



# Apple Qmaster

Distributed Processing Setup Guide

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Apple  
1 Infinite Loop  
Cupertino, CA 95014  
408-996-1010  
[www.apple.com](http://www.apple.com)

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# Welcome to Distributed Processing

Transcoding or processing a series of large files on one desktop computer is processor intensive and time-consuming. You can increase speed and productivity by distributing processing across multiple computers.

This preface covers the following:

- About the Apple Qmaster Distributed Processing System (p. 5)
- About the Distributed Processing Documentation (p. 6)
- Additional Resources (p. 6)

## About the Apple Qmaster Distributed Processing System

High-volume processing is sometimes addressed by carefully managing multiple computers; technicians set up batches of processing tasks for each computer and then monitor their progress, collect and route the processed files, and start over again with new batches. Although this is an improvement over the single-computer method, the resource and process management can be laborious and slow.

The Apple Qmaster distributed processing system provides a more efficient solution, handling all the work distribution and processing for you, behind the scenes. Apple Qmaster and the Apple Qmaster features of Compressor manage the processing across designated computers. They subdivide the work for speed, route the work to the computers with the most available computing power, and direct the processing.

The Apple Qmaster system uses the processing capacity of your network computers for a wide range of tasks, including transcoding and rendering for digital visual effects software packages such as Apple Shake, Adobe After Effects, and Autodesk Maya.

## About the Distributed Processing Documentation

The Apple Qmaster distributed processing system is included with every copy of Final Cut Studio and Shake. The system comes with various documents that help you get started as well as provide detailed information about each of the applications. (To access onscreen help for an application, open the application and choose the application's help from the Help menu.)

- *Distributed Processing Setup Guide*: This manual is the primary documentation for the Apple Qmaster distributed processing system. The manual explains how to set up and maintain a distributed processing network for use with Compressor or digital visual effects software packages. It includes information on preparing a distributed processing network, creating and administering clusters of computers, monitoring batches, and using the system from the command line.

Although all of the chapters should be useful to administrators, *client users* (users who are not administrators) may need to refer only to the *Compressor User Manual* or the *Apple Qmaster User Manual*, and possibly to the introductory information in this document, to understand how to use the Apple Qmaster distributed processing system for their purposes.

The *Distributed Processing Setup Guide* is available in Compressor Help, Apple Qmaster Help, and Apple Qadministrator Help.

- *Compressor User Manual*: This is a comprehensive document that describes the Compressor interface, commands, and menus and gives step-by-step instructions for using Compressor and accomplishing specific tasks. It is written for users of all levels of experience. The *Compressor User Manual* is available in Compressor Help.
- *Batch Monitor User Manual*: This brief document describes how to use the Batch Monitor application to monitor the transcoding progress of batches and jobs. The *Batch Monitor User Manual* is available in Batch Monitor Help, Compressor Help, and Apple Qmaster Help.
- *Apple Qmaster User Manual*: This document describes the Apple Qmaster client application only. This is a specialized application for submitting jobs with Shake, Autodesk Maya, and other digital visual effects software packages. The *Apple Qmaster User Manual* is available in Apple Qmaster Help.

## Additional Resources

Along with the documentation that comes with the Apple Qmaster software, there are a variety of other resources you can use to find out more about the Apple Qmaster distributed processing system.

### **Final Cut Studio Website**

For general information and updates, as well as the latest news on Final Cut Studio, go to:

- <http://www.apple.com/finalcutstudio>

### **Compressor Website**

For general information and updates, as well as the latest news on Compressor, go to:

- <http://www.apple.com/finalcutstudio/compressor>

### **Apple Service and Support Websites**

For software updates and answers to the most frequently asked questions for all Apple products, go to the general Apple Support webpage. You'll also have access to product specifications, reference documentation, and Apple and third-party product technical articles.

- <http://www.apple.com/support>

For software updates, documentation, discussion forums, and answers to the most frequently asked questions for Compressor, go to:

- <http://www.apple.com/support/compressor>

For discussion forums for all Apple products from around the world, where you can search for an answer, post your question, or answer other users' questions, go to:

- <http://discussions.apple.com>





This section introduces most of the basic concepts and terms related to using the Apple Qmaster distributed processing system.

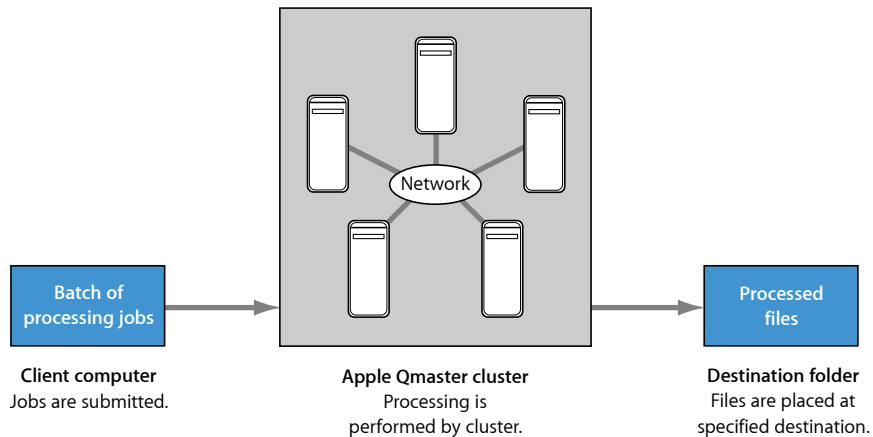
This chapter covers the following:

- Using Distributed Processing to Increase Speed and Efficiency (p. 9)
- Basic Components of the Apple Qmaster Distributed Processing System (p. 10)
- QuickClusters (p. 13)
- Compressor AutoClusters (p. 13)
- How the Apple Qmaster System Distributes Batches (p. 13)

## Using Distributed Processing to Increase Speed and Efficiency

*Distributed processing* accelerates processing by distributing the work to multiple computers that have been chosen to provide more processing power. You can submit batches of processing jobs to the Apple Qmaster distributed processing system, which allocates those jobs to other computers in the most efficient way (described in more detail in *How the Apple Qmaster System Distributes Batches*).

Computers that submit batches to the Apple Qmaster distributed processing system are called *clients*. A *job* is a processing task such as a Compressor preset-source pair, or a Shake file, or other files or commands that use UNIX commands to specify settings such as rendering instructions and file locations and destinations.



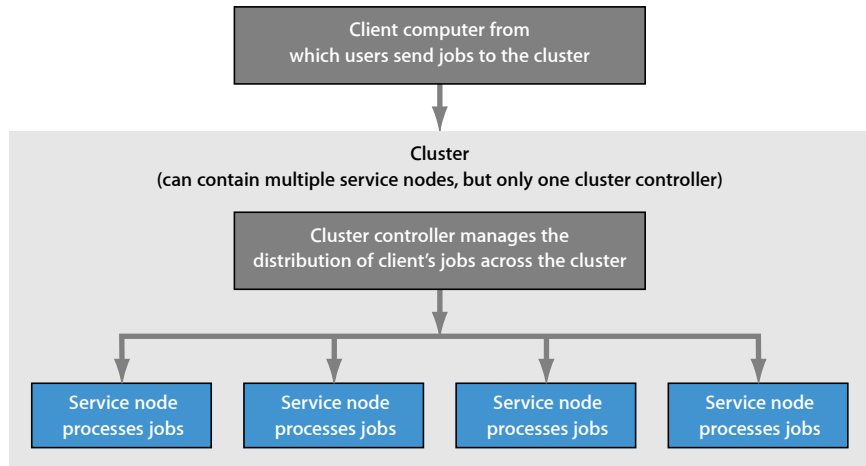
A *batch* is one or more jobs submitted for processing at one time. The procedure is analogous to printing multipage documents from a word processing program; the files are spooled and processed in the background. Although a batch can include just one job, you will typically want to submit several jobs at once for processing. Similarly, several people can use the same Apple Qmaster system at the same time, with several client computers sending batches in the same time frame. Batches are managed and distributed by the computer that is designated as the Apple Qmaster cluster controller, which is described in the next section.

## Basic Components of the Apple Qmaster Distributed Processing System

Although the Apple Qmaster software includes a few different applications (see [The Interfaces](#)), as a whole it is part of a networked system that includes the following basic components.

- *Client(s)*: The computer or computers that use Compressor or Apple Qmaster to submit jobs for distributed processing. Applications that can use Apple Qmaster services for processing include Compressor, Shake, Autodesk Maya, and many UNIX command-line programs.
- *An Apple Qmaster cluster*: An Apple Qmaster cluster contains:
  - *Service nodes*: The computers that perform the processing of batches submitted via Compressor or Apple Qmaster. A batch can include one or more jobs.

- *Cluster controller*: The software, enabled on a computer by means of the Apple Qmaster pane of System Preferences, that divides up batches, determines which service nodes to send work to, and generally tracks and directs the processes.



The client computer, the service nodes, and the cluster controller are often on separate (but network-connected) computers, for the most rapid processing potential. However, the cluster controller could be on a client computer or a service node. See [Using One Computer to Serve Two Distributed Processing Roles](#) for more information on this scenario.

Following is a closer look at the part each component plays in the Apple Qmaster system.

## Clients

Batches are submitted for distributed processing from the *client computers*. A client computer can be any computer that has Compressor or Apple Qmaster installed and is on the same network (subnet) as the cluster controller. Multiple client computers can be on the same subnet, using the same cluster to do the processing for various applications.

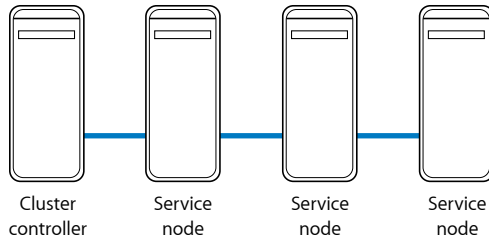
You use Compressor or the Apple Qmaster application to submit batches to be processed for a client. See the *Compressor User Manual* and the *Apple Qmaster User Manual* for details on using these applications.

**Note:** On any given Final Cut Studio system or network, the Compressor and Apple Qmaster versions (numbers) and the version of QuickTime must all match. For example, Compressor 3.0.5 will work only with the 3.0.5 version of Apple Qmaster, and no other version. In this example, the correct version of QuickTime is QuickTime 7.5.5 or later. Non-matching configurations are not supported.

## Clusters

When a client sends batches to the Apple Qmaster distributed processing system, all the processing and subsequent moving of any output files is performed by a group of Apple Qmaster-configured computers called a *cluster*. You can create one or more clusters of service nodes, with one cluster controller included in each cluster. Each computer in the cluster is connected to the other computers in the cluster through a network connection.

### Example of a cluster



**Note:** This illustration provides only one simple example of a cluster. Other possibilities are described in [Preparing a Network for Distributed Processing](#).

## Service Nodes

The service nodes are where the processing work is done. When you assign a group of service nodes to a cluster, they function as one very powerful computer because all their resources are shared. If one service node is overloaded or otherwise inaccessible, another service node is used.

You make a computer available as a service node by configuring it in the Apple Qmaster pane of System Preferences. The simple steps involved in using System Preferences to configure a service node are described in [Administering Clusters](#).

**Note:** The terms *processing* and *rendering* will come up frequently as you read this document. The term *processing* is used here in a general way to cover both rendering (for Shake and other frame-based rendering applications) and encoding (or transcoding or compression) for Compressor. For more information, see the *Shake User Manual* and the *Compressor User Manual*.

## Cluster Controllers

The cluster controller software acts as the manager of a cluster. The cluster controller directs the distribution of batches within the cluster. It has the ability to determine the best use of the cluster resources based on work and availability variables. (See [How the Apple Qmaster System Distributes Batches](#) for more details.) The cluster controller is responsible for accepting batch submissions, maintaining and managing the batch queue, and doling out the work to the appropriate service node. It also tracks the status of all outstanding batches.

You make a computer available as a cluster controller by turning on the cluster-controlling service in the Apple Qmaster pane of System Preferences.

## QuickClusters

The QuickCluster feature of the Apple Qmaster distributed processing system is a simple and automated alternative to creating and configuring clusters manually. For more information about QuickClusters, see [Creating QuickClusters](#).

## Compressor AutoClusters

The AutoCluster feature in Compressor gives you an easy way to take advantage of the distributed processing capabilities offered by Apple Qmaster without requiring a lot of knowledge about how clusters are configured, setting up file sharing, and so on. For more information about AutoClusters, see [Using Compressor AutoClusters](#).

## How the Apple Qmaster System Distributes Batches

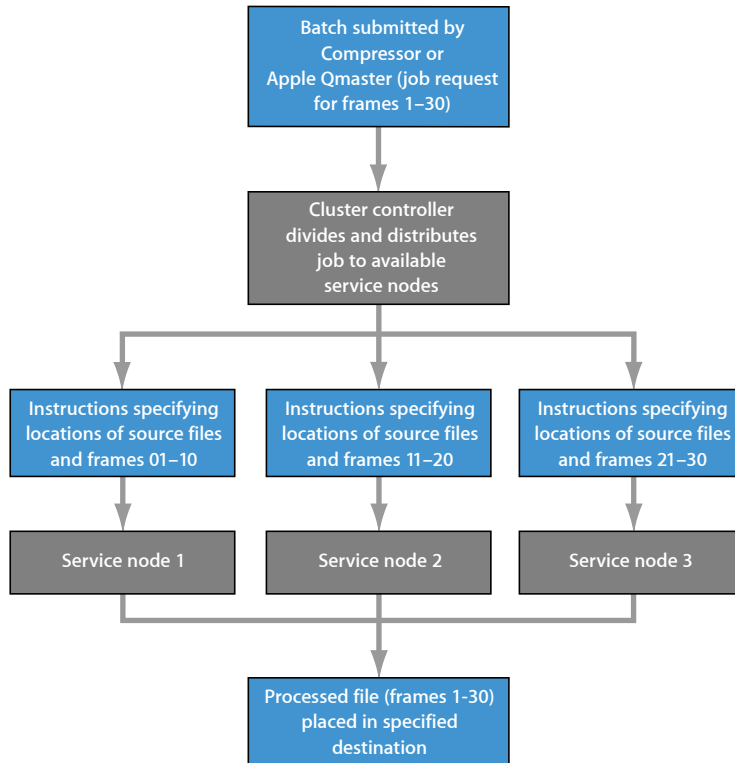
The Apple Qmaster cluster controller determines the most efficient use of the cluster resources. It makes this determination based on the availability of each service node and the number of separable parts (described next) of the batch.

Because Apple Qmaster subdivides individual batches across different service nodes, the work is shared and completed more quickly. And, because this method uses all the service nodes as much as possible, you avoid under-utilizing your resources.

Batches can be distributed to a cluster by the cluster controller in one or both of the following ways. (Apple Qmaster determines which way is the most efficient for specific batches, depending on the circumstances.)

- *The batch is subdivided into data segments:* For example, for a render batch, the cluster controller could divide the frames into groups (segments). Each segment would be processed in parallel on the service nodes in the cluster.
- *The batch is subdivided into tasks:* For example, for a render batch, the cluster controller could subdivide the rendering work into different processing tasks. Different tasks would be run on different service nodes.

Rather than actually moving segments, Apple Qmaster tells the service nodes which segments to read via the network, where to find them, and what to do with them. Below is an example of how one batch could be processed in an Apple Qmaster system.



In distributing batches, Apple Qmaster uses the technology built in to Mac OS X to locate services in a cluster on the same IP subnet and to dynamically share and receive information. Because the computers can continually transmit their current processing availability status, Apple Qmaster can distribute (load-balance) the workload evenly across the cluster.

The Apple Qmaster distributed processing system has default settings that allow you to use distributed processing immediately.

This chapter covers the following:

- Quick and Easy Distributed Processing (p. 15)
- About the Compressor Service Sharing Pane (p. 19)

## Quick and Easy Distributed Processing

The steps below describe the simplest and quickest way to start using distributed processing.

- Stage 1: Installing the Software
- Stage 2: Configuring a QuickCluster
- Stage 3: Adding Service Nodes to a Cluster
- Stage 4: Creating and Submitting a Batch

### Stage 1: Installing the Software

Install the appropriate software on the computers you want to include in your distributed processing network. Each computer in the network requires Apple Qmaster and/or Compressor software.

#### To install the software

- 1 Make sure the client software is on at least one computer in your network.

In order to submit jobs and batches to the distributed processing system, you need to use *client* (submission) software (either Compressor or Apple Qmaster). If you are reading this, you have probably already installed one or both of these. For further information, see the installation booklet that came with either of these applications.

- 2 Install Apple Qmaster software on each computer you want to use for distributed processing. (All computers must be on the same subnet.) By default, the Final Cut Studio installer installs the Apple Qmaster software necessary for distributed processing.

However, in most standard distributed processing networks, you need to install Apple Qmaster software on *every* computer in the network. You can use the standalone Apple Qmaster Node Installer to install the Apple Qmaster software on additional computers on your network.

**a** Locate the folder containing the Apple Qmaster software.

- *If you are using Compressor:* Insert the Final Cut Studio installation disc and locate the Apple Qmaster Node Installer package (AppleQmasterNode.mpkg).
- *If you are using Shake:* Insert the Shake installation disc and locate the Apple Qmaster Node Installer package (AppleQmasterNode.mpkg).

**b** Do one of the following:

- Double-click the AppleQmasterNode.mpkg installer package, and follow the onscreen instructions. By default, this installer installs all the necessary Apple Qmaster software.
- Install Apple Qmaster software from the command line. See *Installing Apple Qmaster from the Command Line* for more information.

Both the Final Cut Studio Installer and the Apple Qmaster Node Installer include the Compressor Service Sharing pane, in which you can quickly set up the computer as an unmanaged service node. See *About the Compressor Service Sharing Pane* for more information.

**Note:** On any given Final Cut Studio system or network, the Compressor and Apple Qmaster versions (numbers) and the version of QuickTime must all match. For example, Compressor 3.0.5 will work only with the 3.0.5 version of Apple Qmaster, and no other version. In this example, the correct version of QuickTime is QuickTime 7.5.5 or later. Non-matching configurations are not supported.

Keep the following useful tips in mind as you prepare your Apple Qmaster distributed processing system:

- If you are using the Apple Qmaster distributed processing system with Compressor or Shake, all nodes (computers) in a cluster must have the same version of QuickTime installed. To download the most recent version of QuickTime, go to <http://www.apple.com/quicktime/download/mac.html>.
- In order to use the Apple Qmaster distributed processing system to process Dolby Digital Professional audio, each node (computer) in your distributed processing network must have Final Cut Studio installed.
- Shake users can create distributed processing clusters containing computers that do not have any Apple Qmaster software installed. See the *Apple Qmaster User Manual* for more information.



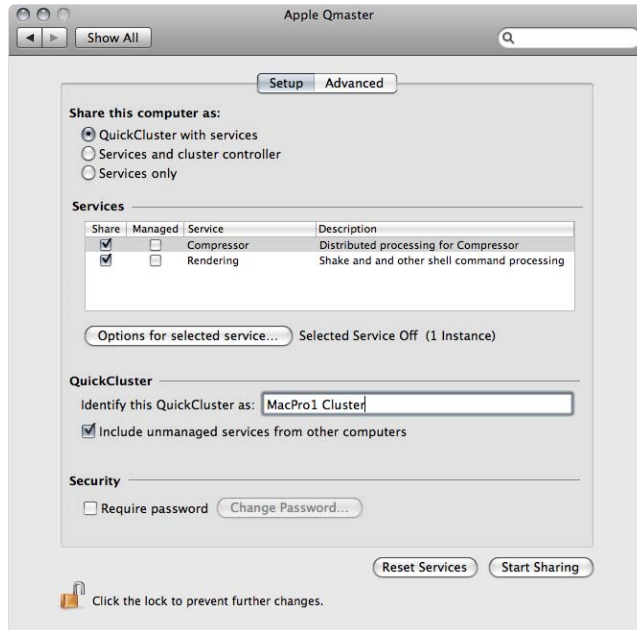
## Stage 2: Configuring a QuickCluster

Use the Apple Qmaster pane of System Preferences to configure the cluster controller and service node computers.

**To configure the cluster controller and service node computers**

- 1 Open System Preferences.
- 2 Click the Apple Qmaster button, located in the Other section.

The Apple Qmaster pane appears.



- 3 If the pane is locked, unlock it by clicking the padlock in the lower-left corner to enter the administrator name and password.
- 4 Click Start Sharing.

This creates a QuickCluster with this computer as its controller, and an instance of processing services for each processor on the computer. For information about multiple service instances, see [Using Virtual Clusters to Make the Most of Multiprocessor Computers](#).

## Stage 3: Adding Service Nodes to a Cluster

Do the following on each computer that you would like to make a service node on your cluster.

**To add a service node to a cluster**

- 1 Open System Preferences.

- 2 Click the Apple Qmaster button, located in the Other section.

The Apple Qmaster pane appears.

- 3 If the pane is locked, unlock it by clicking the padlock in the lower-left corner to enter the administrator name and password.
- 4 Select “Services only.”



- 5 Click Start Sharing.

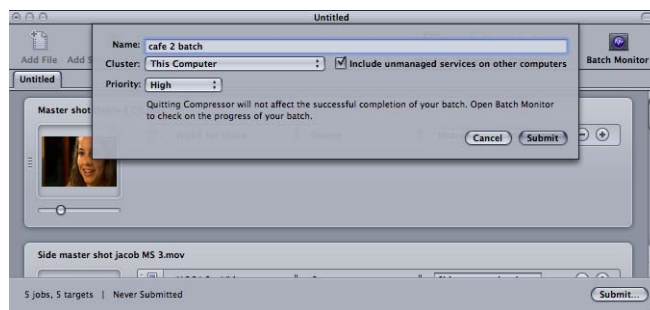
This creates a service node that will automatically process jobs submitted to the QuickCluster you set up in *Stage 2: Configuring a QuickCluster*.

## Stage 4: Creating and Submitting a Batch

In the Compressor Batch window or in the Apple Qmaster window, create a batch with one or more jobs. See the *Compressor User Manual* or the *Apple Qmaster User Manual* for details.

### To submit the batch

- 1 Do one of the following:
  - *If you are using Compressor:* In the Compressor Batch window, click Submit, and in the resulting dialog, do one of the following:
    - Use the Cluster pop-up menu to choose the cluster you created in stage 2.
    - Leave the Cluster menu set to the default This Computer setting, and select the “Include unmanaged services on other computers” checkbox. For more information on this option, see *Using Compressor AutoClusters*.



- *If you are using Apple Qmaster:* In the Apple Qmaster window, choose the cluster you created in stage 2 from the Submit To pop-up menu.



## 2 Click Submit.

The distributed processing system processes the batch.

For more advanced information on creating and controlling clusters and services, see any of the following:

- Basic Components of the Apple Qmaster Distributed Processing System
- Sample Setup for Part-Time Processing on Desktop Computers
- The Interfaces in the Apple Qmaster Distributed Processing System
- Apple Qmaster Pane of System Preferences
- Apple Qadministrator
- An Overview of Configuring a Cluster
- Configuring Service Nodes and Cluster Controllers
- Creating Clusters with Apple Qadministrator
- About QuickClusters
- Modifying and Deleting Clusters with Apple Qadministrator

## About the Compressor Service Sharing Pane

Both the Final Cut Studio installer and the Apple Qmaster Node Installer include the Compressor Service Sharing pane, in which you can quickly set up the computer as an unmanaged service node. Selecting the Yes option in this pane is the first of two steps in setting up AutoClusters in Compressor. An AutoCluster is a temporary QuickCluster that you create automatically when you submit a batch. For more information about AutoClusters, see [Using Compressor AutoClusters](#).

**Note:** You can change any of these settings at a later time in the Apple Qmaster pane of System Preferences.

If you are unsure which role each computer will play in your network, just install the Apple Qmaster software on each computer in your network. You can sort out the details later. See [Basic Components of the Apple Qmaster Distributed Processing System](#) for additional information on what roles individual computers can play in the distributed processing system.



A distributed processing network can consist of as few as one or two computers, whereas a high-volume network may include many computers, an Xserve system and Xserve cluster nodes in a rack, and high-speed networking infrastructures.

You can scale up a distributed processing system as your workload demands by adding features and devices to the network that supports it.

This chapter covers the following:

- The Minimum You Need to Know (p. 21)
- Example of a Minimal Distributed Processing Network (p. 22)
- Using Compressor AutoClusters (p. 23)
- Other Possible Components of a Distributed Processing Network (p. 24)
- Example of an Expanded Distributed Processing Network (p. 26)
- Sample Setup for Part-Time Processing on Desktop Computers (p. 26)
- Configuring Access for Part-Time Distributed Processing (p. 27)
- Setting Up for Part-Time Distributed Processing with Shake (p. 29)
- Additional Steps for Distributed Processing with Shake (p. 30)

## The Minimum You Need to Know

The following are the basic rules for setting up a distributed processing network:

- A cluster must contain one (and only one) computer acting as the cluster controller, and at least one computer acting as the service node. (These two can be the same computer, as shown in [Example of a Minimal Distributed Processing Network](#).)
- The client computers and the computers in any cluster that supports them must be on the same network.
- The network must support the Apple networking technology built in to Mac OS X.
- All the computers in a cluster need read-and-write access to any computers (or storage devices) that will be specified as output destinations for files.

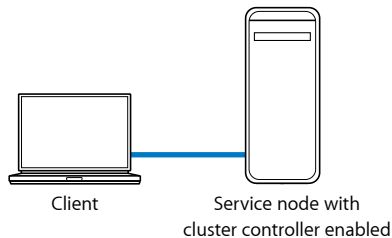
For information about a very basic setup, see [Example of a Minimal Distributed Processing Network](#).

## Example of a Minimal Distributed Processing Network

A very small distributed processing setup could include as few as two computers:

- One computer connected to the client and configured to act as both the service node and the cluster controller
- One client computer

Minimum setup for distributed processing



Though simple, this setup is useful in a small-scale environment because it allows the client computer to offload a lot of processing work.

See [Example of an Expanded Distributed Processing Network](#) for an illustration of a more powerful setup.

### Using One Computer to Serve Two Distributed Processing Roles

To maximize your resources, you may want to consider using some computers for more than one distributed processing function.

- *Service node and cluster controller:* In a small setup, one of the service nodes in a cluster can also act as the cluster controller so that it performs both functions. However, in a cluster of many service nodes, the processing load required for the cluster controller could be so high that it would not be efficient to use one computer as both a service node and a cluster controller.
- *Client computer and cluster controller or service node:* You could also set up a client computer to act as a cluster controller or service node in a cluster, but again, keep in mind that the more available processing power a computer has, the faster it can manage or process jobs.

## Using Compressor AutoClusters

The AutoCluster feature in Compressor gives you an easy way to take advantage of the distributed processing capabilities offered by Apple Qmaster without requiring a lot of knowledge about how clusters are configured, how to set up file sharing, and so on.

Using AutoCluster is a two-step process:

- Automatically creating Apple Qmaster service nodes as you install Final Cut Studio or Apple Qmaster
- Selecting “Include unmanaged services on other computers” when you submit a Compressor batch for processing

These two steps let you harness the processing power of any number of computers on your network without any additional effort or knowledge on your part.

- Stage 1: Creating Service Nodes During Installation
- Stage 2: Submitting Compressor Batches for Processing

### Stage 1: Creating Service Nodes During Installation

Both the Final Cut Studio installer and the Apple Qmaster Node Installer include the Compressor Service Sharing pane, in which you can quickly set up the computer as an unmanaged Apple Qmaster service node, which is essentially a free agent “processing slave,” available on the network for any computer that requests its services.



If you select Yes in this pane, the Apple Qmaster pane of System Preferences is configured as follows:

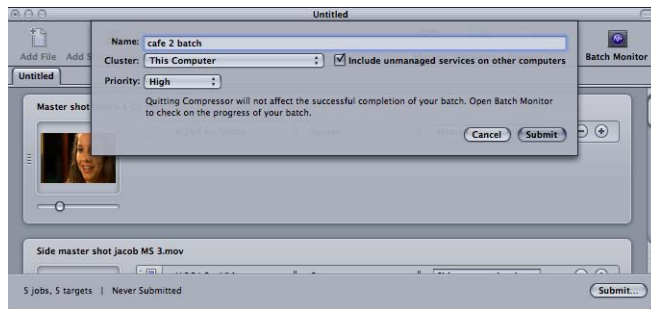
- *Share this computer as:* Services only
- *Compressor service:* Selected, unmanaged
- *Start Sharing:* Started

You can change any of these settings at a later time in the Apple Qmaster pane of System Preferences. For more information, see [Apple Qmaster Pane of System Preferences](#) and [Administering Clusters](#).

**Important:** Although the Final Cut Studio installer requires a separate serial number for each computer, you can use the Apple Qmaster Node Installer (available in the Extras folder) to install the necessary Apple Qmaster software to make any computer on your network into an Apple Qmaster service node.

## Stage 2: Submitting Compressor Batches for Processing

When you submit a Compressor batch for processing, a dialog appears that allows you to name the batch and select the computers to process the batch. At this point, you can harness the processing power of all the computers you set up as service nodes in stage 1 to complete the batch.



### To process the batch using AutoCluster

- 1 Leave the Cluster pop-up menu set to the default selection (This Computer).
- 2 Select the "Include unmanaged services on other computers" checkbox.

Compressor and Apple Qmaster coordinate the distribution of the processing tasks between the available computers and deposit the resulting output files at the location(s) you designated in Compressor.

## Other Possible Components of a Distributed Processing Network

There are many ways to expand the capacity of a distributed processing network. You could include any of the following.

- *High-speed switch and cables:* A 100Base-T or Gigabit Ethernet switch and compatible cables to allow your data to move over the LAN at maximum speed.
- *Multiple clients:* Multiple client computers can use the services of the same cluster. And, you can have multiple client applications on the same client computer, using the same cluster.



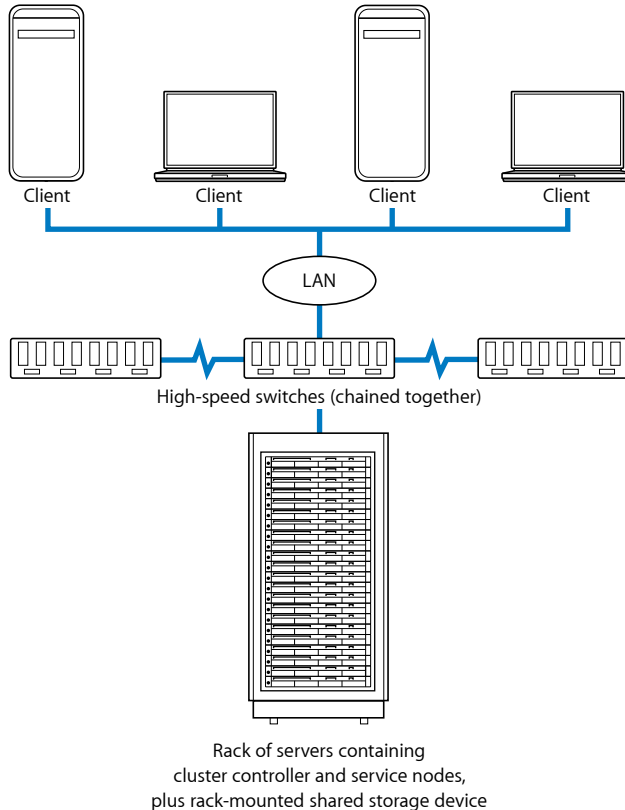
- *Multiple clusters:* Depending on how extensive your network is and how many clients it needs to serve, you may want to divide up available computers and create more than one cluster to serve various clients. (Users select the cluster they want to send a batch to when they submit the batch.)
- *Multiple service nodes:* In general, more service nodes mean more processing power. In deciding how many service nodes to have in a cluster, consider the ratio of data movement time to computing time. If the processing demand is greater than the network demand required to move job segments throughout the cluster, as is the case with rendering, more service nodes are a good idea. If the computing load, per job, is closer to the network load, having a smaller number of service nodes per cluster may be more efficient. If you are using the Apple Qmaster distributed processing system with applications other than Shake or Compressor, consult the application's user manual on how to optimize the number of service nodes.
- *Storage device:* A storage device, such as a remote disk or group of disk arrays, can be used as *cluster scratch storage*, which is a place for short-term storage of temporary data generated by the cluster controller, clients, and service nodes. (You set the scratch storage location in the Apple Qmaster pane of System Preferences. See [Using Cluster Storage](#).) Alternatively, a storage device can be used as a final destination for the files after they are processed.

For more information, see [Example of an Expanded Distributed Processing Network](#).

## Example of an Expanded Distributed Processing Network

For rendering, a network might include a number of client computers on a LAN, connected to a cluster using a high-speed switch. A rack of servers plus a shared storage device, acting as the cluster, would be an extremely strong rendering engine. The service nodes would each have a local copy of the relevant client application software so that they could process the rendering jobs.

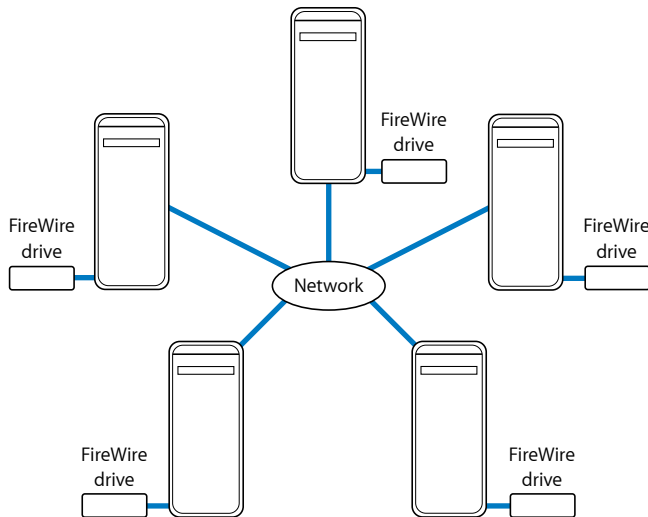
Example of a network setup for distributed rendering



## Sample Setup for Part-Time Processing on Desktop Computers

This section takes you through the basic steps involved in a sample setup for “part-time” distributed processing. You can use it to get an idea of the kind of distributed processing environment you want to create, and as a guide in setting up that environment.

This setup is for an environment that uses desktop computers. It is called “part-time” processing because each computer acts as someone’s workstation, but at the same time is also part of the distributed processing cluster. The bulk of the processing jobs can be submitted with Compressor or Apple Qmaster at the end of the day, so that the computers are busy processing a large queue of distributed processing batches after everyone has gone home. (See [Scheduling Service Availability in the Work Schedule Dialog](#) for information on scheduling service node availability.)



Each computer acts as both a client that submits jobs for processing and a service node that performs the processing.

All source and output files are stored on the FireWire drives.

In the sample setup shown above, five computers act as both the clients (user workstations from which users submit jobs for distributed processing) and cluster computers (which do the processing). Each computer has an additional volume, such as a FireWire drive, that is used for media before and after it is rendered, and for the associated files.

For more information on how to configure this desktop distributed processing environment, see [Configuring Access for Part-Time Distributed Processing](#).

## Configuring Access for Part-Time Distributed Processing

Follow the instructions below to set up a “part-time” distributed processing system.

Before you get started, keep these essentials in mind:

- The cluster computers (cluster controller and service nodes) and the client computers (user workstations) need to be on the same local network (subnet).

- All the computers in the setup need read-and-write access to any volumes that will be specified as the source location or output destination for files, including Shake scripts. (An appropriate way to configure this access is included in the sample configuration procedure below.)

### **Stage 1: Installing Compressor and/or Apple Qmaster**

The necessary components of Compressor or Apple Qmaster need to be installed on each computer. See [Stage 1: Installing the Software](#) for more information.

On any given Final Cut Studio system or network, the Compressor and Apple Qmaster versions (numbers) and the version of QuickTime must all match. For example, Compressor 3.0.5 will work only with the 3.0.5 version of Apple Qmaster, and no other version. In this example, the correct version of QuickTime is QuickTime 7.5.5 or later. Non-matching configurations are not supported.

**Important:** The Compressor distributed processing feature for Dolby Digital Professional (AC-3) and Final Cut Pro is limited to computers that have Final Cut Studio installed.

### **Stage 2: Setting Up Media Storage**

Make sure each computer has the necessary available storage, preferably a dedicated media volume. For example, give each computer a second volume, such as a FireWire drive, that is used for media. Each computer can use this volume for all source and destination files associated with distributed processing.

If you are a Compressor user, you can skip to one of the following chapters to complete the setup of your part-time distributed processing system:

- [Getting Started Quickly](#)
- [Administering Clusters](#)

If you are a Shake user and you cannot consolidate all of the necessary source files (Shake scripts, media files, and so on) on a single-cluster storage volume, skip to [Additional Steps for Distributed Processing with Shake](#) before going on to stage 3.

### **Stage 3: Creating a Cluster**

First, use the Apple Qmaster pane of System Preferences to enable cluster controlling on one of the computers and enable the processing services on all the computers (making them service nodes). Then, you can assemble these computers as a cluster.

Apple Qadministrator may not be necessary. See [Administering Clusters](#) for detailed instructions.

## Setting Up for Part-Time Distributed Processing with Shake

If you cannot consolidate all of the necessary source files (Shake scripts, media files, and so on) on a single-cluster storage volume, follow the instructions below.

- Stage 1: Turning Off the Shake UNC Setting
- Stage 2: Turning On Personal File Sharing
- Stage 3: Mounting the Media Storage Volumes

### Stage 1: Turning Off the Shake UNC Setting

To make sharing and volume mounting work smoothly in this setup, you need to turn off the Shake UNC setting on each computer. The UNC setting uses the entire file pathname, with the network address, in a convention that starts with `//ComputerName/DriveName/path`. You don't want Shake to use this filenames convention because it conflicts with the file sharing and volume mounting used in this setup.

**Note:** All the media volumes created in stage 2 of *Configuring Access for Part-Time Distributed Processing* should have the *same* name.

In the three steps below, you make this change in a Shake *startup.h* file. As described in the Shake documentation, the *startup.h* files, located in the *startup* directory, are used to customize Shake settings (similar to setting preferences).

**To turn off the UNC setting, do the following on each of the computers**

- 1 Log in as the user who will use Shake on the computer.
- 2 Double-click the Terminal icon in `/Applications/Utilities/` to open a Terminal window.
- 3 Enter these two command lines in the Terminal window, pressing Return after each command line:

```
mkdir -p ~/nreal/include/startup/  
echo 'script.uncFileNames = 0;' > ~/nreal/include/startup/UNC_off.h
```

### Stage 2: Turning On Personal File Sharing

On each computer, turn on Personal File Sharing. This allows the computers to share the media volumes.

**To turn on Personal File Sharing**

- 1 Open System Preferences.
- 2 Click Sharing.
- 3 Select the File Sharing checkbox.

### Stage 3: Mounting the Media Storage Volumes

Follow the instructions below so that all the computers in the cluster are mounting all the media volumes in the cluster.

### To mount the media storage volumes

- 1 On each computer, log in as the administrator. (The first user account you create when you set up Mac OS X is an administrator account.)
- 2 On each computer in the group, use the Connect to Server command in the Finder's Go menu to mount each media volume.
- 3 Enter another computer's name in the Connect to Server dialog.
- 4 Choose the associated media volume as the volume you want to mount.
- 5 Repeat steps 1 through 4 until all the computers are mounting all the media volumes in the cluster.

## Additional Steps for Distributed Processing with Shake

The following additional steps may be necessary for Shake users.

### Submitting Processing Jobs in the Sample Part-Time Distributed Processing Setup

After you finish the final stage in *Setting Up for Part-Time Distributed Processing with Shake*, each one of these computers can be used to submit jobs for distributed processing.

Because of the way access has been configured in *Setting Up for Part-Time Distributed Processing with Shake*, all file pathnames are conveniently consistent and simple for the purposes of specifying them in Compressor, in Shake scripts, and in Apple Qmaster, assuming that:

- Users place the source media on a mounted media volume (one of the FireWire drives).
- Users place the Shake scripts on a mounted media volume.
- All folders and files on the shared media volumes have read-and-write access enabled for everyone (for Owner, Group, and Others). You can configure this access setting by selecting the folder or file and choosing File > Get Info.

These three assumptions are important because they ensure that all the computers have read-and-write access to all the source files and output destinations.

### Specifying Media File and Script Locations

The following additional configuration guidelines apply to anyone using Shake (or any other UNIX-based rendering applications).

#### Specifying the Media File Locations in Shake Scripts

As you follow the steps in *Setting Up for Part-Time Distributed Processing with Shake*, all the Shake render scripts should specify their source media (File In) locations and output (File Out) destinations as */Volumes/MediaDiskName/* (for example, */Volumes/Media3/*).

### Specifying Shake Script Locations in Apple Qmaster

As you follow the steps in [Setting Up for Part-Time Distributed Processing with Shake](#), all the Shake script locations should be specified in Apple Qmaster as */Volumes/MediaDiskName/ScriptFilename* (for example, */Volumes/Media3/Script.shk*).





Instead of one individual interface, the Apple Qmaster distributed processing system includes up to four different applications and utilities for configuring, monitoring, and managing services.

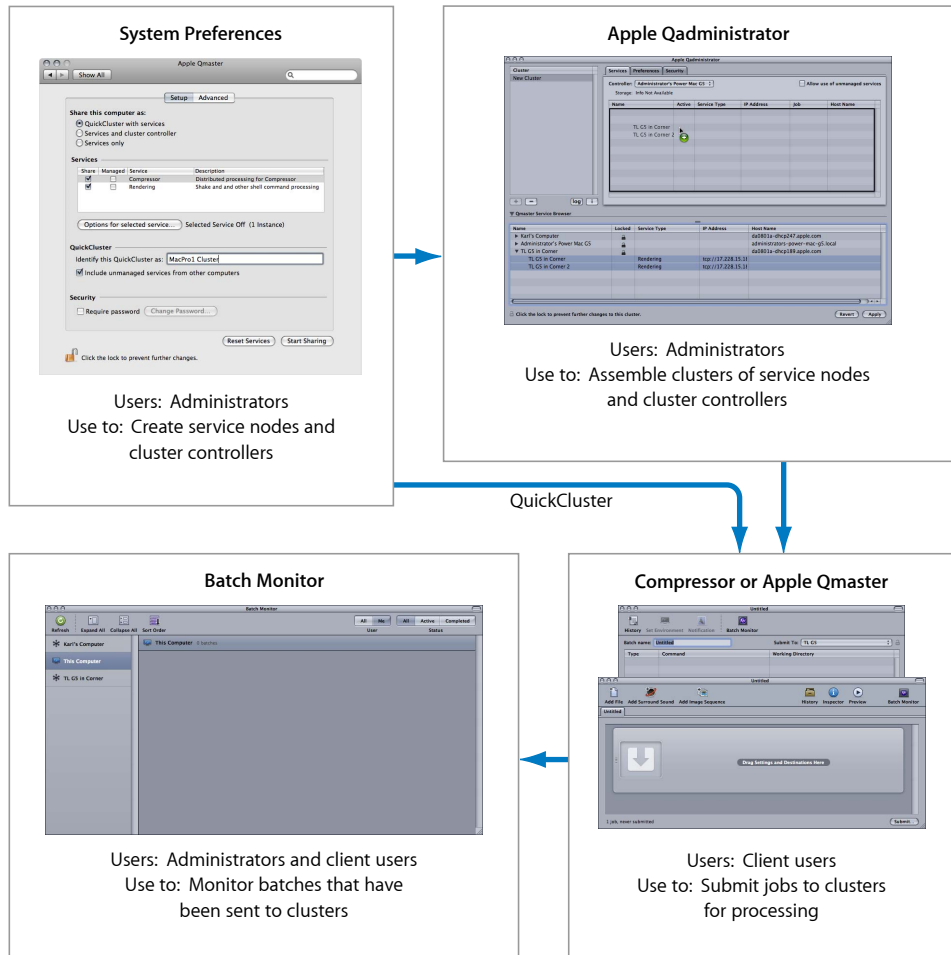
This chapter covers the following:

- The Interfaces in the Apple Qmaster Distributed Processing System (p. 33)
- Apple Qmaster Pane of System Preferences (p. 35)
- Apple Qadministrator (p. 41)
- Compressor and Apple Qmaster as Client Interfaces (p. 43)
- Batch Monitor (p. 45)

## The Interfaces in the Apple Qmaster Distributed Processing System

The Apple Qmaster system is a suite of applications that work together to provide maximum power and flexibility for distributed processing. The elements of the system can be combined in a variety of ways to suit your needs.

In general, you use the Apple Qmaster pane of System Preferences to configure service nodes and cluster controllers and to create simple clusters. System administrators use Apple Qadministrator for advanced cluster creation and control. Client users use Compressor or Apple Qmaster to submit batches of jobs for processing. Finally, Batch Monitor can be used by both administrators and client users to monitor and manage batches.

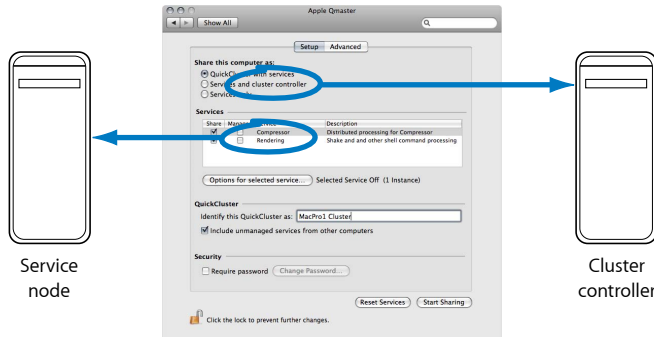


**Note:** It is possible to create a simple (personal) distributed processing system and skip Apple Qadministrator altogether. See [Apple Qmaster Pane of System Preferences](#) and [About QuickClusters](#) for more information.

## Apple Qmaster Pane of System Preferences

Use the Apple Qmaster pane of System Preferences to activate, create, or make changes to Apple Qmaster cluster-controlling and processing services (including passwords and scratch storage locations).

Use Apple Qmaster System Preferences to configure service nodes and cluster controllers:



For details about using the Apple Qmaster pane of System Preferences, see:

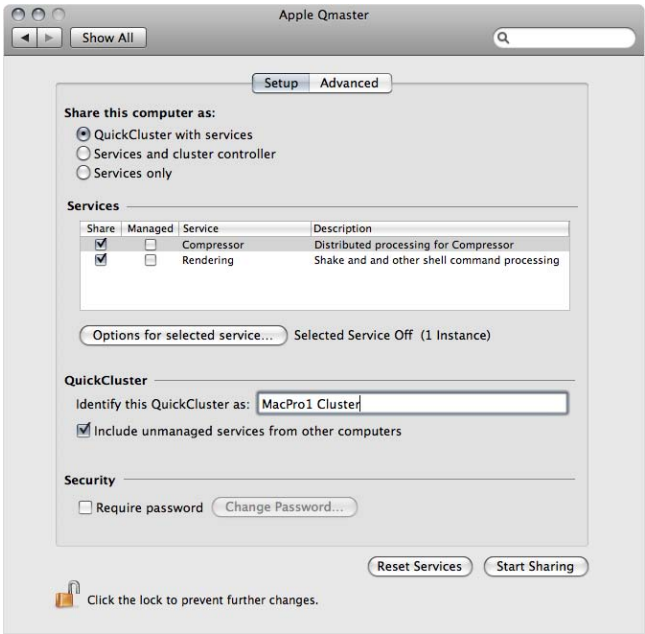
- Configuring Service Nodes and Cluster Controllers
- Using Virtual Clusters to Make the Most of Multiprocessor Computers
- Setting a Service Password for Including a Computer in a Cluster
- Using Cluster Storage

Also see the *Apple Qmaster User Manual* for more information, including information about creating an extended node cluster that uses nodes without Apple Qmaster installed.

### To open the Apple Qmaster pane of System Preferences

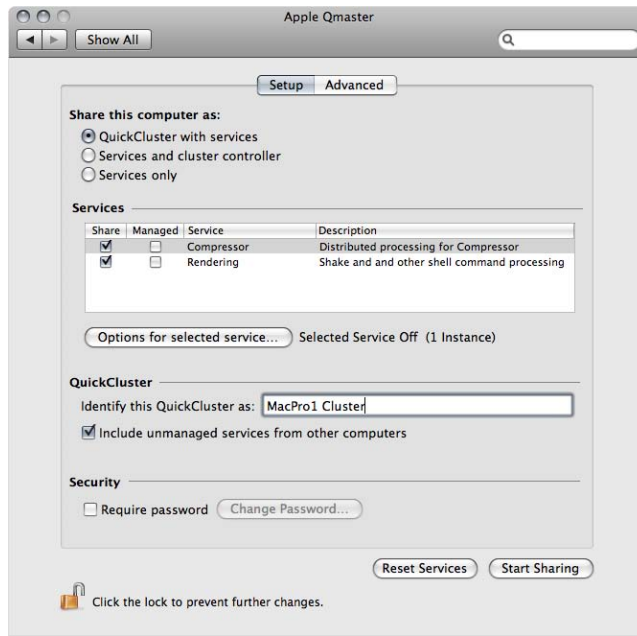
- 1 Open System Preferences.
- 2 Click the Apple Qmaster button, located in the Other section.

The Apple Qmaster pane appears.



## About Basic Settings in the Apple Qmaster Preferences Pane

You can use the Setup pane within the Apple Qmaster preferences pane to configure your distributed processing system.



### Sharing Settings

- “Share this computer as” buttons: Use these buttons to assign a distributed processing role to your computer.
  - *QuickCluster with services*: Select this option to create an “instant” cluster with unmanaged services. See [About QuickClusters](#) for more information.
  - *Services and cluster controller*: Select this option to build a cluster in Apple Qadministrator. See [Creating Clusters with Apple Qadministrator](#) for more information.
  - *Services only*: Select this option to make this computer a service node only. Service nodes perform the processing of batches. They can be included in QuickClusters or in managed clusters. See [Managed vs. Unmanaged Services](#) for more information.

### Services Settings

- *Share checkboxes*: Use these checkboxes to enable or disable a specific (Compressor or Rendering) service. For more information, see [Turning Cluster Controller Services On or Off](#).
- *Managed checkboxes*: Use these checkboxes to make the shared service unmanaged (the default) or managed. For more information, see [Managed vs. Unmanaged Services](#).

- *“Options for selected service” button*: Click this button to open a dialog in which you can adjust the number of instances of a processing service. For more information, see [Using Virtual Clusters to Make the Most of Multiprocessor Computers](#).

### QuickCluster Settings

- *“Identify this QuickCluster as” field*: Use this field to change the name of a QuickCluster. For more information, see [About QuickClusters](#).
- *“Include unmanaged services from other computers” checkbox*: Select this checkbox to have Compressor and Apple Qmaster use the available unmanaged computers on your network for distributed processing. For more information on this option, see [About QuickClusters and Managed vs. Unmanaged Services](#).

### Security Settings

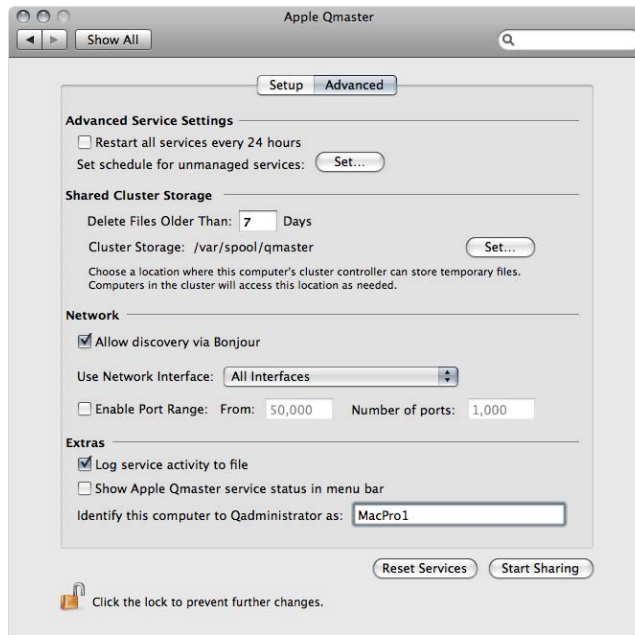
- *“Require password” checkbox*: If you want to control who is able to include a specific service node or cluster controller in a cluster, select this checkbox to open a password dialog to enter and verify a password. For more information, see [Setting a Service Password for Including a Computer in a Cluster](#).
- *Change Password button*: Click this button to open a password dialog to enter and verify a new password.

### Start Sharing, Reset Services, and Lock Settings

- *Start Sharing button*: Click this button to enable the service node or cluster controller you are setting up.
- *Reset Services button*: Click this button to restart services in the Apple Qmaster distributed processing system.
- *“Click the lock to make changes/Click the lock to prevent further changes” button*: If the “Click the lock to make changes” message appears next to the lock, click the lock icon and type the administrator user name and password for your computer.

## About Advanced Settings in the Apple Qmaster Preferences Pane

You can use the Advanced pane within the Apple Qmaster preferences pane to further configure your distributed processing system.



### Advanced Service Settings

Use these features to schedule service restarts and service availability.

- *“Restart all services every 24 hours” checkbox:* Selecting the “Restart all services every 24 hours” checkbox ensures a robust distributed processing system. Refreshing the services periodically prevents increased virtual memory sizes and memory leaks in third-party software.
- *“Set schedule for unmanaged services” button:* If you enabled unmanaged services, you can open a calendar interface and schedule the availability of these services to the distributed processing system. For information on using the calendar interface, see [Scheduling Service Availability](#).

### Shared Cluster Storage

Use these features to configure scratch storage for this computer’s cluster controller. For more information on cluster storage, see [Using Cluster Storage](#).

- *Delete Files Older Than N Days field:* Enter the number of days temporary process files may remain on the cluster’s scratch location before they are automatically deleted. If you anticipate a transcoding session that will last up to seven days or longer, you must adjust this value.

- *Cluster Storage button*: Enter a local folder directory to change the scratch location for the cluster's temporary process files. See [Using Cluster Storage](#) for more information.

## Network

Use these features to configure network settings.

- *"Allow discovery via Bonjour" checkbox*: By default, this checkbox is selected to have the Apple Qmaster distributed processing system use the Bonjour networking technology. You can deselect the "Allow discovery via Bonjour" checkbox for enhanced security. This will prevent detection of your computer over a Bonjour network. This feature requires Mac OS X v10.4 or later.
- *"Use Network Interface" pop-up menu*: Restrict distributed processing activity to a particular network interface card by choosing it from this pop-up menu. If you do this on a service node computer, use a different computer to submit Compressor jobs and batches.
- *"Enable Port Range" checkbox and fields*: You can define which ports Apple Qmaster uses for service advertisements with the Enable Port Range checkbox and text fields in the Network section of the Advanced pane within the Apple Qmaster pane of System Preferences. For more information, see [Defining Ports for Service Advertisements](#).

## Extras

Use these features to configure additional settings.

- *"Log service activity to file" checkbox*: If this checkbox is selected, an activity log is created and updated regularly with information about the Apple Qmaster actions on this computer. Logs are stored in /Library/Logs/Qmaster/. To turn this feature off, deselect the checkbox.

**Note:** You can also access this log information using the Log button in Apple Qadministrator or the Log tab in Batch Monitor.

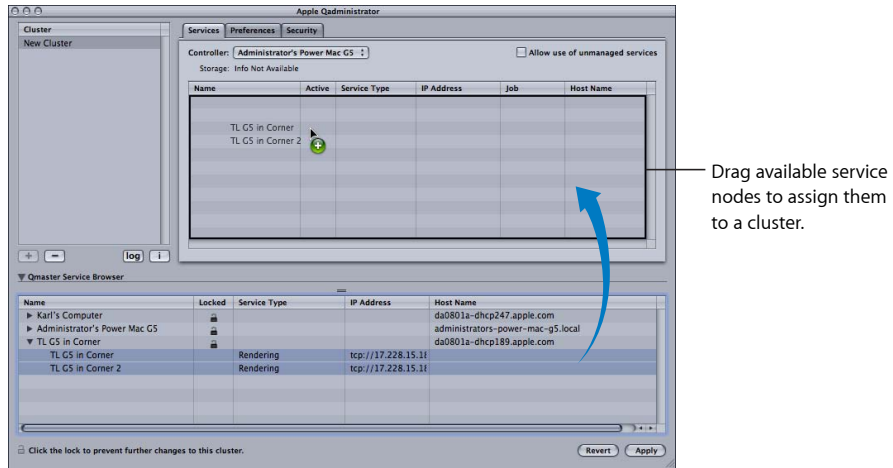
- *"Show Apple Qmaster service status in menu bar" checkbox*: If this checkbox is selected, an Apple Qmaster icon appears in the computer's menu bar. The menu bar item provides Apple Qmaster status and activity information. For more information, see [Service Node Status Indicator in the Menu Bar](#).
- *"Identify this computer to Qadministrator as" field*: By default, a computer is identified on the network by its computer name (as it is entered in the Sharing pane of System Preferences). You can change this name to something more meaningful if you like, since it is the name used to identify this computer in the Apple Qadministrator application. If you are setting up a managed cluster controller, this is the name that will appear in the Apple Qadministrator Controller pop-up menu.



## Apple Qadministrator

Use the Apple Qadministrator application to create and modify Apple Qmaster clusters. Apple Qadministrator can be used on any computer that is on the same network as the cluster you want to administer. With the administrator password (if one was created), you can also use Apple Qadministrator to see and modify existing clusters on the network.

Use Apple Qadministrator to assemble clusters:



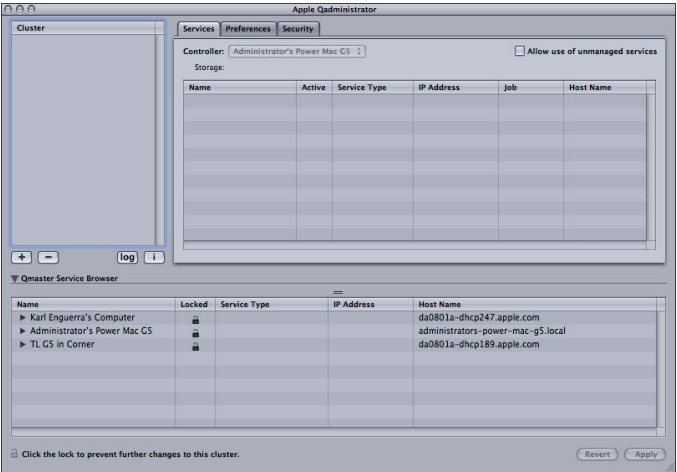
For details about using Apple Qadministrator, see:

- Creating Clusters with Apple Qadministrator
- Modifying and Deleting Clusters with Apple Qadministrator
- Monitoring Cluster Activity
- Setting Preferences
- Setting Cluster Administrator and User Passwords

### To open Apple Qadministrator

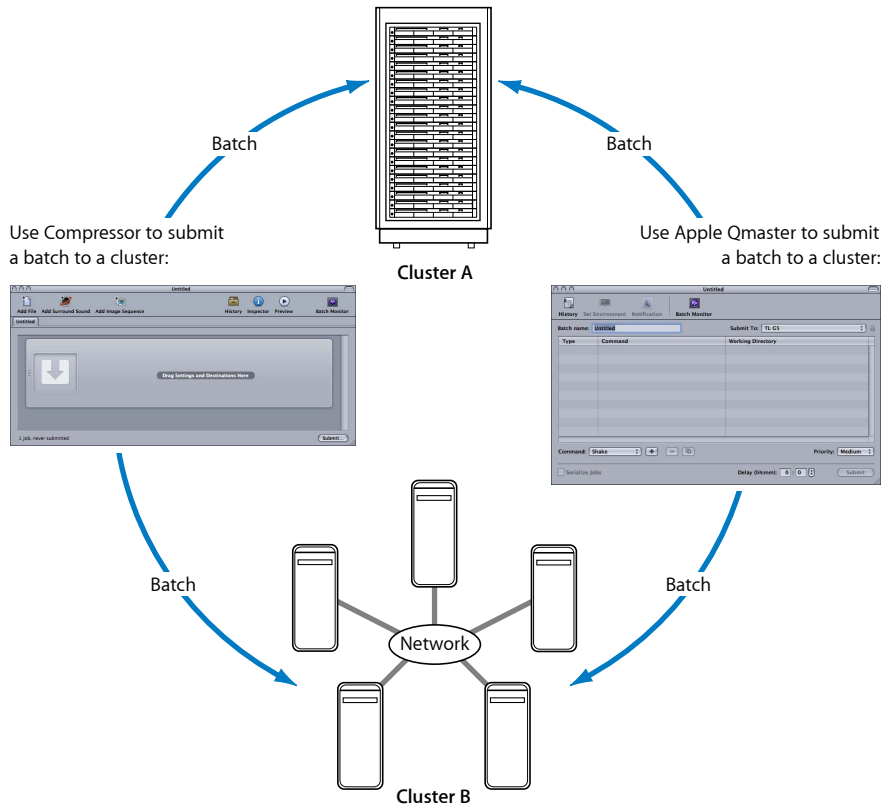
- Double-click the Apple Qadministrator icon in the Applications folder.

The Apple Qadministrator window appears. If a password was created for the currently selected cluster, you will not be able to see or modify the cluster until you click the Lock button and then enter the password in the dialog that appears.



## Compressor and Apple Qmaster as Client Interfaces

Client computer users use either Compressor or Apple Qmaster to submit batches for processing.



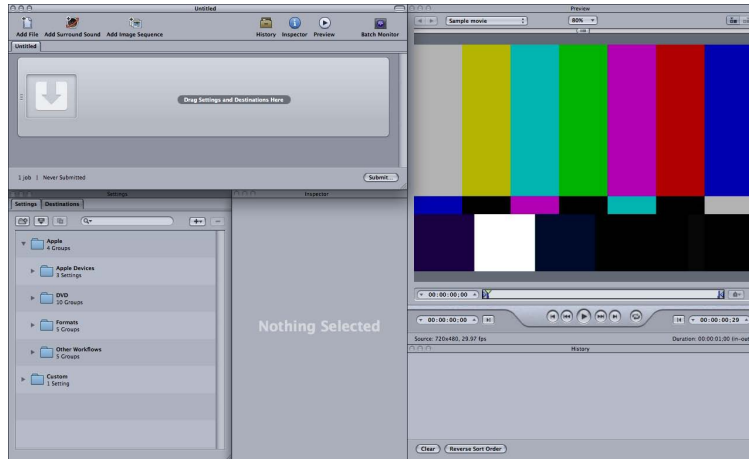
### Using Compressor

Use the Cluster pop-up menu in the Compressor Batch window to choose a cluster for any given batch. For more information on submitting batches with Compressor, see the *Compressor User Manual*.

#### To open Compressor

- Double-click the Compressor icon in the Applications folder.

The Compressor default window layout appears.



## Using Apple Qmaster

The Apple Qmaster application is the application that you use to submit distributed processing jobs from digital visual effects software packages such as Shake, Autodesk Maya, and any UNIX command-line program.

You can use any of the following workflows in Apple Qmaster:

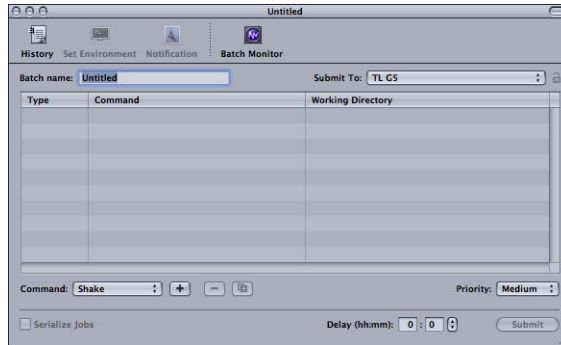
- For Shake processing batches, you can drag Shake files into the Apple Qmaster window. A default script for submitting the jobs is automatically created. In Apple Qmaster, you can then specify certain details, such as which cluster to use, and make adjustments to certain settings.
- For Maya batches, there is also a special interface within Apple Qmaster for submitting and customizing Maya jobs.
- You can use the Generic Render command in Apple Qmaster for the distributed processing of projects from other frame-based rendering applications (such as After Effects and LightWave).

For complete information about the Apple Qmaster application, see the *Apple Qmaster User Manual*.

### To open Apple Qmaster

- Double-click the Apple Qmaster icon in the Applications folder.

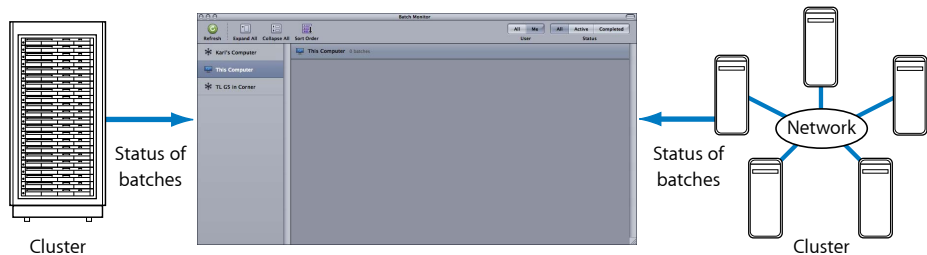
The Apple Qmaster window appears.



## Batch Monitor

As an administrator, you can use Batch Monitor to track the progress of all the batch activity for all the clusters on your network. You can see how close to completion each job is, along with other details, and you can stop, resume, or delete batches as well. If you are a client user, you can use Batch Monitor to view and manage your own batches.

Use Batch Monitor to see information about batches that have been sent to specified clusters:



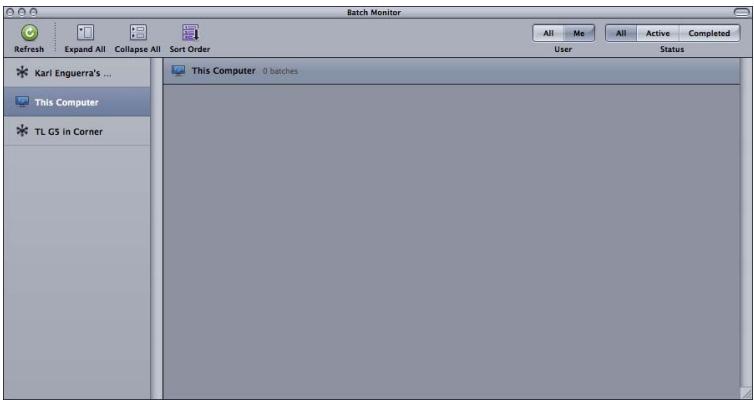
For complete information about Batch Monitor, see the *Batch Monitor User Manual*.

### To open Batch Monitor

Do one of the following:

- Submit a batch with Compressor or Apple Qmaster. The Batch Monitor window opens automatically depending on your preference setting.
- Double-click the Batch Monitor icon in the Utilities folder in the Applications folder.
- Click the Batch Monitor button in the Apple Qmaster window or in the Compressor Batch window.
- In Apple Qadminstrator, choose Cluster > Show Batch Monitor.

Batch Monitor opens.



Once your network is set up and you have installed the necessary components, you are ready to create distributed processing clusters.

If you have questions about any concepts and terms used here, see [Distributed Processing Basics](#).

This chapter covers the following:

- [An Overview of Configuring a Cluster](#) (p. 47)
- [Configuring Service Nodes and Cluster Controllers](#) (p. 48)
- [Creating Clusters with Apple Qadministrator](#) (p. 55)
- [About QuickClusters](#) (p. 58)

## An Overview of Configuring a Cluster

Assuming Apple Qmaster software is installed on all the computers that you plan to use as part of the cluster, there are three basic steps involved in configuring a cluster.

**Note:** On any given Final Cut Studio system or network, the Compressor and Apple Qmaster versions (numbers) and the version of QuickTime must all match. For example, Compressor 3.0.5 will work only with the 3.0.5 version of Apple Qmaster, and no other version. In this example, the correct version of QuickTime is QuickTime 7.5.5 or later. Non-matching configurations are not supported.

### Stage 1: Configuring Service Nodes

Configuring a service node to perform distributed processing is a matter of turning on processing services in the Apple Qmaster pane of System Preferences. Optionally, you can also set passwords at this time. See [Configuring Service Nodes and Cluster Controllers](#) for details.

### Stage 2: Configuring a Cluster Controller

To configure a computer to control the cluster, turn on the cluster control services in the Apple Qmaster pane of System Preferences. See [Turning Cluster Controller Services On or Off](#) for more information.

### Stage 3: Creating a Cluster

You can create a simple QuickCluster in the Apple Qmaster pane of System Preferences, or you can create a managed cluster from the service nodes and cluster controller using Apple Qadministrator. After a cluster is created, client applications on the same network can start sending batches to the cluster. You can use Apple Qadministrator from any computer (with Apple Qadministrator installed) that is on the same network as an Apple Qmaster cluster. See any of the following for more details:

- [Getting Started Quickly](#)
- [Creating QuickClusters](#)
- [Creating Clusters with Apple Qadministrator](#)

**Note:** If you are an Apple Qmaster user and you want to create a cluster that includes computers that do not have Apple Qmaster installed, see the *Apple Qmaster User Manual* for instructions.

## Configuring Service Nodes and Cluster Controllers

Once service processing or cluster controlling is enabled on a computer, the computer is advertised on the network as available to be used in a cluster.

**Important:** There can be only one cluster controller in a cluster. However, a computer can be designated as both a cluster controller and a service node (see [Using One Computer to Serve Two Distributed Processing Roles](#)).

## Configuring Service Node Processing

Use the Apple Qmaster pane of System Preferences or Apple Qadministrator to set processing services on a computer.

### To turn on processing services

- 1 Open the Apple Qmaster pane of System Preferences.
- 2 Optionally, you can configure a number of settings before you turn on the processing services. (See [Scheduling Service Availability](#).)

**Note:** It's easiest to do this now because you can't configure these settings when processing services are enabled. To configure these settings after services have been enabled, you need to turn off the services, configure the settings, and then turn the services on again.

- 3 In the "Share this computer as" section, select one of the following buttons:
  - *QuickCluster with services*: Select this option to create an "instant" cluster with unmanaged services. (See [About QuickClusters](#) for more information.)



- *Services and cluster controller*: Select this option to build a cluster in Apple Qadministrator. (See [Creating Clusters with Apple Qadministrator](#) for more information.)
  - *Services only*: Select this option to make this computer a service node only. Service nodes perform the processing of batches. They can be included in QuickClusters or in managed clusters. (See [Managed vs. Unmanaged Services](#) for more information.)
- 4 In the Services section, do one of the following:
- *For Compressor services*: In the Share column, select the checkbox for Compressor Processing.
  - *For Apple Qmaster services*: In the Share column, select the checkbox for Rendering.
- 5 Click Start Sharing.

The processing service is enabled, making this computer a service node that can process batches.



## Options in the Apple Qmaster Pane of System Preferences

You can configure any of the following settings before you turn on processing services. (Changing any of the following settings requires that processing services be turned off.) For a complete list of the options and settings in the Apple Qmaster pane of System Preferences, see [About Basic Settings in the Apple Qmaster Preferences Pane](#) and [About Advanced Settings in the Apple Qmaster Preferences Pane](#).

## Setting the Name

By default, a computer is identified on the network by its computer name (as it is entered in the Sharing pane in System Preferences). You can change this name to something more meaningful if you like, since it is the name used to identify this computer in the Apple Qmaster distributed processing system. If you are setting up a QuickCluster, this is the name that will appear in the Compressor Cluster pop-up menu or the Apple Qmaster Submit To pop-up menu. If you are setting up a managed cluster controller, this is the name that will appear in the Apple Qadministrator Controller pop-up menu.

### To enter a name for a QuickCluster

- Enter the new name for the cluster in the “Identify this QuickCluster as” field.

### To enter a name for a cluster controller for use with Apple Qadministrator

- 1 Click Advanced to open the Advanced pane.
- 2 Enter the new name in the “Identify this computer to Apple Qadministrator as” field.

## Unmanaged Services

You can enable unmanaged services for a QuickCluster. For more information, see [Managed vs. Unmanaged Services](#).

## Setting the Password

To add a password requirement, select the “Require password” checkbox.

- *If you are setting up a QuickCluster:* Other users will be required to enter this password before being allowed to submit requests to this computer.
- *If you are setting up a cluster to use with Apple Qadministrator:* An administrator will be required to enter this password before being allowed to add this computer to a cluster.

For more information, see [Setting Passwords](#). (If you configure the computer as both a cluster controller and a service node, this password is used for both.)

## Setting Cluster Storage

You can change the default scratch storage location for processing that occurs on this computer in the Advanced pane. For more information, see [Using Cluster Storage](#).

## Service Node Status Indicator in the Menu Bar

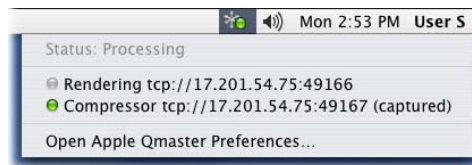
By default, once a service node is enabled, an Apple Qmaster icon appears in the computer’s menu bar. The icon now changes color based on the service node’s current status:

- *Gray:* Idle
- *Green:* Processing

- *Red*: Connection failure



Click the icon to reveal additional information, including the service node's IP address, port number, and capture status, as well as a link to the Apple Qmaster pane of System Preferences.

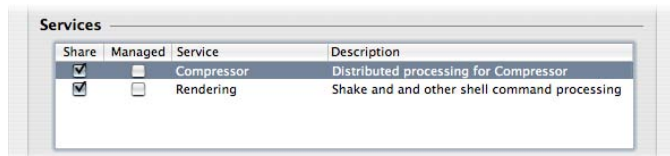


To show the service node status indicator in the menu bar

- 1 Open the Apple Qmaster pane of System Preferences.
- 2 Click Advanced to open the Advanced pane.
- 3 Select the “Show Qmaster service status in menu bar” checkbox.

## Managed vs. Unmanaged Services

You have flexibility in how you build clusters for distributed processing with Compressor or Apple Qmaster. When you turn on processing services (see [Turning Cluster Controller Services On or Off](#)), you can choose to make them either managed services or unmanaged services (the default).



## Managed Services

Managed services can be assigned to serve one particular cluster controller. Once assigned, managed services remain exclusively dedicated to that cluster until they are removed with the Apple Qadministrator application. QuickClusters cannot use managed services from other nodes, except in the case of extended node clusters. For more information, see [Modifying and Deleting Clusters with Apple Qadministrator](#). See the *Apple Qmaster User Manual* for more information on extended node clusters.

## Unmanaged Services

Unmanaged services automatically assign themselves to the first available QuickCluster with enabled unmanaged service support. QuickClusters listen for unmanaged service advertisements and may mark or remember any of them for later use. A QuickCluster can use any available unmanaged service on the same local network (subnet). An unmanaged service remains dedicated to its QuickCluster only long enough to finish the current job. Once the current job is complete, an unmanaged service is once again a “free agent” and advertises its availability to all QuickClusters.

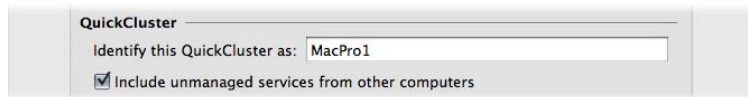
**Note:** Managed clusters (those created with Apple Qadministrator) can also use unmanaged services. When unmanaged service support is enabled on a managed cluster, the cluster automatically adds any available unmanaged services in addition to its managed services (that were explicitly added using Apple Qadministrator).

## Enabling Unmanaged Services on QuickClusters

Follow these steps to enable unmanaged services on QuickClusters.

### To enable unmanaged services on QuickClusters

- 1 Open the Apple Qmaster pane of System Preferences.
- 2 Select the “QuickCluster with services” button to create a QuickCluster.
- 3 Select “Include unmanaged services from other computers.”



- 4 Click Start Sharing.

For more information on creating QuickClusters, see [Getting Started Quickly](#) and [About QuickClusters](#).

## Enabling Unmanaged Services on Managed Clusters

Follow these steps to enable unmanaged services on managed clusters.

### To enable unmanaged services on managed clusters

- 1 In Apple Qadministrator, select a cluster in the Cluster list, or click the Add (+) button to add a new cluster.
- 2 Select “Allow use of unmanaged services.”

For more information on creating managed clusters, see [Creating Clusters with Apple Qadministrator](#).

## Managing Processing Services

Follow the instructions below to manage the processing services on a computer in a cluster.

**Note:** If processing services are enabled, you must turn them off before you can adjust the processing service type.

**To set managed processing services**

- 1 Open the Apple Qmaster pane of System Preferences.
- 2 Select the checkbox in the Managed column.

**To set unmanaged processing services**

- 1 Open the Apple Qmaster pane of System Preferences.
- 2 Deselect the checkbox in the Managed column.

**To turn off processing services**

- 1 In the Apple Qmaster pane of System Preferences, click Stop Sharing.
- 2 In the dialog that appears, enter the number of minutes you want processing services to continue before shutting down, then click OK.



The default is 0 minutes, but you can enter a different number in the field. If you enter any number greater than 0, a countdown appears next to the Cancel button. The shutdown delay is provided as a way to allow computers to complete the processing of active batches without interruption.

- 3 In the Services section, do one of the following:
  - *To turn off Compressor services:* Deselect the On checkbox for Compressor Processing.
  - *To turn off Apple Qmaster services:* Deselect the On checkbox for Rendering.

## Turning Cluster Controller Services On or Off

Use the Services pane in the Apple Qmaster pane of System Preferences to turn the cluster controller on or off on a specific computer.

**To turn on cluster controller services**

- 1 Open the Apple Qmaster pane of System Preferences.
- 2 Optionally, you can configure a number of settings before you turn on the processing services. (See [Scheduling Service Availability](#).)

**Note:** It's easiest to do this now because you can't configure these settings when processing services are enabled. To configure these settings after services have been enabled, you need to turn off the services, configure the settings, and then turn the services on again.

- 3 In the “Share this computer as” section, select one of the following buttons:
  - *QuickCluster with services*: Select this option to create an “instant” cluster with unmanaged services.
  - *Services and cluster controller*: Select this option to build a cluster in Apple Qadministrator. (See [Creating Clusters with Apple Qadministrator](#) for more information.)

Also see [Managed vs. Unmanaged Services](#) for more information.

- 4 In the Share column, select the checkbox.
- 5 Click Start Sharing.

The cluster is enabled, making this computer a cluster controller.

#### To turn off cluster controller services

- 1 Open the Apple Qmaster pane of System Preferences.
- 2 Click Stop Sharing.
- 3 In the dialog that appears, enter the number of minutes you want controller services to continue before shutting down, then click OK.

The default is 0 minutes, but you can enter a different number in the field. If you enter any number greater than 0, a countdown appears next to the Cancel button. The shutdown delay is provided as a way to allow computers to complete the processing of active batches without interruption. No new cluster connections are allowed to occur as the cluster controller is shutting down.

**Note:** Optionally, you can turn off the controller and just make the node a service node. To do this, select “Services only” in the “Share this computer as” section.

## Using Virtual Clusters to Make the Most of Multiprocessor Computers

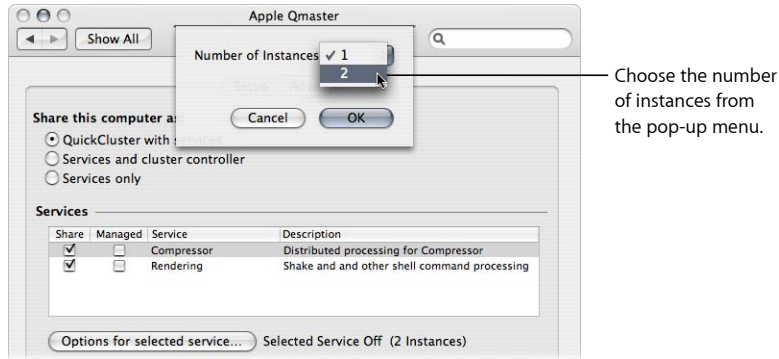
If any of the service node computers in your network have multiple processors, you can adjust the number of instances of a processing service, essentially creating *virtual clusters* on individual computers. For processor-intensive work, having many instances may increase speed and efficiency, depending on the processing application.

**Note:** By default, the Apple Qmaster system creates one Rendering service instance for each processor. Rendering services are for Shake (with Apple Qmaster), Autodesk Maya, and other UNIX command-line programs, as opposed to Compressor services, which are solely for Compressor distributed processing. Consult the documentation that came with the application to see if using each processor individually is ideal.

#### To change the number of instances of processing services on a computer

- 1 Open the Apple Qmaster pane of System Preferences.
- 2 Select the Compressor or Rendering service in the Services section.
- 3 Select “Options for selected service.”

- 4 In the dialog that appears, choose the number of instances from the pop-up menu.



- 5 Click OK.
- 6 In the Services section, select the Share checkbox for the service.

**Note:** The Service Options dialog is also used to add extended nodes to a cluster, as described in the *Apple Qmaster User Manual*.

## Creating Clusters with Apple Qadministrator

Once you configure managed service nodes or cluster controllers, they are visible in Apple Qadministrator, which you use to create and modify Apple Qmaster clusters.

There are two basic steps to creating a managed cluster with Apple Qadministrator. First, you create a new cluster and choose the cluster controller. Then, you add service nodes to the cluster.

- Stage 1: Creating a New Cluster
- Stage 2: Assigning Service Nodes

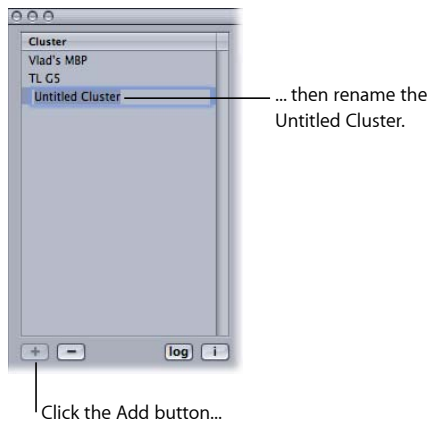
### Stage 1: Creating a New Cluster

Use the following steps to create a cluster with Apple Qadministrator.

#### To create a new cluster

- 1 Open Apple Qadministrator, then do the following:
  - a Click the Add (+) button.

- b Select **Untitled Cluster** and rename it. (The cluster name you create will also appear in the cluster pop-up menus in Batch Monitor and Apple Qmaster.)



- 2 From the Controller pop-up menu, choose a cluster controller from those available on the network.



**Note:** If a password was created for the cluster controller in System Preferences, a password authentication dialog appears.

- 3 Optionally, create cluster passwords by clicking the Security tab and selecting and entering the passwords you want.
- *Administrator Password:* If you create this password, administrators will need to know it in order to modify this cluster and to view this cluster's batches in Batch Monitor.
  - *User Password:* If you create this password, users will need to know it in order to submit batches to this cluster and to view those batches in Batch Monitor.

## Stage 2: Assigning Service Nodes

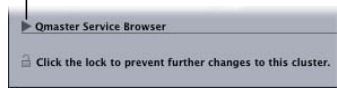
Use the following steps to assign service nodes to a cluster.



## To add a service node to a cluster

- 1 If the Qmaster Service Browser is not already displayed, click the disclosure triangle to see it.

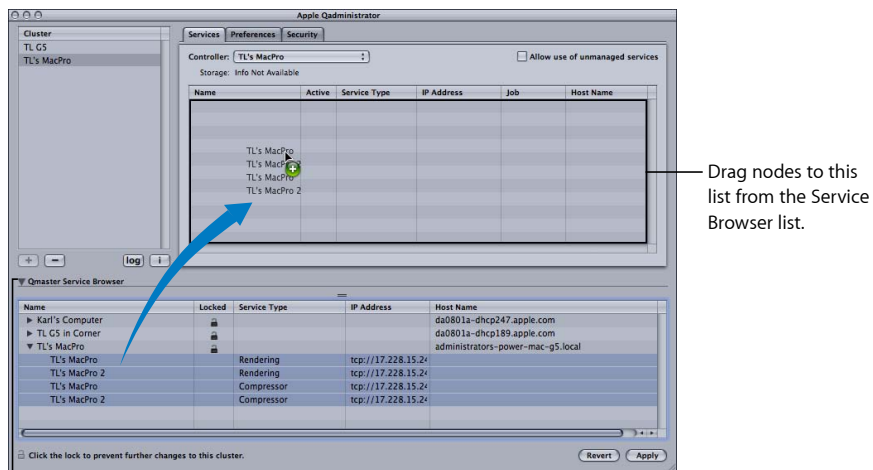
Click this disclosure triangle to see available nodes.



- 2 Add service nodes to the new cluster by dragging them from the Qmaster Service Browser list at the bottom of the window to the cluster's service nodes list.

If there is a closed lock icon next to a computer name, click the lock and enter the password that was assigned to it in the Apple Qmaster pane of System Preferences. Otherwise, you won't be able to drag that service node to the cluster.

Service nodes that are already assigned to another cluster are not shown.



Clicking this disclosure triangle displays each instance of the services set in System Preferences for this node.

**Note:** The computer names you see at the top level of the Name columns may appear in one of three formats, depending on your configuration: the computer name (for example, Lemur node), the Apple networking name (for example, Lemur-node.local), or the network address for the computer (for example, 02030b-dhcp45.company.com).

- 3 When you have finished adding service nodes, click Apply.  
Your cluster is now ready to process batches.

**Note:** Although Apple Qadministrator currently allows you to create a cluster with unmanaged services, valid clusters require at least one managed service for the cluster to be viewable in Apple Qmaster, Compressor, and Batch Monitor.

## About QuickClusters

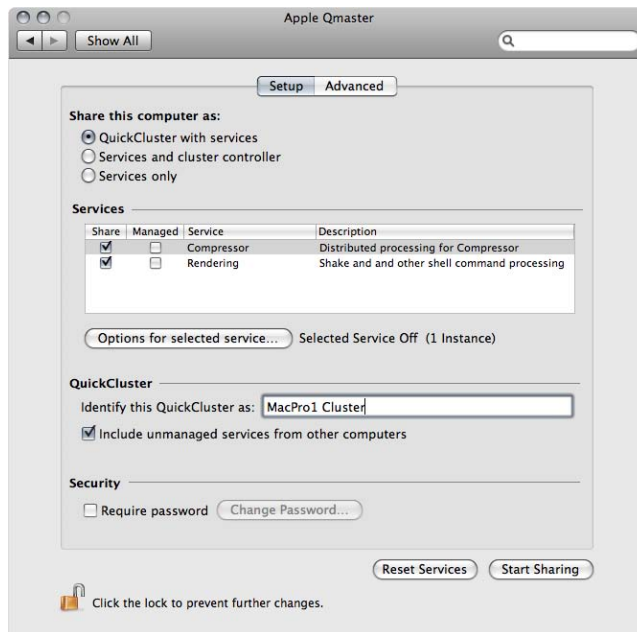
QuickClusters offer a simple and automated way to create and configure clusters, as well as an alternative to creating and configuring clusters manually with Apple Qadministrator. QuickClusters with enabled unmanaged support automatically configure themselves and use any available unmanaged services on the same local network (subnet). QuickClusters listen for unmanaged service advertisements and may mark or remember any of them for later use.

## Creating QuickClusters

You can create and modify QuickClusters in the Apple Qmaster pane of System Preferences.

### To create and modify QuickClusters

- 1 Open the Apple Qmaster pane of System Preferences.



- 2 Under "Share this computer as," select "QuickCluster with services."
- 3 Optionally, you can configure a number of settings before you turn on the processing services. (See [Scheduling Service Availability](#).)

**Note:** It's easiest to do this now because you can't configure these settings when processing services are enabled. To configure these settings after services have been enabled, you need to turn off the services, configure the settings, and then turn the services on again.

4 Click Start Sharing.

This creates a QuickCluster with this computer as its controller.

**Note:** With an active QuickCluster, Apple Qmaster users can create extended node clusters, which contain one or more computers that do not have Apple Qmaster installed. See the *Apple Qmaster User Manual* for more information.

## About AutoClusters

The AutoCluster feature in Compressor gives you an easy way to take advantage of the distributed processing capabilities offered by Apple Qmaster without requiring a lot of knowledge about how clusters are configured, how to set up file sharing, and so on. The AutoCluster feature in Compressor allows you to do the following steps, on the fly, with just one click, at the moment of batch submission:

- Turn “This Computer” into a temporary QuickCluster. (The computer you are using appears as “This Computer” in the Apple Qmaster distributed processing system.)
- Use unmanaged services from other computers.

For more details on AutoClusters, see [Using Compressor AutoClusters](#).



As the administrator of your distributed processing network, you can set a number of cluster options and security controls. You may also want to know about failure notification and recovery features.

If you have questions about any concepts and terms used here, see [Distributed Processing Basics](#).

This chapter covers the following:

- [Modifying and Deleting Clusters with Apple Qadministrator \(p. 61\)](#)
- [Monitoring Cluster Activity \(p. 63\)](#)
- [Accessing Activity Logs \(p. 63\)](#)
- [Setting Preferences \(p. 63\)](#)
- [Setting Passwords \(p. 67\)](#)
- [Scheduling Service Availability \(p. 68\)](#)
- [Using Cluster Storage \(p. 70\)](#)
- [Defining Ports for Service Advertisements \(p. 73\)](#)
- [Recovery and Failure Notification Features \(p. 73\)](#)

## Modifying and Deleting Clusters with Apple Qadministrator

Using Apple Qadministrator, you can change and delete clusters. Once a cluster is configured, you can use Apple Qadministrator to deactivate and reactivate the processing services on a computer in the cluster, to add a service node to the cluster, or to remove a service node from the cluster.

If you want to change the cluster controller in a cluster, you need to delete the cluster and then re-create it with a new cluster controller.

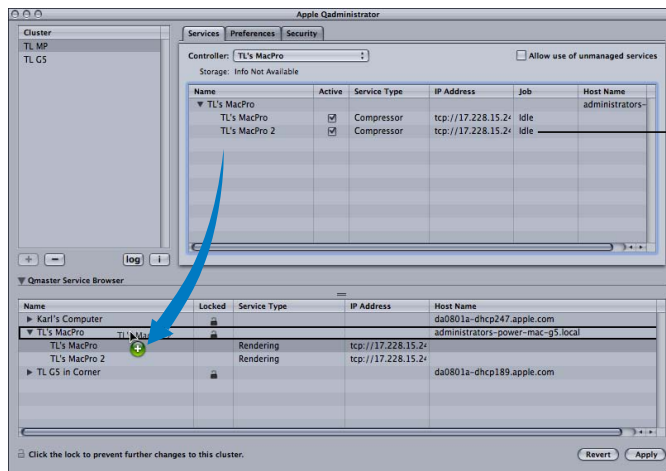
**Note:** Unless Apple Qadministrator and the QuickCluster are on the same computer, QuickClusters are not visible in Apple Qadministrator. Only managed clusters can be modified and deleted in Apple Qadministrator. Managed clusters are clusters that were created in Apple Qadministrator. QuickClusters must be modified in the Apple Qmaster pane of System Preferences.

### To modify a cluster

- 1 Open Apple Qadministrator.
- 2 In the Cluster list (on the left side of the window), select the cluster you want to change.  
If the cluster's Service Nodes list isn't already showing individual services, click the disclosure triangle in the Name column to reveal them.

Make any of the following changes.

- *To temporarily turn off the processing services on a computer in the cluster:* Deselect the Active checkbox for that service node.
- *To remove a service node from the cluster:* Select the computer and drag it back to the Qmaster Service Browser at the bottom of the Apple Qadministrator window.



To remove nodes from a cluster, drag them to the Qmaster Service Browser.

- *To add a service node to the cluster:* Drag it from the service browser list at the bottom of the window to the service nodes list.
- 3 Click Apply.

**Note:** To turn off the service node or cluster controlling services on any computer within a cluster, see [Configuring Service Node Processing and Turning Cluster Controller Services On or Off](#).

### To change a cluster's name in Apple Qadministrator

- 1 In the Cluster list, double-click the cluster name.

- 2 Type a new name, then press Return.

#### **To delete a cluster in Apple Qadminimator**

- 1 In the Cluster list, select the cluster you want to delete.
- 2 Click the Remove (–) button.

## Monitoring Cluster Activity

You can use Apple Qadminimator to find out what is happening within a cluster by examining details (such as processor usage, which batch is being processed, disk space usage, and data activity) about each node in the cluster.

#### **To monitor cluster activity in Apple Qadminimator**

- 1 In the Cluster list, select the cluster you want to examine.
- 2 Select a node in the cluster service nodes list.
- 3 Click the Info (I) button near the bottom of the Cluster list.
- 4 In the resulting window, click the CPU, Memory, Volume Info, and I/O Activity tabs to see a variety of details about the selected node.

## Accessing Activity Logs

Apple Qadminimator provides log information for a selected service or cluster. This information is useful for troubleshooting distributed processing issues, and it can be saved to a file and processed with XML tools and UNIX scripts.

#### **To view or copy log information in Apple Qadminimator**

- 1 In Apple Qadminimator, select the service or cluster whose log you wish to view.
- 2 Click the Log button near the bottom of the Cluster list.

A new window appears displaying the log information for the selected service or cluster. The log file is deleted when you close the window.

## Setting Preferences

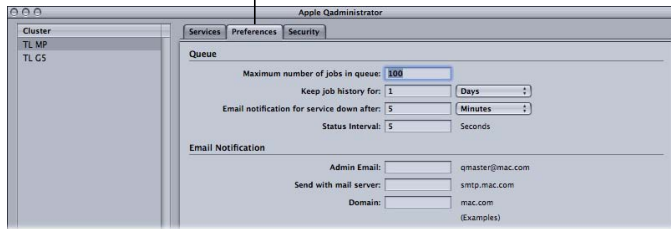
You can use Apple Qadminimator preferences to configure several aspects of Apple Qadminimator. These include setting preferences for specific cluster as well as setting preferences for using Apple Qadminimator over a wide area network.

#### **To set preferences for a cluster**

- 1 Open Apple Qadminimator.
- 2 In the Cluster list, select the cluster for which you want to set preferences.

### 3 Click Preferences.

Click Preferences to display the Preferences tab.



### 4 Set any of the preferences listed in [About the Apple Qadminimator Preferences Tab](#).

To set preferences for using Apple Qadminimator over a wide area network

- Choose Apple Qadminimator > Preferences, or press Command-Comma (,).

## About the Apple Qadminimator Preferences Tab

This section describes the features available in the Apple Qadminimator Preferences tab.

### Controls in the Apple Qadminimator Preferences Tab

You can use the Apple Qadminimator Preferences tab to configure a number of Apple Qadminimator settings.



The Apple Qadminimator Preferences tab contains the following items.

#### Queue

Use the following settings to configure queue preferences in Apple Qadminimator.

- *Maximum number of jobs in queue:* Enter the maximum number of batches that can be queued up at one time for this cluster. If the maximum number is reached, the cluster does not accept new batches until there is an opening in the queue.
- *Keep job history for:* Set how long batches are listed in the History table of Batch Monitor.



- *Email notification for service down after:* Set how much time should pass, after a service becomes inaccessible, before the cluster controller sends an alert message to the administrator. (See [About the Work Schedule Dialog](#).)
- *Status Interval:* Set how often status information about this cluster should be generated and sent to Batch Monitor.

### Email Notification

To have the cluster controller send service failure alerts to an administrator, enter the relevant information in the fields provided. See [Recovery and Failure Notification Features](#) for more information.

**Note:** The Apple Qmaster distributed processing system does not currently support SMTP servers that require authentication.

- *Admin Email:* Enter the administrator's email address.
- *Send with mail server:* Enter the administrator's mail server.
- *Domain:* Enter the cluster controller's domain.

## About the Apple Qadministrator Wide Area Network Preferences Window

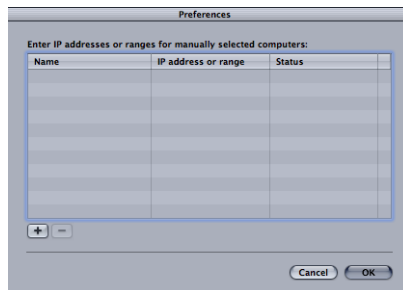
You can set wide area network preferences by choosing Apple Qadministrator > Preferences.

### About Wide Area Network Preferences

The Apple Qadministrator wide area network preferences window includes the following items:

### Apple Qadministrator Wide Area Network Preferences Details

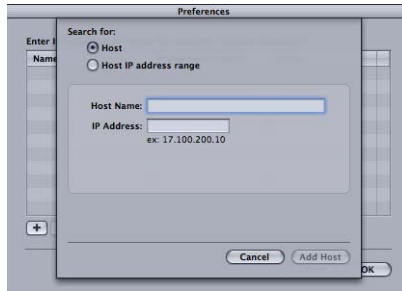
Use the following controls to configure wide area network preferences.



- *“Enter IP addresses or ranges for manually selected computers” table:* This table displays information about remote host computers.
- *Add/Remove button:* Use the button to add or remove information about remote host computers.

## Remote Computer Address Dialog

This dialog is displayed when you click the Add/Remove button in the main Preferences dialog. Use this dialog to enter IP addresses or ranges for remote computers.



- *Host and "Host IP address range" buttons:* These buttons control whether this dialog is in IP Address mode (in which you enter a specific address) or IP Address Range mode (in which you enter a range of addresses).
- *Host:* Use this mode to enter a host name and IP address for a specific remote computer.
- *Host IP address range:* Use this mode to enter a name and set of range numbers (Range From, Range To) for a range of remote IP addresses.

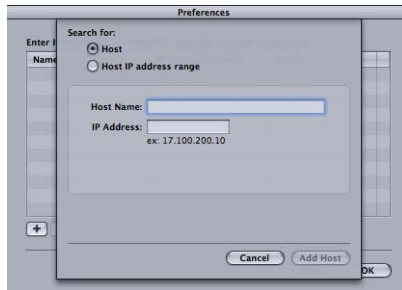
## Setting Wide Area Network Preferences

Follow the instructions below to set wide area network preferences for Apple Qadmin.

### To enter IP addresses or ranges for remote computers

- 1 Click Add (+).

The host address dialog appears.



- 2 In the host address dialog, do one of the following:
  - Select Host, complete the Host Name and IP Address fields, and click Add Host.
  - Select "Host IP address range," complete the Range fields, and click Add Range.

The hosts or host ranges appear in the Host table in the main Preferences dialog.

## Setting Passwords

You can create several types of passwords for the Apple Qmaster distributed processing system. All these passwords are optional; you can use the system without creating them.

- *Cluster administrator password:* A password required for modifying a cluster in Apple Qadministrator, and for modifying the status of the cluster's batches in Batch Monitor. See [Setting Cluster Administrator and User Passwords](#).
- *Cluster user password:* A password that client users need in order to submit batches to a cluster and to modify the status of those batches in Batch Monitor. See [Setting Cluster Administrator and User Passwords](#).
- *Service password:* A password required for an administrator to add a specific service node or cluster controller to a cluster. See [Setting a Service Password for Including a Computer in a Cluster](#).

You can also change the default scratch storage location for a cluster, or for each computer in a cluster. See [Using Cluster Storage](#).

## Setting Cluster Administrator and User Passwords

You can create cluster passwords while creating a new cluster, as described in [Creating Clusters with Apple Qadministrator](#). However, once the cluster is created, you can still add or change passwords, using the same settings in Apple Qadministrator.

### To create or change cluster passwords

- 1 In Apple Qadministrator, select the cluster from the Cluster list.
- 2 Click Security.
- 3 Select and enter or change the passwords you want.



- 4 Click Apply.

**Note:** Cluster administrator and cluster user passwords can be stored in a user's keychain.

## Setting a Service Password for Including a Computer in a Cluster

If you want to control who is able to include a specific service node or cluster controller in a cluster, you can create a password called a *service password* for the computer.

**Note:** A service password can be stored in a user's keychain.

#### To set a service password

- 1 On the computer designated as the service node or cluster controller, open the Apple Qmaster pane of System Preferences.
- 2 If any Apple Qmaster services are enabled on this computer, temporarily turn them off by clicking Stop Sharing.
- 3 Click Require Password.

The password dialog opens.



- 4 Enter and verify a password, then click OK.
- 5 Select the relevant checkbox or click the Start Sharing button to restart the services you need on this computer.

## Scheduling Service Availability

If you enabled unmanaged services, you can open a calendar interface and schedule the availability of these services to the distributed processing system.

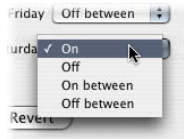
## About the Work Schedule Dialog

The calendar interface of the work schedule dialog contains several useful features.



You can use the following controls to constrain the availability of unmanaged services for each day of the week:

- *On/Off pop-up menu:* Use this pop-up menu to turn services on or off for a particular day of the week.



- *On:* This setting indicates that the services are available for all 24 hours of that particular day. (This is the default setting for all seven days of the week.)
- *Off:* Makes the service unavailable on that day of the week.
- *On between:* Allows you to enter the period of time the service will be available.
- *Off between:* Allows you to enter the period of time the service will not be available.
- *Start time field:* Enter a start time.
- *End time field:* Enter an end time.

## Scheduling Service Availability in the Work Schedule Dialog

Follow the steps below to schedule the availability of unmanaged services.

### To schedule service availability

- 1 In the Advanced pane within the Apple Qmaster preferences pane, click Set. The work schedule dialog appears.

- 2 To constrain the availability of the services, choose one of the options from the pop-up menu next to a particular day of the week. See [About the Work Schedule Dialog](#) for details.
- 3 Enter any constraining time periods in the appropriate start time and end time fields.  
**Note:** You must enter valid days and times. The time *cannot* overlap into the next day in one entry. There must be two entries when the range ends after 12 a.m. For more information, see [Setting Availability from Sunday Night to Monday Morning](#).
- 4 Click OK to save the settings.

### Setting Availability from Sunday Night to Monday Morning

You must enter valid days and times. The time *cannot* overlap into the next day in one entry. There must be two entries when the range ends after 12 a.m.

For example, to set the service availability from 6 p.m. on Sunday to 8 a.m. on Monday, follow the steps below.

#### To provide service availability from Sunday night to Monday morning

- Make both of the following entries:
  - *Sunday:* On between 6:00 PM and 12:00 AM
  - *Monday:* On between 12:00 AM and 8:00 AM

## Using Cluster Storage

By default, the Apple Qmaster distributed processing system saves temporary process files in the `/var/spool/qmaster/` directory on the cluster controller. You can also choose any other location on a local disk for this scratch storage. Computers in the cluster will access this location as needed.

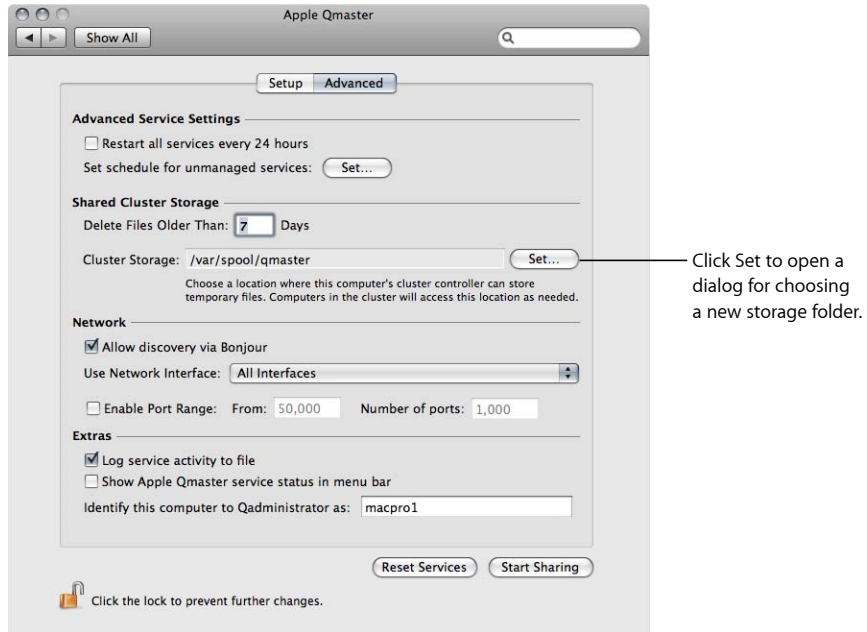
### Selecting a Cluster Storage Location

Follow the steps below to change the cluster storage location.

#### To select a new storage location for a cluster

- 1 On the cluster controller, open the Apple Qmaster pane of System Preferences.
- 2 If any Apple Qmaster services are enabled on this computer, click Stop Sharing to temporarily turn them off.
- 3 Click Advanced to open the Advanced pane.

- 4 Click the Set button next to the Cluster Storage field.



- 5 Navigate to the folder in the dialog, select it, and then click Choose.

**Note:** If you are using the default This Computer setting in the Cluster pop-up menu in the Compressor Batch window and you choose Cluster Storage as the destination, the output file will be copied to the Source location.

## Cluster Storage Capacity

If you are processing large source media files that exceed the available storage space on the startup disk, you may run out of storage space on that disk. There are a number of things you can do to address this.

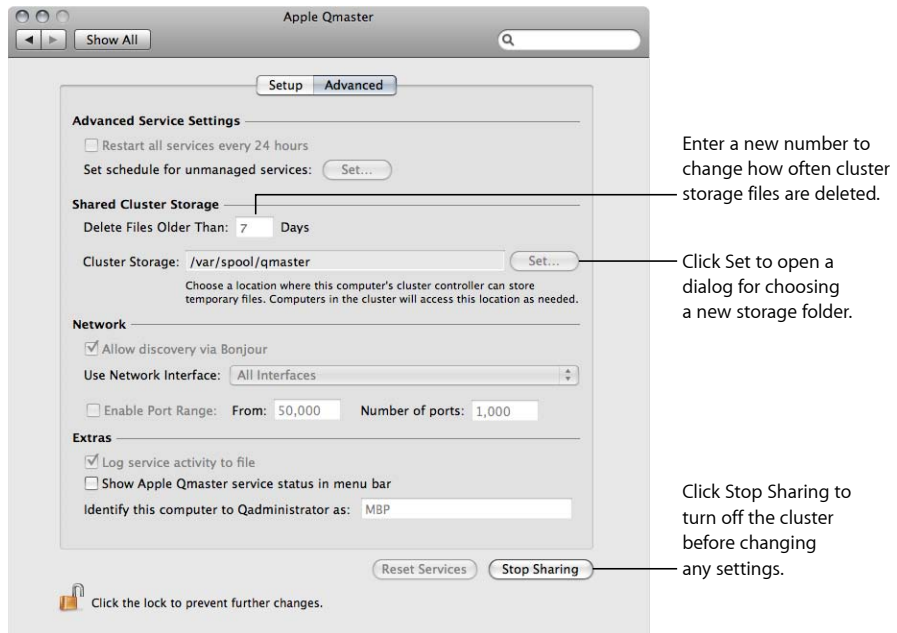
- Change the cluster storage location to a disk with more free space. For more information, see [Adjusting Cluster Storage Settings](#).
- Configure cluster storage settings to delete files more frequently. For more information, see [Adjusting Cluster Storage Settings](#).
- Compressor users can set Cluster Options preferences (choose Compressor > Preferences) to “Never copy source to cluster.” For more information, see the *Compressor User Manual*.

## Adjusting Cluster Storage Settings

Follow the steps below to change scratch storage settings for a cluster.

### To change cluster storage settings

- 1 On the cluster controller, open the Apple Qmaster pane of System Preferences.
- 2 If any Apple Qmaster services are enabled on this computer, click Stop Sharing to temporarily turn them off.  
**Note:** Do not attempt to change the cluster storage settings while the cluster is turned on.
- 3 Click Advanced to open the Advanced pane.
- 4 Configure the following optional settings:
  - *To change the cluster storage location:* Click the Set button next to the Cluster Storage field, then navigate to the folder in the dialog and click Choose.
  - *To change how often cluster storage files are deleted:* Enter a new number in the Delete Files Older Than N Days field.



- 5 Click the Start Sharing button to restart the cluster.

### Cleaning Up Cluster Storage

If you are using cluster storage and an error occurs, partial files may be left on the designated cluster storage location. Check the designated cluster storage location to make sure no partial media files are left there. If you find partial media files, delete them and submit the job again.



## QuickTime Reference Movies

If you submit a reference movie for distributed processing, the Apple Qmaster distributed processing system will automatically copy the appropriate media files to the processing cluster. For the best performance, you can avoid this file transfer step by making sure that the media files specified in the reference movie are available to each node of the Apple Qmaster cluster.

## Defining Ports for Service Advertisements

You can define which ports Apple Qmaster uses for service advertisements with the Enable Port Range checkbox and text fields in the Network section of the Advanced pane within the Apple Qmaster pane of System Preferences.

### To define ports for Apple Qmaster service advertisements

- 1 Open the Apple Qmaster pane of System Preferences.
- 2 Click Advanced to open the Advanced pane.
- 3 Select Enable Port Range.
- 4 In the From field, enter any integer value between 50,000 and 65,535 to set the start of the range.
- 5 In the “Number of ports” field, enter the size of the range, such as 1000.

## Recovery and Failure Notification Features

The Apple Qmaster distributed processing system has a number of built-in features designed to attempt recovery if there is a problem, and to notify you when the system attempts a recovery.

### Recovery Features

The recovery actions described next occur automatically if failures occur in the Apple Qmaster distributed processing system. There is no need for you, as the administrator, to enable or configure these features.

#### If a Service Stops Unexpectedly

If either the cluster controller service or the processing enabled on a service node stops unexpectedly, the Apple Qmaster distributed processing system restarts the service. To avoid the risk of endless stopping and restarting, the system restarts the failed service a maximum of four times. The first two times, it restarts the service right away. If the service stops abruptly a third or fourth time, the system restarts the service only if it had been running for at least 10 seconds before it stopped.

### If a Batch Is Interrupted

When a service stops suddenly while in the middle of processing an Apple Qmaster batch, the cluster controller resubmits the interrupted batch in a way that prevents the reprocessing of any batch segments that were complete before the service stopped. The cluster controller delays resuming the batch for about a minute from the time it loses contact with the service.

### If a Batch Fails

When the service is running, but one batch fails to process, a *service exception* occurs. When this happens, the cluster controller resubmits the batch immediately. The cluster controller resubmits the batch a maximum of two times. If the job fails on the third submission, the distributed processing system stops resubmitting the job. In Batch Monitor, the job is moved to the History table, where the status column indicates that a failure occurred.

## Failure Notification

There are two different ways that the Apple Qmaster distributed processing system can provide information about a problem.

### Email Notification

When a processing service stops unexpectedly, Apple Qmaster sends a notification email to the address that was entered in the Apple Qadministrator Cluster Preferences dialog for that cluster. If no address was entered there, the email is sent to the address in the Internet settings of the computer on which the cluster controller is enabled.

**Note:** Apple Qmaster does not currently support SMTP servers that require authentication.

### Log Files for Individual Jobs or Batches

If a particular job or batch fails, a log file is generated that describes this failure. You can find the name and location of this log file through Batch Monitor.

#### To find the name and location of a log file

- 1 Select the batch or job in the History table of the Batch Monitor window.
- 2 Click the Info icon.

If any log files were generated because of failures in the processing of the item, the names and locations of those logs are shown.

## Notification and Log Labels

The following table lists the service labels used in the email notifications and logs.

Processing service type	Notification label
Local Compressor service	servicecontroller:com.apple.stomp.transcoder
Distributed Compressor service	servicecontroller:com.apple.stomp.transcoderox

Processing service type	Notification label
Distributed Apple Qmaster service	servicecontroller:com.apple.qmaster.executor



If you are accustomed to doing your work from Terminal shells, and you need or prefer to run the distributed processing system from the command line with minimal use of application interfaces, this appendix is for you.

**Note:** Although it is possible to use the command line to run an Apple Qmaster distributed processing network, each Compressor service node (each computer providing Compressor distributed processing services) must be logged in (with a Mac OS X user name and password) for full functionality.

This chapter covers the following:

- Installing Apple Qmaster from the Command Line (p. 77)
- Using the Command Line for Distributed Processing (p. 78)
- Using Scripts to Run Apple Qmaster, Compressor, and Batch Monitor (p. 85)

## Installing Apple Qmaster from the Command Line

Follow these steps to install Apple Qmaster software on each computer you want to use for distributed processing. (All computers must be on the same subnet.)

**Note:** On any given Final Cut Studio system or network, the Compressor and Apple Qmaster versions (numbers) and the version of QuickTime must all match. For example, Compressor 3.0.5 will work only with the 3.0.5 version of Apple Qmaster, and no other version. In this example, the correct version of QuickTime is QuickTime 7.5.5 or later. Non-matching configurations are not supported.

### To install Apple Qmaster software from the command line

- 1 Copy the standalone installer package (AppleQmasterNode.mpkg) to the remote system.

**Note:** Do not alter the file hierarchy of the packages.

- 2 Log in to the remote system.
- 3 Enter the following command:

```
sudo installer -pkg AppleQmasterNode.mpkg -target /
```

Apple Qmaster processes start automatically after installation.

- 4 Repeat these steps for each computer in your distributed processing network.

**Tip:** You can also install Apple Qmaster using Apple Remote Desktop. Just select a node, click Install Package, and select the standalone installer package (AppleQmasterNode.mpkg). The copy and installation process is done automatically.

## Using the Command Line for Distributed Processing

The following sections describe how to issue shell commands (from the command line) to run your distributed processing network.

### Shell Commands for Configuring Service Nodes and Cluster Controllers

As an alternative to using the Apple Qmaster pane in System Preferences, you can use the command `qmasterprefs`, with command-line options for enabling and disabling service node and cluster-controlling services.

In the command-line descriptions below, angle brackets `< >` indicate a mandatory argument in a command, and brackets `[]` indicate an optional argument.

#### Synopsis

Below is a synopsis of the command for enabling and disabling Apple Qmaster services on a computer. The `qmasterprefs` command is located in `/usr/sbin`.

```
qmasterprefs [options] [-cluster <on | off> [options]] [-service <name> <on  
| off> [options]]
```

#### Command Options

This table provides information about each of the enabling and disabling service-node and cluster-controlling services on a computer.

Preference command option	Description
<code>-help</code>	Displays information about supported options for <code>qmasterprefs</code> .
<code>-list</code>	Lists the current <code>qmasterprefs</code> settings.
<code>-resetCluster</code> <code>[cancelJobs]</code>	Restarts cluster processes. <code>cancelJobs</code> deletes batches in the queue.
<code>-allowBonjourDiscovery</code> <code>&lt;on   off&gt;</code>	Enables or disables Bonjour advertisements.
<code>-startSharing</code> <code>[servicesOnly  </code> <code>servicesAndCluster  </code> <code>servicesAndQuickCluster]</code>	Sets sharing state. (Similar to the Apple Qmaster pane in System Preferences.)
<code>-stopSharing</code>	Stops Apple Qmaster services on local computer.
<code>-restart</code>	Restarts all Apple Qmaster services.
<code>-reset</code>	Resets Apple Qmaster services to default configuration.

Preference command option	Description
<code>-launchContentAgent &lt;on   off&gt;</code>	Automatically launches content agent at startup.
<code>-log [0-5] [truncate on   off]</code>	Sets logging level. Default is 3. Off is 0. Sets whether logs are overwritten when services are restarted.
<code>-statusMenu &lt;on   off&gt;</code>	Displays service node status indicator in menu bar.
<code>-cluster &lt;on   off&gt; [options]</code>	Turns cluster-controlling services on or off. All [options] are: [timeout min] [[quickcluster] servername name] [maxactivetargets val] [maxactivesegments val] [storagepath path] [privatestorage on off] [publishedstorage on off] [storagecleanupthreshold days] [unmanagedservices on off] [unmanagedmulticapturethreshold sec] [networkinterface allinterfaces   <bsd name>] [log [0-5]   [truncate on off]]
<code>-service "name" [on off] [options]</code>	Turns service on or off. Valid names are Rendering or "Compressor Processing". All [options] are: [timeout min] [sharing on off] [instances n] [autorestart on off] [unmanaged on off] [log [0-5] [truncate on off]]

**Note:** For a complete list of shell command options, enter `qmasterprefs -help`.

### Example of the qmasterprefs Command

In the following example, the computer is set to be a cluster controller, bound to the primary network interface (en0), with logging set to verbose, with the logs not overwritten. The `Rendering` service is on, with 4 managed services and logging set to verbose, with the logs not overwritten. The `Compressor Processing` service is configured with the same settings, with two instances.

```
qmasterprefs -sharingType servicesAndCluster -cluster on networkinterface
en0 log 5 truncate off -service Rendering on sharing on instances 4 unmanaged
off log 5 truncate off -service "Compressor Processing" on sharing on
instances 2 unmanaged off log 5 truncate off
```

### To reset controller and service configurations

- Enter the following:

```
qmasterprefs -reset
```

### To reset all controller and service processes and cancel all batches in queue

- Enter the following:

```
qmasterprefs -resetCluster cancelJobs
```

### To stop sharing

- Enter the following:

```
qmasterprefs -stopSharing
```

#### To start sharing

- Enter the following:

```
qmasterprefs -startSharing
```

#### To change the cluster storage path to an Xsan volume

- Enter the following:

```
qmasterprefs -cluster off storagepath /Volumes/XsanVol
```

#### To change the number of Compressor Processing services from 2 to 4

- Enter the following:

```
qmasterprefs -service "Compressor Processing" off sharing on instances 4
```

#### To turn off the Rendering service

- Enter the following:

```
qmasterprefs -service Rendering off
```

#### To turn on unmanaged services for Compressor Processing

- Enter the following:

```
qmasterprefs -service "Compressor Processing" on unmanaged on
```

#### To configure a service-only node

- Enter the following:

```
qmasterprefs -stopSharing -sharingType servicesOnly -startSharing
```

#### To create a QuickCluster

- Enter the following:

```
qmasterprefs -stopSharing -sharingType servicesAndQuickCluster -startSharing
```

## Shell Commands for Submitting Compressor Jobs

You can run the Compressor application from the command line using the `Compressor` command, with a number of command-line options for submitting jobs.

In the command-line descriptions below, angle brackets `< >` indicate a mandatory argument in a command, and brackets `[]` indicate an optional argument.

### Synopsis

Below is a synopsis of the command for submitting a job to a cluster. The `Compressor` command is located in `/Applications/Compressor.app/Contents/MacOS/`.

```
Compressor [-clustername <name>][-clusterid  
<username:password@ipaddress:portNumber>] [-batchfilepath <path>] [-batchname  
<batchname>] [-priority <value>] [-jobpath <path>] [-settingpath <path>]  
[-destinationpath <path>] [-info <xml>] [-timeout <seconds>] [-help] [-show]
```

In this example, `-jobpath`, `-settingpath`, and `-destinationpath` can be repeated as many times as the number of jobs you want to submit.



**Note:** Not all the options are necessary. For example, you can specify the cluster either by its `-clustername` or by its `-clusterid`. You do not need to specify both. If both are specified, only `-clusterid` is used.

Additionally, if you specify `-batchfilepath`, then `-jobpath`, `-settingpath`, and `-destinationpath` are not necessary because the previously saved batch file already contains information about the job, settings, and destination.

Example of `-batchfilepath`:

```
Compressor -clustername "This Computer" -batchfilepath  
"/Volumes/Hermione/SavedCompressorBatches/FreeChampagne.compressor"
```

Once the job is submitted successfully, this command displays the batch ID (identifier) and job ID (identifier) in the shell, and you can monitor the progress of a batch in Batch Monitor.

## Command Options

This table provides information about each of the command options for submitting jobs.

Submission command option	Description
<code>-clustername &lt;name&gt;</code>	Use to specify the name of the cluster to which you want to send the job. Using the cluster name, Compressor looks for the cluster on the network in order to use it.
<code>-password &lt;value&gt;</code>	User password for the cluster specified by ID or name.
<code>-batchname &lt;name&gt;</code>	Use to specify a name for the batch so that you can easily recognize it in Batch Monitor.
<code>-clusterid &lt;user name:password@IP address:port number&gt;</code>	<p>Optionally, you can use <code>-clusterid</code> to enter the cluster ID and port number instead of using <code>-clustername</code>. (When you enter the cluster ID and port, less time is required to find the cluster on the network.)</p> <p>Or, if you used <code>-clustername</code> and the cluster requires a password, use <code>-clusterid</code> to specify the user name and password. (You need to include the IP address:port number as well whenever you use <code>-clusterid</code>.)</p> <p>Use Compressor <code>-show</code> to see a cluster's IP address and port number.</p>
<code>-priority &lt;value&gt;</code>	Specifies the priority level for a job.
<code>-jobpath &lt;url&gt;</code>	Specifies the location of the source file.
<code>-settingpath &lt;url&gt;</code>	Specifies the location of the settings for the job.
<code>-destinationpath &lt;url&gt;</code>	Specifies the destination file URL for the job.
<code>-info &lt;xml&gt;</code>	Gives detailed information for a batch or a job.

Submission command option	Description
-timeout <seconds>	Use to specify the number of seconds before Compressor can quit when looking for a cluster. The default value is 0, which puts no limit on the timeout and allows Compressor to browse the network for as long as it needs to find the cluster.
-show	Shows the ID information for the cluster specified with -clustername or -clusterid, or for all clusters if no cluster is specified.
-help	Displays information regarding the required parameters for the Compressor command.

### Example of Compressor Command XML

The code below is an example of XML code for submitting a Compressor command. Notice that because it needs to be entered as one command line, every character after -options that isn't alphanumeric must be preceded with a backslash (\).

```
./Compressor -clusterid tcp://127.0.0.1:51737 -batchname myBatch -jobpath
/Volumes/Source/ShortClips/NTSC24p.mov -settingpath
/Users/stomper10/Library/Application\ Support/Compressor/PhotoJPEG.setting
-destinationpath /Users/machinename/Movies/myDestinationFilename.mov.
```

This command has the following elements:

- Cluster address is tcp://127.0.0.1:51737.
- Batch name is myBatch.
- Job path is /Volumes/Source/ShortClips/NTSC24p.mov.
- Setting path is /Users/stomper10/Library/Application Support/Compressor/PhotoJPEG.setting.
- Destination path is /Users/machinename/Movies.

### Shell Commands for Submitting Apple Qmaster Jobs

You can use the Apple Qmaster command, `Apple Qmaster`, with a number of command-line options for submitting jobs.

In the command-line descriptions below, angle brackets < > indicate a mandatory argument in a command, and brackets [ ] indicate an optional argument.

#### Synopsis

Below is a synopsis of the command for submitting a job to a cluster. The `Apple Qmaster` command is located in `/Applications/Apple Qmaster.app/Contents/MacOS/`.

```
Apple Qmaster [-clustername <name>] [-clusterid <user name:password@IP
address:port number>][-command <command type> -options <XML command>
[-wd<working directory>] [-timeout <seconds>] [-show] [-batchname <name>]
[-help]
```

Once the job is submitted successfully, this command displays the batch ID (identifier) and job ID (identifier) in the shell.

## Command Options

This table provides information about each of the command options for submitting jobs.

Submission command option	Description
<code>-clustername &lt;name&gt;</code>	Use to specify the name of the cluster to which you want to send the job. Using the cluster name, Apple Qmaster looks for the cluster on the network in order to use it.
<code>-batchname &lt;name&gt;</code>	Use to specify a name for the batch so that you can easily recognize it in Batch Monitor.
<code>-clusterid &lt;user name:password@IP address:port number&gt;</code>	<p>Optionally, you can use <code>-clusterid</code> to enter the cluster ID and port number instead of using <code>-clustername</code>. (When you enter the cluster ID and port, less time is required to find the cluster on the network.)</p> <p>Or, if you used <code>-clustername</code> and the cluster requires a password, use <code>-clusterid</code> to specify the user name and password. (You need to include the IP address:port number as well whenever you use <code>-clusterid</code>.)</p> <p>Use <code>Apple Qmaster -show</code> to see a cluster's IP address and port number.</p>
<code>-command &lt;command type&gt;</code>	Specifies the kind of command you are entering: <code>Shell</code> , <code>Shake</code> , <code>Maya</code> , or other command, depending on the application you want to use for distributed processing.
<code>-options &lt;XML command&gt;</code>	<p>Specifies the command with XML code. Enter the XML code after <code>-options</code>, with the necessary qualifiers for entering it in a shell. See <a href="#">Example of Shake Command XML</a>, next, for an example.</p> <p>If no <code>-option</code> is entered, the values from the application's preferences file, in <code>~/Library/Preferences/</code>, are used (which are the values of the most recent job submitted).</p>
<code>-wd &lt;working directory&gt;</code>	Use to specify the working directory path (from which the command should be executed). The default working directory is <code>/Applications/Shake</code> .
<code>-timeout &lt;seconds&gt;</code>	Use to specify the number of seconds before Apple Qmaster can quit when looking for a cluster. The default value is 0, which puts no limit on the timeout and allows Apple Qmaster to browse the network for as long as it needs to find the cluster.
<code>-show</code>	Shows the ID information for the cluster specified with <code>-clustername</code> or <code>-clusterid</code> , or for all clusters if no cluster is specified.
<code>-help</code>	Displays information about supported options for Apple Qmaster.

## Example of Shake Command XML

The code below is an example of XML code for submitting a Shake command.

```
/Applications/Apple\ Qmaster.app/Contents/MacOS/Apple\ Qmaster -clustername
  elvis -command "Shake" -options "<command
executable="/Applications/Shake/shake.app/Contents/MacOS/shake"
script="/Volumes/Data/scripts/applestyle.shk" start="1" end="1000"
stepsOf="1" minCount="10" otherOptions="" previewNode="" previewWidth="0"
shutterOn="yes" motion="yes" proxyFlags="0" proxyScale="1.000000"
proxyRatio="1000.000000" shutter="1.000000"></command>"
```

**Note:** Apple Qmaster stores the XML code for the last command you entered in ~Library/Preferences/com.apple.AppleQmaster.plist. You can copy the command in XML form there, and customize it to use for a new job submission.

## Shell Commands for Monitoring Batches

You can use the Batch Monitor command, `Batch Monitor`, with a number of command-line options for monitoring jobs.

In the command-line descriptions below, angle brackets `< >` indicate a mandatory argument in a command, and brackets `[ ]` indicate an optional argument.

### Synopsis

Below is a synopsis of the command for monitoring batches. The `Batch Monitor` command is located in `/Applications/Utilities/Batch Monitor.app/Contents/MacOS/`.

```
Batch Monitor [-clustername <name>] [-clusterid <user name:password@IP
address:port number>] [-jobid <identifier> -batchid <identifier>] [-timeout
<seconds>] [-query <seconds>] [-help]
```

### To cancel a job or batch

- Use the following command:

```
Batch Monitor [-clustername <name>] [-clusterid <IP address> <port number>
<user name> <password>] -kill -jobid <identifier> -batchid <identifier>
```

### Command Options

This table provides information about each of the command options for monitoring batches.

Monitoring command option	Description
<code>-clustername &lt;name&gt;</code>	Use to specify the name of the cluster to which the job was sent.
<code>-password &lt;value&gt;</code>	User password for the cluster specified by ID or name.
<code>-clusterid &lt;user name:password@IP address:port number&gt;</code>	<p>Optionally, you can use <code>-clusterid</code> to enter the cluster ID and port number instead of using <code>-clustername</code>.</p> <p>Or, if you used <code>-clustername</code> and the cluster requires a password, use <code>-clusterid</code> to specify the user name and password. (You need to include the IP address:port number as well whenever you use <code>-clusterid</code>.)</p> <p>Use <code>Apple Qmaster -show</code> or <code>Compressor -show</code> to see a cluster's IP address and port number.</p>

Monitoring command option	Description
-jobid <identifier> -batchid <identifier>	Use to specify the job you want to monitor.  When you use the -jobid option, you must also specify the -batchid, in the form of the name that was given to the batch when it was submitted. (The -batchid and -jobid are displayed after a batch is submitted.)  If you do not use the -jobid option, all the jobs submitted to the specified cluster are listed.
-timeout <seconds>	Use to specify the number of seconds before Batch Monitor can quit when looking for a cluster. The default value is 0, which puts no limit on the timeout and allows Batch Monitor to browse the network for as long as it needs to find the cluster.
-query <seconds>	Use to specify how frequently, in seconds, the job status should be updated.
-kill -jobid <identifier> -batchid <identifier>	Cancels the specified job or batch.
-help	Displays information about supported options for Batch Monitor.

## Using Scripts to Run Apple Qmaster, Compressor, and Batch Monitor

To simplify your use of the command line, you can add command-line friendly scripts to /usr/bin. Each script sets an ENV variable for location and then executes the binary. Using the following scripts would be useful if you frequently use the command line for submissions or automated submissions. You do not need to specify the full path, and you can add frequently used ENV variables and options to speed up the submission process. To run Apple Qmaster, Compressor, or Batch Monitor, you can simply open up a terminal and type `qmaster`, `compressor`, or `batchmonitor`.

### Apple Qmaster Script Example

```
#!/bin/csh -f
#
# set env var, QMASTER_LOCATION if not set
#
if ${? QMASTER_LOCATION} == 0 then
    pushd `dirname $0` >& /dev/null
    setenv QMASTER_LOCATION /Applications/Apple\ Qmaster
    popd >& /dev/null
endif
#
# launch qmaster
#
exec ${QMASTER_LOCATION}/Apple\ Qmaster.app/Contents/MacOS/Apple\ Qmaster
$argv:q
```

## Compressor Script Example

```
#!/bin/csh -f
#
# set env var, COMPRESSOR_LOCATION if not set
#
if ${?COMPRESSOR_LOCATION} == 0 then
    pushd `dirname $0` >& /dev/null
    setenv COMPRESSOR_LOCATION /Applications/Compressor.app/Contents/MacOS
    popd >& /dev/null
endif
#
# launch Compressor
#
exec ${COMPRESSOR_LOCATION}/Compressor $argv:q
```

## Batch Monitor Script Example

```
#!/bin/csh -f
#
# set env var, BATCHMONITOR_LOCATION if not set
#
if ${?BATCHMONITOR_LOCATION} == 0 then
    pushd `dirname $0` >& /dev/null
    setenv BATCHMONITOR_LOCATION "/Applications/Utilities/Batch Monitor.app/
Contents/MacOS"
    popd >& /dev/null
endif
#
# launch Batch Monitor
#
exec "${BATCHMONITOR_LOCATION}/Batch Monitor" $argv:q
```

# Solving Problems

If you are having trouble with your Apple Qmaster distributed processing system, look here for answers to your questions.

This appendix covers the following:

- Resources for Solving Problems (p. 87)
- Solutions to Common Problems (p. 87)
- Contacting AppleCare Support (p. 92)

## Resources for Solving Problems

If you run into problems while working with Compressor or the Apple Qmaster distributed processing system, there are several resources you can use to find a solution.

- *This appendix*: This appendix includes information about some of the most frequent issues users encounter.
- *Release Notes*: The Release Notes document, available from the Help menu, provides up-to-date information that didn't make it into the manual. Be sure to consult this document as soon as you install or upgrade Compressor or Apple Qmaster.
- *AppleCare Knowledge Base*: AppleCare Support maintains a database of common support issues that is updated and expanded to include new issues as they arise. This is an excellent, free resource for Compressor and Apple Qmaster users. To access the AppleCare Knowledge Base, go to the AppleCare support page at <http://www.apple.com/support>.
- *AppleCare Support*: There are a variety of support options available to Final Cut Studio customers. For more information, see the Apple service and support information that was included with your Final Cut Studio package.

## Solutions to Common Problems

The following sections address some common issues.

## Exporting from Final Cut Pro and Distributed Processing

You can use Compressor to transcode sequences or clips from within other applications, such as Final Cut Pro. This saves time and hard disk space by eliminating the need to export self-contained media files before processing them.

There are two methods you can use to avoid exporting self-contained media files for Compressor distributed processing:

- Export a sequence directly from Final Cut Pro to Compressor and then submit that job to a cluster in an Apple Qmaster distributed processing network. In this workflow, Final Cut Pro opens on each processing node in that cluster to complete the job.
- Export the Final Cut Pro sequence as a QuickTime reference movie and then submit the resulting movie to the cluster for processing. Because this method does not involve Final Cut Pro, you are free to use Final Cut Pro while the batch is being processed in the background. If you submit a reference movie for distributed processing, the Apple Qmaster distributed processing system will automatically copy the appropriate media files to the processing cluster. For the best performance, you can avoid this file transfer step by making sure that the media files specified in the reference movie are available to each node of the Apple Qmaster cluster. Below, you will find two sets of instructions for submitting reference movies: one with automatic file transfer and one with preparatory steps for maximizing performance.

**Note:** You can also use distributed processing with the Share feature in Final Cut Pro and Motion. For more information, see the *Final Cut Pro User Manual* or the *Motion User Manual*.

### To export a Final Cut Pro sequence directly to Compressor for distributed processing

- 1 Make sure Final Cut Pro is installed on each computer in the cluster that you intend to use for distributed processing.

Each installation of Final Cut Pro requires a product serial number. For information about volume licenses, go to <http://www.apple.com/finalcutstudio>.

**Note:** On any given Final Cut Studio system or network, the Compressor and Apple Qmaster versions (numbers) and the version of QuickTime must all match. For example, Compressor 3.0.5 will work only with the 3.0.5 version of Apple Qmaster, and no other version. In this example, the correct version of QuickTime is QuickTime 7.5.5 or later. Non-matching configurations are not supported.

- 2 Make sure all of the source media files and render files for your Final Cut Pro project are on a hard disk that can be shared (mounted) by all the computers in the cluster that will process the job. (The following instructions use an example of a shared hard disk named Media1.)

If you copy all the media files to another hard disk for this purpose, you may need to reconnect the media files in Final Cut Pro before proceeding.



**Important:** The hard disk you use to store the media files may not be a startup disk for any computer in the cluster.

- 3 In Final Cut Pro, set the scratch disk to the same hard disk used for storing media files in step 2:
  - a Choose Final Cut Pro > System Settings, then click the Scratch Disks tab.
  - b Click Set.
  - c In the dialog that appears, locate and select the disk you want to use (Media1 in this example).
  - d Click Choose. The specified disk (Media1) is listed next to the Set button, along with the amount of available disk space.

For more information about Final Cut Pro scratch disks, see the *Final Cut Pro User Manual*.

- 4 Enable file sharing on the computer where the scratch disk (Media1) is located (in the Sharing pane of System Preferences, click Services and then select Personal File Sharing).
- 5 On each computer in the intended cluster, mount the scratch disk you specified in step 3 (in the Finder sidebar, click Network, navigate to the computer that contains the Media1 disk, click Connect, and select Media1).
- 6 In Compressor preferences, specify cluster options settings:
  - a Choose Compressor > Preferences, or press Command-Comma (,).  
The Preferences window appears.
  - b Choose "Copy Source to Cluster as Needed" from the Cluster Options pop-up menu.
- 7 In Final Cut Pro, choose File > Export > Using Compressor.  
Compressor opens with the selected media file (the Final Cut Pro sequence) in the Batch window.
- 8 In Compressor, double-click the selected file and play it in the Preview window to verify the integrity of the clip.
- 9 In the Batch window, assign settings and destinations to the selected file as necessary.
- 10 Choose the intended cluster from the Cluster pop-up menu in the lower-left corner of the Batch window.
- 11 Click Submit.

**To export a Final Cut Pro sequence as a QuickTime reference movie and submit it to Compressor for distributed processing using automatic file transfer**

- 1 In Final Cut Pro, choose File > Export > QuickTime Movie.
- 2 In the Save dialog, make sure that the Make Movie Self-Contained checkbox is not selected.
- 3 Import the QuickTime reference movie into Compressor. (Drag it from the desktop to the Compressor Batch window.)

- 4 In the Batch window, assign settings and destinations to the selected file as necessary.
- 5 Click the Submit button.

The submit dialog appears.

- 6 Do one of the following:
  - Choose the intended cluster from the Cluster pop-up menu.
  - Select the “Include unmanaged services on other computers” checkbox to use the AutoCluster feature. See [Using Compressor AutoClusters](#) for more information.

- 7 Click Submit.

The Apple Qmaster distributed processing system automatically copies the appropriate media files to the cluster and processes the batch.

**To export a Final Cut Pro sequence as a QuickTime reference movie and submit it to Compressor for distributed processing using preparatory steps to maximize performance**

- 1 Make sure all the source media files and render files for your Final Cut Pro project are on a hard disk that can be shared (mounted) by all the computers in the cluster that will process the job. (The following instructions use an example of a shared hard disk named Media1.)

If you copy all the media files to another hard disk for this purpose, you may need to reconnect the media files in Final Cut Pro before proceeding.

**Important:** The hard disk you use to store the media files may not be a startup disk for any computer in the cluster.

- 2 In Final Cut Pro, choose File > Export > QuickTime Movie.
- 3 In the Save dialog, make sure that the Make Movie Self-Contained checkbox is not selected.
- 4 Save the QuickTime reference movie to the same hard disk (Media1) used to store media files in step 1.
- 5 Enable file sharing on the computer where the scratch disk (Media1) is located (in the Sharing pane of System Preferences, click Services and then select Personal File Sharing).
- 6 On each computer in the intended cluster, mount the hard disk (Media1) where the media files and QuickTime reference movie are located (in the Finder sidebar, click Network, navigate to the computer that contains the Media1 disk, click Connect, and select Media1).
- 7 In Compressor preferences, specify cluster options settings:
  - a Choose Compressor > Preferences, or press Command-Comma (,).The Preferences window appears.
- b Choose “Never Copy Source to Cluster” from the Cluster Options pop-up menu.
- 8 Import the QuickTime reference movie into Compressor. (Drag it from the desktop to the Compressor Batch window.)

- 9 Double-click the file in the Batch window and play it in the Preview window to verify the integrity of the clip.
- 10 In the Batch window, assign settings and destinations to the selected file as necessary.
- 11 Click the Submit button.  
The submit dialog appears.
- 12 Do one of the following:
  - Choose the intended cluster from the Cluster pop-up menu.
  - Select the “Include unmanaged services on other computers” checkbox to use the AutoCluster feature. See [Using Compressor AutoClusters](#) for more information.
- 13 Click Submit.

### QuickTime Reference Movies

If you submit a reference movie for distributed processing, the Apple Qmaster distributed processing system will automatically copy the appropriate media files to the processing cluster. For the best performance, you can avoid this file transfer step by making sure that the media files specified in the reference movie are available to each node of the Apple Qmaster cluster.

### Cluster Settings for Extended Transcoding Sessions

If you are using Compressor 2 or later for distributed processing, and you anticipate a transcoding session that will last up to seven days or longer, you must make an adjustment in the Advanced section of the Apple Qmaster preferences pane. By default, temporary process files may remain on a cluster’s scratch location for seven days before they are automatically deleted. You can increase this value (the number of days) in the Apple Qmaster pane of System Preferences.

### Cleaning Up Cluster Storage

If you are using cluster storage and an error occurs, partial files may be left on the designated cluster storage location. Check the designated cluster storage location to make sure no partial media files are left there. If you find partial media files, delete them and submit the job again.

### Using Apple Qmaster with an NFS Server

By default, Apple Qmaster uses `/etc/exports` to define its Cluster Storage export. This can cause a conflict if you defined an NFS export in your local NetInfo database. When you enable a controller using Apple Qmaster 2 or later, Apple Qmaster uses `/etc/exports`, not entries defined in your NetInfo database. To work around this issue, either move the exports to `/etc/exports`, or move the controller to a computer that doesn’t export anything.

## Apple Qmaster Distributed Processing and Xsan

Here are some tips on using the Apple Qmaster distributed processing system with Xsan systems.

### Restarting Apple Qmaster and Xsan Systems

Using previous versions of Apple Qmaster distributed processing on an Xsan system may cause mounting problems when restarting an Apple Qmaster distributed processing cluster controller. You must restart Apple Qmaster and Xsan computers in the exact order described below.

#### To restart Apple Qmaster and Xsan computers

- 1 Turn off the cluster controller by clicking Stop Sharing in the Apple Qmaster pane of System Preferences.
- 2 Restart the Apple Qmaster cluster controller computer.
- 3 Wait for the Xsan volume to mount on the desktop.
- 4 Click Start Sharing in the Apple Qmaster pane of System Preferences to restart the controller.

### Xsan Compatibility

Xsan 1.3 is not compatible with Compressor and the Apple Qmaster distributed processing system when Xsan media drives are used for cluster (scratch) storage. To use Xsan with Apple Qmaster 2.3, update to Xsan 1.4.

#### To download and install Xsan 1.4

- Go to <http://www.apple.com/support/xsan>.

### Compressor Command-Line Usage Requires Login

Although it is possible to use the command line to run an Apple Qmaster distributed processing network, each Compressor service node (each computer providing Compressor distributed processing services) must be logged in (with a Mac OS X user name and password) for full functionality.

## Contacting AppleCare Support

Information about the support options available from Apple is included in your Final Cut Studio package. Several levels of support are available.

Whatever your issue, it's a good idea to have the following information immediately available when you contact Apple for support. The more of this information you have to give to the support agents, the faster they will be able to address your issue.

- The Support ID number found on the back of the *Installing Your Software* booklet that came with Final Cut Studio.

**Note:** The 11-digit Support ID number is different from the product serial number used to install Final Cut Studio.

- The version of Mac OS X you have installed. This information can be viewed by choosing About This Mac from the Apple menu.
- The version of Compressor and Apple Qmaster you have installed, including updates if applicable. The version number can be viewed by choosing Compressor > About Compressor and Apple Qmaster > About Apple Qmaster.
- The model of computer you are using.
- The amount of RAM installed in your computer, and how much is available to Compressor and Apple Qmaster. You can find out how much RAM is installed by choosing About This Mac from the Apple menu.
- What other third-party hardware is connected to or installed in the computer, and who the manufacturers are. Include hard disks, graphics cards, and so on.
- Any third-party plug-ins or other software installed along with Compressor or Apple Qmaster.

In certain support situations, AppleCare may require information about both your computer and how this particular application is configured. Choosing Help > Create Support Profile creates a file that contains the necessary information and can be emailed to AppleCare. You would not normally use this feature unless directed to by an AppleCare representative.

AppleCare can be reached online at one of the following locations:

- *For Compressor support:* Go to <http://www.apple.com/support/compressor>.
- *For Apple Qmaster support:* Go to <http://www.apple.com/support/qmaster>.

There is also an item in the Help menu that will take you directly to the AppleCare website.

**To go to the AppleCare website from within Compressor or Apple Qmaster**

- Do one of the following:
  - In Compressor, choose Help > Compressor Support.
  - In Apple Qmaster, choose Help > Apple Qmaster Support.

