rendering and click Reserve. The queue is started automatically.

Note: Only users with administrator privileges can set up a VCA connection. For more information, see Setting up an Iray Server connection to VCA Manager (page 38).

2. *To stop the render queue:* From the Queue page, click Stop Queue.

The currently running job, if any, is completed, then rendering stops. The Start Queue button is displayed.

5.5 Switching between streaming and queuing

Streaming and queuing modes cannot run simultaneously. If a user is streaming from the server when you try to start the queue, a warning message is displayed:



Streaming warning

Do one of the following:

- 1. Click Start Queue to stop streaming mode and start queuing mode.
- 2. Click Cancel to allow the user to continue streaming.

Note: Streaming mode can accept jobs for later processing in the queue.

5.6 Stopping a job

You can stop a running job or a job waiting in the queue. When a job is stopped, you can edit, copy, or remove it. See Editing a job (page 29), Copying a job (page 27), and Removing a job (page 29).

A stopped job can continue to move up the queue but it cannot run. In the meantime, other jobs in the waiting state are run.

To stop a running job:

- 1. From the Queue page, look under Jobs and locate the running job you want to stop.
- 2. Click the Stop button. A confirmation window is displayed.
- 3. From the confirmation window, choose one of the following:
 - Confirm the stop operation. The current state of the job is saved but the progress of the currently rendering frame is lost. The job remains in the render queue and the job status is changed to stopped. You can restart and finish the job later.
 - Cancel the stop operation. The job will continue to be rendered until completion.

When a running job is stopped, its displayed status is changed to stopped.

To stop a job waiting in the queue:

- 1. From the Queue page, look under Jobs and locate the waiting job you want to stop.
- 2. Click the Stop button.

When a waiting job is stopped, its displayed status is changed to stopped.

5.7 Restarting a job

Note:

- Users can restart their own jobs only.
- Users with administrator privileges can restart any job in the queue.

To restart a stopped job in the queue:

- 1. From the Queue page under Jobs: Find the job you want to restart and click the Start button. If the job queue is running (not stopped), a confirmation window is displayed.
- 2. From the confirmation window, confirm or cancel the restart operation. A job is restarted from its current position in the render queue.

5.8 Copying a job and adding it to the queue

You can make a copy of a queued or completed job, edit its parameters to suit your needs, and add it to the queue.

To create a copy of a job and add it to the queue:

1. From the Queue or Archive pages: Find the job you want to re-submit and click the Copy button. The Copy page is displayed with a list of editable parameters:

Na	me		Tee	dDire in et			
A	vailable		les	stProject			
Pri	Priority Lower values mean higher priority						
Re	nder mode Photoreal or Iray I		Ste	reo Photo	real		Ŧ
Ste	ereo Pairing		Lef	t over Righ	nt ¹		•
Ey In s	e Separation	Distance	0.3	14			
Res	solution olution for all buffe		800)		600	
Bu	ffers of buffers and ligh	t path expression					
	Buffer	Format		Bit Depth		Remove	
÷E	leauty	PNG		RGBA		Remove	
E	Suffer 👻	Format		Bit Depth	las 🔻	Add But	
▼ L Add	ight Path Ex	pressions					
1-1	Max. iterat	ions	100)			
in s	Max. rende	er time	60				
0-1	Max. quali	ty	1				

The Copy window

- *Name:* The name of the new job, which must be unique. If the frame of the entry box is red, the displayed name is already used and must be changed before you can submit the job. If the frame of the entry field is green, the displayed name is unique.
- *Priority:* A job's position in the queue is determined by its priority level.

Zero (0) is the highest priority level. You cannot assign a priority level to a job that is higher than the priority level assigned to you by the administrator.

• *Render mode:* Supported render modes are Photoreal, Interactive, Stereo Photoreal, and Stereo Interactive.

Render mode Iray Photoreal or Iray Interactive	Photoreal		
Resolution	Photoreal		
Resolution for all butters	Interactive		
Buffers List of buffers and light path expression	Stereo Photoreal		
Buffer Format	Stereo Interactive		

If you select a stereo render mode, the following editable parameters are displayed:

- *Stereo pairing:*
 - *Separate:* Two images are rendered. Each image represents one eye.
 - *Left over right:* The image of the left eye is rendered above the image of the right eye. The rendered images are twice the height of a non-stereo image.
 - *Left next to right:* The image of the left eye is rendered beside (left side of) the image of the right eye. The rendered images are twice the width of a non-stereo image.
- *Eye separation distance:* The deviation separating the two perspectives. Use a minor deviation that matches the natural perspectives that both eyes receive in binocular vision. The value is specified in scene units.
- *Resolution:* Enter the resolution. You can unlock the ratio between height and width by clicking on the little lock symbol.
- *Buffers:* A list of all buffers to be rendered. For each buffer the buffer type, the file format and the bit depth is specified. To remove buffers in the list, click Remove.

You can:

- Change the file format and the bit depth for each buffer in the list.
- Add new buffers by selecting a new buffer type from the drop-down menu to the left of the Add Buffer button. You must select an image file format and a bit depth for the output data. You can only select supported combinations of buffer type, image file format, and bit depth.
- *Light Path Expressions:* Light Path Expressions (LPEs) enable you to render any interaction of light with any object into separate images, which can then be composited. To generate output files using LPEs, you specify a name, light path expression (LPE), format, and bit depth, and click Add. For more information about creating and using LPEs, refer to the documentation for your Iray-compatible application and the iray dev blog entry, Compositing with Light Path Expressions⁶.
- Calculations for determining the end of the render operation include any combination of the following criteria:
 - Maximum iterations

 $^{{}^{6} \}texttt{http://blog.irayrender.com/post/76948894710/compositing-with-light-path-expressions}$

- Maximum render time (hh:mm:ss)
- Maximum quality
- 2. Modify the job parameters to suit your needs and click Add to Queue.

5.9 Editing a job

If a job is stopped or waiting, you can edit its parameters in the queue. While the Edit window is open, the job status is stopped. A job can continue to move up the queue while the Edit window is open, but it cannot run; other jobs in the waiting state, including those with a lower priority, are run in the meantime. After you close the Edit window, the previous status of the job is restored (waiting or stopped)

To edit a job in the queue:

1. From the Queue page: Find the job in the queue that you want to edit and click the Edit icon. The Edit window is displayed with a list of editable parameters:

For a description for the fields, see Copying a job and adding it to the queue (page 27).

2. Modify the job parameters to suit your needs and click Save.

5.10 Moving a job up or down the queue

The easiest way to move a job up and down the queue is by dragging its Priority icon.

Priority level has two aspects:

- The priority level assigned to you by your administrator
- The priority level you assign to a job

The highest priority level you can assign to a job is the priority level assigned to you by your administrator. There are no restrictions concerning the lower boundary of priority levels that you can assign to jobs.

If you drag and drop a job with a low priority in front of a job with a higher priority, the priority level of the moved job is automatically updated. You can also change the priority level from the Edit and Copy windows.

To move a job up or down the queue:

- 1. From the Queue page, locate the job in the queue.
- 2. Drag and drop the Priority icon.

5.11 Deleting (removing) a job in the queue

To delete (remove) a job in the queue:

- 1. From the Queue page, locate the job in the queue.
- 2. If the job is active, it must first be stopped. See Stopping a job (page 26).
- 3. Click the Remove icon. A confirmation window is displayed.
- 4. From the confirmation window, choose one of the following:

- Delete to remove the job from the render queue. If there are any rendered files, they are saved and accessible from the Results page where you can view them and download them.
- Cancel to continue the rendering operation.

6 Managing render results

This chapter describes tasks associated with viewing, downloading, and archiving the results of your jobs from Iray Server:

- Viewing render results as imagery (page 31)
- Viewing render results as a file list (page 32)
- Downloading render results (page 33)
- Deleting render results (page 34)
- Viewing the archive list (page 35)
- Adding archived jobs to the queue (page 35)
- Deleting archived jobs (page 35)

6.1 Viewing render results as imagery

For each job listed in the Done list on the Queue page and in the Archive list that belongs to the current user, the generated imagery is displayed on the Results page.

VIIDA Iray Server	Results				
🖞 Queue	Diamonds (5)				× 11 Files
🖻 Results				_	
Archive		- Participant			
L Account					
? About					
E Logout	Diamonds (4)			× 60 Files	Download
	<		THE REAL		
	Diamonds (3)			× 10 Files	Download

The Results page

Job results are listed from most recent to least recent. Each row lists the results for each uniquely named job. The list includes the results of uncompleted jobs as long as one frame was rendered before the job was stopped.

For each render result, the following information and action buttons are displayed:

- *Name of the job (top left):* The name of the job.
- Tool bar (top right):
 - *Delete:* Delete the complete job results.

- *Files:* Display a complete list of generated output files. File names reflect the type of generated output. By default, the number of files is listed on the Files button.
- Download: Download the complete job results.
- Thumbnail images for each generated output file. Left-right scrolling arrows are provided. Clicking a thumbnail displays a full-sized image, the file name, the type of generated output, and a Download button.

Note: A bar at the top of the page enables you to download render files even while a job is running.

6.2 Viewing render results as a file list

To display a list of generated files and view selected results:

- 1. From the Results page, find the job whose result files you want listed. To the right of the job name is the Files button.
- 2. Click the Files button. The generated output files are displayed as a list of active buttons.

NVIDIA: Iray Server	Results
E Queue	Diamonds (3) X 10 Files Download
Results	
Archive	
L Account	
? About	
🔁 Logout	E Files 10
	DiamondsAI.0001 DiamondsAI.0002 DiamondsAI.0003 DiamondsAI.0004 DiamondsAI.0005 DiamondsAI.0006 DiamondsAI.0007
	DiamondsAI.0008 DiamondsAI.0009 DiamondsAI.0010
	Diamonds (2) X 1 Files Download
	Diamonds (1) X 1 Files Download

List of image files generated for a job

3. To open a particular file, click its file name. A full-sized image and the file name of the generated output are displayed.



Full-size image with file name and download button To download the image file, click the Download button.

6.3 Downloading render results as a zipped folder

Note: Downloading a single image file is described in Viewing render results as a file list (page 32).

From the Results page, you can download the complete job results as a zipped folder.

To download a zipped folder:

- 1. From the Results page, find the job whose results you want to download. To the right of the job name is the Download button.
- 2. Click the download button. A download window is displayed with the name of the zipped folder. The name of the zipped folder is the same as the job name.
- 3. Specify a download location and click OK.

6.4 Deleting render results for a specific job

From the Results page, you can delete the results of a job.

Note: All output for a job is deleted. You cannot delete a selection of files for a particular job.

To delete all output files for a completed job:

- 1. From the Results page, find the job whose results you want to delete. To the right of the job name is the X (Delete) button.
- 2. Click the X (Delete) button. A confirmation window is displayed.
- 3. From the confirmation window, click Delete. The generated output is deleted.

6.5 Archiving all jobs in the Done list

The Done list is a list of all ended jobs where at least one frame was generated. You can clear the job list in one operation by using the Clear button.

	Iray Server	Queue					
È	Queue	Welcome to	Iray Server				
8	Results	Jobs 0				Awaiting jobs	
	Archive	Priority	Owner	Job	Frames	Progress	
?	About	Done 1					✓ Clear
Ð	Logout	Priority	Owner	Job	Frames	Progress	
		√ 50	robert	Diamonds (4) done o added an hour ago	60 / 60		

Clear the Done list by clicking the Clear button

Copies of the cleared jobs are stored in the archive. The render results are not deleted.

Note: You can clear and archive your own jobs only, unless you have administrator privileges.

To archive all jobs in the Done list:

- 1. From the Queue page beside the header Done: Click Clear. A confirmation window is displayed.
- 2. From the Confirmation window, click Clear jobs.
- 3. To view archived jobs, go to the navigation bar on the left and click Archive. The Archive page (page 35) is displayed.

6.6 Viewing the archive list

From the left navigation bar click Archive. The Archive list is displayed:

VVIDIA Iray Server	Archive			
🖆 Queue	Jobs 4			× Delete all
Results	Priority Owner	Job	Frames	Progress
Archive				
L Account	✓ 50 robert	done C added 15 hours ago	1/1	
? About	50 robert	Diamonds (2) done o added 15 hours ago	1/1	
된 Logout	50 robert	Diamonds (3) done • o added 23 minutes ago	10 / 10	
	√ 50 robert	Diamonds (1) done O added 15 hours ago	1/1	

The Archive page

Jobs are listed from most recently completed to least recently completed. The list has the same layout as the Done list on the Queue page.

Note: In the archive list, you can only see your own jobs, unless you have administrator privileges.

6.7 Adding archived jobs to the render queue

To add an archived job to the render queue:

- 1. Click the copy button. The Copy window is displayed.
- 2. Type a valid name and edit other parameters to suit your needs.
- 3. Click Add to Queue. The job is added to the Jobs list on the Queue page.

6.8 Deleting archived jobs

Note:

- This delete operation deletes all archived jobs. You cannot delete a selection of archived jobs.
- After you delete archived jobs, you cannot retrieve them.

To delete archived jobs:

- 1. From the Archive page, click Delete. A confirmation window is displayed.
- 2. From the confirmation window, click Delete jobs.

7 Iray Server administration tasks

Note: You must have administrator privileges to perform the tasks described in this chapter.

This chapter describes tasks associated with managing selected Iray Server configuration settings, managing resources or rendering, and managing users.

7.1 Managing Iray Server configuration settings

From the Settings page, you can specify settings for your Iray Server configuration. The Settings page is divided into the following parts:

• General settings (page 37) to to specify the server name and change the message of the day

Note: Specifying a unique server name is recommended when you have multiple standalone installations of Iray Server to manage independent processes such as staging and production. The name of the server you are linked to is displayed in the bottom left of the window. This is particularly handy when you want to view the various installations from multiple tabs in one or more browser instances.

- VCA settings (page 38) to enable rendering on a VCA
- Result settings (page 39) to manage rendered output
- Events (page 41) to add custom commands

7.1.1 Changing general settings

VIDIA Iray Server	Settings	
Queue		VCA
🖾 Results	General	VCA
Archive		
Ju Resources	Server Name	VCA Connection Enabled
L Users	Iray Server Save	If enabled, the server will connect to the VCA Manager, reserve nodes and render on the cluster.
🔹 Settings	If you use multiple servers you can change the server names to exclude any confusions	172.16.1.93
L Account		Inv. conver
? About		iray_server
된 Logout	Message of the Day	
	Welcome to Iray Server	Save
		Automatic Cluster Release
	Will be shown on the Queue page. Save	If enabled, the reserved VCA cluster will be released after the queue has been idle for (minutes):
		20 Save

Following is the General settings section (left of the VCA settings):

General settings (left of the VCA settings)

The following editable fields are displayed:

- Server Name: The server name. The default name is Iray Server.
- *Message of the Day:* A message for all users, which is displayed on the Queue page.

7.1.1.1 Changing server names

If your Iray Server configuration consists of multiple clusters, it is recommended that you give the master server of each cluster a unique name to avoid any confusion.

In the Server Name entry field, type the unique name that you want to assign to the master server and click Save. A Saved message is displayed in the top-right corner of the page.

7.1.1.2 Changing the message of the day

This message is displayed near the top of the Queue page. It is useful, for example, to notify users of upcoming events or server availability.

To change the message of the day:

- 1. In the Message of the Day entry field, edit the existing message or type a new message.
- 2. Click Save. A confirmation message is displayed in the top-right corner of the page. The Queue page is immediately refreshed for all users.

7.1.2 Changing VCA settings

🔖 İray Server	Contractor	
	Settings	
Results	General	VCA
Archive		
Ju Resources	Server Name	VCA Connection Enabled
L Users	Iray Server Save	If enabled, the server will connect to the VCA Manager, reserve nodes and render on the cluster.
Settings	If you use multiple servers you can change the server names to	172.16.1.93
1 Account	exclude any confusions.	
? About		iray_server
El Logout	Message of the Day	
	Welcome to Iray Server	Save
		Automatic Cluster Release
	Will be shown on the Queue page.	If enabled, the reserved VCA cluster will be released after the queue has been idle for (minutes):
		20 Save

Following is the VCA settings section (right of the General settings):

VCA settings (right of the General settings)

The following sections describe how to enable your VCA connection and how to enable the automatic release of your reserved VCA cluster.

7.1.2.1 Setting up an Iray Server connection to VCA Manager

When enabled, Iray Server connects to and renders on the VCA. You download render results from the Results page. (This is true for all configurations.)

If you want to offload rendering to the VCA, you need to establish an Iray Server connection with VCA Manager. You need to provide a URL that Iray Server can use to connect to VCA Manager, and a user name and password. When the VCA Manager queue is started, the VCA Manager allocates a given number of VCAs for rendering. When the VCA Manager queue is stopped, the VCAs are released.

To edit the VCA settings and establish a connection to VCA Manager:

- 1. Click the Disabled switch. The Enabled switch is displayed and the Edit mode is activated for the VCA entry fields.
- 2. In the VCA Address field, type the URL to connect to VCA Manager.
- 3. In the Username and Password fields, type a known VCA user ID and password.
- 4. Click Save. Iray Server tries to connect to VCA Manager. A message is displayed to inform you whether or not a connection is established.

Note: If Iray Server fails to connect to VCA Manager, check the validity of the VCA address, and the VCA user ID and password.

The connection to the VCA remains enabled until you disable it or you enable automatic cluster release. When disabled, the VCA nodes are released and rendering is performed on the local machine.

7.1.2.2 Enabling automatic cluster release

You can release a reserved cluster automatically by enabling the Automatic Cluster Release button and specifying an idle time as the release trigger.

To enable automatic release of a VCA or VCA cluster:

- 1. Click the Enabled/Disabled slider if it is currently disabled.
- 2. Specify the length of idle time that will trigger the release of the VCA or VCA cluster

After a VCA or VCA cluster is released the VCA connection is set to disabled.

7.1.3 Changing result settings

Following is the Results settings section:

VIDIA Iray Server		
自 Queue	Results	
Results		
a Archive	Global Image Storage Path	Canvas Update Interval
III Resources	results Save	8 Save
L Users	The global image storage path specifies a relative or absolute	The update interval time in seconds acts as a hint to the
Settings	written.	active job will be exported to disk on each canvas update. This includes the thumbnalls and preview images for the browser as
1 Account		well as the results in the original format and resolution.
? About	5	
휜 Logout	Generate ZIP Files	Progressive Export Disabled
	download the results from this web interface.	Export seperate results on each canvas update. The number of iterations will be added to the result file names. Activating this option will produce many result files and use up more disk space.

Resource settings

The following sections describe actions that you can take to manage interim and final render results:

- Specify the directory where render results are stored
- Zip up and download render results
- Specify the update interval for interim render results when you perform a progressive rendering operation
- Export interim render results based on the update interval

7.1.3.1 Specifying a directory for storing render results

When setting up the global storage path or individual paths for users you need to take into account that a storage path may be different on different machines. For example, should Iray Server run on a Linux machine while your machine is running on Windows, the storage path will look very different even if both machines access the same file server.

In some cases, even between different Windows machines, the setup may differ. For example, a shared storage may be accessed as different disk drives (for example, d:\ and e:\). This is highly dependent on your local setup. The path that you need to give to Iray Server is always the path that is valid on the machine that Iray Server is running on. For that reason, it is recommended that you log in to that machine when determining the storage path.

To change the destination folder for render results: In the Global Image Storage Path entry field, edit the displayed directory name and click Save. A confirmation message is displayed in the top-right corner of the page.

The default directory path is the current working directory of Iray Server. The default directory name is results.

Note: Custom storage paths defined for users remain unaffected by path or name changes to the destination folder.

7.1.3.2 Zipping up and downloading render results

When this setting is enabled, .zip files are generated from the render results for each job. Users download zipped render results from the Results page.

Note: Zip files are a requirement for downloading render results from the user interface.

Creating .zip files takes time and space. Disabling this option makes sense when you are rendering locally and you do not want the associated overhead.

To generate .zip files for downloading render results: Beside Generate Zip Files, set the slider to Enabled. The results of each job are packaged in a .zip file for download from the Iray Server user interface.

7.1.3.3 Setting an update interval for interim render results

You can suggest to the renderer how often you want the interim render result to be updated. The update interval is specified in seconds. When the image is updated, the interim result is exported to disk. Each exported result includes the results in the original format and resolution and thumbnails and preview images.

To specify an update interval: In the Canvas Update Interval entry field, edit the displayed value and click Save. A confirmation message is displayed in the top-right corner of the page.

7.1.3.4 Exporting interim render results to separate result buffers

You can save the results of each interim render result in separate result buffers. However, it is important to remember that enabling this setting produces many result files and uses up more disk space.

To enable separate result buffers for interim results: Beside Progressive Export, set the slider to Enabled.

7.1.4 Adding custom commands

Note: Setting events is for advanced users.

	Iray Server	Events
Ē	Queue	
1	Results	Job Status
	Archive	Command
.la	Resources	This command will be called when a job has finished or failed. You can pass the following variables to your program: @user, @job, @status, @email and @error - they will be replaced by the corresponding strings.
11	Users	
۵	Settings	
1	Account	
?	About	
	Logout	

Event settings

When a job is finished, custom scripts can be called. Under Windows, use a batch script. Under Linux, use a shell script.

Scripts may be used for example to forward a job to a post-processing tool chain or to send notifications to users when jobs are completed. Event settings are shared by all users.

The following variables can be passed to the scripts:

Variable	Value
@user	The user who submitted the job
@job	The name of the job
@status	The status of the job, which can be either done or failed
@email	The email address of the user who submitted the job
@error	A description of the error if there was any.

7.2 Managing resources for rendering

From the Resources page, you can check the status of your rendering resources.

kan Iray Server	1995					
😰 Queue	Resources	rione				
🖾 Results	Supported ver					
Archive	Bridge Protocol HTTP Address	270930 8.0.8.8:9091				
L Resources	Admin HTTP Server Cluster Interface					
🎎 Users						
Settings	Cache Manage					
L Account	Address:					
	HTTP Address					
	High-water mark					
	Storage					
	Total Space	405.27 68				
						Standalone Mode
	ID Hostna	ime	Memory	CPU Cores	GPUs	Uptime
	1 master					
						Download
	[Med, 06 Jul 201 [Med, 06 Jul 201	6 13:56:59] 3 266666.4957 1.1 6 13:56:59] 3 26666.4957 1.2 6 13:56:59] 3 26666.4957 1.2 6 13:56:59] 3 26666.4957 1.2 6 13:56:59] 3 26666.4957 1.3	27 IRAY ^C net info : Snapsh 25 IRAY ^C net info : snapsh cene inporter] Snapshot cre 3 BRIDGE net info : Stoppin 22 STREAM net info : 127.0.	ot context manager: Crea ot cloud(1): Snapshot do ated g session vKALON92KXc87n 0.1:50636: Forcefully cl	ated snapshot context 1 fr nne. ux in state connected. losing connection. Any dar	or session vKALQN9ZXXc87ux. to not yet delivered might
	[Med, 05 Jul 201 [Wed, 05 Jul 201	6 13:56:59] 3 266666.4957 1.2 6 13:56:59] 3 266666.4957 1.2	21 ERIDGE net info : Remove 25 ERIDGE net info : Sessio	d server side remote sco n(vKALQN9ZKXc87ux): Con	spe 1 with parent 0. mection state changed to	

The Resources page

The Resources page is divided into the following parts:

- Supported Versions: Supported versions of Iray Bridge. See Checking the supported versions of Iray Bridge (page 42).
- *Cache Manager:* Configuration options for the Cache Manager. See Checking the Cache Manager settings (page 43).
- *Storage:* Available storage for render results. See Checking the available storage for render results (page 43).
- *Hosts:* List of servers in your Iray Server cluster and their resource status. See Checking the server configuration (page 44).
- *Logs:* Downloadable log of the master node in your Iray Server cluster. See Checking and downloading the log of the master node (page 44).
- *Benchmarks:* Pre-uploaded rendering jobs are provided with the installation. You can use these rendering jobs to test that your Iray Server configuration is working and its performance. See Benchmarks (page 45).

7.2.1 Checking the supported versions of Iray Bridge

From the Resources page, you can view the Supported Versions report. It specifies the supported versions of Iray Bridge. A report is provided for each version of Iray Bridge that is supported.

- Bridge protocol
- HTTP address
- Admin HTTP server
- Cluster interface

Multiversion support for Iray:

Iray Server launches an Iray Worker for each version of Iray that is supported. When a request is submitted to Iray Server, the job is automatically sent to the correct Iray Worker for processing. The Bridge protocol is used to associate it to the relevant version of Iray being run by an Iray Worker. For example:

- Bridge protocol 261500.7208 supports Iray 2016.1
- Bridge protocol 272800.3371 supports Iray 2016.2
- Bridge protocol 278300.3661 supports Iray 2016.3

These Bridge protocols, which are referenced in the log file, may help you track down multiversion issues (if any).

7.2.2 Checking the cache manager settings

From the Resources page, you can view the cache manager settings. The Cache Manager report contains the following information:

- *Address:* The address to listen on. It should only be changed when there is a conflict in the port usage.
- *Data path:* The directory used by the cache manager to store its data.
- *Low water mark:* Garbage collection is ended when memory usage (in MB) falls below this value.
- *High water mark:* Garbage collection is started when memory usage (in MB) exceeds this value. When this value is set to zero (0), garbage collection is disabled.

7.2.3 Checking the available storage for render results

From the Resources page, you can view the Storage report. It specifies the available disk space for render results. A report is provided for each storage location.

The Storage report contains the following information:

- Total space: The amount of space on the hard disk
- Available space: The amount of space that is still free
- *Path:* The directory path where render results are stored for all users, unless a custom path is specified

7.2.4 Checking the server configuration

From the Resources page, you can view the Hosts report. It provides a list of the servers in your Iray Server configuration and a short description of each:

Ø	Iray Server	Hosts						
	Queue	ID Hostnar	me	Memory	CPU Cores	GPUs	Uptime	
	Results	1 master	staher-dt	12 GB			11 min	^
	Archive							
	Resources	Use CPU						
<u>.</u>	Users							
\$	Settings	1 GeForce GT Memory	5.9 GIB					
1	Account	Clock Rate Multiprocessors	876 MHz 14					
?	About	Display Enabled	Yes					
	Logout							

The Hosts report, which also displays the configuration mode (top-right)

The Hosts report specifies the type of configuration (top-right) and provides the following information about each server:

- ID
- Host name
- Memory
- CPU cores
- GPUs
- Uptime

When you click on the host name, switches are displayed to allow you to enable and disable CPU and GPU usage.

7.2.5 Checking and downloading the log of the master node

From the Resources page, you can check and download the log of the master node. The log is displayed in a scrollable viewport. The most recent log messages are displayed at the bottom of the window.

The log is locked by default. When the log is locked, scrolling is automatic. For manual scrolling, you need to unlock the scroll bar by clicking the lock icon.

To download the log, click the Download button.

7.2.6 Benchmarks

If there is a benchmarks folder with scenes in the installation directory, a table with all the scene names is displayed on the Resources page.

Benchmarks					
Name					
cubes	+ Add to Queue				
5_spheres	+ Add to Queue				
animals	+ Add to Queue				
buddha	+ Add to Queue				
bunny-backplate	+ Add to Queue				
cornell_box	+ Add to Queue				
decals	+ Add to Queue				
interior	+ Add to Queue				
light_glow	+ Add to Queue				
matroschka	+ Add to Queue				
shader_ball	+ Add to Queue				
vases_horse	+ Add to Queue				

Benchmark scenes

To run a scene, click the Add to Queue button. The scene is added as a new job to the queue.

The new job uses the following predefined rendering options:

- Format: PNG
- Resolution: 1920x1080
- Maximum iterations: 1000

7.3 Managing users

From the Users page, you can manage access to Iray Server. The Users page provides a complete list of users. Commands are provided to add and delete users and edit user settings.

You can think of a user account in two ways:

- As a single user account where each user has a unique account name and password.
- As a project account where multiple users share a password.

7.3.1 Viewing and editing a list of users and user settings

From the Users page, a complete and editable list of users and user settings is displayed.

kvida. Iray Server	Llaara				
	Add User				
Results	Name	Admin	Max. Priority	Image Storage	Action
In Resources	admin alice		0	Default Default	✓Edit ✓Edit X Delete
A Users	o bob		100	Default	✓Edit × Delete
Settings					
Account About					

The Users page

The following information is displayed for each user:

- Name: User ID.
- Admin: Specifies whether or not the user has administrator privileges.
- *Max. Priority:* Specifies the highest priority level that a user can assign to a job in the queue. The highest priority level is 0 (zero). The lowest priority level is 100.
- Image Storage: Specifies the directory where render results are stored for this user.
- Action: Specifies the available editing actions for each user.

7.3.2 Adding a user

To add a user:

1. Click the Add user button near the top of the page. The New User window is displayed:

				Jarn I		
	New User					
- 24	Name A-Z a-z 0-9 @ .					
	E-mail					
	Password At least 5 characters					
	Max. priority Max. job priority - lower values higher priority	100				
	Permissions Normal user or administrator	Normal	user			
	Require password change Prompt the user to change the pasaword on next login	C Yes				
	Image storage p Absolute or relative pain to a to store the results of the new					
			Cancel	Save		

The New User window

- 2. Fill in the appropriate fields.
- 3. Click Save. A confirmation message is displayed in the top-right corner of the page. If the Save operation is successful, the new user is added to the Users list.

7.3.3 Deleting a user

To delete a user:

- 1. In the Users list locate the user.
- 2. In the Action column, click Delete. A confirmation window is displayed.
- 3. Click Remove to delete the user.

7.3.4 Editing a user profile

To edit a user profile:

- 1. In the Users list locate the user.
- 2. In the Action column, click Edit. The Edit User window is displayed:

Iray Server				
🗐 Queue				
🖬 Results	Name Edit User		Image Storage	
Ju Resources	e adr Name	robert		
LL Lisers	E-Mai	robert@nvidia.com		
Settings	Max. Priority	50		
L Account	Permissions Image Storage Path	G Admin Custom		
E Logout				
		Cancel Save		

3. After you finish your edits, click Save.

7.4 Troubleshooting

The following sections address typical error situations that may occur when running Iray Server.

7.4.1 Clustering

Q: I am using UDP with multicast and it is not working correctly.

A: Iray Server supports two cluster modes: UDP with multicast and TCP/IP discovery mode. UDP with multicast is generally quite easy to set up. You simply enable it; you do not need to concern yourself with addresses.

Some networks, however, either do not support UDP with multicast or support very low bandwidth only. In such cases, TCP/IP discovery mode is recommended. For more information about cluster modes, refer to Cluster options (page 11).

7.4.2 Out-of-memory

Q: A job appears to hang which prevents Iray Server from uploading the job correctly.

A: The computer on which Iray Server is running may be low on memory. Check the log for typical error messages such as error: Socket write operation failed. and Failed to read data for element Under Windows, select the Performance tab in the Task Manager window. Verify memory usage.

If memory usage is extremely high, either shutdown unnecessary applications and services or run Iray Server on another machine.