



System Requirements

Minimum System

- Intel® Pentium® 4 or AMD Athlon™
- 2 GHz CPU or faster
- 2 GB RAM (2GB RAM for HD encoding)
- 100 MB free hard disk space
- DirectX 9.0 or later
- Microsoft® Windows® XP Home, XP Professional, 2003 Server
- USB 1.1 or 2.0 port for USB Hardware Key

Recommended System

- Intel® Xeon 5160 or AMD Opteron, dual-core; dual-processor configuration
- 4 GB RAM
- 50 GB free hard disk space
- DirectX 9.0 or later
- Microsoft® XP Professional or 2003 Server (Server recommended for Carbon Server)
- USB 1.1 or 2.0 port for USB Hardware Key

Rhozet™ Carbon Coder/Server/Admin v3.11 User Guide

Introduction

Thank you for purchasing Rhozet Carbon Coder/Server. Rhozet is focused on one goal: to provide universal media transcoding. The boom in video consumption has resulted in an explosion in the number of formats that content creators and distributors must manage. Video may be captured in one format, edited in another, served live in a third, delivered on-demand via the Web and mobile in half a dozen more and then finally archived in yet another. Rhozet's products provide cost-effective and rapid transcoding across a wide range of applications from small studios to the largest enterprises. Rhozet is a business unit of [Harmonic, Inc.](#) (NASDAQ: HLIT).

Carbon Coder is a stand-alone application that handles transcoding between all major formats, as well as providing a host of additional functions like standards conversion, logo insertion, timecode burn-in, etc.

Carbon Server is a management tool that manages a network of Carbon Coder engines to accelerate transcoding for high-volume applications. Both Carbon Coder and Carbon Server have easy-to-use user interfaces, and both can also be managed via an XML-based SDK for absolute programmatic control.

This manual will cover the installation, basic and advanced functions of both Carbon Coder and Carbon Server. For updates on the latest features and documentation please visit www.rhozet.com.

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New Features in Carbon 3.0

8/16 Channel Audio Support

New for Carbon 3.0 is the support of up to 16 channels of audio (a channel of audio is assumed to be one single unique waveform). Eight channels are supported for the various broadcast and playout server formats (MXF, LXF, Omneon) and for MPEG-2 Transport Streams, and up to 16 channels of 24bit audio for the GXF format.

Audio Flat Channel Mode

Input files with multiple audio programs can now be read beyond the first audio program.

All audio channels in all audio programs are “flattened” into one long list of audio channels. A channel of audio is assumed to be one single distinct unique waveform. An audio program is assumed to be a collection of channels that are related in some way, such as Left and Right channels of a stereo pair.

Take as an example an input file containing one video program and three audio programs.

Program Type	Program #	Program Description	# of Channels	Channel Description
Video	1	Video	n/a	n/a
Audio	1	English Surround	6	Left, Right, Center, Left Surround, Right Surround, LFE
Audio	2	English stereo	2	Left, Right
Audio	3	Spanish stereo	2	Left, Right

This input file has a total of 10 audio channels, numbered as followed:

'Flattened' channel number	Channel Description
1	English Surround program - Left
2	English Surround program - Right
3	English Surround program - Center
4	English Surround program - Left Surround
5	English Surround program - Right Surround
6	English Surround program - LFE
7	English Stereo program - Left
8	English Stereo program - Right
9	Spanish Stereo program - Left
10	Spanish Stereo program - Right

When using the Channel Mixer audio filter, you can extract the English stereo channels and mix them into a stereo output file by referring to channels number 7 and 8.

Carbon Admin Application

The new Carbon Admin application that is shipped with Carbon 3.0 offers much-improved access to all the features Carbon offers. You can use the Carbon Admin user interface to access features and set up watch folders configured in ways that were only possible for API users in previous versions of Carbon.

For a quick glance at the possibilities, see the section [FTP Delivery in Carbon Coder](#) in this document; you can find out much more from either the Carbon Admin section of this user guide.

Expanded Input Control for MXF, GXF, and H.264

In Carbon 3.0 you can scrub and preview GXF, MXF, and H.264 source content using the Carbon Coder User Interface (installed on both Carbon Coder and Carbon Server machines). In addition, we have added the ability to set in-points and out-points and select source segments.

Flash Exporter

Carbon 3.0 now includes the ability to create Flash 7, 8, and 9 files. To create Flash 7 or 8 files using the On2 VP6 codec use the Flash Exporter or associated preset. To create Flash 9 files use the H.264 exporter and set the Stream Type field to either **F4V** or **MPEG-4 System** or use a Flash 9 preset.

The Flash Exporter allows you to create Flash 7 files wrapped as either FLV or SWF formats. You may also create Flash 8 files in a FLV wrapper. Both Flash 7 and Flash 8 support the use of Rhozet Micro-Gridding technology, substantially increasing transcode performance by splitting the encode over as many as eight processors on a single machine. Additionally, Flash 8 supports Rhozet Macro-Gridding technology which allows splitting a single transcoding job over several machines in a Carbon Server system, again substantially increasing transcoding performance by splitting the load over several machines. See the [Macro-Gridding section](#) for more information.

FTP Delivery in Carbon Coder

While it was not possible to use the previous version of the Carbon Coder User Interface (version 2.5) to specify the delivery of transcoded target files using FTP, it was possible to use the API to do this. This continues to be an option.

With the release of Carbon 3.0, all Carbon products including Carbon Coder are now shipped with the new Carbon Admin application. This application exposes all features and possibilities of Watch Folder creation to a level of detail previously only possible for API users. Watch Folders can now be configured with FTP delivery, email notification, and many other features.

Large Farm Manageability Improvements - Enhanced Job Distribution

The algorithm used by Carbon Server to communicate with Carbon Agent machine has been changed to improve the behavior of transcoding systems under heavy load. More caching is performed by the server and it now uses internal timeouts during server-to-agent communication. This limits the load on the network and makes the hand off of jobs from the server to agents faster.

Large lists of agents are handled more responsively, and jobs are handed off to agents in a semi-random fashion (while still considering agent priority and loading) instead of always handing off jobs using a round-robin algorithm. This ensures that large transcoding farms distribute the load better across agents and are more efficient at dealing with short and medium length transcoding jobs.

There is now also a process to automatically propagate the kernel settings of one agent to all agents attached to a specific server.

Macro-Gridding

Rhozet Macro-Gridding Technology enables multiple machines in a Carbon Server system to simultaneously transcode a single source file. Essentially, the source file is split into multiple segments, with each segment being processed by a different Carbon machine, all at the same time, thus transcoding the source file much faster than one single Carbon machine could. This is particularly useful for the rapid encode of source content with long durations, such as feature films and TV shows. Currently this feature support Flash 8 encoding with future support planned for MPEG-2 and VC-1.

Macro-Gridding can be used through the Carbon Coder User Interface that is installed on Carbon Server machines, activated when using a watch folder, or used when submitting transcoding requests through the API.

As an example, let's say that you have a Carbon Server system with 5 nodes (1 Carbon Server and 4 Carbon Coders) and you have a 60 minute source file. With Macro-Gridding enabled you can split this single transcode into 5 separate jobs which will be transcoded on separate systems to maximize processor usage. These 5 jobs will be 4 segments of 15 minutes of video each, plus a separate segment for the audio encoding. Once each of these 5 jobs is completed, Carbon Server will then stitch the 4 video segments together and multiplex the audio into the stream. Even taking into account the small overhead for splitting the source file up and stitching the target segments together this can complete the transcode of the hour-long source file in approximately the time it would normally take to transcode a 15 minute file without using Macro-Gridding.

Execute a Macro-Grid Job in the Carbon Coder user Interface, either on the Carbon Server machine itself, or when submitting a job to Carbon Server from a separate Carbon Coder machine by following the steps below.

1. Launch the Carbon Coder application.
2. Add any source file.
3. Add the Flash Exporter or associated preset.

4. Verify that you are creating a Flash 8 file.
5. Click **Queue** on the left-hand side.
6. Select **Render in Network Grid**.
7. Select the number of segments – this setting allows you to choose how many segments the video encode will be split into. Referencing the above example, choose **4** to split the video into 4 segments. Note that 6 jobs will be created in your job queue (4 video segments, 1 audio, and a final job to stitch the pieces together).
8. Press **Queue**.
9. Open Carbon Admin to view the transcode progress.

Microsoft Vista Support

Carbon 3.0 now supports running on the Microsoft Windows Vista platform under both 32 and 64-bit versions. Please note that some support issues may have different solutions when running under Vista as opposed to Windows XP SP2 or Server 2000 and 2003.

New Presets

Some of these are completely new, while others are new presets for exporters that already existed. Some may also be duplicated to make them easier to find.

- AC-3
- Cameras\Panasonic P2, Sony XDCAM, XDCAM HD
- Devices\iPhone, PSP, Zune
- Distribution format\ATSC HD, ATSC SD, CableLabs
- Fast DVD VOB
- Flash 7
- Flash 8
- Flash 9
- H.264\MPEG-4 stream
- Handheld\3GPP, 3GPP2
- Mobile\3GPP, 3GPP2
- MXF\D10, Panasonic P2, XDCAM, XDCAM HD
- Server\MediaStream, XDCAM proxy
- Storyboard
- VC-1\Blu-Ray, HD, SD, Zune

Quality Control - Basic Compliance Check

Carbon 3.0 adds a new target to allow for the quality control of output files as they are being produced. This new target can be added to any transcoding session. For example if a source file has been loaded and two target files (e.g. H.264 and MXF) have been defined, the Basic Compliance Check can be added as a third target. It will not actually produce an output file, but will check the output files for potential problems.

It is also possible to use the Basic Compliance Check target by itself with multiple sources loaded, this will check all the source files quickly without having to do any transcoding and may be useful when checking an archive of files just received from a content partner, or previously produced by some other process for example.

The transcode job can be aborted when a problem is detected, or instead it is possible to have the error written to an output file during transcoding without halting the transcode, for manual inspection of the output later.

Letterbox

To check if letterboxes or pillar boxes have inadvertently been added to the output, this filter checks the pixels in the four corners to see if they are below broadcast black or close to it for longer than a specific duration. While it does this it verifies that pixels in the middle of the frame are not black, to verify that there is indeed an image present.

No Content

To check if the entire frame has dropped out, all four corners of the image and the center of the image are checked for black pixels that exceed a specified duration.

Audio Level

To check if the audio is not present or has dropped out, specify the level (in decibels) below which all the audio channels are not allowed to drop to for more than the specified time.

Server Browse

You can use the User Interface of the new Carbon Admin application to connect to FTP servers and browse for folders. Once a specific folder has been found, it can be configured as a Remote Retrieval folder for Watch Folders.

VC-1 Exporter

Carbon 3.0 now supports the ability to create Windows media files using the new Microsoft VC-1 codec. The VC-1 codec can be used for Internet streaming, HD DVD, Blu-Ray Disc, Microsoft Silverlight, Zune, and many other applications. Included with Carbon 3.0 are a set of presets for specific devices and playback modes designed specifically for the VC-1 Exporter by the Microsoft VC-1 team.

Web User Interface Improvements

See the [Carbon Server section](#) for the description of the Carbon Server Web User Interface. Some changes have been made to the old Web UI to improve usability and responsiveness, including better queue displays and deeper and more detailed exposure of watch folder features such as remote retrieval, FTP delivery, and email notifications.

Installing Carbon Products

IMPORTANT: There are 4 different installers for Carbon that you need to be aware of before installing the product.

1. **Carbon Coder** is a standalone application which runs on a single system that can be used for production or for development purposes. Carbon Coder **cannot** be controlled by Carbon Server.
 2. **Carbon Server** is a management application which allows you to control a farm of transcoders known as Carbon Agents. The Carbon Server installation also includes a copy of Carbon Coder which is installed on the desktop of the Carbon Server system.
- Note:** there are separate instructions for [New](#) and [Upgrade](#) installations.
3. **Carbon Agent** is a transcoder which is controlled by a Carbon Server. Carbon Agent does not transcode independently of Carbon Server.
 4. **Carbon Server Web Interface** is an optional installation which allows you to remotely manage Carbon Server. It can be installed on the same machine or independently of Carbon Server.

Installing Carbon Coder 3.0

Prior to installing Carbon Coder, be sure the USB hardware key that comes with your software is **NOT** plugged in.

1. Make sure that the latest version of QuickTime is installed on your system. The latest version of QuickTime is available on the installation CD or from the [Apple website](#).
2. Insert the Carbon Coder CD-ROM in your CD drive. The installer automatically launches if Windows' Autorun feature is enabled. If Autorun is not enabled, then go to **My Computer**, double-click on the CD-ROM drive and run *Setup.exe*.
3. When the **Welcome** screen appears, click **Next**.
4. The **License Agreement** appears. Click **Yes** to accept the terms of the license.
5. When the **Customer Information** dialog box opens, enter your name and your company name and click **Next**.
6. Choose a destination location for Carbon Coder. The Carbon Coder Installer automatically suggests a default location. If you wish to change this location, click **Browse** and select a new destination folder. Click **Next**.
7. When the **Select Program Folder** dialog box opens, choose a folder name and **Start Menu** destination and click **Next**.

8. After installing Carbon Coder, the Windows Media software will be installed. If you already have the latest versions of the software on your machine, the installer will skip to the next step.
9. Once installation is complete, you must restart your computer to complete the installation. Choose **Yes, I want to restart my computer now** and click **Finish** to restart your computer.
10. Once your computer has restarted, plug-in the USB Hardware Key that comes with your software. You can use the computer's on-board USB ports, a USB PCI card or a USB hub connected to either of these ports.

Note: The USB Hardware Key **must** be connected before starting Carbon Coder.

Installing Carbon Server 3.0 – New Installation

IMPORTANT: It is necessary to install the applications using an account that has administrative rights. We strongly recommend using the "Administrator" account.

WARNING: If you have ANY other Rhozet product such as Carbon Coder or Carbon Agent installed on this machine, you MUST un-install that product before installing Carbon Server.

If an earlier version of Carbon Server has previously been installed on this machine, please skip this section and go to the section "Carbon Server - Upgrade Installation" instead.

1. Make sure that the latest version of QuickTime is installed on your system. The latest version of QuickTime is available on the installation CD or from the [Apple website](#).
2. Install the Carbon Server farm manager software from the \Carbon Server\setup.exe path on the Carbon Server CD. This will install the core components of Carbon Server, the drivers for the USB security key (HASP dongle), and Windows Media components. It also creates the following shortcuts on the desktop:
 - **Carbon Coder** - the version of Carbon Coder that runs on the Carbon Server machine. You can use this Carbon Coder user interface to create jobs, manage presets, etc. the same way you can on a stand-alone Carbon Coder machine. Please see the Carbon Coder documentation for more details.
 - **Carbon Server Admin** - this tool lets you view and manage the transcoding jobs that are currently running on the server and agents. It also allows you to manage the server and agent parameters and modify advanced server options. You also use this to create, manage, and edit watch folders.

IMPORTANT: When the installer finishes, it offers to reboot the machine. It is very important to reboot at this time. Do not install any other applications before the machine is restarted.

3. Insert the Carbon Server USB security key into a USB port on the Carbon Server machine.

IMPORTANT: Reboot the machine.

4. In order for the Carbon Server Nexus service to access Watch Folders, read source files, and write target files, it needs to be given the correct permissions. If you don't set this correctly, you may see errors such as "Can't read from source" when using Watch Folders or the API.

Note: The Nexus service runs on the Carbon Server machine, as well as on all the Carbon Agent machines. This means that you need to set the permissions on each machine, once for the Carbon Server machine, and once per Carbon Agent machine. If you have purchased any Carbon Agent licenses, it is recommended that you finish installing the Carbon Server machine and all the Carbon Agent machines before creating domain or workgroup accounts and setting service credentials.

5. Create the account that has permission to access the network resources. Options:
 - If running in a Windows Workgroup environment, create identical users on all the machines using the user management in Windows. Choose a user name like **cs_service** and assign a password. Remember to use the exact same name and password on all the machines in the farm.
 - If all machines are part of a Windows Domain, just create one domain user account like **cs_service**.
6. By default the Nexus service has the credentials of the "Local System" account. You will need to change that to the account you created earlier.
7. Go to **Start > Control Panel > Administrative Tools > Services**.
8. Double-click on **Nexus Server (CarbonServer Farm)** service.
9. Select the **Log On** tab.
10. Click **OK**.
11. Stop and restart the Nexus service.
12. Close the **Services** console.

Carbon Server - Upgrade Installation

Follow the instructions in this section if you already have a version of Carbon Server (either 2.x or a pre-release 3.0 version) and are upgrading to Carbon Server 3.0. Make sure you follow the exact order of the installation steps, otherwise valuable data may be lost.

1. Exit any Rhozet application. If the Job Queue Manager is running in the systray right-click on the icon and click **Exit**.
2. Uninstall Carbon Server by clicking on **Start > Programs > Rhozet > Carbon Server Farm > Uninstall Carbon Server Farm**. Follow the on-screen instructions.

IMPORTANT: Don't uninstall any other Carbon Server 2.x components at this time. This includes Meerkat, Carbon Server Management Tool, Web UI for 2.x, or MSDE. Uninstalling any of these components now will delete many of the settings and properties of the previous Carbon Server system configuration and you will have to recreate them manually.

IMPORTANT: Reboot the system when prompted by the Carbon Server installer.

3. Install Carbon Server 3.0 from the \Carbon Server\setup.exe path on the Carbon Server 3.0 CD.

IMPORTANT: Reboot the system when prompted by the Carbon Server installer.

4. If you are migrating from Carbon Server 2.x, open the Carbon Server Admin application, click on **Tools > Advanced > Migrate Carbon 2.x to 3.x**. This will convert your old FTP Retrieval Watches and Email notifications that were previously created and configured with the Carbon Server 2.5 Web UI.
5. Using Carbon Server Admin, verify that you can see all your old presets, Watch Folders, and retrievals & notifications.
6. If you are migrating from Carbon Server 2.x, uninstall the various components of Carbon Server 2.x that are no longer needed for Carbon Server 3.0:
 - Meerkat
 - Carbon Server Management Tool
 - Rhozet Carbon Server webinterface
 - MSDE
7. Make sure you follow the instructions in the Carbon Agent Installation section on the next page for information on how to upgrade your Carbon Agent machines.

Carbon Agent Installation

WARNING: If you have ANY other Rhozet product (Such as Carbon Coder or Carbon Server farm manager) installed on this machine, you must un-install that product before installing Carbon Agent. Note that the USB security key provided with Carbon Agent allows you to install either Carbon Agent or Carbon Coder. You cannot have both products installed on the same machine simultaneously, because they each use a background Nexus service and will conflict with each other.

1. Install either Windows XP Professional or Windows 2003 Server on the Agent machine.
2. Install QuickTime from the \QuickTime folder on the Carbon Server CD. At the time of writing this document, the current approved installation is QuickTime 7.3.1 for Windows 2003 Server machines, and QuickTime 7.4.5 for Windows XP machines. From time to time newer versions of QuickTime are released, and once they are verified to work correctly with Carbon Server, Rhozet will include those newer versions on the distribution CD. You should not independently update components that have not been verified with Rhozet. Please [contact us](#) if you are unsure.

IMPORTANT: The versions of QuickTime on the Carbon Server CD are QuickTime 7.3.1, which is intended to be installed on Windows Server 2003 machines, and QuickTime 7.4.5, for Windows XP machines. In general, please do not install any older or newer versions of QuickTime. Specifically, installing newer versions than QuickTime 7.3.1 on Windows 2003 Server machines may cause QuickTime to stop working on those machines.

3. If a previous version of Carbon Agent is installed, uninstall it by clicking on **Start > Programs > Rhozet > Carbon Agent > Uninstall Carbon Agent**. Follow the on-screen instructions, and be sure to reboot after the un-installation completes.
4. Install the Carbon Agent software from the \Carbon Agent\setup.exe path on the CD. This will also install the drivers for the USB security key (HASP dongle), and Windows Media components. It also creates the **Carbon Agent Admin** shortcut, which enables you to view and manage the transcoding jobs that are running on the local agent.

IMPORTANT: When the installer finishes, it offers to reboot the machine. It is very important to reboot at this time. Do not install any other applications before the machine is restarted.

5. In order for the Carbon Agent Nexus service to access Watch Folders, read source files, and write target files, it needs to be given the correct permissions. If you don't set this correctly, you may see errors such as "Can't read from source" when using watch folders or the API.

Note: You should already have set these permissions when you installed Carbon Server, please see the Carbon Server installation section for more information.

6. Create the account that has permission to access the network resources.
 - If running in a Windows Workgroup environment, create a user on this machine using the user management in Windows. Choose a user name like cs_service and assign a password. Remember that this must be the same user name and password as you used on all the other machines in the farm, both the Carbon Server machine and other Carbon Agent machines.
 - If all machines are part of a Windows Domain, just create one domain user account like cs_service. You only need to do this once, so if you already created the domain user account during the installation of the Carbon Server machine or one of the other Carbon Agent machines you don't need to do it again for this machine.
7. For all the network resources that Nexus needs to access, make sure that the account you just created has permission to read files from and write files to those resources. This includes the administrative shares (e.g. "C\$", "D\$"), specifically on the drive(s) on the Carbon Server machine where the System Presets and User Presets are located. It also includes folders that contain source files, folders where target files will be written, folders that contain presets (see below for locations of these), program files, etc.
8. The System Presets and User Presets for Carbon Server are stored in the registry on the Carbon Server machine in two keys. Go to the Carbon Server machine and click on **Start > Run...** and enter **regedit** to start the Registry Editor tool to locate these keys:

- **HKLM\Software\Rhozet\CarbonServer Farm\Common\PresetCacheValidator\SysPresetDir**
- **HKLM\Software\Rhozet\CarbonServer Farm\Common\PresetCacheValidator\UsrPresetDir**
- **HKLM\Software\Rhozet\CarbonServer Farm\Common\PresetCacheValidator\WizPresetDir**

By default the Nexus service has the credentials of the "Local System" account. You will need to change that to the account you created earlier.

1. Click on **Start > Control Panel > Administrative Tools > Services**.
2. Double-click on **Nexus Server (Carbon Agent)** service.
3. Select the **Log On** tab.
4. Click **This account** and set the credentials for the service, user name and password (twice).
 - If running in a Windows Workgroup environment, enter the user name with a leading

period character but no domain name (e.g. .\cs_service). You can also use **Browse**.



- If running as part of a Windows Domain, enter the user name with the domain name (e.g. domain\cs_service). You can also use **Browse**.
5. Click **OK**.
 6. Close the **Services** console.
 7. Insert the supplied Carbon Agent USB security key into a free USB port on the Carbon Agent machine.
 8. **IMPORTANT:** Reboot the machine.

Carbon Server Web Interface 3.0 Installation

If you have decided to install the new Carbon Server 3.0 Web Interface:

1. Install the Carbon Server Web Interface from the \Web Interface\Carbon3.0_WebUI.msi path on the Carbon Server CD. You should accept the defaults for all of the settings.
2. Copy the file default.htm from C:\inetpub\wwwroot\carbon to C:\inetpub\wwwroot .
3. When accessing the Web UI, browse to **http://localhost/carbon** (or **http://localhost**) .

4. Optional: By default, when using the Web Interface, Carbon Server presents only the root of the "C:\" and "D:\" drives as locations you can browse by clicking. All other locations (e.g. "E:\Temp\") must be typed in. To add more "click-able" locations to the Web Interface, add new "String" values to the registry key **HKLM\SOFTWARE\Rhozet\CarbonServer\WebInterface\BrowseShortcuts** using the Registry Editor tool (click on **Start > Run** and enter *regedit*). You can add multiple locations -- just use the same format as the "C Drive root" and "D Drive root" that are there by default.

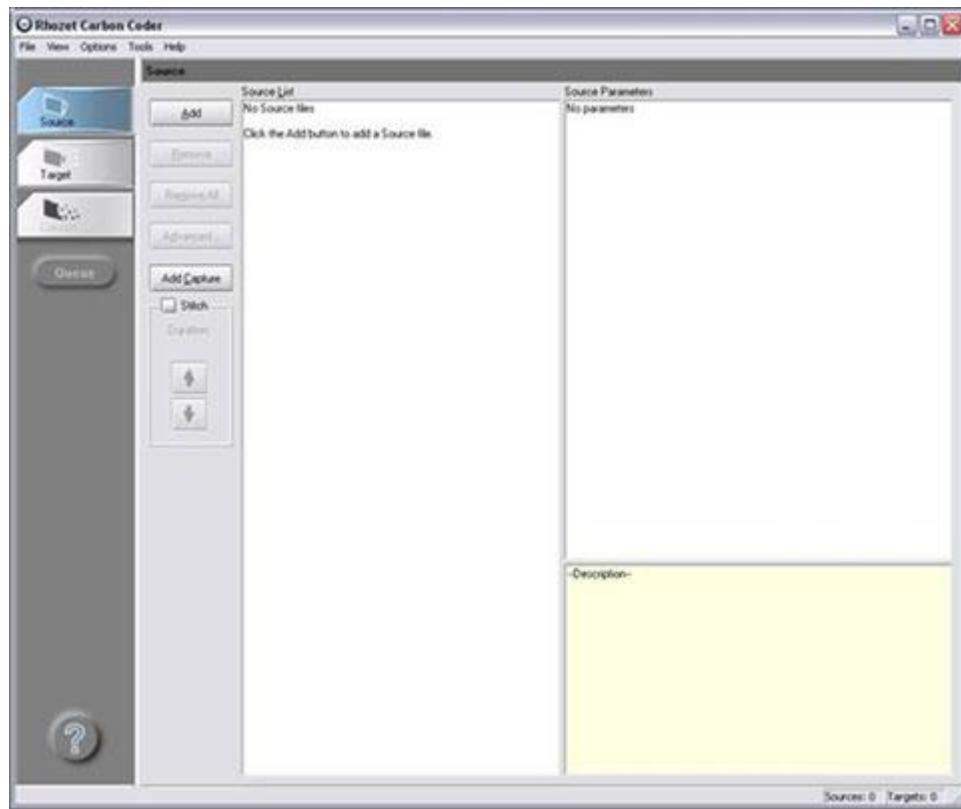
Quick Start Guide

This Quick Start Guide is split into two components. The first shows the Carbon Coder interface which is used for creating presets, running test, and doing manual transcoding. The second section highlights the Carbon Admin interface which allows you to monitor batch processing of jobs, create simple automation workflows using watch folders and manage a Carbon Server Farm.

Carbon Coder Quick Start Guide

Carbon Coder Interface

Each time you start Carbon Coder you will begin at the home screen. First, there are three tabs – **Source**, **Target**, and **Convert** – which are located on the left side of the screen. These tabs control the basic functions that allow you to add source files, set the target conversion format, modify input and output details, and begin the conversion processes.



You will notice that the content in the center of the home screen changes depending on the tab you have selected, but generally this area displays the files you are working with. After selecting a particular file, you will see its properties on the right side of the screen. This is the Source Parameters dialog box and it shows you the details of your original file and allows you to change certain aspects of that file.

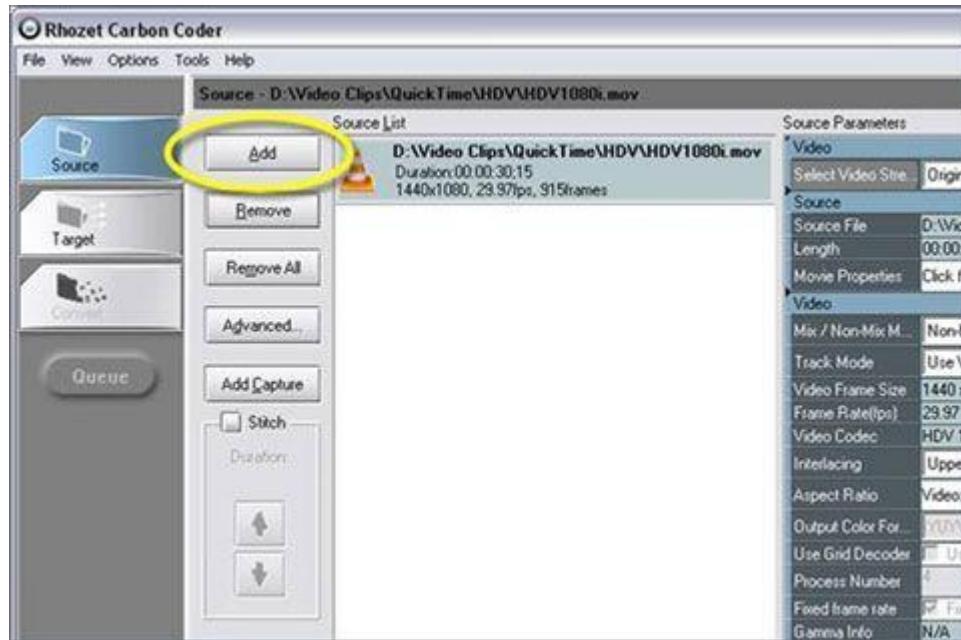
And finally, if you need assistance or more information for any feature, there is a help icon on the bottom left that provides general instructions on each area of the product. There is also a **Help** menu item that has detailed, searchable information.

The basic process for performing a transcode

1. Select the **Source** tab to add the file(s) you wish to convert.
2. Select the **Target** tab to choose which format(s) you want to encode to.
3. Select the **Convert** tab to encode your file(s) and complete the process.

Adding Source Files

To begin, you will need to add a source file. A source file is the file you want to convert into another format type. You can add one source file for a single file conversion or you can add multiple source files for easy batch conversions.



1. Select the **Source** tab.
2. Click **Add** to choose the file you want to convert. This will bring up the **Open File** dialog where you can select the file you want to convert.
3. Select a single file and click **Open**.
4. You will now see the selected file in the Source List.

The Source Parameters window on the right displays the properties for the source. The Source Parameters window is designed to show you the details of your original file and allow you to change certain aspects of that file. For example, you might want to change the interpreted pixel aspect ratio of the

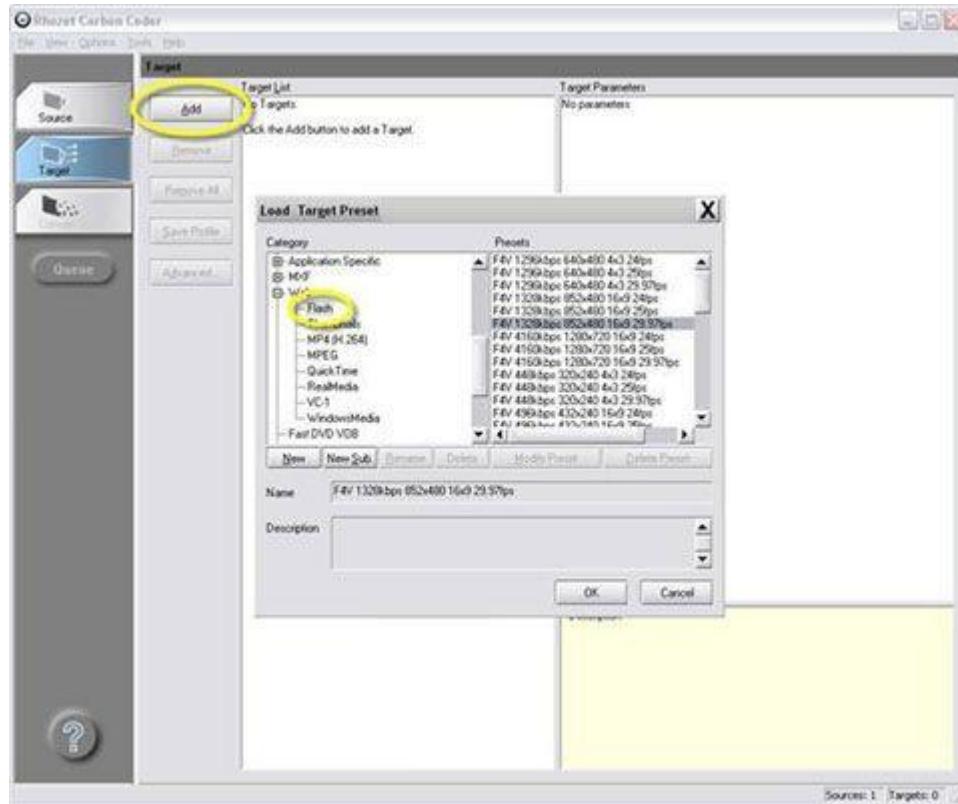
source or choose a different audio source file rather than the one embedded with the source file. If you click on any item, you will see a more detailed description in the lower right window pane.

To the left of your source list, you will also see a button for advanced functions as well as a **Stitch** checkbox. These give you more controls that allow you to, for example, select only a segment of your video for transcoding or to “stitch” a number of input files into a single output file. These functions will be described in detail later in the manual.

You can add multiple source files for easy batch conversions or combine (stitch) multiple files together for one single output file. Stitching allows you to link multiple sources together to create a single seamless result, preventing you from having to combine the sources in an editor. Check the **Stitch** button to link the multiple sources together to create a single seamless source file. Use the arrow keys rearrange the order of each source.

Assigning a Target Format

Next, you will need to assign a target format for your files to be converted to. You can select a single or multiple target formats. Select the **Target** tab, and then click **Add** to bring up the **Load Target Preset** dialog box.



The **Load Target Preset** dialog box has two columns. On the left side are categories of transcoding presets, and on the right are the actual presets. First select a category on the left and then select one

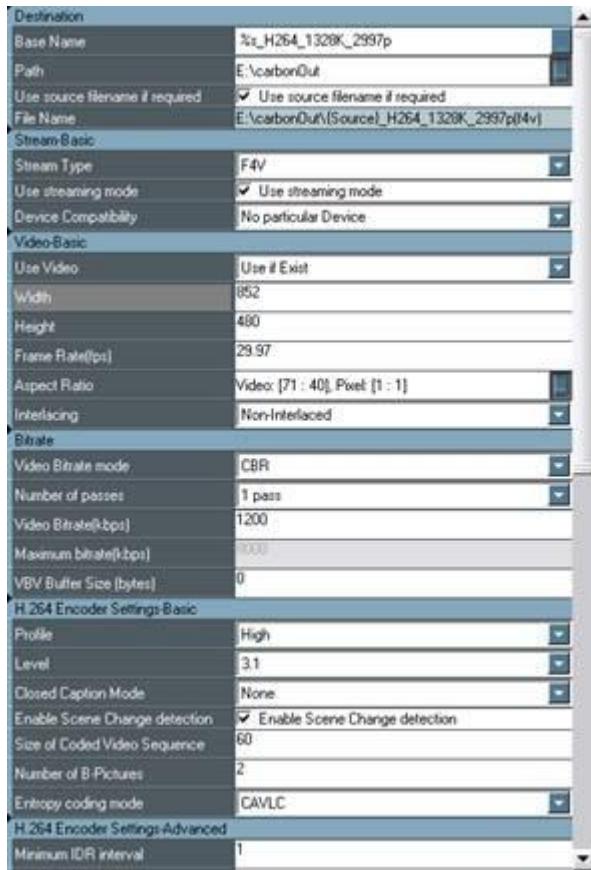
of the available presets on the right. A category (like Web) can have several sub-categories (like QuickTime, Windows Media, etc.). Carbon Coder ships with over a hundred presets to help you get started. You can modify these presets and create your own. You can also create new categories for storing your own presets.

1. In the **Load Target Preset window**, click on a desired category on the left side.
2. Click on **(+)** next to a category (if needed) to display its sub-categories.
3. The right side displays all the available presets for that category.
4. When you have selected a preset, you will see complete details of the format settings in the description pane located in the bottom of the Load Target Preset dialog box.
5. You can use SHIFT + SELECT or CTRL + SELECT to grab multiple presets within a single category
6. Click **OK** to add this preset to your Target window.
7. Repeat steps 1-7 to add multiple targets.

After you have added a target format to the Target List, you will see the specific encoding parameters on the right hand side of the screen. You can modify every parameter, including output file naming, encoding parameters, audio processing, etc. After you have modified encoding parameters, you can save them to disk to be reused in the future by clicking on **Save Profile**. Below the save profile button, there is also an **Advanced** button. This button allows you to access advanced codec encoding parameters as well as add video and audio filtering to your encoding.

Target Parameters

The **Target Parameters** window displays the properties of the currently selected target in the **Target** tab. All of the resources necessary for managing and modifying your target parameters are available in this window.

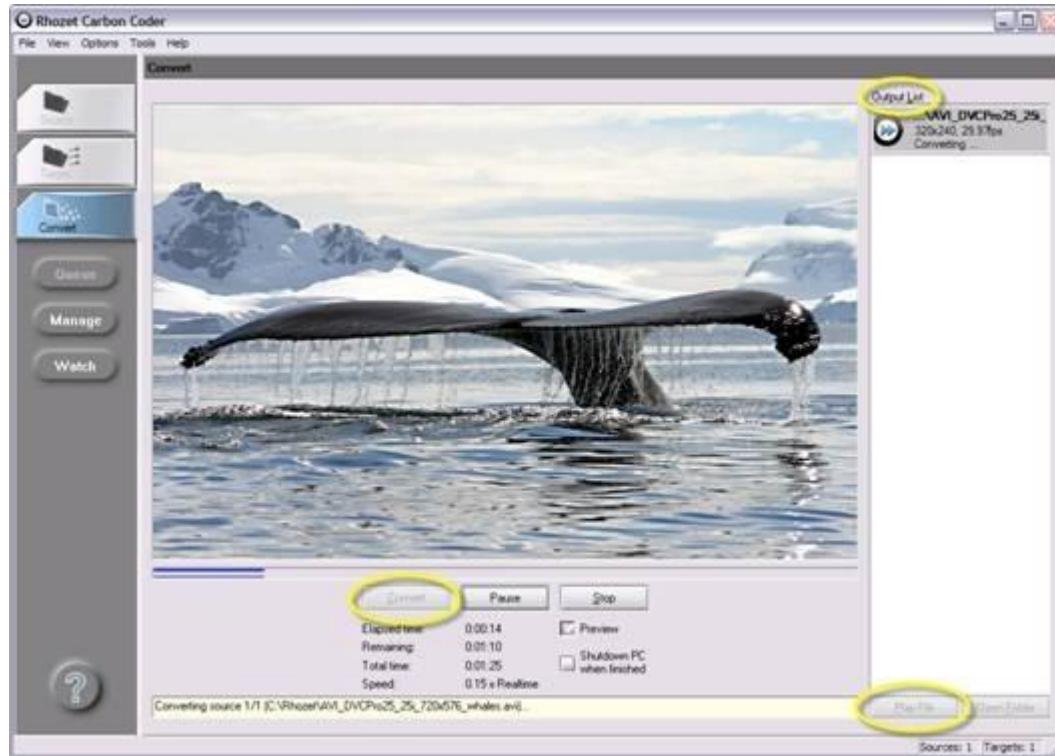


The target's basic parameters appear in the **Target Parameters** section. You can modify any of the parameters that aren't grayed out. Simply enter values in the fields, or use the drop-down menus to modify the default target parameters.

If you want to save the changes for a custom target, click **Save Profile**. Saved presets are visible in the **Custom** tab in the **Add Target** dialog box.

Converting Your Files

The last stage of the process is to convert (transcode) your files into their new formats. If you have chosen to convert one file into several output files, Carbon Coder will do each transcode simultaneously. You can view the output of the transcode during the transcoding process, and you can also play any transcoded file from the Output List on the right hand side of the screen.



1. Select the **Convert** tab. The **Convert** tab will be greyed out until you have chosen a source file and a target format.
2. Click **Convert** to begin the encoding process.
3. Press **Pause** to temporarily halt the encoding process.
4. Press **Stop** to cancel the encoding process.
5. Select **Preview** to turn on or off the video preview.

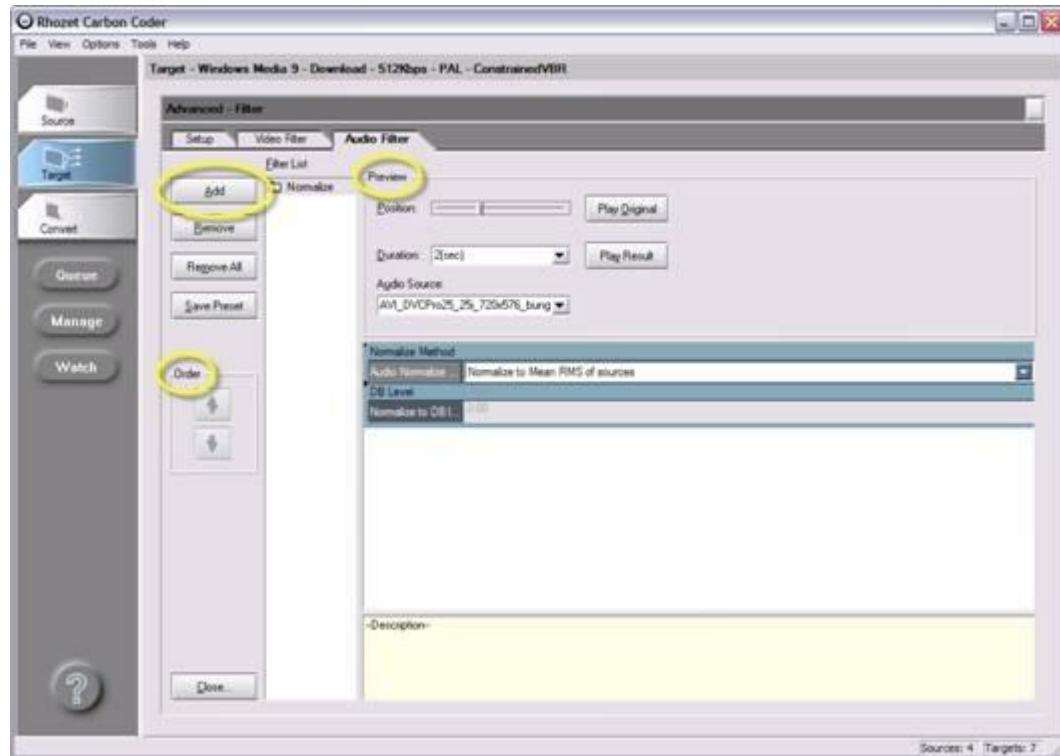
Note: The encoding process is faster when the preview is turned off. As each file is finished, it can be played from within the program (even if other transcoding conversions are still in process).

6. Select the file you would like to view and click the **Play File** button located on the bottom right of the screen.

Note: Carbon Coder automatically makes the necessary settings to be sure the source format transcodes properly to the target format.

Adding Filters

Video and Audio filters can be added to either individual source or target files depending on your workflow. Video and Audio filters allow you to manipulate the video/audio during the transcode to perform tasks such as logo insertion, audio normalization, and color correction.



1. Click **Advanced** from the **Source** or **Target** screens to see the advanced controls and select the **Video Filter** tab.
2. Click **Add** to add one or more video filters to your target.

Remember that you can add filters to both sources and targets, so you should only add a filter at the target to improve it, for example, a brightness filter to correct a dark target.

3. Selected filters are applied from the list top-down, so the top-most filter in the list is applied first, and the bottom-most filter in the list is applied last.
4. To adjust the order of the filters in the list, select the filter in the list then click **Up** or **Down** to move it up or down in the list.
5. Once you have added a filter, you can click the filter in the list to view and adjust its properties just below the video preview.

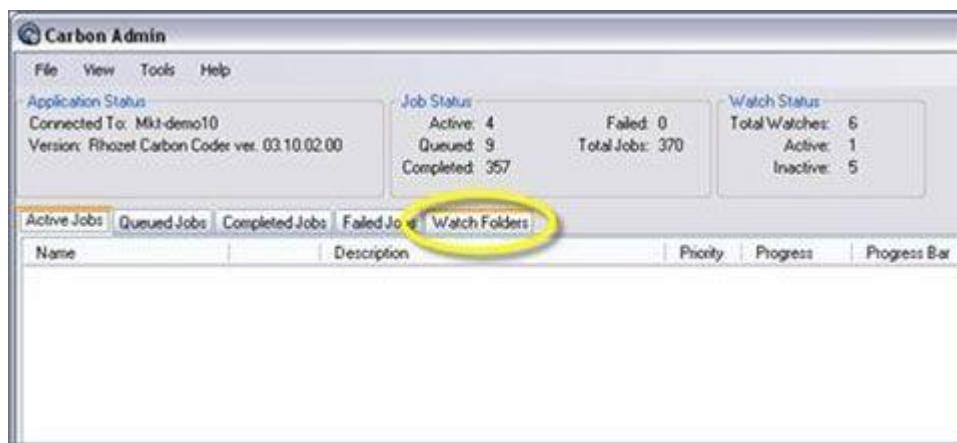
Note: From this view, you can also save Preset Video Filters.

Carbon Admin Quick Start Guide

This Quick Start guide will familiarize you with Carbon Admin's basic features. You will learn how to create Watch Folders, and how to customize Presets to match your specific requirements. For a more complete description of each feature, please consult the corresponding section later in this manual.

Setting Up a Watch Folder

1. Start by launching the Carbon Coder/Server Admin application using the application on the desktop.
2. When the opening screen appears, showing the **Active Jobs**, **Queued Jobs**, **Completed Jobs**, **Failed Jobs**, and **Watch Folders** tabs, select the **Watch Folders** tabs.



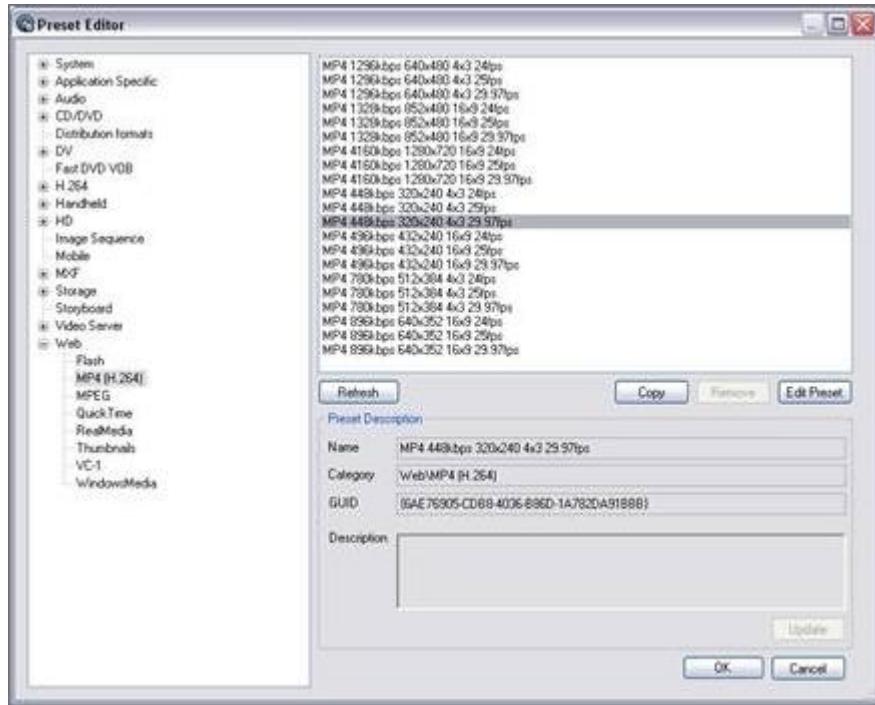
3. When the **Watch Folder** dialog box appears, click on **Add Watch** to start creating a new watch folder.



4. In the **Name** field, enter the name that you want to give to the watch folder.
5. To select the folder to drag (or copy) source files to, click on **Browse Folders**.
6. When the folder selection dialog box opens, navigate to the folder you want and click **OK**.
7. Click on **Add** underneath **Target File** in the watch folder properties list on the left side of the screen.



8. The **Target** screen appears. Here is where you choose which kinds of files your source files (input) will be transcoded to (target/output). You first select a category, then a preset from that category to use to create your target file. The target file is created from the source file by transcoding from the source format to the format (codec) specified in the preset. For our example we're choosing the H.264 preset that creates .mp4 target (output) files 320 pixels wide by 240 pixels high, with a frame rate of 30 frames per second.
9. Click **Browse** next to the Preset field; this will open the preset selection dialog.
10. In the tree-list of preset categories on the left side of the preset selection dialog box, select the **MP4 (H264)** category. This will display the MP4 H.264 factory default presets made available during installation.



11. In this category, select the **H.264 (.mp4) 320x240 30fps** preset and click **OK**.
12. To select the folder that the H.264 .mp4 files will be written to, click **Browse**.
13. When the folder selection dialog box opens, navigate to the folder you need and click **OK**.

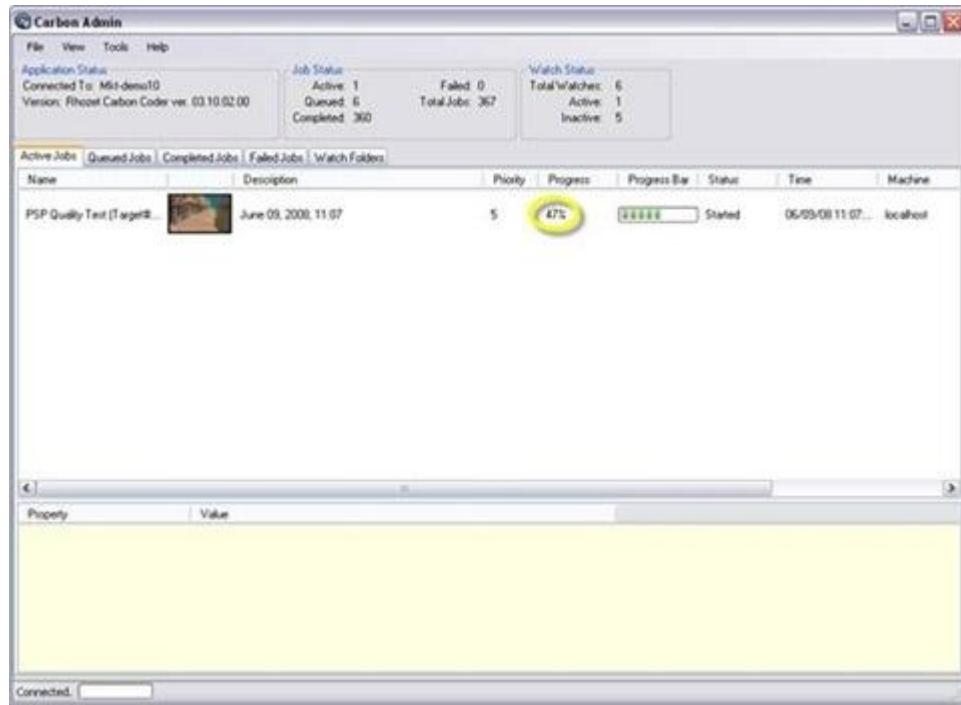
Once you have selected your output folder, you are now finished with this target. You can read more about all the possible parameters and configurations in the rest of this manual.

14. Click on **Update** to add the H.264 target to the watch folder. Notice in the watch folders properties list on the left side of the screen that a new target has been added to the watch folder.

For this example, although we could add more targets to this watch folder, we will only add the H.264 target.

15. You can now click on **Save Watch** to save all the changes you made and save the watch folder.
16. Now open the input and output folders you specified (in the examples above the input folder where you drop the source files is C:\Temp\WatchSource, and the output folder for the H.264 target file is C:\Temp\WatchTarget.).
17. Drop a video file into the watch folder (the input folder). Instead of dropping the file itself, you can also create a shortcut to the file by right-clicking and dragging the file, and releasing the right mouse button when the file is over the watch folder.
18. Select **Create Shortcuts Here** to create a shortcut to the input file inside the watch folder.

In order to see the progress as the source file is transcoded into the target H.264 .mp4 file, go back to the Carbon Coder/Server Admin application and click on the **Active Jobs** tab. You should now see a display like the following screenshot, in this example 47% of the input file has been transcoded.



After a while the progress bar will reach 100%, indicating that the job has finished transcoding, and you will see the status change to "Completed". You should now be able to find the new file with the .mp4 file extension in the output folder (C:\Temp\WatchTarget in our example).

Feel free to explore a little more on your own and create another few watch folders, maybe using different presets.

The handling of presets is discussed in detail in one of the following sections; we suggest you have a look at it once you feel comfortable creating watch folders and transcoding files by yourself.

Note: If you create a watch folder that reads source files or writes target files to a network drive, you can **not** use mapped drives such as M:\NetworkWatchInput, you **must** use UNC paths such as \\SERVERNAME\SharedFolder\NetworkWatchInput. If you do not do this, Carbon Coder/Server will not be able to read the files or write the files, since it does not understand or have access to mapped drives, only UNC paths.

Creating New Presets

Carbon Coder/Server includes hundreds of presets to simplify choosing settings for your transcoding jobs. There will be times, however, where you will be making changes to the supplied presets for a

particular requirement. If you need to reapply the same settings in the future, you can save your own preset that restores all the codec parameters you configured.

A preset saves the settings for a single codec. Use it to reapply a particular set of parameters for future projects. As an example, you could have a preset called "QuickTime MP4 with H.264 for Streaming" which saves the H.264 and QuickTime parameters used for streaming output from your web server. Each time you have a new source file that needs to be transcoded for streaming, you can apply this saved preset instead of having to re-enter all the setting such as frame size, frame rate, file wrapper (.mp4) and many more.

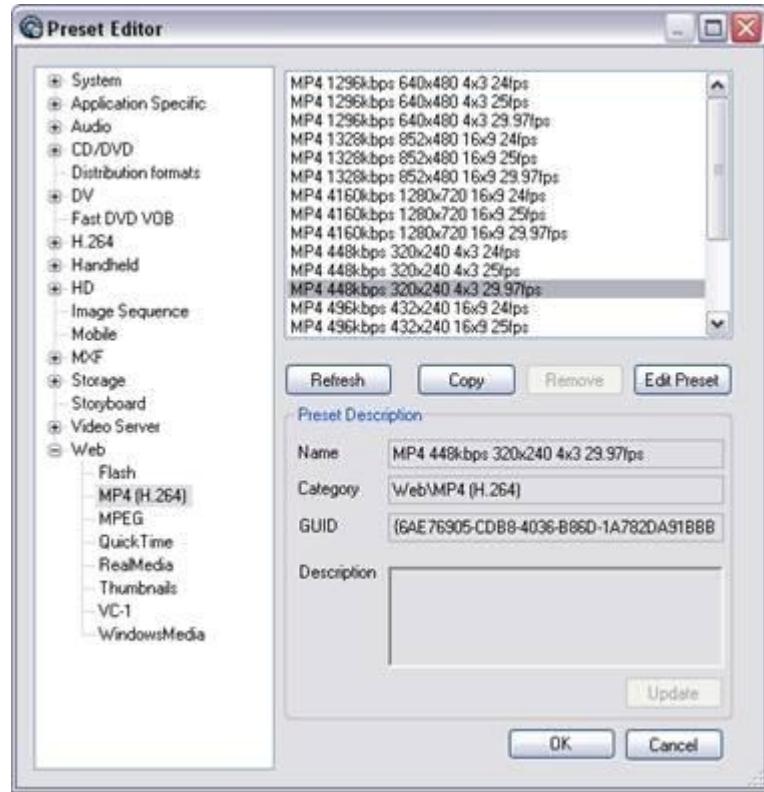
If you completed the earlier section, [Setting up a Watch Folder](#), you already used the "H.264 (.mp4) 320x240 30fps" preset. This preset describes how to create a QuickTime file with the .mp4 extension, which contains video information encoded according to the H.264 specification. The video created using this preset will be 320 pixels wide and 240 pixels, with 30 frames of video displayed every second.

We're going to use that preset to create a new customized preset, one that makes video with frames that are 400 by 300 pixels instead of 320x240. We're only going to change the frame size, and no other parameters, but the principle of creating new presets remains the same, no matter how few or how many parameters you change.

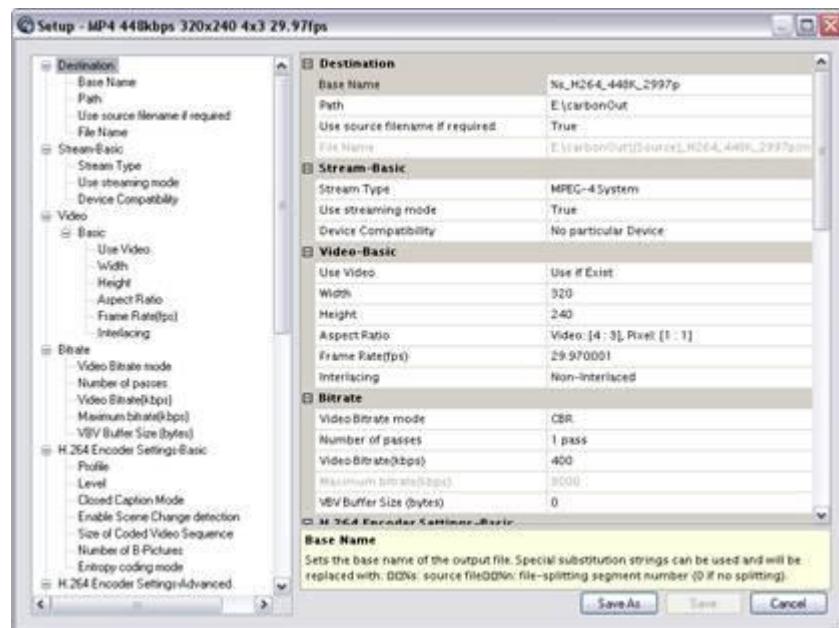
1. Make sure that Carbon Coder/Server Admin has been opened and select the **Preset Settings** option from the **Tools** menu.
2. When the Preset Editor dialog box opens, on the left side you can see the list of preset categories. When you save a new preset, you can choose a category to save it under so it's easier to find in the future, and you can group it with other, similar presets.

When you select a category (in this example the "H.264" top level category and the "Web" sub-category), the list of presets stored under that category appears. In this example, the two presets that are installed with Carbon Coder/Server are displayed. We're going to take one of those presets and modify it to create our own new customized preset.

3. Select the **H.264 (.mp4) 320x240 30fps** preset and click **Edit Preset**.



When the preset parameter list appears, all the parameters that can be changed for this codec are listed on the left in a tree listing, the description of the parameters and the current value for the parameter in this preset is shown on the right.



4. Scroll down to the **Width** parameter, and change it to *400*. Change the **Height** parameter to *300*, and click **Save**.
5. When the preset **Save As** dialog box appears, enter a name for the preset and a custom description. The description is a useful place to make note of any specifics about the preset, such as the intended use of the output target files.

You can also select the category under which the preset will be saved from the tree on the left. It's a good idea to group new presets together in the category that already has similar presets, although you can create new categories and sub-categories if you want.

6. When you're done with the name and the description, click **Save**.

Carbon Coder/Server Admin now validates the parameters in the preset, and adds it to the list of existing presets. You might have to wait a while for the preset to be validated. The preset editor screen now appears again, and the preset you just created is shown in the "H.264\Web" category.

You can now use your new preset when you create a watch folder. There are many more parameters you can change, and there are many existing presets you can customize, so feel free to experiment. The default set of presets that is installed when Carbon Coder/Server is installed can't be accidentally deleted using the Carbon Coder/Server Admin user interface, so feel free to experiment.

Carbon Coder

Sources

The Source Tab lets you add/remove source files, sort them, modify, enhance and repair source video settings prior to the conversion process.

Source List

The Source List displays all of the source files you are planning to transcode. Use the buttons and options on the left to modify the list.

- **Add** - Click **Add** to add files to the list. You can also add files by dragging and dropping them onto the Source List.
- **Remove** – Click **Remove** to remove the currently selected file(s) from the list. You can also delete them using the delete key.
- **Remove All** – Click **Remove All** to remove all of files from the list.
- **Advanced** – Click **Advanced** to open the **Advanced** dialog box which will appear on top of the main Carbon Coder window. Double-clicking on a item in the Source List also opens the **Advanced** dialog box. To close the **Advanced** dialog box, click **Close**.
- **Stitch** – Check this option if you want Carbon Coder to connect all the items in the Source List into one logical source file. Stitching is useful if you want to connect multiple source segments. Use the arrow keys to reorder the Source List before the files are stitched together. By enabling the Stitching feature, you can encode multiple files into a single file.

Adding Source Files

1. Select the **Source** tab .
2. Click **Add** to choose the file you want to convert.
3. When the **Open File** dialog box opens, select the file you want to convert.
4. Select a single file and click **Open**.
5. You will now see the selected file in the **Source List**.

Source Parameters

The Source Parameters window displays the properties of the currently selected source in the source tab. All of the resources necessary for managing and modifying your source parameters are available in this window.

When you add a file to the Source List, Carbon Coder automatically reads the file properties and analyzes its parameters. You can read more about each parameter by selecting it and referring to the Description section which is located in bottom right-hand corner of the **Source** or **Target** tab windows.

For example, if you add an interlaced source file to the Source List, the Parameters section tells you if the **Bottom Field** or the **Top Field** appears first in the **Interlacing** field. While Carbon Coder does its best to make the correct assessment, it may incorrectly identify the field order. If this happens, you can use the **Interlacing** drop-down menu to override Carbon Coder and choose the correct setting.

Source Parameters requiring attention and possible correction:

- **Length** – Displays the duration of the source file in **hours:minutes:seconds;frames**.

Note: The length in many cases is an estimate only – the length of some source types can only be determined by scanning the entire file which would take an unacceptable amount of time.
- **Interlacing** – Displays whether your source video is interlaced or not. If your source file is interlaced, the drop-down menu displays which field is stored first (bottom or top). Specifying the incorrect field order will result in a vertical jitter or ghosting during playback. If you encounter this kind of result, please correct the field order in the source.
- **Aspect Ratio** – Displays the source file's width-to-height ratio.
- **Video Aspect Ratio** – Displays the size proportion of width to height. Carbon Coder has presets for both standard (4:3) and widescreen (16:9) video aspect ratios and allows specifying custom aspect ratio settings. An improper video aspect ratio will result in the image looking stretched or squashed, i.e. circles will appear as ovals.
- **Video Aspect Ratio** - Determines the displayed "shape" of each pixel. For computer use, pixels are normally square (1:1 ratio). However, for television and video use, pixels are mostly (but not always) rectangular. Carbon Coder has presets for square, television and DV standard, television and DV widescreen, and anamorphic pixel sizes.

Advanced Features Window

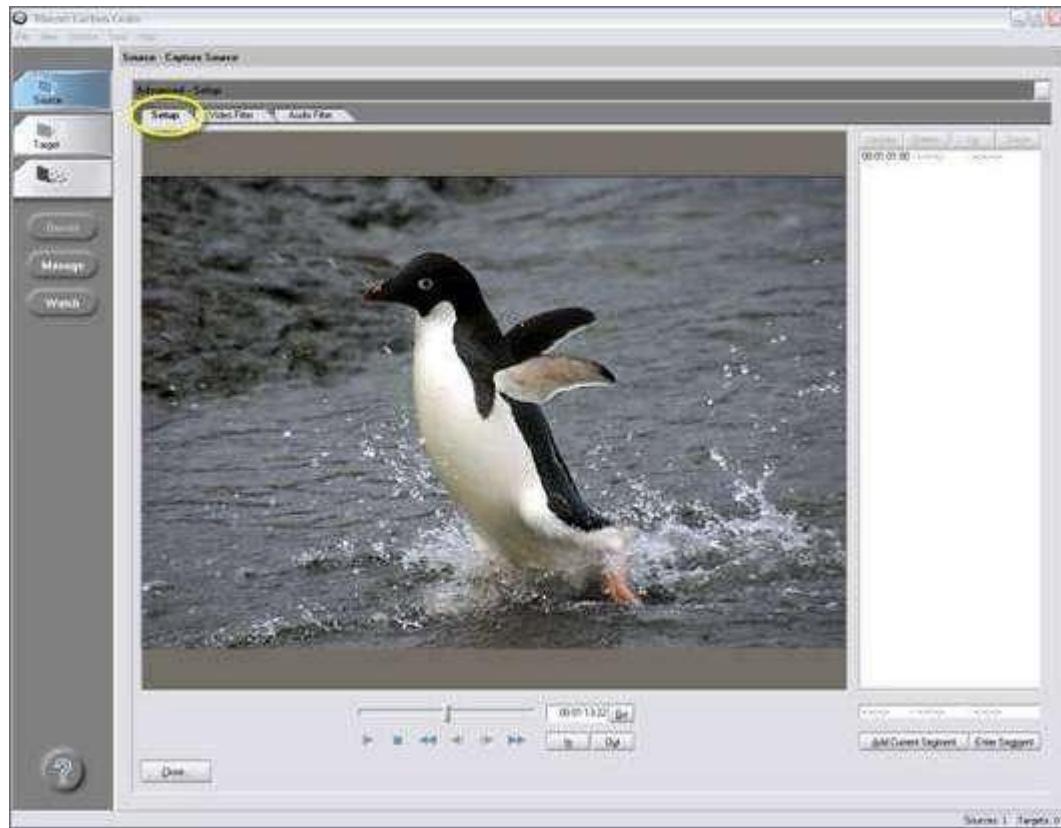
The Advanced Features Window allows you optimize the source file prior to the encoding process. You can trim the file, add a video filter to clean up the image, or apply an audio filter to enhance the audio quality.

To access the Advanced Features Window from the basic view, do one of the following:

1. Click the **Advanced** tab.
2. Double-click the **Source** entry.
3. Right-click the **Source** entry and choose **Advanced**.

Setup

By selecting the **Setup** tab you will be able to trim a segment of your video for transcoding.



To trim a segment of your video, use the Video Scrubber, Play, or Time Controls to choose the desired In and Out points. The In button sets the In Point at the current displayed frame. The Out button sets the Out Point at the current displayed frame.

Trimming a Segment

1. If you are using the video scrubber, move the cursor to the desired In point and click **In**.
2. Move the cursor to the desired Outpoint and click **Out**.

The selected video will appear on the video scrubber as a white bar.

3. To play the selected area, press the **play** (icon) button.
4. Click **Add current segment** to add the new selection to the list of segments.
5. Or you can click **Enter Segment** to directly enter an in/out point pair:
 - **Scrubber/Play Controls** – Use the scrubber or play controls to choose your In point and then click **In**. Then choose your Out point and click **Out**.
 - **Trimming section**
 - **In** – Sets the **In Point** at the currently displayed frame. The In Point's Time and Frame number are listed in their respective boxes.

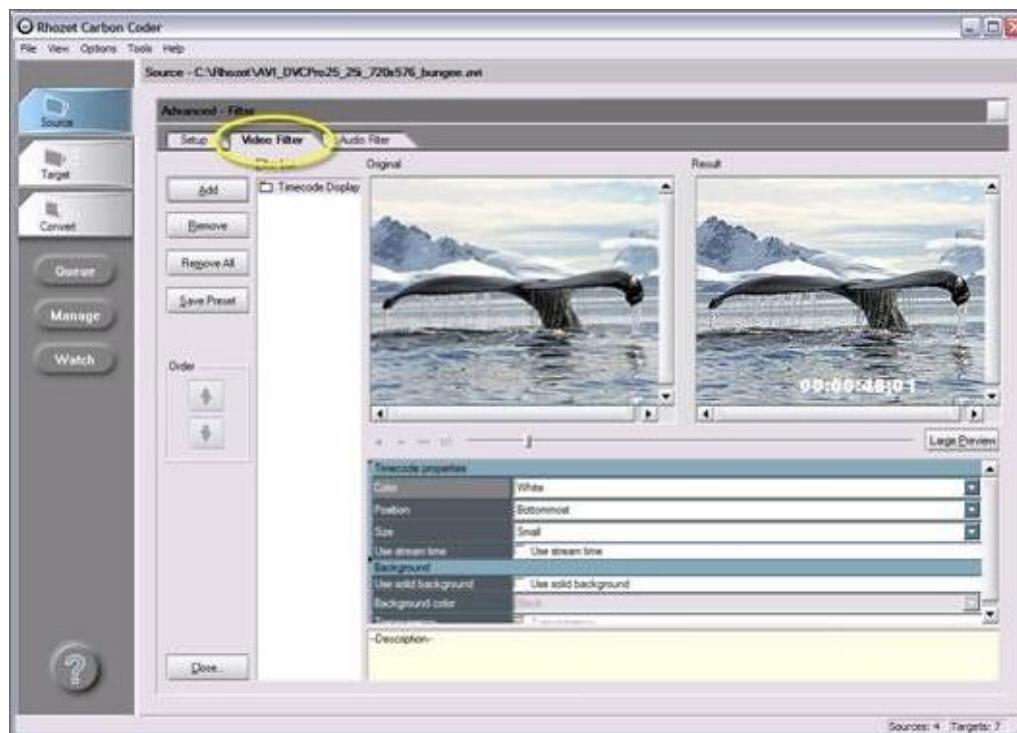
- **Out** – Sets the **Out Point** at the currently displayed frame. The Out Point's Time and Frame number are listed in their respective boxes.

■ Clip section

- **Time** - Displays the time for the frame at which the scrubber is stopped. You can also use the arrow buttons to find a specific time at which you want to set the In or Out point, or simply enter a time in the **Time** field.
- **Frames** - Displays the frame number at which the scrubber is stopped. You can also use the arrow buttons to find a specific frame at which you want to set the In or Out points. You can also simply enter a frame number in the **Frame** box.
- **Total** – Displays the source file's total duration after the In and Out Points are set. This value is calculated automatically and cannot be modified by hand. It can only be modified by setting the In and Out points. Duration time is displayed in **hours:minutes:seconds;frames**.

Video Filters

The **Video Filter** tab lets you apply filters to your video to help improve image quality of your source files before they are converted. The filters can be previewed in this tab prior to the conversion process.



1. Click **Advanced** from the Source screen to see the advanced controls and select the **Video Filter** tab.
2. Click **Add** to add one or more video filters to your source. A brief description of each filter is listed in the **Description** box when the filter is highlighted. You can browse the different filter categories on the left and choose filters from the right. Holding down SHIFT or CTRL and selecting the desired filters lets you add multiple filters to the Filter list. Remember that you can add filters to both sources and targets, so you should only add a filter at the target to improve it, for example, a brightness filter to correct a dark target.
3. The filter name(s) will appear in the **Filter List**. To the right you will see a preview of how the filter changes your source file in the **Result** window.
4. To adjust the filter parameters, use the sliders below the preview pane to your desired specifications.
5. Selected filters are applied from the list top-down, so the top-most filter in the list is applied first, and the bottom-most filter in the list is applied last. To adjust the order of the filters in the list, select the filter in the list then click **Up** or **Down** to move it up or down in the list.

Previewing Video Filters

The **Original** window displays what the original file looks like before filtering. The **Result** window displays the original file with all the filters displayed in the filter list applied.

The **Plus** button enlarges both preview images and the **Minus** button makes both preview images smaller. If the preview image is larger than the window, scroll bars appear allowing you to navigate through the entire image. You can also click and drag on the image to navigate through the image.

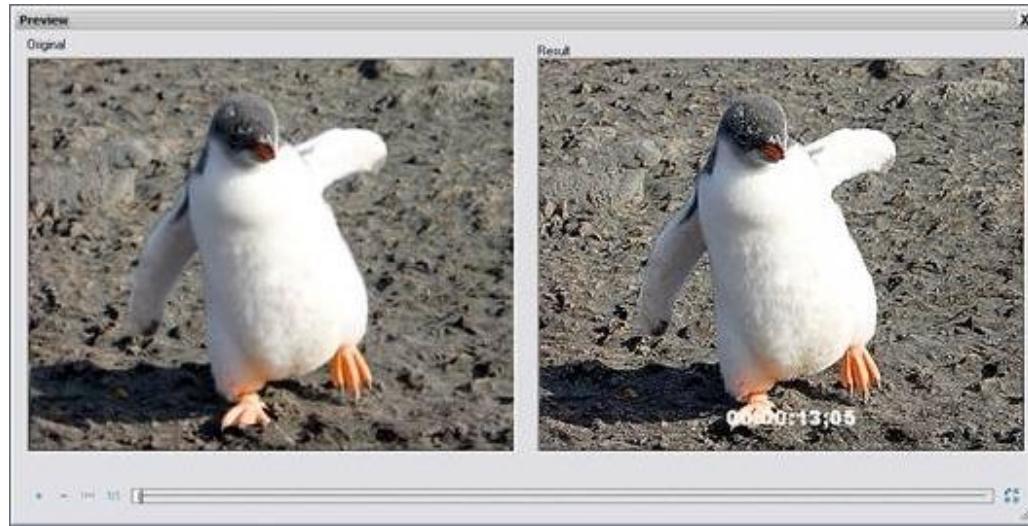
The **Fit to Window** button resizes the preview images to fit inside the window's current size. No matter what size the window, this preview mode preserves the aspect ratio assigned to the file. This button is useful if you enlarged or reduced the preview image and want to view the whole image in the window again.

The **1:1** button displays the video at 1-to-1 pixel size. (1 monitor pixel = 1 video pixel)

Use the **Scrubber** bar to find specific frames in the source video that you want to use so you can see the effect of the filter(s) on the specific frame. You can either click and drag the scrubber or use your keyboard's arrow keys to step through the video's individual frames.

Large Preview

Clicking the **Large Preview** button opens a floating window that allows you to modify the preview size. This is helpful for scrutinizing the finer details of your video. You can use the scrubber bar to find specific points in the video. You can resize the window as needed, and it adjusts the size of the previews proportionally. It also contains the same controls as the **Video Filter** tab.



Included Video Filters

- **601 Correction - Expand Color Space** – This video filter expands the RGB range of the video from 16-235 to 0-255. Use this filter to create output for a system that uses the full 0-255 range from input that uses 16-235.
- **601 Correction - Shrink Color Space** – This video filter shrinks the RGB range of the video from 0-255 to 16-235. Use this filter when creating output for a system that uses the 16-235 range from input that uses the full 0-255 range.
- **601 to 709 Color Correction - SD/HD Color Space** – This video filter is used to convert video in the SD (601) colorspace to the HD (709) colorspace. Broadcast HD video uses YCbCr colors following Rec. ITU-R BT 709-5 while broadcast SD video follows ITU-R BT 601.
- **709 to 601 Color Correction** – The inverse of the above.
- **Adaptive De-Interlace** – Perform custom de-interlacing of interlaced content for progressive targets, either using Adaptive De-Interlace, Interpolate from Dominant Field, or Discard Dominant Field. Use this filter only when you want to change the default de-interlacing behavior.
- **Bitmap Keying** – Superimpose a bitmap logo or graphic on the video. This is often used to watermark video so it can be personalized.
- **Black/White Correction** – This filter lets you adjust and control the levels of black and white pixels in your video. By adjusting the sliders, you can specify at which point a pixel will become black and/or white. The higher the setting, the more nearly black pixels will be converted to true black and vice versa. This works best if you are encoding video for the Web and need to adjust the black and/or white levels of broadcast video so that they are truly black or white. It's also useful for making white titles on a black background more legible when viewing on a computer monitor.
- **Blur** – This filter blurs the video in a rectangular pattern.

- **Broadcast Color Safe** – Restricts the color range of the video to broadcast-safe values. Some colors that can be displayed on a computer cannot be displayed on television or video output. This filter restricts the colors in the source to only colors that are safe for television and video broadcast.
- **Circular Blur** – This filter blurs the video in a circular pattern.
- **Color Correction** – This filter allows you to adjust the brightness, contrast, hue and saturation of your video image.
- **DVD Subtitle/608 CC1 Imprint** – Imprints either DVD subpicture subtitles, or 608-style captions from the CC1 line of the VBI section of sources that allow and carry content in the VBI.
- **Fade In/Out** – This filter applies a fade in and/or out to your video in order to aid the encoding process. You should use this filter if your source video has a lot of fast motion in the first few frames. The fade-in gives Carbon Coder a “running start” so it can encode your video more efficiently.
- **Flexible-to-fixed Framerate Conversion** – Use this filter to correct jittery frame timestamps while decoding from flexible framerate source video files.
- **Line 21 Extraction** and **Line 21 Modulation** – Allow the extraction and insertion of 608-style captions from- and into Line 21 of the VBI for sources and targets that have a VBI section.
- **Gamma Correction** – This filter adjusts your video's gamma settings.
- **Gaussian Blur** – This filter applies a Gaussian blur to the video.
- **Median** – This filter is designed to improve picture quality by removing single-pixel defects without affecting the sharpness. This is similar to a despeckle filter.
- **Pulldown** – This filter offers conversion without interpolation for progressive-to-interlaced (i.e. film-to-video) file conversion. This preserves full spatial image quality and creates target fields that are selected from the nearest temporal source frame. Displaying the resulting file on a progressive display, such as a computer monitor, produces very noticeable interlacing artifacts. However, displaying this on an interlaced display, such as a television, produces very good image quality. This method is generally used when cinematographic footage is encoded to a DVD and played on a TV.
- **Relative Crop** – Allows for percentage-based cropping of sources. It is usually preferred to use the Video Source Properties filter to crop sources, since that crop filter can be applied to targets and can therefore also be used in Watch Folders. Relative Crop may be deprecated in future releases of Carbon.
- **Rotate** – This filter provides 90-degree rotation and axis-flipping for the video.
- **Sharpen** – This filter sharpens the video using the “Un-Sharp Mask” technique.

- **Temporal Noise Reducer** – This filter removes noise by using temporal noise reduction. Temporal noise reduction is effective for removing analog noise.
- **Timecode Display** – Overlays the video with timecode.
- **Video Closed Caption Inject** – This will allow the reading of ".SCC" closed caption files and inject the caption data in the target file. If you want to insert caption data into a target with VBI, you also need to use the Line 21 Modulation filter.
- **Video Inverse Telecine Filter** – Use this filter to apply inverse telecine to sources that have had 2-3 telecine applied.
- **Video Metadata Inject** – The current version of the filter allows the setting of the start timecode of the target file and setting chapter markers. The syntax of the XML input file for this filter is as follows:

```
<cnpsXML StartTimeCode="00:00:05,00">
    <Markers>
        <Marker_1 MarkerTime_27MHz.QWD="270000000" MarkerName="Marker1"/>
        <Marker_2 MarkerTime_27MHz.QWD="540000000" MarkerName="Marker2"/>
        <MyMarker MarkerTime_27MHz.QWD="810000000" MarkerName="MyMarker"/>
    </Markers>
</cnpsXML>
```

- **Video Source Properties** – This filter allows you to crop the source file before transcoding it to the target file(s). It can also be used to force the aspect ratio of the source file, and the force the detection and handling of progressive vs. interlaced content. This filter can also be used when creating Watch Folders, which otherwise don't allow the manipulation of the properties of the source files. In the Carbon Coder application, it is possible to use this filter on a source as well as a target.
- **XML Titler** – This is a fully-featured filter which allows for a rich set of features when applying titles to target video files. The syntax of the XML input file for this filter is discussed in "XML Titler".

Saving Custom Video Filter Presets

A custom preset saves the customized settings of the selected filter. Saving a custom preset is useful if you plan on reapplying the same filter settings in the future. Custom presets are stored with the default presets and can be categorized into folders and subfolders.

1. Select the filter you would like modify from the **Filter** list.
2. Modify the filter's properties according to your specifications.

3. Click **Save Preset**. The **Save Video Filter Preset** window will appear.
4. At the bottom of the **Save Video Filter Preset** dialog box, enter a name and a personalized description for the preset that will remind you of your custom settings.
5. After you have saved a customized filter preset, click **Add** and load it the same way you would load a default preset.
6. To remove a customized filter preset, click **Add** to open the **Load Video Filter Preset** dialog box. Then click the filter preset you want to remove and click **Delete Preset**. You cannot delete the default system presets.

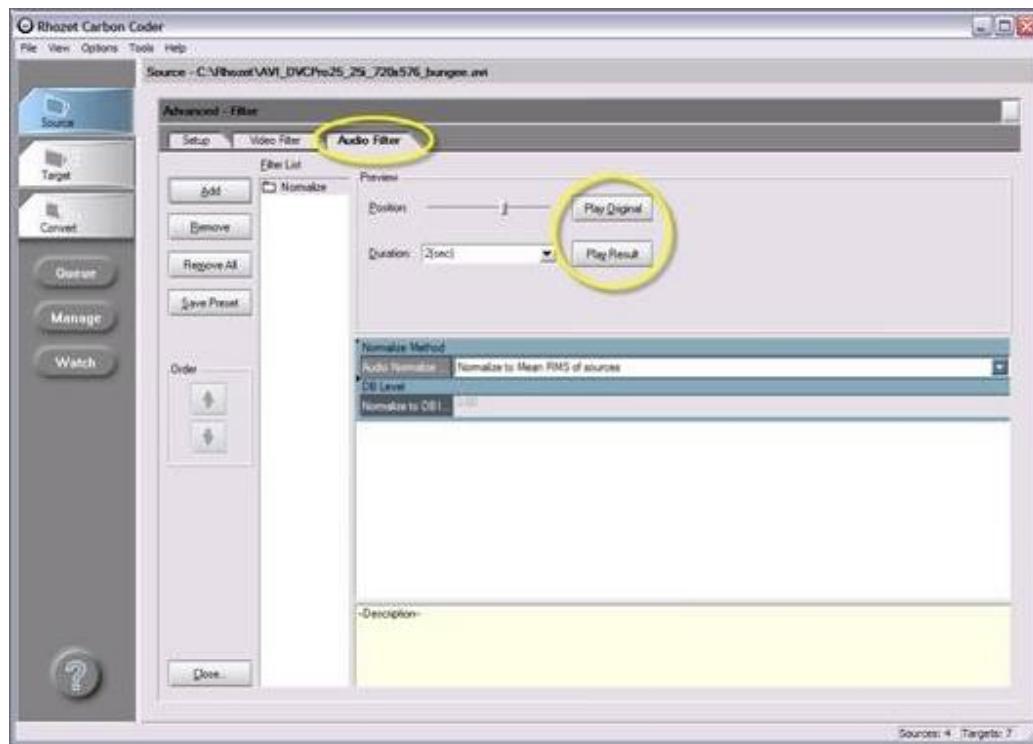
Audio Filters

The **Audio Filter** tab lets you add audio filters to your source file to help improve the audio quality of your target files. These filters can be previewed in this tab and are applied to the source audio before any target audio filters are processed.

1. Click **Advanced** from the Source dialog box. When you will see the advanced controls, select the **Audio Filter** tab to add a variety of filters.
2. Click **Add** to add one or more audio filters to your source. A brief description of each filter is listed in the **Description** box when the filter is highlighted. You can browse the different filter categories on the left and choose filters from the right. Holding down SHIFT or CTRL and selecting the desired filters lets you add multiple filters to the **Filter** list. Remember that you can add filters to both sources and targets, so you should only add a filter at the source to improve it, for example, a low pass filter to remove a whine or hiss.
3. Once you have added a filter, you can click the filter in the list to view and adjust its properties.
4. Selected filters are applied from the list top-down, so the top-most filter in the list is applied first, and the bottom-most filter in the list is applied last.
5. To adjust the order of the filters in the list, select the filter in the list then click **Up** or **Down** to move it up or down in the list.

Previewing Audio Filters

You can compare and preview the effect of audio filters by clicking **Play Original** followed by **Play Result**.



Use the **Position** scrubber bar to select the area of the file you want to preview. Use the **Duration** drop down menu to select the length of the preview from 2 to 15 seconds.

Included Audio Filters

- **Channel Mixer** – Use this filter to interchange and map audio channels.
- **Dynamic Range Compressor** – Audio Dynamic Range Compression Filter. Use this filter to for compressing the dynamic range of audio.
- **Fade In/Out** – The Audio Fade In/Out filter is used to add a fade in and/or fade out to the audio. Use this filter in conjunction with the Video Fade In/Out filter for a audio/video fade in/out.
- **Lowpass** – The Lowpass filter removes high-frequency signals, such as electrical noise and hiss, from the audio.
- **Normalize** – The Normalize filter raises the audio to maximize volume without clipping. This is a dual-pass filter and will increase your source file's overall conversion time. This filter is useful when performing a batch conversion or stitching various sources together so all the sources are at the same level.
- **Parametric 5.1 to Stereo Converter** – This filter is used instead of the built-in converter if access to the conversion parameters is needed.
- **Volume** – Lets you adjust the overall volume of the audio.

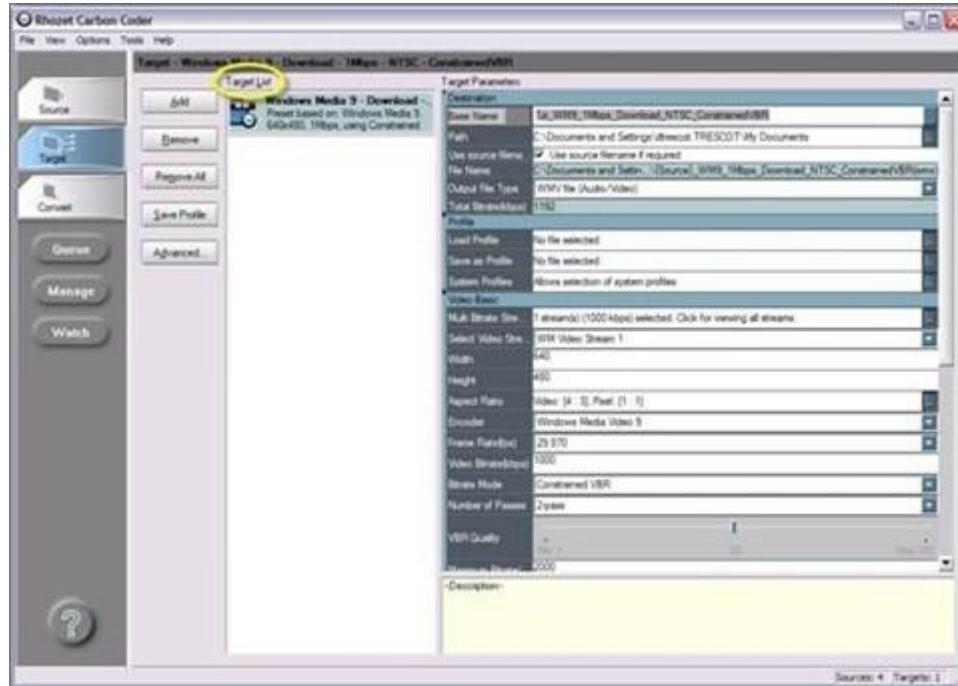
Saving Custom Audio Filter Presets

A custom preset saves the customized settings of the selected filter. Saving a custom preset is useful if you plan on reapplying the same filter settings in the future. Custom presets are stored with the default presets and can be categorized into folders and subfolders.

1. Select the filter you would like modify from the **Filter** list.
2. Modify the filter's properties according to your specifications.
3. Click **Save Preset**. The **Save Audio Filter Preset** dialog box will appear.
4. At the bottom of the dialog box, enter the name of the preset and a personalized description that will remind you about your custom settings.
5. After you have saved a customized filter preset, simply click **Add** and load it the same way you would load a default preset.
6. To remove a customized filter preset, click **Add** to open the **Load Audio Filter Preset** dialog box. Then click the filter preset you want to remove and click **Delete Preset**. You cannot delete the default system presets.

Targets

The **Target** tab lets you assign a "target" format for your source file to be converted to. You can assign multiple targets to a single source file which lets you create different formats of the same source file in one process.



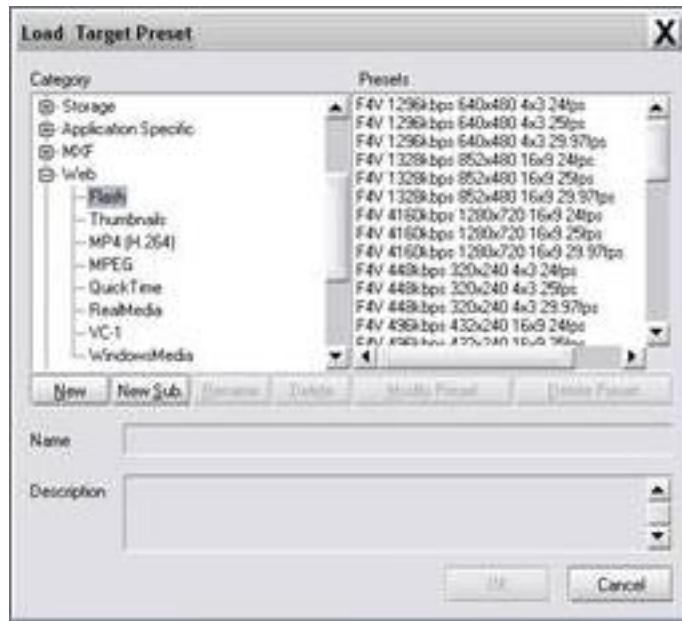
Target List

The Target List displays all of the target files you are planning to transcode. Use the buttons and options on the left to modify the list.

- **Add** – Click **Add** to add target formats to the list.
- **Remove** – Click **Remove** to remove the currently selected target format(s) from the list. You can also delete them using the delete key.
- **Remove All** – Click **Remove All** to remove all the targets from the list.
- **Save Profile** – Click **Save Profile** to save all target outputs in the target list, their customized settings, and their associated filter settings. A profile will typically be used to save a complex task which includes multiple targets and filters. The profile can then easily be re-applied to different sources.
- **Advanced** – Click **Advanced** to open the Advanced dialog box. This window will appear on top of the main Carbon Coder window. Double-clicking on a item in the Source List also opens the Advanced window. To close the Advanced dialog box, click **Close**.

Assigning Targets

After clicking **Add**, you will need to assign a target format.



1. In the **Load Target Preset** dialog box, click on a desired category on the left side.
2. Click on (+) next to a category (if needed) to display its sub-categories. the available presets for that category are displayed on the right.

3. When you have selected a preset, you will see complete details of the format settings in the description pane located in the bottom of the Load Target Preset dialog box.
4. You can use SHIFT+SELECT or CTRL+SELECT to grab multiple presets within a single category
5. Click **OK** to add this preset to your Target window.

Preset Target Types

- **System** – contains base settings for all the formats Carbon Coder produces. These settings are a good starting point for creating a custom setting.
- **Audio** – contains PCM and MP3 settings for audio-only output formats. These settings are good for exporting audio for use in other applications and for conforming audio files.
- **DV** – contains AVI, QuickTime and Raw DV profiles for different DV standards.
- **Storage** – contains AVI, DivX, MPEG, or Windows Media targets for use as archival storage formats.
- **Handheld** – contains DivX, 3GPP and RealMedia 10 for video files that are compatible with handheld devices, such as PDAs and cell phones.
- **HD** – contains DivX, MPEG and Windows Media HD settings.
- **CD/DVD** – contains DivX, Computer, VCD, DVD and SVCD useful for video on CD and DVD media.
- **Application Specific** – contains Editing Software, DVD production/ authoring, Hardware, and STB profiles.
- **Web** – contains MPEG, QuickTime, RealMedia, and Windows Media profiles suitable for Web delivery.
- **Image Sequence** – exports a series of still images.

Target Parameters

The Target Parameters window displays the properties of the currently selected target in the target tab. All of the resources necessary for managing and modifying your target parameters are available in this window.

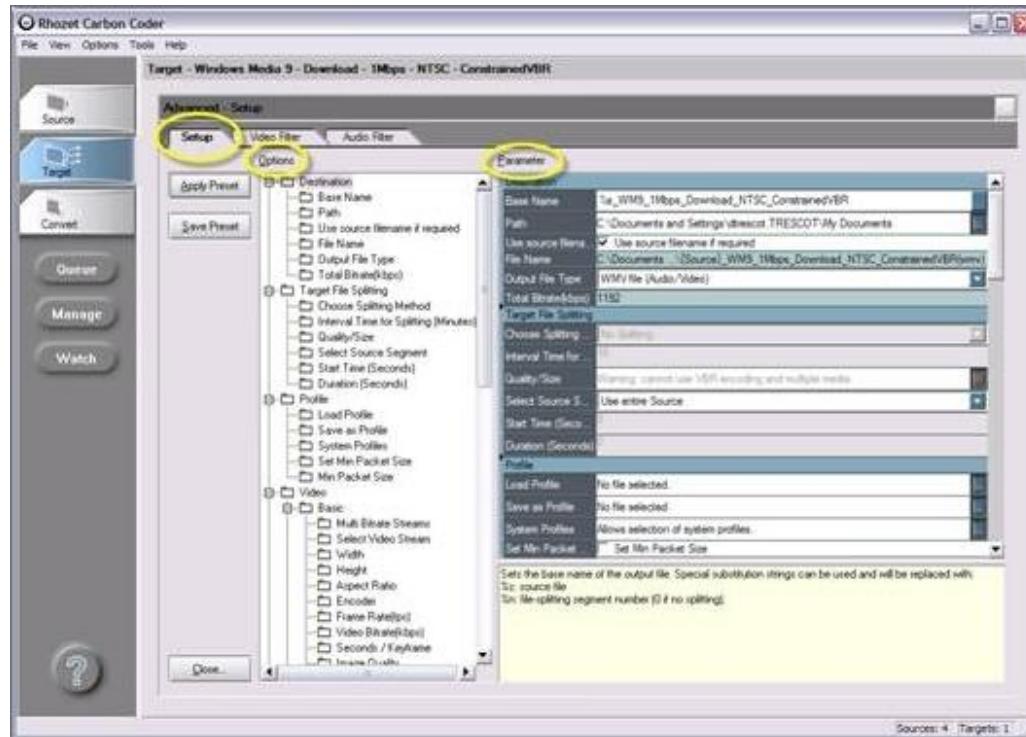
The target's basic parameters appear in the **Target Parameters** section. You can modify any of the parameters that aren't grayed out. Simply enter values in the fields or use the drop-down menus to modify the default target parameters.

If you want to save the changes for a custom target, click the **Save Profile** button. Saved presets are visible in the **Custom** tab in the **Add Target** dialog box.

Setup

The Setup tab allows you to modify the parameters for each of the default encoding targets. By using the tree-based option list, you can navigate through the available settings. Select a parameter in the

tree to display its parameters on the right of the screen in the **Target Parameters** section. Properties that have white backgrounds can be modified. Properties that have blue backgrounds are disabled for modification in order to maintain the format's particular specifications. A description of the parameter is displayed in the yellow box at the bottom of the screen.



Parameter Definitions

Depending on the circumstances of transcode, the parameters settings may not appear in certain targets, may be in different locations or may only appear under certain option choices. Some parameters settings may be disabled when using some target presets.

Destination

Base Name – Sets the name of the file excluding the extension. A few special substitution strings can be used in the Base Name and Carbon Coder will replace them with the values during its processing. Periods are not allowed in the base name.

- **%s** is replaced by the name of the source file (without extension) unless the **Stitch** function is used, in which case %s will be replaced by {Stitched Sources}
- **%n** is replaced by the file-splitting segment number of the output file. If file-splitting is disabled, %n will be 0.
- **%%** is replaced by a percent-sign (%).

- **Path** - Sets the output location for the target file(s). Click **Continue (...)** to set the output folder.
- **File Name** - Displays the output file name or an example if one of the substitution strings is used.

Target File Splitting

Choose Splitting Method - Selects the automatic file-splitting method. Automatic file-splitting can divide output files into separate files for easier archiving or transport. File-splitting is not related to multiplexing. File-splitting cannot be used with multi-pass encoding. Not all formats support file splitting or all options available for file splitting.

- **No Splitting** – Do not automatically split output files.
- **Split using Time Interval** – Start a new output file when the current output's video length reaches the specified maximum time.
- **Split using max. Size** – Start a new output file when the current output's file size reaches the specified maximum size.

Interval Time for Splitting (Minutes) - Sets the time interval to split output files at in minutes. For example, if the interval time is set to 10 minutes, a 35-minute source will be split into 4 output files.

Max. File Size for Splitting (MB) - Sets the size to split output files at in megabytes. For example, if the max file size is set to 650 MB and the total output size is 1.5 GB, there will be 3 output files.

Quality/Size - Click **Continue (...)** to bring up the **Quality/Size Configuration** dialog box. The Quality/Size Configuration dialog box displays the media requirements for your conversion parameters and can set the bitrate to an appropriate value based on the number of media you want to output.

For example, if your target media is a single CD-R (650MB) and your current setting will output 800 MB, the Number of media will be 2. You can then adjust the Quality slider until the Number of media reads 1. Alternatively, you can enable the Fill Media if possible option, then set the number of media to 1. Carbon Coder will automatically calculate an appropriate bitrate to fit within the media requirements, if possible.

This option is only available under the following circumstances:

- The target supports a user-specified bit rate for encoding
- **Split using max. Size** is enabled
- There is only a single source or the **Stitch** function is enabled.

Video

Use Video - Choose how Carbon Coder will output video for the target.

- **Use Always** – A video track is always output. If the source has no video, a black video track is generated.
- **Use if Exist** – If the source has video, that video will be output. If the source has no video, no video track is generated.
- **Don't Use** – A video track is not generated, even if the source contains video.

Audio

Use Audio - Selects whether the target will contain an audio track.

- **Use Always** – The target will always contain an audio track, even if the source does not contain audio.
- **Use if Exist** – The target will contain an audio track if the source contains audio. If the source does not contain audio, the target will not have an audio track.
- **Don't Use** – The target will not have an audio track, even if the source contains audio.

Presets and Profiles

Carbon Coder includes over a hundred presets to simplify choosing transcoding settings for your job. There will be times, however, where you will be making changes to the supplied presets for a particular requirement. If you need to reapply the same settings in the future, you can save your own preset. Carbon Coder also includes the concept of a profile. Unlike a preset, a profile can include multiple target outputs. For example, you could save a profile called "Web Outputs" that creates five separate output files in different web formats. This profile could then be applied to any source file(s) in the future.

To summarize:

- A **preset** saves the settings for a single codec or filter. Use it to reapply a particular set of parameters for future projects. As an example, you could have a preset called "Windows Media for Streaming" which saves the Windows Media parameters used for streaming output at your company. The **Apply Preset** and **Save Preset** buttons are available in the Advanced section for a particular codec or filter.
- A **profile** saves the settings for all the targets and filters in a particular project. For example, you could save a profile called "Web Outputs" that creates 5 separate output files in different web formats. This profile could include the "Windows Media for Streaming" preset described above. The **Save Profile** button is on the main target tab.

Note: A preset will not include the target file name and target folder. This is on purpose: a target preset is considered a group of encoding parameters, not file system locations. A profile will save the target file name and target folder.

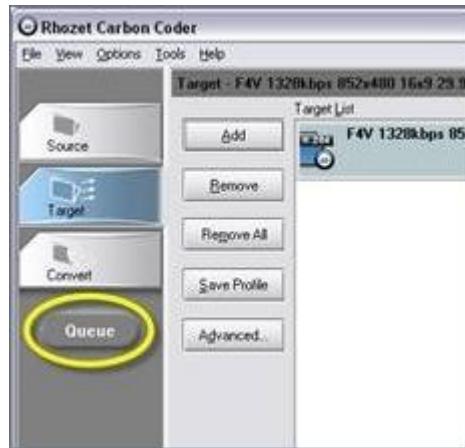
Background Transcoding

In addition to its normal conversion processes, Carbon Coder also provides job queuing capabilities. Instead of waiting for the Carbon Coder application to finish a conversion, you can queue jobs to a background transcoding process which takes over and performs conversion of queued jobs much like a print spooler handles printing jobs. In this manner, the Carbon Coder application serves as a job set-up tool and you can queue multiple jobs with different priorities and continue working with Carbon Coder.

The background transcoding process that is installed with Carbon is called 'Nexus' and is installed as a Windows operating system service. The various job queues that Nexus manages can be viewed by the management application called **Carbon Admin**. Carbon Admin is new to Carbon 3.0 and is available whenever any version of Carbon 3.0 is installed (Carbon Coder, Carbon Server, or Carbon Coder). Using Carbon Admin, you can see any jobs that have been queued for background transcoding when using Carbon Coder, as well as jobs that have been created by Watch Folders. Please see the [Carbon Admin](#) section for more information.

Queuing a Job

To queue a job, set up the conversion in the Carbon Coder application as you normally would, but instead of selecting the **Convert** tab and starting conversion, click **Queue** below the **Convert** tab.



1. In the **Job Name** field, enter a name for the job. The name will be displayed when the job is viewed in one of the job queues. If logging of jobs is enabled the name will also appear in the log.
2. Enter a description of the job in the **Job Description** field. The description will be displayed when the job is viewed in one of the job queues. If logging is enabled the description will also appear in the log.
3. Choose a **Job Priority** from the drop-down box. The higher the job priority is, the sooner the Queue Manager will start the job. Higher-priority jobs are started before lower-priority

jobs. The highest priority is 9 which means the job will be started as soon as any currently jobs are complete, unless there are more priority 9 jobs already waiting.

4. If you want **One Job for Each Target** select the checkbox.
5. From the **Target File Name** drop-down menu, select the appropriate action to take if an output file already exists:
 - **Rename if exists** – Rename the output file if a file of the same name already exists.
 - **Overwrite if exists** – Overwrite the output file if a file of the same name already exists.
6. If your network contains a Carbon Server machine in the same TCP/IP subnet as the machine Carbon Coder is operating on, you may queue this job to this farm for remote execution. You can then continue working on your local machine, for example configuring your next job.
7. Click **Queue** to add the job to the queue.
8. Go to **Options > Transcoding Settings** to open the **Transcoding Settings** dialog box, .
9. Transcoding progress can be viewed by using the Carbon Admin application.

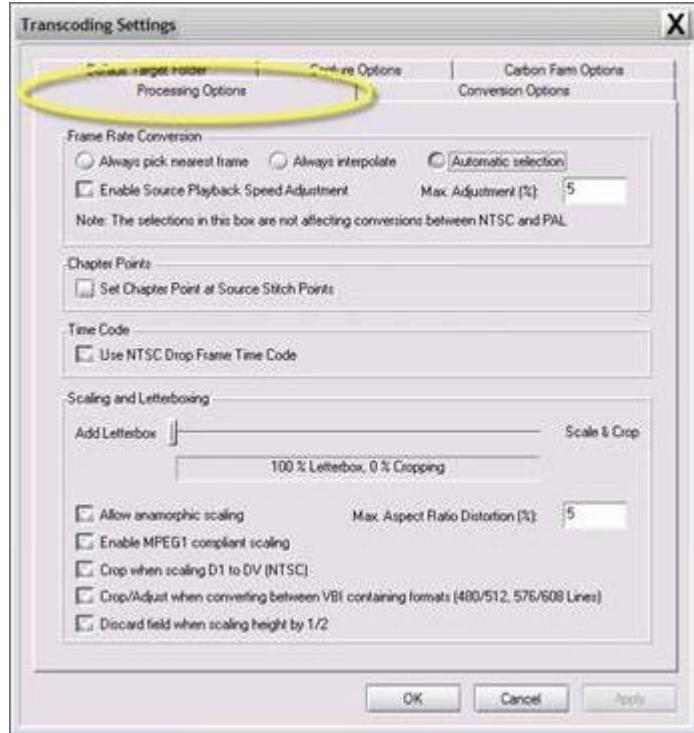
Application Options

Transcoding Settings

The Transcoding Settings window allows you to set target folders to save encoded files and specify processing options for the application. Setting these parameters is useful if you are going to be dealing with many source files from a single or similar sources.

Processing Options Tab

The **Processing Options** tab controls both Frame Rate Conversion and Scaling and Letterboxing preferences.



Frame Rate Conversion

If your source and your target have different frame rates, there are many different ways to convert the source frame rate to the target frame rate.

- **Always Pick Nearest Frame** – This option creates a target frame by picking the nearest temporal frame from the source stream. This preserves full spatial source image quality. However, depending on the ratio between the source and target frame rates, movement in the video may appear jerky.
- **Always Interpolate** – This option creates a target frame interpolating between the two nearest temporal source frames. This guarantees smooth movement. However, since every target frame is an interpolation between source frame, the spatial quality is degraded and "ghost" images may appear.
- **Automatic Selection** – When the source or target frame rate is below approximately 23 fps, Carbon Coder will pick the nearest frame instead of interpolating in order to avoid ghosting. If Carbon Coder needs to interpolate frames for doing frame rate conversions, ghost images might appear. Use the Automatic selection option to avoid ghosting. If ghosting still occurs, then use the Always pick nearest frame option.
- **Enable Source Playback Speed Adjustment** - Carbon Coder normally does not alter the playback rate of sources in order to preserve the source's original speed and visual intent. In

other words, objects always move at the same speed through video regardless of the target frame rate and a 10-second source always converts to a 10-second target.

However, in some circumstances it is advantageous to slightly alter the source playback rate by a very small amount in order to aid conversion. For example, a 29.97fps source can be sped up to 30fps playback for conversion to a 15 fps output, removing the possibility of interpolation artifacts and making the conversion faster.

It is also standard that 24fps film transfers to PAL DVD-Video are not put through frame rate conversions. Instead, the 24fps film content is encoded and authored as if it was 25fps content, resulting in a 4% speed-up. This eliminates any interpolation or pulldown but makes PAL DVDs of film transfers slightly shorter in length.

Check this box to allow Carbon Coder to alter the playback speed of sources up to the percentage in the **Max. Adjustment (%)** box.

Chapter Points

Chapter points are metadata information that can be embedded in the source or output file. These chapter points are generally used to allow jumping to different sections within a video.

- **Set Chapter Point at Source Stitch Points** – This option can be used when stitching together multiple files into single output file. Chapter points will be set at each joining point. An example use of this would be merging the multiple chapters of a movie into a single output file.

Time Code

This is used to represent the temporal location of a particular frame of video. The time code may be embedded in the source video or it may be imputed from the video itself. Time code may be discontinuous in a particular piece of video.

- **Use NTSC Drop Frame Time Code** – In the NTSC video world time code can be represented in two modes, drop frame and non-drop frame. Drop frame time code compensates for the difference between wall clock time and the time code generated by the 29.97 frame rate of NTSC video. Choose this option to make all time code display in drop frame mode.

Scaling and Letterboxing

If your source and your target have different frame sizes, there are two different ways to handle this scenario. For example, you may have a 16:9 source file that needs to be encoded to a target file with a 4:3 aspect ratio frame size. Because of the different frame sizes, you either have to scale and crop your Source file, or add black bars to the video to compensate for the difference.

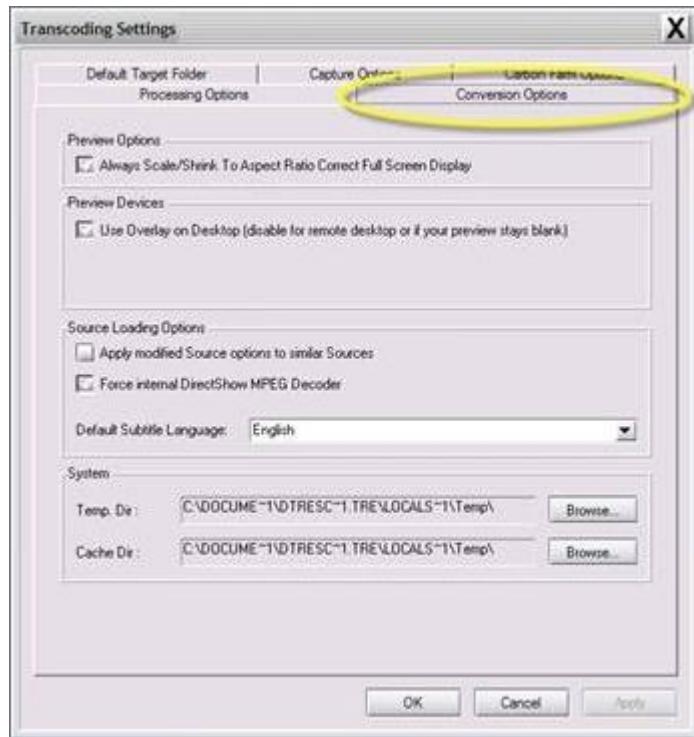
- **Add Letterbox/Scale & Crop Slider** - Use the slider to adjust the desired percentages or cropping. Select 100% letterbox, by sliding the adjustment bar to all the way to the left will leave the source frame completely visible, with letterbox bars added if necessary. If the slider

is at 0% letterbox (100% Scale and Crop) , the image will fill the entire space without letterboxing, but the sides will be chopped off. Leaving the letterbox slider in the middle (50%) is a mixture of adding letterbox bars and scaling the file to fit the space. If you know you can afford to cut off a little of the video, then you should have the bar more toward the middle. Experiment with these settings to determine the correct settings for your source files.

- **Allow anamorphic scaling** - This setting allows scaling the pixel aspect ratio non-proportionally (horizontal and vertical scaling are different). Next to this checkbox is a field for entering the maximum aspect ratio distortion percentage allowed during the anamorphic scaling process.
- **Enable MPEG-1 compliant scaling** - Carbon Coder normally converts full-D1 sources to MPEG-1 SIF using the Scaling and Letterboxing slider setting. However, the MPEG specification states that to convert a full-D1 (720x480) source to MPEG-1 SIF (352x240), crop 8 pixels from the left and right sides of the source to create a 704x480 frame then scale it to 50% for a 352x240 frame. Checking this box forces Carbon Coder to use the MPEG-1 specification method.
- **Crop when scaling D1 to DV (NTSC)** - Enable this option when converting a NTSC D1 (720x486) source to NTSC DV (720x480). Carbon Coder will crop 4 lines from the top and 2 lines from the bottom of the source frame during conversion. This results in faster processing and higher quality since scaling is not performed.
- **Crop/Adjust when converting between VBI containing formats (480/512, 576/608 Lines)** - This option can be used for certain transcodes between broadcast formats where either the source or target contain Vertical Blanking Interval (VBI) information and the other format does not. With this option checked, Carbon Coder will either strip out the extra 32 lines of VBI data when going from a VBI source to a non-VBI target or add 32 lines of blank VBI data when going from a non-VBI source to a VBI target.
- **Discard field when scaling height by ½** - When using full-size interlaced source files, this option discards one of the fields if you are scaling the file to half-size. In some cases, this eliminates the need for applying deinterlacing filters to your source file since discarding a field effectively deinterlaces the video.

Conversion Options Tab

The **Conversion Options** tab controls various preview, loading and system preferences.



Preview Options

Always Scale/Shrink To Aspect Ratio Correct Full Screen Display – Enable this option to have Carbon Coder always compensate for pixel aspect ratio differences and provide an accurate on-screen display. It is recommended to keep this option enabled.

Preview Devices

Use Overlay on Desktop – Enable this option to use video overlay for preview. Video overlay is faster than standard video and therefore uses less system resources. You should disable this option for remote desktop or if your preview stays blank.

Source Loading Options

- Apply modified Source options to similar Sources** – Enable this option to use modified source options on subsequent source files. With this option enabled, subsequent sources of similar types will be loaded with the same source parameters as the previous source of the same file type. This is useful for Watch folders because it allows source files to be adjusted automatically without the need for the user to interact with the software. For example, let's say you have an AVI file that does not have square pixels and you set it so the pixel aspect ratio isn't square (i.e. DV NTSC). If **Apply modified Source options to similar Sources** is enabled, the next AVI source file you load will retain the same settings used before, and will load the file with the pixel aspect ratio set to DV NTSC, instead of the default setting.

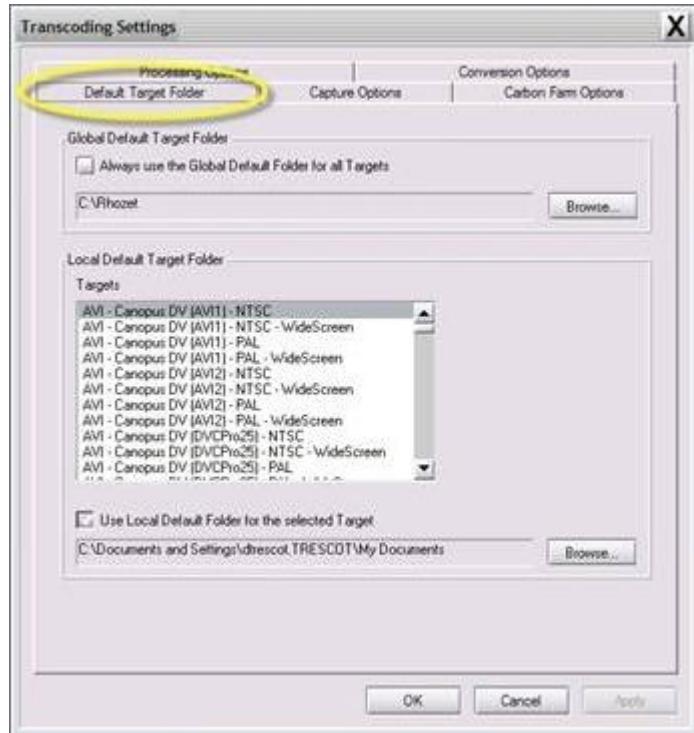
- **Force Internal DirectShow MPEG Decoder** – this forces Carbon Coder to use the built-in decoder, even when using DirectShow graphs.
- **Default Subtitle Language** – select what subtitle language should be pre-selected when loading a VOB.

System

- **Temp. Dir** – Some conversions need to save temporary files. Click **Browse** to choose a location for your temporary directory.
- **Cache Dir** – Carbon Coder retains some information in order to speed certain types of conversions. Click **Browse** to select the location to use for Carbon Coder's cache files.

Default Target Folder Tab

The **Default Target Folder** tab allows you to specify where you transcoded files should be stored.



Global Default Target Folder – This option sets the output location for all formats and targets. Click **Browse** to select the folder you want to use.

If you want the global settings to apply to all target folders, select **Always use the Global Default Folder for all Targets**. Checking this option disables and overrides any local settings you may specify in the next section.

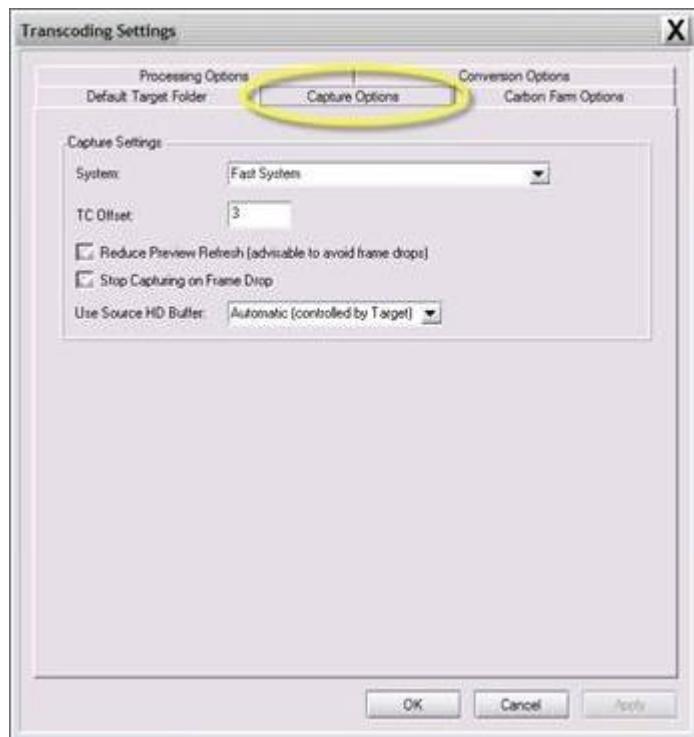
Local Default Target Folder – Sets the output location for specific target presets. The local defaults override the global defaults. This is helpful for separating files that go to different projects or can be used to separate different target formats from each other.

Setting the Local Default Target folder:

1. Uncheck **Always use the Global Default Folder for all Targets**.
2. Select the desired target from the list by clicking on it.
3. Select **Use Local Default Folder** for the selected target option.
4. Click **Browse** to choose the folder to use.
5. Click **Apply** or **OK**.

Capture Options Tab

The **Capture Options** tab allows you to specify video and audio capture settings. A DirectShow compliant hardware capture device must be installed in your computer. See the "Video Capture" section for a list of supported devices.



- **System** – While capturing video, Carbon Coder attempts to transcode directly from the input video into the target formats. If the performance of the system is not fast enough to enable immediate encoding, Carbon Coder will generate an intermediate file on disk and then transcode asynchronously from this temporary file into the target formats. If your encode stops during capture or has dropped frames, select a lower system speed which will force

Carbon Coder to generate the temporary file.

- **TC Offset** – Time Code offset is used when there is a difference between the time code displayed by the tape deck and the display in Carbon Coder.
- **Reduce preview refresh** – Previewing video during capture uses CPU cycles that could be used for transcoding. Selecting this option will reduce the rate of frames displayed and will increase the processing power available for encoding. On faster machines this option is not necessary.
- **Stop Capturing on Frame Drop** – If your machine is not fast enough to perform encoding during the capture it may drop some video frames. Select this option to stop the capture process if there is a frame dropped.
- **Use Source HD Buffer** – Some encoding functions are particularly computationally intensive - for example frame rate conversions. Carbon Coder has the ability to perform partial transcodes and then write temporary data to the hard drive to ensure that there are no dropped frames during the transcode. Writing this temporary data will slow down the encoding process, but guarantees successful capture. You may select from one of three options: Never, Automatic and Always. The Never option will never write intermediate data to the hard drive, the Always option always will, and the Automatic will write data depending on the target parameters. You can tune the settings depending on your system performance.

Carbon Farm Options Tab

The Carbon Farm Options tab allows you to specify and setup the Carbon Farm settings. Carbon Coder can be used as a front-end to a “farm” of transcoders under the control of Carbon Server. If you do not have a Carbon Server system, then these settings are not used. If you are using a Carbon Server system, you can set up transcoding jobs and then queue them up for processing on the farm. These settings allow you to control interaction with the farm.

- **Use Local Presets** – if you would like to use presets that have been developed on the local machine, choose this option.
- **Use hosted Presets** – if you would like to use presets that are on the Carbon Server machine (or some other machine in your network), choose this option. After choosing this option, you can browse to select the machine and file location for the presets that you would like to have available. By hosting presets on a central machine, all of the users in your environment can share the same presets.
- **Connect to Carbon Server** – choose this option to initiate connection to a Carbon Server machine. After choosing this option, you will select from the available Carbon Servers in the drop down selection box. The **Status** window to the right of the selection box shows the status of the selected Carbon Server.

Application Settings

The Application Settings window lets you set enable or disable application-specific behaviors. To open the Application Settings, choose **Options > Application Settings**.



Settings

- **Window Animation** – This toggles whether or not the windows slide into place when they open or close.
- **Show "Save Project" Dialog on exit** – This toggles whether or not Carbon Coder prompts you to save your projects when you exit the application.
- **Disable Sound on "Conversion finished"** – This option disables the exuberant "Done" sound that plays when Carbon Coder finishes a foreground conversion.
- **Show Advanced options in basic view** – This option includes all advanced options within the basic view. When the advanced options are included in the basic view, the advanced view is only necessary for source trimming and adding filters to sources and targets.

Confirmation

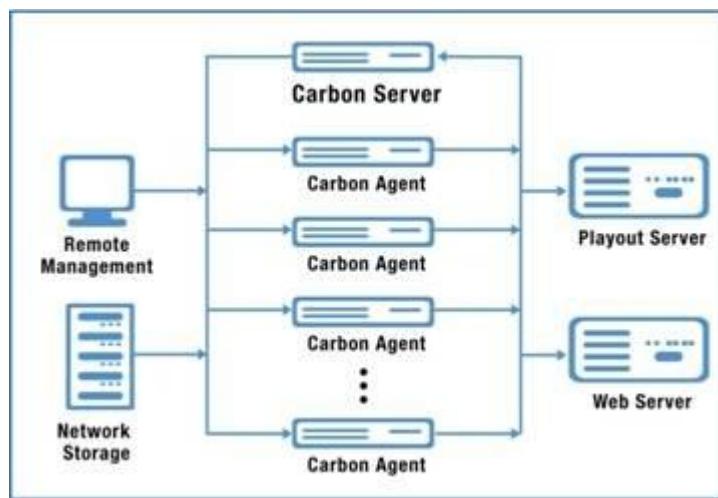
- **Disable confirmation when removing Filter** – This option lets you disable the prompt that appears when you want to remove a filter(s) from targets or sources.
- **Disable confirmation when removing Source** – This option lets you disable the prompt that appears when you want to remove a source file(s) from the Source List.
- **Disable confirmation when removing Target** – This option lets you disable the prompt that appears when you want to remove a target(s) from the Target List.

Carbon Server

By using Carbon Server, an organization can easily scale the number of machines being used for transcoding without changes to the basic workflow. Carbon Server allows a network of transcoding machines to “look” like a single transcoding machine. The Carbon Server application manages the following items:

- Job distribution
- Job prioritization
- Load balancing
- Failover protection
- FTP transfer management
- Status monitoring
- Job notification

A simple Carbon Server setup would look something like this:



In this case a single Carbon Server is controlling a number of Carbon Agents. A Carbon Agent is the “slave” transcoding process that runs under the “master” of Carbon Server. The Carbon Agent is a version of the Carbon Coder application that runs without a user interface. The Carbon Server application can also perform local transcoding. Therefore a configuration of one Carbon Server and 4 Carbon Agents would provide five times the transcoding throughput of a single Carbon Coder machine.

Carbon Server is designed to scale from a single user to an entire enterprise. The server software automatically recognizes new Carbon Agent “nodes” and adds them to the transcoding network. If a Carbon Agent fails to transcode a job, that job is automatically routed to another Carbon Agent.

The distributed transcoding network managed by Carbon Server can access shared storage on the network or remote storage via FTP. As an example, Carbon Server can be set to watch an FTP

location on a catch server, then automatically transcode arriving material into an editing format. The transcoded video can then be automatically transferred to an editing station.

There are several ways that you can manage your Carbon Server transcoding network, using the desktop tools, using the optional Web user interface, and using the API, as described in the following paragraphs.

Desktop Tools

Carbon Coder

The Carbon Server installation process also installs the Carbon Coder application on the machine. Carbon Coder allows you to create presets for specific transcoding operations. Carbon Server ships with several hundred presets, or you can create your own. A preset includes both the transcoding parameters and any desired video and audio filters. The presets created in Carbon Coder are available for setting up Watch Folders. See the "Carbon Coder" section for more details.

Carbon Server Admin

The Carbon Server Admin application allows you to see all the jobs that are currently queued for transcoding. You can see the parameters for each job, including priorities and targets. It also allows you to manage transcoding nodes within the system. For example, you can individually set the number of simultaneous transcodes that you want each node in the network to work on. You can also activate or reset specific nodes in the system. In addition, Carbon Server Admin allows you to set up specific watch folders on your network. A watch folder has a number of parameters including source file location, location to write the target file, preset, etc. A watch folder can also be used to get data from a specific FTP server or to send a transcoded target file out to an FTP server. Watch folders can also have instructions regarding what to do with source files once transcoded – for example should they be deleted or left in place. See the "Carbon Admin" section for more details.

Web User Interface

Users of a Carbon Server transcoding network can also interact with it via the optional Web User Interface (Web UI). This allows users in the network to set up transcoding jobs without having to have direct access to the Carbon Server machine, which will generally be in a remote server room. The Web UI allows the creation and management of watch folders and the selection of presets. The Web UI is not intended as a network management tool but rather a tool to configure new transcoding workflows, usually using presets and locations already prepared with the desktop tools. The low-level management of the Carbon Server system is performed by a system administrator using the Carbon Coder and Carbon Server Admin applications.

Controlling Carbon Server with the API

In addition to the desktop tools and Web UI, a transcoding network can be controlled directly via an XML-based API provided with the software. Every aspect of the transcoding process can be controlled by the API, including source- and target destinations, transcoding parameters, filtering, compositing,

ad insertion, titling, notifications, etc. The same API controls both Carbon Coder and Carbon Server, so your work will scale from a single machine to an entire transcoding network. Please see the Carbon API documentation for more details.

Considerations for Operating Carbon Server

File and Folder Access

Every Carbon Agent "sees" a job exactly as you submitted it. If you set your watch folder to the Carbon Server machine's "C:\incoming" folder and you drop a file "test.avi" into the folder, the job will be passed to the Carbon Agent with instructions something like "take the file in the folder c:\-incoming\test.avi and convert it". The "C:" drive on the Carbon Agent machine is different and may not even contain a "C:\incoming" folder, therefore the job will fail. Carbon Server does do translation of local drives to UNC paths, such as converting "C:\incoming\test.avi" to "\\\<-Managermachine>\c\$\incoming\test.avi", but this may still be a problem in some circumstances, for example with user access rights.

To avoid this, we suggest avoiding drive letters entirely. If you want to create a drop location in your local machine, create it as "\\<your machine>\<drive>\$\<folder>\\". In this case the agents will be able to access the watch folder regardless of location. The same issue applies to the target folder of your watch folder.

Codec and 3rd party Component Availability

If you are using codecs or exporters which were not shipped along with your Carbon Server please make sure they are installed on every Carbon Agent in your farm. Carbon Server distributes user created presets automatically but it cannot re-distribute 3rd party components such as codecs etc.

Multiple Carbon Servers

Carbon Server can be operated with multiple Carbon Server farm manager machines. In this scenario, each Carbon Agent serves each Carbon Server – when a Carbon Agent has free slots, the first Carbon Server that polls the Carbon Agent will receive access to the Carbon Agent resources. When running multiple Carbon Servers, please consider user right issues – the Carbon Agent is controlled by a Windows Service with a user login and has to serve multiple Managers – the access to all Manager machine administrative shares must be ensured for this user (for preset distribution). This issue is covered in the installation and configuration steps, but pay specific intention in the multiple Carbon Server issues to issues such as account naming and credentials.

Failover

Carbon Server has built-in "failover" – if a job fails to transcode on a Carbon Agent machine for any reason, the job will be re-assigned to a different Carbon Agent. This will be repeated until all Carbon Agents report failure.

If you use the Carbon Agent Admin application to look at the queues of the individual Carbon Agent machines, you will see those errors reported. Since Carbon Server spends a significant amount of

time in retrying and reassigning jobs please consider trouble-shooting that particular Carbon Agent if the number of errors is high.

Logging

To view job status (Job started, failed, completed etc.) as well as certain error conditions, enable logging as follows:

1. Launch the Carbon Server Admin application.
2. Click on **Tools > Kernel Settings** and check the following options:
 - Logging: Write Engine Log File
 - Logging: Log File Path (if you want to change the location of the log files)
 - Optionally you can also enable the debug logs (enable the first two only when asked to by Rhozet Support, they will significantly impact transcoding performance):
 - Debug - Logging: Log COM Interface Activity (Slow!)
 - Debug - Logging: Log GUI Interface Activity (Slow!)
 - Debug - Logging: Log Watches
 - Debug - Logging: Log Attached Watches
3. Close the Carbon Server Admin application.
4. Restart the Nexus service to read the logging options.
5. Click on **Start > Control Panel > Administrative Tools > Services**.
6. Select the Nexus Server (CarbonServer Farm) service, and click **Restart the service** in the top left of the window.

After setting the logging options, Carbon Server will generate log information and write it to the specified file.

Performing a Clean Install of Carbon Server

Under normal conditions, the standard uninstall process of Carbon Server should be used. If you are experiencing problems, Rhozet support may ask you to perform a complete or 'Clean' uninstall.

Note: This clean uninstall will remove all your customizations from the Carbon Server machine, including watch folders and their configurations, jobs in progress, and any user-created presets. To avoid losing valuable information, follow the procedures below only when instructed.

1. Exit any Rhozet application.
2. Uninstall Carbon Server using **Start>Programs>Rhozet>CarbonServer Farm>Uninstall CarbonServer Farm**.

3. From Control Panel, go to **Add or Remove Programs** and uninstall the following components and applications:
 - Carbon Server 3.0 Web Interface
 - CarbonServer Farm
4. Delete the following folders:
 - Program File folder - **C:\Program Files\Rhozet**
 - User presets & system presets folder - **C:\Program Files\Common Files\Rhozet**
 - Watch folder information and job folder (jobs - completed and in progress - and watch folder information are stored here) - **C:\Documents and Settings\All Users\Application Data\Rhozet**
5. Using the Registry Editor tool (click on **Start > Run...** and enter *regedit*) delete the following registry key (if present): **HKCU\SOFTWARE\Rhozet** and **HKLM\SOFTWARE\Rhozet**.
6. **IMPORTANT:** Restart the machine.
7. If necessary, re-install Carbon Server normally, rebooting when prompted.

Troubleshooting

General Issues

If one of the Carbon Server or Carbon Agent machines does not work as expected, please check the following points:

- **DirectX and QuickTime** - Verify that DirectX and QuickTime are installed on Carbon Server and Carbon Agent machines.
- **USB Security Keys** - Verify that each USB security key (dongle) is inserted correctly and in the appropriate machine. The Carbon Server farm manager machine requires the "Carbon Server" USB security key; each Agent requires one "Carbon Agent" USB security key. If you are in doubt, the Job Queue Manager application will report an incorrect or missing USB security key when launched.
- **Firewalls** - Please ensure that the firewalls are disabled on the involved machines. If a firewall is required to run, please open the ports 21, 80, 1101, 1102, 1103 and 1104. You may find that under some circumstances even opening ports will not make Windows Firewall work correctly, in this case try disabling it entirely.
- **Event Viewer** - When the Rhozet background transcoding services start, potential problems will be logged as events, which can be viewed using the Windows Event Viewer (**Start > Control Panel > Administrative Tools > Event Viewer**).

Multi-hosting with Carbon Server

Multi-hosting is supported with Carbon Server or Carbon Agent by binding the Nexus background service to a specific IP address. We define multi-hosting as a machine with multiple NIC's connected to the same or different network but maintaining different IP addresses. Please see the "Kernel Settings" section in the Carbon Admin documentation for more information.

Windows Firewall Consideration

By default, Windows Firewall will block the ports that Carbon requires to communicate. In order for Carbon to be able to properly communicate across the network, either Windows Firewall needs to be disabled or configured to allow traffic on those ports. If your Carbon installation is using the default ports for communication, then you need to make sure that the Nexus Service has access to both ports 1101 and 1111. If you've customized the ports over which Carbon communicates, then those new port numbers would be assigned to Nexus in the firewall configuration instead of ports 1101 and 1111.

Migrating Carbon Server Installations

The purpose of this document is to describe how to take the settings and profiles from an established Carbon Server 3.0 machine and migrate them all to a new Carbon Server 3.0 installation.

This does not cover migrating from Carbon Server 2.5 to Carbon Server 3.0. See [Carbon Server - Upgrade Installation](#) for that information. You should first upgrade any Carbon Server 2.5 machines to Carbon Server 3.0 before you attempt to migrate settings between machines.

1. Copy the User Presets, Database Information, and Watch Folder information from the existing Carbon Server. You should fully copy the directories listed below:
 - C:\Program Files\Common Files\Rhozet\CarbonServer Farm\User Presets\
 - C:\Documents and Settings\All Users\Application Data\Rhozet\CarbonServer Farm\Nexus\Watches\
2. Copy the registry entries which contain all of your application settings by clicking on **Start > Run**, type *regedit*, and press **Enter**.
3. Open the directory **HKEY_LOCAL_MACHINE\SOFTWARE\RHOZET**.
4. Right-click on the Carbon Server folder and choose export.
5. Save this file with the copies you made in Step 1.
6. Install Carbon Server on your new installation using the detailed instructions in the Carbon Server Manual (pgs. X-Y).
7. Import the registry file you created in step 2.

Note: You must make sure that the version of Carbon Server you exported the registry from and the version you are importing the registry to are exactly the same. Moving registry keys between different versions of Carbon Server may cause serious problems to your installation.

8. Copy the files you copied in Step 1 to the same locations on the new Carbon Server Installation.

You should now be up and running with everything on the new farm exactly the way that it was on the old farm. This also applies to all other hardware and software based firewalls that are installed between your Carbon machines. Please visit www.microsoft.com or your firewall manufacturer's website for instructions on how to configure ports for specific services.

Data Execution Prevention

When running Rhozet products on Windows 2003 Server, errors may appear when trying to launch applications. One symptom is the Rhozet application stalling on the message "Loading 'Sharpen' filter".

To solve this requires changing the Windows Data Execution Prevention (DEP) default setting. See the steps below how to set the DEP option.

Instructions

1. Go to **Start > Run** and enter **sysdm.cpl**. Click **OK** to open your **System Properties** dialog box.



2. Select the **Advanced** tab.



3. In the **Performance** section click on **Settings**.
4. Select the **Data Execution Prevention** tab.



5. Select **Turn on DEP for essential Windows programs and services only**.
6. Click **OK**.

Carbon Server and Carbon Agent on Different Subnets

By default, Carbon Server and Agent will not find each other if they are located on different IP subnets within your network. The reason for this is that the ports over which Carbon communicates are

more often than not closed by default on routers. There are two possible solutions to get Carbon to communicate through different subnets. First, you can reconfigure your routers to allow the default ports Carbon uses by default to be open. Second, you can change the ports Carbon uses to communicate on each system to a port that is already open and available on your routers. Note that this change needs to be made on every Carbon Server and Carbon Agent machine you wish to communicate. Please see the [Debug – Network - Ports parameters](#) in Kernel Settings in the Carbon Admin documentation for more information.

Option 1: Router Configuration - The two default ports that need to be open for Carbon to communicate are 1101 and 1111. Individual router configuration is different between different brands and models, so please consult the documentation accompanying your router to open these two ports.

Option 2: Port Configuration - To change the ports on which Carbon communicates, open the Carbon Admin application on both Server and Agents. Click on the **Tools > Kernel Settings**. There you will find two settings: Nexus Service Port and Nexus Admin Port. Change these two fields to the ports that you would like to use and set the routers accordingly. Please note that these cannot be the same port. Please see the [Debug – Network - Ports parameters](#) in the Kernel Settings section in the Carbon Admin documentation for more information.

Carbon Admin

Carbon Admin is a component of the Carbon family of products from Rhozet. Carbon Admin does not work by itself, but is used to configure and control the other Carbon products, Carbon Coder, Carbon Server, and Carbon Agent.

For previous users of Carbon that may be familiar with the older applications that were used to control job queues and watch folders (the **Job Queue Manager** and the **Watch Folder Manager** respectively), those applications have been replaced and combined into a single and more powerful application, Carbon Admin.

The Carbon Server web-based user interface is however still available, and can either work by itself as usual, or be used together with Carbon Admin. See the "Carbon Server" section for more information.

Carbon Admin can be used in a variety of ways:

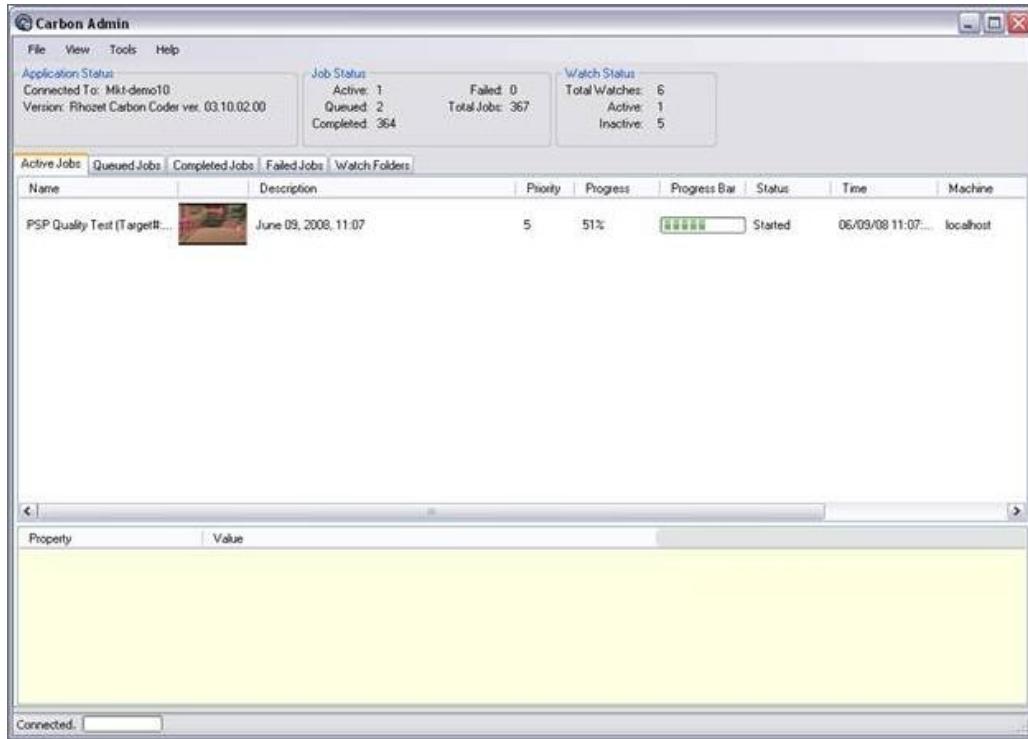
- Set up watch folders, automated processes that transcode any source file dropped or copied into the folder.
- View transcoding jobs, and their status. This includes jobs that are currently running, jobs that have previously been run and are now finished, and jobs that are waiting (queued-up) to be run.
- Create new presets and manage existing ones. Presets describe the kinds of output files you need to create, and are a convenient way to recreate the same kinds of files over and over instead of having to enter parameters such as codec (Flash, H.264, etc), file type (FLV, MP4, MOV), frame size (320x240 pixels), bit rate (300 Kbits/second), and frame rate (25 frames/second) every time you want to create a new output file.
- Configure Carbon transcoding parameters.
- When applicable, view the transcoding jobs and configure the transcoding parameters of remote systems.

In the rest of this section, some familiarity of the concepts of Watch Folders and Presets is assumed. For more details on those concepts and other transcoding related information please see "Carbon Coder" or "Carbon Server" sections.

Carbon Admin Interface

Overview

Each time you start Carbon Admin you will begin at the home screen. The home screen contains a number of different areas which all display information about the current state of Carbon. First, there is the menu bar, then a number of areas which supply general information about the Carbon transcoder, then the **Job** and **Watch Folder** tabs, then the area that displays Job and Watch Folder lists, then the Job/Watch detail and preview areas, and finally the status bar at the bottom.



The version of Carbon Admin installed with Carbon Server (Carbon Server Admin), has one additional tab called **Carbon Machines**. This tab displays all the Carbon Agent machines that are known to this Carbon Server machine.

The rest of this section describes each area in general terms. Where there is more detailed information available, sections later on in this document provide it.

Menu Bar

The Carbon Admin menu bar is relatively simple. It has four options:

File

The only option in the **File** menu is **Exit**, this will end the Carbon Admin program.

View

- **Refresh** – Re-display the jobs or watch folders in the current tab.
- **Preview Style** - Change whether a preview is shown in the preview window in the bottom right of the Carbon Admin ('Single Preview'), or for every currently transcoding job in the **Active Jobs** tab ('Preview in List'), or not at all ('No Preview'). If **Single Preview** is selected, the preview window is only visible when the **Active Jobs** tab has been selected. If Preview in List or No Preview is selected, the preview window disappears from the bottom right of the Carbon Admin window. If **Preview in List** is selected, every active job that is visible in the **Active Jobs** tab will show a small preview of the current output file.

Tools

- **Preset Settings** - Manage existing presets, and create new ones. See the [Quick Start](#) section for some information to get you familiar with the creation of presets, and see the [Preset Management](#) section for detailed information.
- **Kernel Settings** - Edit less-frequently used configuration parameters for Carbon. See the [Kernel Settings](#) section for more information.
- **Migrate Carbon 2.x to 3.x** - Converts older Carbon 2.x-style Watch Folders and Presets to the newer Carbon 3.0 Watch Folders and Presets. This is mostly useful for Carbon Server, but can also be used if you created a lot of Watch Folders and Presets with version 2.0 or 2.5 of Carbon Coder. Run this the first time you run Carbon Admin, right after you've installed Carbon.

Help

This section is fairly self-explanatory. The **About Carbon Administration** option will display the Carbon Admin version number and legal and copyright information.

Carbon Information Areas

Application Status

Describes which machine Carbon Admin is displaying the status of. Carbon Admin can currently only display the status of the local machine (the machine on which it is running), but in the future may be able to select other machines that are running Carbon and display the status of those other machines.

- **Connected to** - The name of the selected machine (or IP address if the name cannot be found). The IP address "127.0.0.1" is reserved for the local machine, i.e. the machine that Carbon Admin is currently running on.
- **Version** - The version of Carbon that is running on the selected machine.

Job Status

List the total number of jobs in each job category.

- **Active** - The number of transcoding jobs that are currently in the process of being transcoded.
- **Queued** - The number of transcoding jobs that have been requested to transcode, but that are waiting for a transcoding "slot" to free up. A machine running Carbon can be configured to have a user-specified number of Transcoding Slots, which indicates how many transcoding jobs that machine can execute simultaneously. If a machine has three transcoding slots and is already executing three transcoding jobs, that machine cannot accept any new jobs until one of the three jobs completes or fails. Once that happens, a transcoding slot becomes available, and one of the jobs in the Queued status now becomes Active.
- **Completed** - The number of transcoding jobs that have been transcoded successfully.

- **Failed** - The number of transcoding jobs that have encountered an error somewhere during transcoding.
- **Total Jobs** - The number of all jobs in the four preceding categories combined.

Watch Status

This area lists the numbers of Watch Folders and their state of activity.

- **Total Watches** - The total number of Watch Folders that have been configured on this machine.
- **Active** - The number of Watch Folders that have been marked as **Active**. When a source file is dropped into the input folder of a Watch Folder marked as "Active", it will be transcoded according to the Watch Folder settings.
- **Inactive** - The number of Watch Folders that have not been marked as "Active". When a source file is dropped into the input folder of a Watch Folder not marked as "Active", it will be ignored, it will not be queued, and no transcoding will take place.

Connected Machine Status

This informational area displays the status of Carbon Server systems, and is not displayed for Carbon Coder or Carbon Agent machines.

- **Total Machines** - The number of Carbon Agent machines that are under the control of the Carbon Server machine.
- **Active** - The number of machines that are under the control of the Carbon Server machine and that have been marked as "Active". Active machines are configured to accept jobs dispatched by the Carbon Server machine.
- **Inactive** - The number of machines that are under the control of the Carbon Server machine and that have not been marked as "Active". Inactive machines will not accept jobs dispatched by the Carbon Server machine.
- **Total Slots** - The sum of transcoding slots on all active machines. A machine running Carbon can be configured to have a user-specified number of Transcoding Slots, which indicates how many transcoding jobs that machine can execute simultaneously. If a machine has three transcoding slots and is already executing three transcoding jobs, that machine cannot accept any new jobs until one of the three jobs completes or fails. Once that happens, a transcoding slot becomes available, and one of the jobs in the Queued status now becomes Active.
- **Slots Used** - The sum of the number of transcoding jobs that are currently being executed simultaneously on all active machines.

Job and Watch Folder Tabs

Active Jobs

Selecting this tab will display a list of transcoding jobs that are currently in the process of being

transcoded. Right-clicking a job in this tab will display the following options:

- **Stop** - Terminate transcoding, and move the jobs to the "Failed Jobs" tab. From there it can be re-submitted for transcoding at a later time if desired.
- **Remove** - Terminate transcoding and remove the transcoding job from this tab.
- **Set Priority (1-10, Render Now)** - Change the priority of this job. It doesn't have any effect if the job is already in the Active Jobs tab.

Queued Jobs

Selecting this tab will display a list of transcoding jobs that have been requested to transcode, but that are waiting for a transcoding "slot" to free up. A machine running Carbon can be configured to have a user-specified number of Transcoding Slots, which indicates how many transcoding jobs that machine can execute simultaneously. If a machine has three transcoding slots and is already executing three transcoding jobs, that machine cannot accept any new jobs until one of the three jobs completes or fails. When a job is completed or fails, a transcoding slot becomes available, and one of the jobs in the Queued status now becomes Active and is moved to the Active Jobs tab. Right-clicking a job in this tab will display the following options:

- **Remove** - Terminate transcoding and remove the transcoding job from this tab.
- **Re-queue** - Resubmit this transcoding job and move it to the Queued Jobs tab. It doesn't have any effect if the job is already in the Queued Jobs tab.
- **Start Now** - Immediately moves the job to the Active Jobs tab and starts transcoding it, regardless of the number of transcoding jobs already in progress and the maximum number of Transcoding Slots configured for this machine.
- **Set Priority** - Set a priority for this job, between 1 (lowest) and 10 (highest). The highest priority jobs will be transcoded next once a transcoding slot is freed up. Selecting **Render Now** immediately moves the job to the Active Jobs tab and starts transcoding it, regardless of the number of transcoding jobs already in progress and the maximum number of Transcoding Slots configured for this machine.

Completed Jobs

Selecting this tab will display a list of transcoding jobs that have been transcoded successfully. Right-clicking a job in this tab will display the following options:

- **Remove** - Terminate transcoding and remove the transcoding job from this tab.
- **Re-queue** - Resubmit this transcoding job and move it to the Queued Jobs tab.
- **Set Priority** - Set a priority for this job, between 1 (lowest) and 10 (highest). The highest priority jobs will be transcoded next once a transcoding slot is freed up. Selecting "Render Now" immediately moves the job to the Active Jobs tab and starts transcoding it, regardless of the number of transcoding jobs already in progress and the maximum number of Transcoding Slots configured for this machine.

coding Slots configured for this machine. This doesn't have any effect if the job is in the Completed Jobs tab.

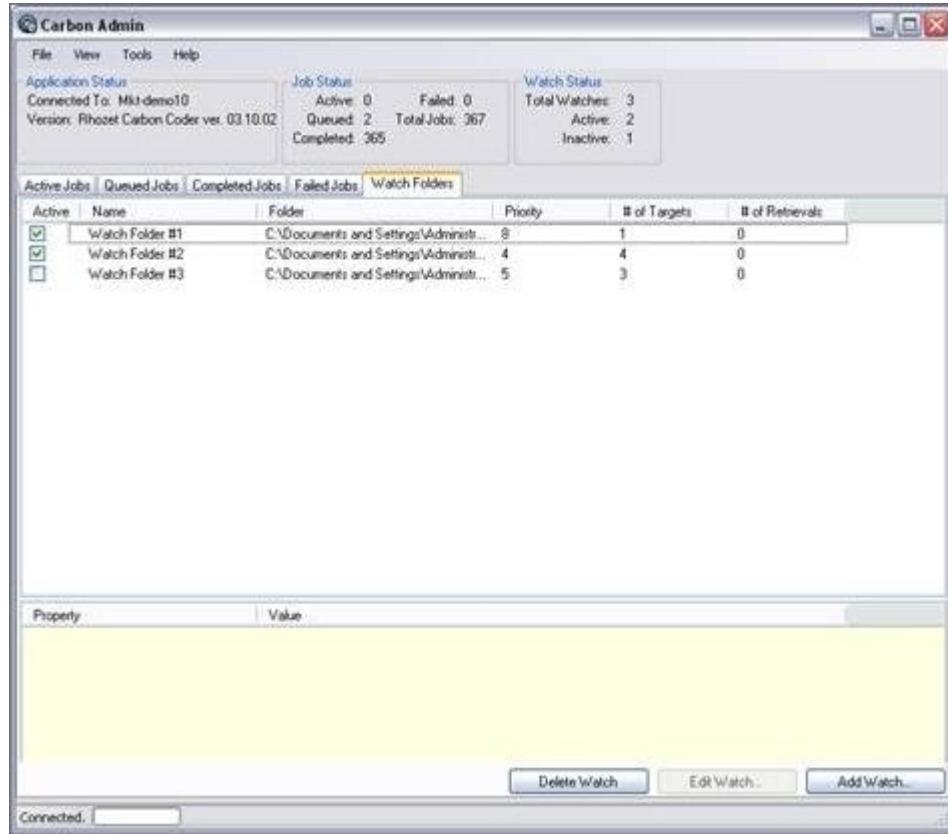
Failed Jobs

Selecting this tab will display a list of transcoding jobs that have encountered an error somewhere during transcoding. Right-clicking a job in this tab will display the following options:

- **Remove** - Terminate transcoding and remove the transcoding job from this tab.
- **Re-queue** - Resubmit this transcoding job and move it to the Queued Jobs tab.
- **Set Priority** - Set a priority for this job, between 1 (lowest) and 10 (highest). The highest priority jobs will be transcoded next once a transcoding slot is freed up. Selecting **Render Now** immediately moves the job to the Active Jobs tab and starts transcoding it, regardless of the number of transcoding jobs already in progress and the maximum number of Transcoding Slots configured for this machine. This does set a priority for the job, but doesn't have any effect if the job is in the Failed Jobs tab until and unless the job is re-queued.

Watch Folders

Selecting this tab will display a list of Watch Folders that have been created on this machine. To the left of every watch folder is a checkbox in the 'Active' column, see the 'Active' paragraph in the "Job and Watch Folder Lists" section a little later on in this manual for information.



Selecting this tab also displays the **Delete Watch**, **Edit Watch**, and **Add Watch** buttons at the bottom of the tab. The **Delete Watch** and **Edit Watch** options only become enabled when you select a watch folder from the list, otherwise those two buttons stay greyed-out.

- **Delete Watch** - Removes an existing watch folder. This is not the same as making a watch folder active or inactive by checking or un-checking the 'Active' checkbox, but rather removes the watch folder permanently. If you want the watch folder back some time in the future, you will have to completely recreate it. Be careful with this option, once a watch folder is deleted it cannot be undeleted, only recreated.
- **Edit Watch** - Change the parameters of an existing watch folder. See the "Quick Start Guide" at the beginning of this for some information to get you familiar with the creation of watch folders, and see the Watch Folder Management section for detailed information.
- **Add Watch** - Create and configure a new watch folder. See the "Quick Start Guide" at the beginning of this manual for some information to get you familiar with the creation of watch folders, and see the [Watch Folder Management](#) section for detailed information.

Right-clicking a watch folder in this tab will display the following options:

- **Delete** - Remove this watch folder.

- **Clone** - Make a copy of this watch folder, but give it a different name.
- **Edit** - Edit this watch folder.

Job and Watch Folder Lists

Selecting one of the job or watch folder tabs will display a list of jobs or watch folders.

Job Lists

In the **Active Jobs**, **Queued Jobs**, **Completed Jobs**, and **Failed Jobs** tabs, details about the jobs in the various job states are displayed.

Tab	Name	(Prev.)	Desc.	Prior.	Prog.	Progress Bar	Status	Time	Machine	Warn
Active Jobs	y	y	y	y	y	y	y	y	y	y
Queued Jobs	y	n	y	y	n	n	n	y	n	n
Completed Jobs	y	n	y	n	n	n	n	y	y	n
Failed Jobs	y	n	y	n	n	n	n	y	y	n

- **Name** - The name assigned to the job. Jobs created by dropping source files in watch folders will usually have a name of the form "Job (date time)". A more custom name can be specified when submitting a job using the API.
- **Description** - A description of the job. Jobs created by dropping source files in watch folders will usually have a description of the form "Source path_to_source_file". A more custom description can be specified when submitting a job using the API.
- **Priority** - For queued and active jobs, this lists the job priority, from lowest (1) to highest (10). A job that has been forced to transcode immediately without needing to be queued first (also referred to as "Start Now" or "Render Now") will be listed with priority 255.
- **Progress** - Percentage of completion of the transcoding job.
- **Progress Bar** - Percentage of completion of the transcoding job, expressed as a progress bar.
- **Status** - Active jobs can be Starting, Started, Error, or Completed. If the job fails with the Error status, it will be moved to the Failed Jobs tab, so the status may not be visible for long. When the job is completed it will be moved to the Completed Jobs tab so the status may not be visible for long.
- **Time** - The time when the watch folder queued the job.

- **Machine** - For active, completed, or failed jobs, on which machine the job was executed.
- **Warnings** - For active or failed jobs, any warnings or errors that were generated during the execution of the job.

Watch Folder Lists

- **Active** - Whether the watch folder will act on source files dropped into the input folder.
When a source file is dropped into the input folder of a Watch Folder marked as "Active", it will be transcoded according to the Watch Folder settings. If this box is unchecked, then source files dropped into the input folder this watch folder will be ignored, will not be queued, and no transcoding will take place.
- **Name** - The user-specified name that was give to the watch folder when it was created.
- **Folder** - The input folder of the watch folder. When a source file is dropped into this folder, it will be transcoded according to the Watch Folder settings.
- **Priority** - Jobs created will by this watch folder will have this job priority by default.
- **# of Targets** - Number of different output files that will be created for each source file dropped into the input folder.
- **# of Retrievals** - Number of network shared storage locations or FTP servers this watch folder scans for source files.

Job and Watch Folder Details

When a job or a watch folder is selected in one of the tabs, the details of that job or watch folder become visible in the details area.

Job Details

Selecting a job in one of the job tabs, displays the details pertaining to that job. Depending on the status of the job, i.e. what tab it's listed in, jobs don't all have the same details to display. The table below lists which details apply to jobs in which tab.

Tab	Watch Source File	Target Preset (Multiple)	Target File (Multiple)	Checked In	Started	Complete	Job GUID
Active Jobs	y	y	y	y	y	y	y
Queued Jobs	y	y	y	y	n	n (y if jobs were re-queued)	y
Completed Jobs	y	y	y	y	y	n (y if jobs were re-queued)	y
Failed Jobs	y	y	y	y	y	n	y

Property	Value
Watch Source File	C:\Temp\WatchSource2\Bear.wmv - Shortcut.lnk
Target Preset	H.264 (.mp4) 400x300 30fps
Target File	C:\Temp\WatchTarget\%
Target Preset	Windows Media 9 - Download - 512Kbps - NTSC - ConstrainedVBR
Target File	C:\Temp\WatchTarget\%
Checked in	2008-03-02 21:29:48
Started	2008-03-02 21:30:02
Job GUID	{CD25EBA1-29B3-4F0C-A928-F61D9989CA85}

- **Watch Source File** - The source file that was dropped into the Watch Folder's input folder. This can be the actual source file, or the shortcut to the source file.
- **Target preset** - The preset used to create an output file. This may appear multiple times, once for each output file the watch folder creates.
- **Target File** - The folder to which an output file is written. This may appear multiple times, once for each output file the watch folder creates.
- **Checked In** - The time that the transcoding job was queued.
- **Started** - The time that the job actually started transcoding.

- **Completed** - For completed or re-queued jobs, the time that the job finished transcoding.
- **Job GUID** - The Globally Unique Identifier of the job. This can be used in API jobs to identify jobs uniquely for logging, accounting, or performance measurement purposes.

Watch Details

Selecting a watch folder in the Watch Folders tabs displays the details pertaining to that watch folder.

- **Watched Folder** - The input folder for the Watch Folder. Files dropped into this folder are automatically transcoded.
- **Watch Status** - The current activity of the Watch Folder process.
- **Retrieval 1 Status** - This detail is visible when a Remote Retrieval such as a network share or FTP is being checked for the arrival of new source files.
- **Target 0 File** - The output folder, preset name, and filename ('%s' represents the source file name) for the first target.
- **Target 1 File** - The output folder, preset name, and filename ('%s' represents the source file name) for the next target. There may be many more 'Target X File" details, depending on how many targets this Watch Folder is configured to create from every source file.

Carbon Machines

Selecting this tab will display a list of Carbon Agent machines that are known to this Carbon Server machine. The listed Carbon Agent machines can be selected or de-selected for accepting transcoding jobs from this Carbon Server machine by checking or un-checking the checkboxes in the 'Active' column.

You can also right-click on the machine name, and select **Edit Node Settings** to change settings on the individual Carbon Agent machines.

Server Setting for Node

Enable – when checked, the selected Carbon Agent is available for this Carbon Server and can be sent transcoding jobs. When unchecked, this Carbon Server will not send new jobs to the selected Carbon Agent. The Carbon Agent will complete its assigned jobs but new jobs will not be sent to it by this Carbon Server, although it may continue receiving new jobs from other Carbon Servers if present.

Slots - refers to how many jobs sent by this Carbon Server can be simultaneously executed on the selected Carbon Agent.

Priority – this Carbon Server will send new jobs to Carbon Agent machines in order of decreasing priority levels. The higher the priority the more likely it is that a new job will be sent to a Carbon Agent. If two Carbon Agents have free transcoding slots, and one has priority "7" and the other has priority "4", the Carbon Agent with priority "7" will be sent jobs until it has no more free transcoding

jobs. Only then will the Carbon Agent with priority "4" be sent new jobs by this Carbon Server. If two Carbon Agents have the same priority, jobs will first be sent to the Carbon Agent with the highest number of empty slots. Only when the two Carbon Agents have the same number of empty slots will jobs be sent to them on a 'Round-Robin' basis.

Global Node Settings

Enable – when checked, the Carbon Agent is available for any Carbon Server and may be sent transcoding jobs. When unchecked, the selected Carbon Agent will not accept jobs from any Carbon Server, such as for situations where the Carbon Agent machine needs configuration or maintenance. The Carbon Agent will complete its assigned jobs but it will not accept any new jobs.

Version – this is the version number of the Carbon Agent software running on the selected Carbon Agent machine.

Tag – used to create sets of Carbon Agents with specific attributes (such as hardware acceleration for example) in a farm network. When a watch folder is created, you can assign tags to all jobs that come from that watch folder. Jobs with a tag will only be assigned to Carbon Agents whose tags match the tags of the job. Tags supersede priorities, so when a job has a tag assigned to it, it will be sent only to those Carbon Agents with the matching tag, even if there are higher priority Carbon Agents without the tag. Within the set of Carbon Agents with a matching tag, Carbon Server farm manager does consider the priorities.

Mandatory Tag – (not yet implemented) a Mandatory Tag indicates that this Carbon Agent machine will only accept jobs from Watch Folders configured with this tag, no other jobs will be accepted.

Total Slots – sets the total number of jobs that can be executed by the selected Carbon Agent, for all Carbon Servers combined.

Failed Count – (not yet implemented) this is the number of jobs that have failed on this Carbon Agent machine.

Kernel Properties – use this to change the kernel properties of the individual Carbon Agent machines. This saves the trouble of using Windows remote desktop to log in to each Carbon Agent machine and using Carbon Agent Admin to adjust the settings on the machine directly.

Reboot Agent - allows you to send a reboot request to the Carbon Agent machine. The machine will reboot immediately and running jobs will be terminated.

View Log - (not yet implemented) view the log file of the Carbon Agent machine.

Preview

This window is only visible when the **Active Jobs** tab has been selected. It can show a preview of the output file as it is being transcoded. Note that whereas the actual effect on the transcoding job you are previewing is low (even large and fast previews won't really slow down the actual transcoding job), there is overhead on the Carbon Admin application, and on the Carbon Server system when

using it. For some extremely large previews, hundreds of kilobytes need to be transferred and displayed, so use this feature wisely.

- **Preview off** - No preview is shown.
- **Thumbnail Preview – slow** - A small fixed-size preview is displayed, the preview is updated slowly.
- **Thumbnail Preview – fast** - A small fixed-size preview is displayed, the preview is updated quickly.
- **Full Size Preview – slow** - A scalable preview is displayed. It can be scaled by dragging the edges of the preview window or dragging the edges or corners of the Carbon Admin window itself. The preview updates slowly.
- **Full Size Preview – fast** - A scalable preview is displayed. It can be scaled by dragging the edges of the preview window or dragging the edges or corners of the Carbon Admin window itself. The preview updates quickly.

Status Bar

The Status Bar area display whether Carbon Admin can communicate properly with the Nexus background transcoding service. It needs to be able to do this to manage and create presets for example. If Carbon Admin is able to connect to Nexus, it will display the message "Connected" as seen below.

If Carbon Admin cannot connect to Nexus for any reason, it will display the message "Not Connected" as seen below. When this happens it is often a problem with the USB key, perhaps it is not inserted properly or the temporary/evaluation license has expired. Try removing and re-inserting the USB key, and restart the machine to see if that makes the problem go away. If not, you may need to contact support for more help.

One other thing to watch out for in this context is the behavior when the machine has just started, or when Nexus has just been restarted. Every time Nexus starts, it verifies all the presets on the machine and builds a list of the ones that have been correctly verified. It takes a while for Nexus to do this, so you may see the **Building Preset** dialog box below while Carbon Admin waits for Nexus to finish. This should never take more than 2 or 3 minutes unless you have a huge list of custom presets. If this dialog never seems to finish, you may have a problem and should restart the machine to see if that fixes the problem.

Preset Management

Carbon includes hundreds of presets to simplify choosing settings for your transcoding jobs. There will be times, however, where you will be making changes to the supplied presets for a particular requirement. If you need to reapply the same settings, like codec parameters and target file handling options, in the future, you can save your own preset that restores all the codec parameters you configured.

A preset saves the settings for a single codec. Use it to reapply a particular set of parameters for future projects. As an example, you could have a preset called "QuickTime MP4 with H.264 for Streaming" which saves the H.264 and QuickTime parameters used for streaming output from your web server. Each time you have a new source file that needs to be transcoded for streaming, you can apply this saved preset instead of having to re-enter all the setting such as frame size, frame rate, file wrapper (.mp4) and many more.

The "Quick Start Guide" of this document gives an overview of the preset management process to get you familiar with the creation of presets, and is recommended reading if you're not familiar with the concept of presets, or if you haven't used the Carbon Coder User Interface or Carbon Admin to create and manage presets before. This section will discuss the details of preset creation and management, and present you with all the available options.

Three Different Types of Presets

To help explain how presets work in Carbon, you need to know about the three different types of presets:

System Presets

System presets are displayed when the **System** category is selected in the list of categories on the left side of the window. System Presets are the basic building blocks of every other type of preset. Both the Factory Default Presets and the User Presets are created by taking one of the System Presets, modifying it, and saving it under a different name and a different category. These presets can never be modified, renamed, or deleted since they are not really separate preset files but are built into and are part of Carbon.

Factory Default Presets

These are specializations and customizations of the System Presets, either according to industry standards (e.g. "CableLabs HD 1080i 18.1 Mbps") or according to Rhozet recommendations (e.g. "3GPP2 H.264 320x240 128Kbps 15fps AAC-LC"). The Factory Default Presets are created by Rhozet and are automatically installed when a Carbon product is installed. They are installed under many different category names. They cannot be deleted or modified by the end user when using the Carbon Coder User Interface or Carbon Admin. In custom installations where these presets are not used for watch folders or API jobs, they can be removed from the file system from the folder where they are installed by default (usually in the folder named "C:\Program Files\Common Files\Rhozet\Carbon Coder\System Presets," this name is slightly confusing in this context but is maintained for backwards compatibility with earlier Carbon versions). This is best done only under controlled circumstances and in consultation with Rhozet Support.

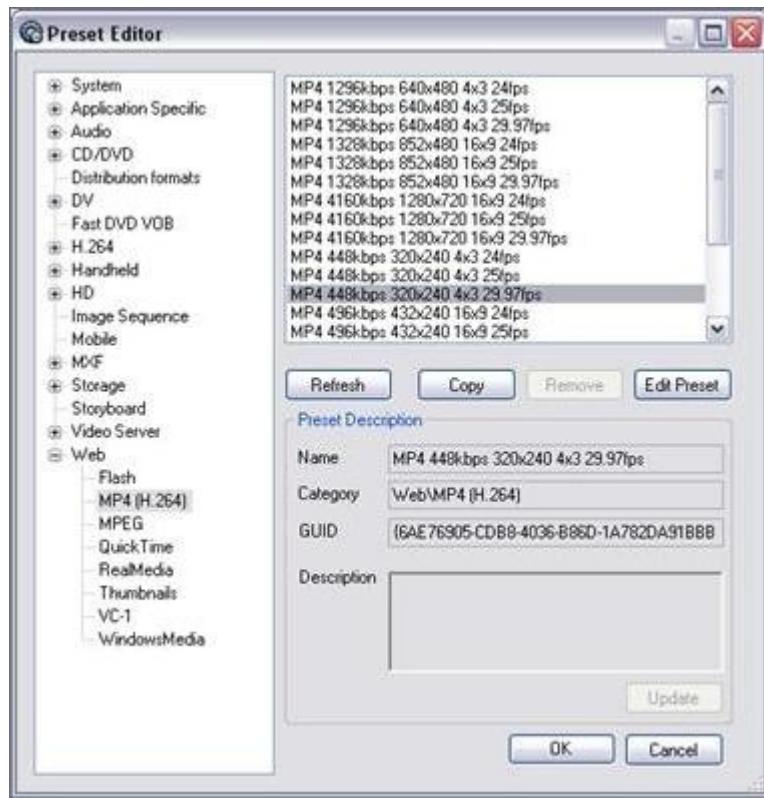
User Presets

These are presets created by the end user, either by modifying a System Preset or a Factory Default Preset. These can be deleted and renamed at will, and can be stored under any category, those created by the end user, in any of the Factory Default Preset categories, or even in the System category. It may sometimes be difficult to tell User Presets from System Presets and Factory Default

Presets, but selecting a User Preset will show the **Remove** button, whereas System Presets and Factory Default Presets can't be removed using Carbon Admin. User Presets are usually stored in the "C:\Documents and Settings\All Users\Application Data\Rhozet\Carbon Coder\User Presets" folder on Windows XP or Windows Server 2003. There is an equivalent folder on Windows Vista, but that name can vary per installation so you may need to search for the folder name "User Presets" to see where Vista placed it.

Preset Editor Window

When you are in the main Carbon Admin window and you select the **Preset Settings** option from the **Tools** menu, the **Preset Editor** dialog box opens. From this window you can manage, create, copy, and delete presets.



Category List

On the left side you can see the list of preset categories. When you save a new preset, you can choose a category to save it under, so that it's easier to find in the future, and you can group it with other, similar presets. Categories can be stored in a hierarchy, so you can have a top level category called 'Flash' and then create two sub-categories under that called 'Flash 8 – Streaming' and 'Flash 8 –

Download' that contain presets to create Flash-8 output files optimized for streaming and down-loading respectively.

Preset List

When you select a category, the top right shows the list of presets stored under the selected cat-egory.

Preset List Buttons

The four buttons in the Preset Editor window that pertain to managing individual presets have the fol-lowing functions:

- **Refresh** - Sometimes changes that have been made to presets aren't immediately dis-played, click this button to refresh the display and display the changes.
- **Copy** - Copy the selected preset, naming it "Copy of NAME". This is very useful when cre-ating a lot of presets that differ in only one or two parameters, you can create the first preset and then copy it multiple times, modifying the copies quickly for those few parameters that are different.
- **Remove** - If a User Preset is selected, this button will be enabled and allow you to per-manently delete the selected preset. If you want the preset back some time in the future, you will have to completely recreate it. Be careful with this option, once a preset is deleted it can-not be undeleted, only recreated.
- **Edit Preset** - Allows the editing of an existing User Preset, or allows you to open a System Preset or Factory Default Preset, edit it, and save the result as a new User Preset. If you edit a System Preset or a Factory Default Preset, and you change any parameters, then you cannot save the preset with the same name as the original, since you cannot change or overwrite Sys-tem Presets or Factory Default Presets. You can however save the modified preset under a dif-ferent name, which will create a new User Preset. See the "Editing Individual Presets" section for details on editing presets and changing settings.

Preset Description

When you select an individual preset you can see the preset details including the description at the bottom right of the window. If you have selected a User Preset then you can change the Name of the preset, you can change the Category under which the preset is saved, and you can change the Description of the preset.

The Globally Unique Identifier (GUID) of the preset is useful when creating API jobs.

Preset Description Buttons

The two buttons in the Preset Editor that pertain to the editing of preset details have the following functions:

- **Save** - If you make any changes to the Name, Category, or Description of a preset, click **Save** to accept the changes Your changes may not always be reflected immediately, you may have to click **Refresh** and wait for a while, while Carbon Admin and the Nexus background

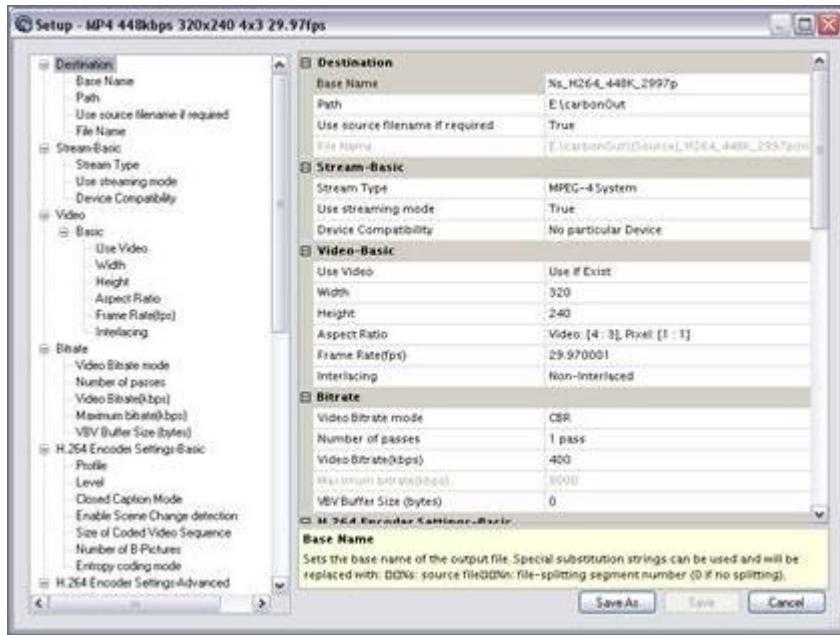
service exchange details of the updated preset.

- **Cancel** - Reject the changes you've made in the Name, Category, or Description fields.

Editing Individual Presets

Preset Parameters

When you have selected an individual preset of any type and clicked **Edit Preset**, the **Preset Setup** dialog box will open.



All the parameters that can be changed for this preset are listed on the left in a hierarchical tree listing, and on right in a list. You can either navigate the tree and select a parameter, or you can scroll down the list to find the same parameter, there is no difference between the two displays.

The parameters can include codec settings such as bitrate, file handling settings such as how to name target files, and various other settings, such as whether to split a target file into segments.

The current value of the parameter in this preset is shown on the right side of this list. When you select an individual parameter, explanatory text for that specific parameter will appear in the preset help text area below the list, to assist you in choosing an appropriate value for the parameter.

Note that the type and amount of parameters you can change depends very strongly on the codec, device, and file format selected. For example, the preset selected in the H.264 System Preset has almost 60 available parameters. There may be many other presets that do not offer the same variety and choice of parameters, such as the Factory Default preset in the second image, which offers only 18 parameters.

In many cases the specific codec only supports a few parameters; in the case of presets that target specific hardware, such as video playout servers or handheld devices, there may be limitations on frame size, bitrate, etc.

Managing and Backing Up Preset Files

As discussed in the [Three Different Types of Presets](#) section earlier, User Presets are usually stored in the **C:\Documents and Settings\All Users\Application Data\Rhozet\Carbon Coder\User Presets** folder on Windows XP or Windows Server 2003. There is an equivalent folder on Windows Vista, but that name can vary per installation so you may need to search for the folder name "User Presets" to see where Vista placed it.

Preset files in that folder are XML files, with names like "fdst_H_264 (_mp4) 400x300 30fps.cpf". The latter part of the file name will reflect the name you gave to the preset, with some characters replaced by underscore characters (e.g. "H.264 (.mp4)" becomes "H_264 (_mp4)").

Preset files can be backed up by copying all files with the ".cpf" file extension to a backup folder.

Watch Folder Management

A Watch Folder is defined as a folder on a Windows system which automatically converts source video files dropped in it into different types of video output files. Any video source files written or dropped into this "Input" folder are converted (transcoded) to the one or more types of output files. The format of the output files is specified by the end user when the Watch Folder is created.

How Watch Folders Work

A Watch Folder consists of three parts:

- A folder on a Windows system which is designated as the Watch Folder Input Folder when the Watch Folder is created.
- A Windows operating system service installed when Carbon is installed ("Nexus"), which continually monitors the Watch Folder's Input Folder for new files.
- The output file formats and other settings and configuration information entered by the end user when the Watch Folder is created.

Input Folder for Watch Folders

When a Watch Folder is created, one of the things the user must do is designate an Input Folder. This is a normal folder on a Windows system, and once the Watch Folder has been created and is active, this folder will be monitored for the presence of new files. When a new file is created in this folder, the Windows operating system and the component of Carbon called the "Nexus" background service will work together to transcode this source file. Carbon will transcode the source file into the various output file formats also specified at the time the Watch Folder is created.

The Nexus Background Service

When Carbon is installed on a Windows system, a part of Carbon called "Nexus" is installed as a Windows service. The Nexus background service runs continuously and handles API jobs, maintains the

various queues of transcoding jobs, and also monitors Watch Folders.

When a file is created inside a Watch Folder's input folder, the Nexus service is notified by the Windows operating system that a new file has been detected. Nexus checks to make sure that the format of that source file is supported by Carbon, and then creates one or more new Windows Processes that handle the actual transcoding of the source file into one or more different output files.

Note: When using the Windows Task Manager application, the Nexus process can be found by looking for a process named "PNXSERVR.exe". The processes that Nexus create and that do the actual transcoding are named "PNXKERNL.exe".

Watch Folder Configuration

Creating a Watch Folder requires the end user to specify which kinds of output files should be created once a source file has been found in the input folder. This can include the kinds of file formats the output files should have, the compression type or encoder (sometimes known as "codec") to use, how large the frame should be, how many frames per second the output file should display, etc.

There are also many options for where and how to deliver the output files, as well as options for what kinds of other actions to take when output files are ready.

Step-by-step instructions for creating a simple Watch Folder have been given in the Quickstart part of this document, in the "Setting Up a Watch Folder" section. The next section, [Watch Folder Setup](#), will discuss all of the individual settings that can be applied to a Watch Folder, and show how to configure even extremely complex watch folders.

Watch Folder Setup

When either the **Add Watch** or **Edit Watch** button is clicked on the **Watch Folders** tab, the Watch Folder Setup dialog box appears. The sections below describe the parameters that can be entered or modified for Watch Folders.

General Properties

Name

This is the name of the watch folder, which helps you manage your watch folders. As an example, you could use the names of projects or customers as the names of your watch folders.

Watch Folder

This is the location of the watch folder. You can choose any local or remote folder location. If choosing a remote location, make sure that the Nexus process has the required permissions to access that remote location.

If Target File Exists

This allows you to either overwrite an existing file or to rename to a new file name if one already exists with your target name.

Job Priority

Since you can have many watch folders operating at the same time, you can set the priority of each. As an example, you may have a news folder that is set to a higher priority than an archive task. A priority 8 job will be executed before a priority 3 job if they both arrive at the same time.

Leading/Trailing Clips

If you would like to have a video “stitched” into the beginning or end of each file that is transcoded, then you would select that video in these settings. The leading and trailing clips do not have to match the source or target settings – they will be automatically converted to the appropriate target format. Leading and trailing clips are often used for automatic advertising insertion.

General Properties - Advanced Settings

Watch Sub Folders

If the Watch Folder contains sub folders, checking this option will look in those sub folders for source files and transcode them the same way as source files in the Watch Folder itself.

For example, if the Watch Folder “C:\MyWatchInput\” contains a sub folder “\FromEditor2\”, then any source files dropped into the “C:\MyWatchInput\FromEditor2\” folder will be processed just like source files dropped into the “C:\MyWatchInput\” folder.

If this option is unchecked, then the source files dropped into the “C:\MyWatchInput\FromEditor2\” folder will never be processed nor removed, but just remain in that folder until manually removed.

Append Source Sub Folder to Target Path

This option is only meaningful if ‘Watch Sub Folders’ is checked. If this option is checked, and the Watch Folder contains sub folders, then target files created from source files dropped into a sub folder will be created in an identically-named sub folder inside the target folder.

For example, if the Watch Folder “C:\MyWatchInput\” contains a sub folder “\FromEditor2\”, and the target folder is “C:\MyWatchOutput\”, then any source files dropped into the “C:\-MyWatchInput\FromEditor2\” folder will be processed and create target files in a new folder “C:\-MyWatchOutput\FromEditor2\”. If this option is unchecked, and the ‘Watch Sub Folders’ option is checked, then the source files dropped into the “C:\MyWatchInput\FromEditor2\” folder will be processed and create target files in the “C:\MyWatchOutput\” folder.

If this option is unchecked, then the source files dropped into the “C:\MyWatchInput\FromEditor2\” folder will never be processed nor removed, but just remain in that folder until manually removed.

Create One Job for Each Target

If a Watch Folder is configured to create multiple target files from each source file, then checking this option will create a separate transcoding job for every target file.

For example, if a Watch Folder is configured to create an H.264 target and an MXF output, then two transcoding jobs will be visible in the **Active Jobs** tab every time a source file is dropped into the Watch Folder.

If this option is unchecked, then one job will be created, and that one job will create both target files. This can be faster because the source file only needs to be transcoded once, but the job will take more memory, and may sometimes exceed the memory limitations of the operating system and thus actually slowing down the job. In addition, if it takes much less time to create one target than the other, then the processor will not be used optimally while Carbon is working to finish the slower target.

Delete Source After Conversion

If this option is checked, any source files dropped into the Watch Folder will be deleted after they have been successfully transcoded. They will not be deleted if the transcoding failed and generated an error.

Accept Folders as Assets

This feature will allow you to use Carbon to automate other, third-party processes using notifiers (See the "Notifiers" section). If this option is checked, and a folder is dropped into the Watch Folder, then Carbon will not attempt to transcode the contents of the folder, but will pass the folder name to any notifiers attached to the Watch Folder.

For example, this could be used to pass the name of the folder that contains transcoded target files to a Command Line notifier (see the section Command Line notifier below). The command line can then launch a third-party process that encrypts or adds DRM to all the files in the folder.

If this option is unchecked, and a folder is dropped into the Watch Folder, Carbon will attempt to transcode source files contained in the folder only if the Watch Sub Folders option is checked (see the "Watch Sub Folders" section).

Retrieve Source Files to Render Node

For Carbon Server systems, checking this option will allow individual Carbon Agent machines to retrieve source files over FTP or from network storage systems themselves. If this is unchecked, Carbon Agent machines have to wait for the Carbon Server machine to retrieve the source files over FTP and store them on the local storage of the Carbon Server machine. Carbon Server will then send the transcoding job to the Carbon Agent machines, and the Carbon Agents will then have to retrieve the source files from the local storage of the Carbon Server machine.

Enable Segmented Grid Transcoding

For Carbon Server systems, checking this will allow source files to be split into segments and have each segment be processed by a different Carbon Agent machine. The 'Maximum Segments' value determines into how many segments the source file can be split, don't make this too high for smaller source files, since the overhead of splitting the source file and stitching the target segments back together may negate the segmenting advantage.

Note: Even if this option is checked, it will only work for some types of target files and under some circumstances.

Source Filters

Audio and video filters can be applied to a source file before it is transcoded into the various target file formats. See the lists below of the available audio and video filters. Please see the Carbon Coder manual for a detailed explanation of the function of each filter.

Audio Filters

- Channel Mixer
- Dynamic Range Compressor
- Fade In/Out
- Lowpass
- Normalize
- Parametric 5.1 to Stereo Converter
- Track Offset
- Volume

Video Filters

- 601 Correction – Expand Color Space
- 601 Correction – Shrink Color Space
- 601 to 709 Color Correction
- 709 to 601 Color Correction
- Adaptive De-Interlace
- Bitmap Keying
- Black/White Correction
- Blur
- Broadcast Color Safe
- Circular Blur
- Color Correction
- Content Change
- DVD Subtitle/608 CC1 Imprint
- Fade In/Out
- Flexible-to-fixed framerate conversion
- Gamma Correction
- Gaussian Blur

- Line 21 Extraction
- Line 21 Modulator
- Line 21 mapping change
- Median
- Pulldown
- Relative Crop Rotate
- Sharpen
- Temporal Noise Reducer
- Timecode Display
- Video Closed Caption Inject
- Video Inverse Telecine Filter
- Video Metadata Inject
- Video Source Properties
- XML Titler

Notifiers

These can cause Carbon to execute a notification (send an email message, post a Web Service URL, or execute a Windows command line) whenever a job event (job starts, job finishes, or job encounters an error) occurs.

You can use the following string replacement tokens in notifications:

- **%jobguid%** - Unique GUID for this task
- **%jobname%** - Unique name for this task
- **%source%** - Full source path and name
- **%destinationname%** - Result destination file name (only valid in completion notifications)
- **%errormessage%** - Error message (only valid in error notifications)

Email Notifier

- Recipient: To whom the email should be sent, this is a normal email address.
- Subject: Subject line of the email.
- Body: Body text of the email.

Example email body text: "The file %source% has generated error message %errormessage%"

Web Notifier

- Web Service URL: The URL to execute when the job event (start, finish, or error) occurs.

Example URL: "http://myserver.com/script.aspx?Source =%source%"

Command Line Notifier

- Command Line: Command to execute.
- External process shown as new job: Check this option to show the command line as a separate job in the Carbon Admin job queue.

Example command line: "c:\myprog.exe %source%"

On Start

Send a notification when a job is started.

On Completion

Send a notification when a job is finished.

On Error

Send a notification when a job encounters an error.

Remote Retrieve

A Watch Folder can actively look for files to transcode on remote storage systems or FTP locations. When a file is detected at this remote location, it will be moved to the local Watch Folder and then transcoded. This is called a "remote retrieval". A remote retrieval is used when the Watch Folder can't transcode directly from the desired location, such as with an FTP site or shared storage that has a different password than the local system.

File Retrieve – Remote Connection

- **Remote Path (UNC)** - The folder on the remote storage where Carbon will look for new files to copy to the local Watch Folder for transcoding. You MUST use a UNC path, you cannot use a mapped drive since Windows processes like the Carbon background process Nexus are unable to access mapped drives.
- **User** (optional) - If you need to log in to the remote storage to access the source files, enter the name here.
- **Password** (optional) - If you need to log in to the remote storage to access the source files, enter the password here.
- **Create Shortcut Instead of File Copy** - Instead of retrieving the source file, just create a shortcut to the source file to be transcoded. This assumes that the Nexus background transcoding process can read the file using the shortcut, make sure that the file access permissions of Nexus are set appropriately.

File Retrieve – Retrieval Settings

- **Wildcard** - File mask to retrieve. Files that do not match the wildcard will not be retrieved.
- **Watch Interval (sec.)** - Interval in seconds between checking the remote location for new files.

- **Trigger File Size (KB)** - Minimum file size in Kilo-bytes. Files smaller than this will not be retrieved.
- **Delete Source Upon Completion** - Whether to delete the file from the remote location once it has been retrieved.
- **Watch Sub Folders** - If the Watch Folder contains sub folders, checking this option will look in those sub folders for source files and transcode them the same way as source files in the Watch Folder itself.
- **Propagate Sub Folders** - This option is only meaningful if 'Watch Sub Folders' is checked. If this option is checked, and the Watch Folder contains subfolders, then target files created from source files dropped into a subfolder will be created in an identically named subfolder inside the target folder.
- **Retrieve to Render Node** - Only useful in a Carbon Server transcoding network. Checking this option will cause Carbon Agent machines to retrieve the source file directly, without Carbon Server having to retrieve the file first and then pass it to Carbon Agent. This can significantly improve transcoding and file transfer speeds.

FTP Retrieve – Server Connection

- **Current Server** - Server name to connect to.
- **Server Status** - Display whether Carbon Admin is currently connected to the FTP server.
- **Current Folder** - The folder on the FTP server that is currently being browsed. Click **Select** to browse into this folder.

FTP Retrieve – Retrieval Settings

- **Selected Folder** - The folder on the FTP to retrieve files from.
- **Wildcard** - File mask to retrieve. Files that do not match the wildcard will not be retrieved.
- **Watch Interval (sec.)** - Interval in seconds between checking the remote location for new files.
- **Trigger File Size (KB)** - Minimum file size in Kilo-bytes. Files smaller than this will not be retrieved.
- **Delete Source Upon Completion** - Whether to delete the file from the remote location once it has been retrieved.
- **Watch Sub Folders** - If the Watch Folder contains subfolders, checking this option will look in those subfolders for source files and transcode them the same way as source files in the Watch Folder itself.
- **Propagate Sub Folders** - This option is only meaningful if Watch Sub Folders is checked. If this option is checked, and the Watch Folder contains subfolders, then target files created from source files dropped into a subfolder will be created in an identically named subfolder inside the target folder.

- **Retrieve to Render Node** - Only useful in a Carbon Server transcoding network. Checking this option will cause Carbon Agent machines to retrieve the source file directly, without Carbon Server having to retrieve the file first and then pass it to Carbon Agent. This can significantly improve transcoding and file transfer speeds.

Target File

- **Preset Category** - Presets are divided into categories for easier selection.
- **Select Preset** - Select the preset to use for this target.
- **Target Folder** - The folder to write the target file to.
- **Target File Name** - The name to give the target file. Make sure to always at least include **%os** which represents the source file name.
- **Delete Local Target File after Delivery** - Whether to delete the file from the local Target Folder once the file has been delivered using either the File Delivery or FTP delivery.

Target File – Filters

Just as audio and video filters can be applied to a source file, see "Source Filters" earlier in this document for a list of audio and video filters that can be applied to.

Target File – Notifiers

When notifiers are added to a Watch Folder, those notifiers will be activated either the moment a source file is dropped in the Watch Folder, or when any one of the targets creates an error, or when all the targets from the Watch Folder have been created. Just like it is possible to add notifiers to the Watch Folder, it is also possible to add notifiers to individual targets. This way, the notifiers will be activated when the individual target is started, creates an error, or is finished.

"Notifiers" earlier in this document for more information on the kinds of notifiers that can be attached to this specific target.

Target File – Delivery – File Delivery

- **Delivery Path (UNC)** - The folder on the remote storage where this target files will be written. You MUST use a UNC path, you cannot use a mapped drive since Windows processes like the background transcoding process Nexus are unable to access mapped drives.
- **User**(optional) - If you need to log in to the remote storage to access the target folder, enter the name here.
- **Password** (optional) - If you need to log in to the remote storage to access the target folder, enter the password here.

Target File – Delivery – FTP Delivery

- **Current Server** - Server name to connect to.
- **Server Status** - Display whether Carbon Admin is currently connected to the FTP server.

- **Current Folder** - The folder on the FTP server that is currently being browsed. Click **Select** to browse into this folder.
- **Selected Folder** - The folder on the FTP to write target files to.

Kernel Settings

The **Tools > Kernel Settings** menu in Carbon Admin is where less-frequently used configuration parameters for Carbon can be found. A number of these can be used to fine-tune Carbon machines, and many of them are helpful in debugging problems with individual Carbon machines or Carbon Server systems.

Some parameters can be changed and be made active immediately (such as the **Transcoding Slots** parameter). For others, once the parameter has been changed, the Carbon Nexus service needs to be restarted before the change is applied. Those parameters have an asterisk (*) appended. The help text at the bottom of the dialog box also mentions "Requires machine restart" in these cases.

RENDERING Category	
Transcoding Slots	Set the number of simultaneous transcodes this machine will perform. A good rule of thumb is to set this to half the number of processor cores on the machine. Setting this to 0 disables transcoding on this machine.
Machine Priority	Jobs will be assigned first to those machines in a transcoding network that have the highest priority (10), lower priorities later.
NETWORK Category	
Use DNS to lookup machine names	Enable this to have IP addresses resolved to machine names using DNS, for the UI and log files. Disable it when there is no DNS server on the network or to improve performance.
Bind to IP Address*	Force Carbon to communicate only using a specific IP address, specified as xxx.xxx.xxx.xxx . Leave this blank except on multi-homed systems. Requires machine restart.
FTP Max Total Sessions	Set the maximum number of simultaneous FTP transfers jobs (up- or downloads) this machine will perform.
FTP Max Upload Sessions	Set the maximum number of simultaneous post-transcoding FTP uploads (deliveries) this

NETWORK Category	
FTP Max Download Sessions	machine will perform. Set the maximum number of simultaneous pre-transcoding FTP downloads (retrievals) this machine will perform.
Local Rendering only	Set this to '1' (default is 'local and remote' = '0') to do transcoding only on the local machine, instead of also accepting transcoding jobs from other Carbon machines.
JOB QUEUE Category	
Manage Job Queue	If this is enabled, the values below will be considered for automatically cleaning your job queue.
Max completed jobs	Number of completed jobs kept in the queue if Manage-Job-Queue is enabled.
Max failed jobs	Number of failed jobs kept in the queue if Manage-Job-Queue is enabled.
Retry Delay for failed Jobs	Number of seconds to wait before a failed job is automatically resubmitted to the queue. Setting this to zero (default) never automatically resubmits a failed job.
EMAIL SERVER Category	
SMTP Server	Specify the SMTP Server to use for outgoing emails.
SMTP User	Specify the SMTP User account for outgoing emails.
SMTP Password	Specify the password for the SMTP User account specified above.
SMTP Sender	Specify the email address of the sender for outgoing emails.
MACHINE RENDER PROPERTIES Category	
Machine Tags	Enter a list of strings separated by semi-colons (';'). Each string (tag) can be chosen by the end user and is used to designate this machine as possessing a specific property. When creating a Pre-load Kernel in Mem-
	Set this to '0' (default is 'pre-load' = '1') to load

MACHINE RENDER PROPERTIES Category	
ory	the transcoding kernel only when transcoding jobs start. Enabling pre-load reduces the start-up delay of transcoding jobs, and reduces free memory by around 80MB.
Kernel Preset Enumeration	Set this to '0' (default is 'enumerate' = '1') when configuring the system for exclusive API use and new presets will not need to be created. WARNING: Disable this only for purely API-based use of Carbon. When disabled, no user interface interaction with presets is possible.
WATCH SETTINGS Category	
Watch Folder Retry Time (ms)	When a source file is dropped into a watch folder, this setting determines how many milliseconds to wait before checking if the source file size is changing (for example because the file is still being written by the OS or an FTP upload). If the file size has changed between checks, Carbon will check again, and continue doing so until the file size is the same for two consecutive checks. If this is set to zero, Carbon may immediately begin transcoding source files when dropped in a watch folder, regardless of whether they are finished being written. This can cause the transcode operation to fail.
Minimum Source File Size (bytes)	When a source file is dropped into a watch folder, it will be transcoded if it is this size in bytes or larger. Smaller files will be ignored, this can be useful for video source files that come with unneeded metadata files for example.
Ignore FS Modifier	Set this to '1' (default is 'do not ignore' = '0') to ignore File System messages from the Windows OS. Some playout server file system drivers or network storage drivers may not completely or correctly implement those messages, so setting this field may resolve issues with jobs staying in the Preparing stage for a long time (tens of minutes). Setting this field disables Carbon's normal

WATCH SETTINGS Category**Don't Resolve to UNC**

detailed file status analysis, so should therefore be used with caution.

Carbon normally automatically converts a directory name such as C:\Input on the machine STORAGE01 into the UNC path \\STORAGE1\C\$\Input, so that other machines can access the same file when needed (for example when decoding a source file). Set this field to disable that mechanism, and leave directory names as they are. This can be necessary in the case of a SAN for example, where every machine on the transcoding network has a SAN driver with the drive letter X: installed for example. In this case, all file names such as X:\DropHere\Sourcefile.mpg will be passed verbatim to other machines. Use this with caution; if not all machines have this drive letter and the drive letter does not point to the exact same network storage for all machines, subtle and difficult to diagnose errors may occur.

JOB SETTINGS Category**Max Node Errors**

If a transcoding job is sent to a Carbon Agent machine, and it fails, Carbon Server will automatically send the same job to a different Carbon Agent, assuming that the first Carbon Agent was faulty. By default, this will continue until all Carbon Agents have been tried. Set this field to the number of times that Carbon Server should retry a failed job on a different Carbon Agent, to prevent fundamentally unsound jobs (with non-existent source files for example) from slowing down an entire large transcoding network.

STORAGE LOCATIONS Category**Media Submission Path***

DirectDrop exporters write media to this directory. This location must be accessible throughout your network, must allow fast writing and must

STORAGE LOCATIONS Category	
have plenty of free space available. Requires machine restart.	
FARM DIRECTDROP Category	
Subscribed Farm Manager	Enter a server name or IP address - Carbon will assume this machine exists and use it for Direct-Drops etc.
XML JOB SUBMISSION Category	
XML Watch Folder*	It is possible to execute API jobs by dropping XML files (see API manual for XML file specifications) in the directory entered in this field. Requires machine restart.
LOGGING category	
Log Jobs to Event Log	Setting this will log Jobs into the Windows Applications Event Log.
Write Engine Log File	Setting this causes Carbon to write a general log file, which contains general information for each transcoding job executed.
Log File Path*	The general log file is written to this directory. Requires machine restart.
Log File Retention (days)	A new log file is created at midnight every day. This field determined how many days back to keep the old log files, for example setting this to 5 leaves today's file and the files from the preceding 4 days intact but removes log files any older than that. Setting this field to zero (default) leaves all log files in place and never removes any.
LOGGING – XML FILE Category	
Write XML Log File to File Share*	Setting this causes Carbon to write a general log file in XML format. Requires machine restart.
File Path for XML Files*	The general XML-format log file is written to this directory. Requires machine restart.

LOGGING – XML FILE (FTP) Category	
Write XML Log File to FTP Server*	Setting this causes Carbon to write a general log file in XML format to an FTP server. Requires machine restart.
FTP Site*	Enter IP address or server name. Requires machine restart.
FTP Port*	Enter Port# to use. Requires machine restart.
FTP User*	Enter User Name. Requires machine restart.
FTP Password*	Enter Password. Requires machine restart.
Remote Path*	Enter Remote Path. Requires machine restart.
STATUS TIMEOUTS Category	
Timeout Preparing Status (s)	Number of seconds a transcoding job allowed to be in the Preparing status before it times out and is considered as having failed.
Timeout Preparing Status - Agent (s)	Number of seconds a transcoding job allowed to be in the Preparing status before it times out and is considered as having failed. This field applies to Carbon Agent machines only, very long timeouts must be tolerated for these machines because very large source files could still be in the process of being written.
Timeout Starting Status (s)	Number of seconds a transcoding job allowed to be in the Starting, Paused, or Reading status before it times out and is considered as having failed.
Timeout Stopping Status (s)	Number of seconds a transcoding job allowed to be in the Stopping status before it times out and is considered as having failed. Note that Stopping can take a relatively long time some exporters index files, re-multiplex, etc. during the Stopping phase. A very high value is recommended, at least twice the time it would take to read/write the typical output files to/from disk.
Timeout Started Status (s)	Number of seconds a transcoding job allowed to be in the Started status before it times out and is considered as having failed. This is the longest total time a job is considered valid without having received status updates.

STATUS TIMEOUTS Category	
Pipeline Inactivity (s)	Number of seconds the transcoding pipeline will wait (for example to receive newly decoded video samples) before it times out and the job is considered as having failed.
USER INTERFACE Category	
Use COM Messaging*	If the service user is a dedicated user and the desktop user is different from the service user, updating the GUI with status changes may fail. Use a special communication through a COM interface by enabling this option. Requires machine restart.
DEBUG – NETWORK – AUTODETECT category	
Broadcast Server IP	Disable this to prevent Carbon Agent and Carbon Coder machines from finding this Carbon Server machine. The Server will still see the Agents.
Broadcast Agent IP	Disable this to prevent Carbon Server machines from finding this Carbon Agent machine. The Agent will still see the Server.
Broadcast Client IP	Disable this to prevent Carbon Server machines from finding this Carbon Coder machine. The Coder will still see the Server.
DEBUG – NETWORK – PORTS category	
Nexus Service Port*	Main listening port of the Nexus background transcoding service for all external connections. Requires machine restart.
Nexus Admin Port*	Internal Nexus to Nexus and component communication port. Requires machine restart.
DEBUG – LOGGING Category	
Log COM Interface Activity*	Logs all NEXUS COM based activities, for debugging issues with an unresponsive GUI. NOTE: This can slow down your transcoding and queue processing tremendously, use only for debugging

DEBUG - LOGGING Category

Log Watches	and support. Requires machine restart. Setting this causes Carbon to write a watch folder log file, which contains processing information about source files dropped in watch folders and jobs created by watch folders. NOTE: Use only for debugging and support.
Log Attached Watches	Setting this causes Carbon to write an attached watch log file, which contains processing information about FTP and LAN retrievals attached to watch folders. NOTE: Use only for debugging and support.

Carbon Wizard

The Carbon Coder Wizard was designed to help you expedite the process for converting a source file or creating a temporary watch folder.

Converting a Source File to a Different Format

1. Select **Convert a source file to a different format.**



2. Click **Load** to add the source file you wish to convert.



3. Select **Use the Carbon Coder Wizard to select a target** to easily create a web video, CD-ROM video, VideoCD, SuperVideo CD, DVD, HD, Email Attachment, or suitable for Video Editing.



4. OR select **Select a generic target** to create an AVI, MPEG, QuickTime, Windows Media, Real Media, or a Raw DV format output.



5. Continue through the questionnaire regarding the format option you selected.
6. Fill out the appropriate fields to name and save your output file. Click **Next** to continue.



7. Review your job summary then click **Convert** to start the conversion process. If you want to change any parameters of output format, click **Advanced Output Settings**.



8. After clicking **Convert**, your file will be converted into the selected format. The information box will display "Conversion Finished" when the conversion process is completed. Click **Next** to review the file's location and conversion information.



Encoding from a Live Source

In order to encode from a live source, you must have a compliant capture device installed.

1. Select the **Encode from a live source** option.



2. Select the Capture Source you wish to capture the video stream from.



3. Select **Use the Carbon Coder Wizard to select a target** to easily create a web video, CD-ROM video, VideoCD, SuperVideo CD, DVD, HD, Email Attachment, or suitable for Video Editing. OR select **Select a generic target** to create an AVI, MPEG, QuickTime, Windows Media, Real Media, or a Raw DV format output.



4. Continue through the questionnaire regarding the format option you selected.
5. Fill out the appropriate fields to name and save your output file. Click **Next**.



6. Click on **Capture Settings** to view and modify the capture settings.



7. Click on **Advanced Options** to view and modify the source parameters.
8. The Video Cropping options allow you to crop the incoming source stream. Select **None** to keep the source file in its original state. Select **Auto** to allow Carbon Coder to choose the cropping format for you. Or select **Manual** to open a manually adjustable cropping box.
9. Click **REC** to start the capture process. Click **End REC** to stop recording and prepare the next source file. Click **Stop** to complete the capture process.



10. The information box will display "Conversion Finished" when the conversion process is completed. Click on **Open Target Folder** to review the file's location and conversion information. Click **Restart** to capture more files, or press **Finish** to complete the process.



Creating a Watch Folder

1. Select the **Create a Watch Folder** option.



2. Select the folder you would like to monitor.



3. Select **Use the Carbon Coder Wizard to select a target** to easily create a web video, CD-ROM video, VideoCD, SuperVideo CD, DVD, HD, Email Attachment, or suitable for Video Editing.



4. OR select **Select a generic target** to create an AVI, MPEG, QuickTime, Windows Media, Real Media, or a Raw DV format output.



5. Continue through the questionnaire regarding the format option you selected.
6. Fill out the appropriate fields to name and save your output file. Click **Next** to continue.



7. Review your job summary then click **Convert** to start the Watch Folder process. If you want to change any parameters of output format, click **Advanced Output Settings**.
8. When you see the **Monitoring Watch Folder** dialog box, you can start placing files in the watched folder to be converted. Click **Unwatch** to stop the watching process. Click **Next** after you have completed your project and no longer want the folder to be watched.



Maximizing Carbon Performance

While upgrading the system is usually the best way to increase Carbon Coder's performance, there are a few optimizations that you can do to increase Carbon Coder's speed without hardware upgrades.

Optimize Drive Speed

Defragmenting the source and target hard drive can significantly increase read and write speeds.

Use Separate Source and Target Drives

Accessing source files and writing target files on separate physical disks will reduce seek data access times which will improve Carbon Coder's performance.

Advanced Features

Carbon Coder gives you access to some advanced features like Video Capture and direct integration with popular editing applications. These advanced features are described below.

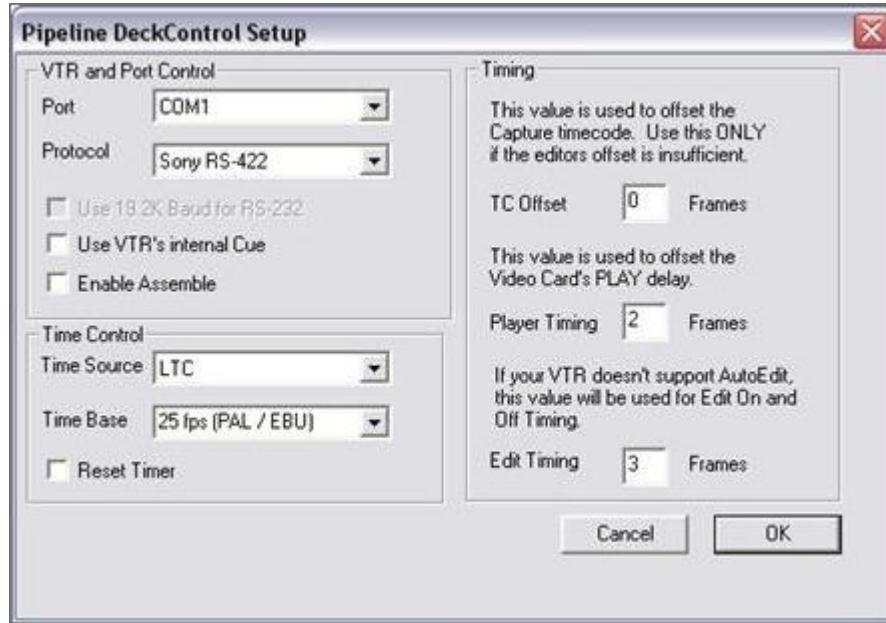
Video Capture

In order to capture with Carbon Coder a DirectShow compliant hardware capture device must be installed in your computer. Currently supported capture devices include the Viewcast Osprey 230, 240, 540, and 560. You will also need to purchase the Capture Option to Carbon Coder, which provides the interface module and jog/shuttle device for capture.

Using RS-422 Device Control

The Carbon Coder Capture Module includes a RS-232 to RS-422 conversion cable to control RS-422 control enabled Video Tape devices. Please connect this cable to an available RS-232 (serial) port on your computer before operating Carbon Coder.

The first time you capture, the **Pipeline Deck Control Setup** dialog box will open. Choose the proper settings and continue. If the cable is disconnected or cannot be found, the dialog box will be shown again.



Advanced Setup Tab

Carbon Coder includes an **Advanced Setup** tab to control your tape device through RS-422. In addition to the standard operation as described above, it can set multiple in- and out points for one source. The segments will be logically combined to one source at conversion time – effectively, it's a cut list.

1. Click **Enter Segment** to directly enter an in/out point pair.

2. Position tape/file by using the scrubber or entering a time code and click **Go**.
3. Click **In** to mark the in point.
4. Then position tape/file by using the scrubber or entering a time code in the time code box and click **Out** to mark the out point.
5. Then click **Add Current Segment** to add the new selection to the list of segments.
6. You may repeat this process for each additional segment.

Using Optional Jog-Shuttle Control

The Carbon Coder Capture Option includes a Shuttle Pro V2 Jog-Shuttle control. This device is not required for operation; you may however find it useful for controlling a connected tape deck. This device includes an installation CD; please follow the instructions on this CD for installation.

Once installed, the Shuttle Pro application allows selection of profiles for working with different applications. Rhozet Carbon Coder is by default not included in this selection; you need to import the application profile included in the Carbon Coder installation CD (in the ShuttlePro folder) into the Shuttle Pro configuration application (located in the tray bar).

The Shuttle Pro functions are:



1	Set Out point	10	Select next segment
2	Set In point	11	Delete selected segment
3	Replace the highlighted segment with the current In- and Out point	12	Unassigned
4	Add a new segment with the current In- and Out points	13	Unassigned
5		14	Unassigned

6	Unassigned	15	Unassigned
7	Stop	16	Play
8	Rewind	17	Fast Forward
9	Select previous segment		

XML Titler

The XML Titler video filter uses data from an XML file to add titles and images to a video stream.

The XML files to use with the titler look like this:

```
<?xml version="1.0"?>
<TitlerData>
<Data StartTime='0.5' EndTime='4.0' Title='First title' CharSize='0.45' PosX='0.5' PosY='0.75'
ColorR='220' ColorG='220' ColorB='220' Transparency='0.0' ShadowSize='0.5' />
<Data StartTime='4.5' EndTime='13.5' Title='This is the second title' CharSize='0.25' />
<Data StartTime='16.0' EndTime='21.0' Title='A third title' />
</TitlerData>
```

New Features in Version 3.0 of the XML Titler

- Text and images can now be faded in and out (see 3e and 3f).
- Additional options have been added to the Shadow Ability (see 3n).
- Titles can now be aligned with the video (see 3t and 3u).
- Images can be offset from the top left position of the video (see 3d and 3e).
- Images are now scalable (see 3f and 3g).
- Transparency now applies to images and titles.

XML Elements and Attributes for Text Titles

- **<?xml version="1.0"?>** - This is the XML file header and must be present.
- **<TitlerData>** - This tag indicates the start of the titler data block. The block must be closed with the **</TitlerData>** entry. XML titler files must contain exactly one titler data block, in which there will be one data entry for each title to display.
- **Data entries** - Each data entry starts with the tag Data and describes one title to be displayed. It may contain several parameters:
 - a. **Font** - specify the name of the font, for instance "Arial". Only one font may be selected per titler project. If more than one font is present in the titler's XML data, only the first one will be used. If the specified font is not installed or cannot be loaded, the XML titler will fail (i.e. a different font will not be used as a fallback).
 - b. **Font CharSet** - specify the character set to use for the font. Allowed values are:
 - 0: ANSI

- 1: BALTIC
- 2: CHINESEBIG5
- 3: DEFAULT
- 4: EASTEUROPE
- 5: GB2312
- 6: GREEK
- 7: HANGUL
- 8: MAC
- 9: OEM
- 10: RUSSIAN
- 11: SHIFTJIS
- 12: SYMBOL
- 13: TURKISH
- 14: VIETNAMESE
- 15: JOHAB
- 16: ARABIC
- 17: HEBREW
- 18: THAI

- c. **StartTime** - the time, in seconds, at which the display of this data entry's title will start.
- d. **StartTimocode** - an alternative to StartTime. Instead of using a floating-point value like '5.5' for 5.5 seconds, you can use a time code value ('00:00:05:15').
- e. **EndTime** - the time, in seconds, at which the display of this data entry's title will end.
- f. **EndTimocode** - an alternative to EndTime. Instead of using a floating-point value like '5.5' for 5.5 seconds, you can use a time code value ('00:00:05:15').
- g. **FadeInTime** - duration, in seconds, for which the title or image will fade in.
- h. **FadeOutTime** - duration, in seconds, for which the title or image will fade out.
 - **Italics** - The italic function is used much like *<i>* and *</i>* in HTML. Within the Title string value, use "ital;" to begin the italics section and "/ital;" to end the italics.

Sample:

```
<?xml version="1.0">
<TitlerData>
```

```
<Data Title='ital;This text will be italic;'/>
</TitlerData>
```

- **Line Breaks** - To insert a line break, within the Title string use the two bytes "0D 0A" to mark the end of line, or if editing XML data with Notepad, simply press the Enter key at the desired location of the line break.

- i. **Title** - the title text to display.
- j. **CharSize** - Value between 0.0 and 1.0, which controls the size of the characters.
- k. **PosX** - Value between 0.0 (left of the screen) and 1.0 (right of the screen) used to position the title horizontally.
- l. **PosY** - Value between 0.0 (top of the screen) and 1.0 (bottom of the screen) used to position the title vertically.
- m. **ColorR, ColorG, ColorB** - Values between 0.0 and 255.0, which respectively describe the amount of Red, Green and Blue to use for the title's color.
- n. **Transparency** - Value between 0.0 (fully opaque) and 1.0 (fully transparent), which determines the title's transparency.
- o. **ShadowSize** - value between 0.0 (no glow) and 1.0 (strongest glow), which determines the glow, or shadow, around the title used to enhance its readability.
- p. **HardShadow** - binary value of 0 or 1. 0: normal shadow 1: shadow with a hard border
- q. **BkgEnable** - set value to 1 to enable use of black background behind text area, otherwise set to 0.
- r. **BkgSemiTransparent** - set value to 1 to make text background semi-transparent, otherwise set to 0. Only takes effect to BkgEnable to set to 1.
- s. **BkgExtraWidth** - specifies how much wider than the text the background should be. This value is relative to the width of the image; so setting it to 0.05 would extend the background by 5% of the image's width.
- t. **BkgExtraHeight** - specifies how much taller than the text the background should be. This value is relative to the height of the image; so setting it to 0.05 would extend the background by 5% of the image's height.
- u. **RightToLeft** - set value to 1 for the text to be displayed in right-to-left order, otherwise set to 0.
- v. **HAlign** - horizontal alignment of the title
 - 0: Center
 - 1: Left
 - 2: Right

w. **VAlign** - vertical alignment of the title

- 0: centered around the first line
- 1: centered
- 2: top
- 3: bottom

XML Elements and Attributes for Image Titles

When using image scripting, most of the XML tags previously defined for text (such as background, color, and position) don't apply to images. Supported image formats are tif, png, tga, and psd.

1. <?xml version="1.0"?> - This is the XML file header and must be present.
2. <TitlerData> - This tag indicates the start of the titler data block. The block must be closed with the </TitlerData> entry. XML titler files must contain exactly one titler data block, in which there will be one data entry for each title to display.
3. Data Entries
 - **StartTime** - the time, in seconds, at which the display of this data entry's title will start.
 - **StartTimecode** - an alternative to StartTime. Instead of using a floating-point value like '5.5' for 5.5 seconds, you can use a time code value ('00:00:05:15').
 - **EndTime** - the time, in seconds, at which the display of this data entry's title will end.
 - **EndTimecode** - an alternative to EndTime. Instead of using a floating-point value like '5.5' for 5.5 seconds, you can use a time code value ('00:00:05:15').
 - **Image** - the local path and filename for the image file to be used in the title.
Sample:<?xml version="1.0"?>
<TitlerData>
<Data StartTime='0' EndTime='6.1' Image='E:\alphatest.tif'/>
<Data StartTime='7' EndTime='26.1' Image='E:\betatest.png'/>
</TitlerData>
 - **ImageOffsetX** - image horizontal offset, in pixels. Please note that "0" denotes the far left and increasing values will offset the image to the right.
 - **ImageOffsetY** - image vertical offset, in pixels. Please note that "0" denotes the top of the image and increasing values will offset the image towards the bottom.
 - **ImageScaleX** - image horizontal scale factor. Eg. 1.0 is actual size, 0.5 is half size, and 2.0 is double original size.

- **ImageScaleY** - image vertical scale factor. Eg. 1.0 is actual size, 0.5 is half size, and 2.0 is double original size.
- **Transparency** - Value between 0.0 (fully opaque) and 1.0 (fully transparent), which determines the title's transparency.

XML Titler - Additional Notes

- The first data entry should define all the different parameters.
- If a data entry does not set a parameter, the last value set for this parameter will be used for that data entry. For instance, if you want a transparency value of 0.2, you may put Transparency='0.2' only in the first data entry and that value will be used for all other data entries.
- The title's first line is always centered on the position described by PosX and PosY.
- The data entries must be sorted according to start time in the XML file.
- Unless specified, titles are displayed on a single line. The XML titler will not add a line break if a line is too long. It will be clipped from the left and right. Line break characters must be inserted in the Title in order for a line break to occur.
- Only one font may be used per XML titler filter instance.
- When using StartTime/EndTime for NTSC, in order to identify the start and end time of the titles, make sure to use drop-frame time code. Non-drop-frame time code approximates the real frame rate and will drift away from the actual time by a few frames every minute.
- When using StartTimecode/EndTimecode, both drop-frame and non-drop-frame time codes are supported. Drop-frame is in the format 'hh:mm:ss:ff', while non-drop-frame time code's format is 'hh:mm:ss;ff'. Notice that seconds and frames are separated by a semi-colon in non-drop-frame time code.
- When using StartTimecode/EndTimecode, the title display timing will not be accurate in the video filter's preview (**Video Filter** tab of **Advanced - Filter**).
- You can use Internet Explorer, or a number of other tools, to verify if your XML file has correct XML syntax. Simply open your file in Internet Explorer - if any errors related to the XML syntax exist, Internet explorer will display them.
- You can mix image data with regular data, but if a Data entry has an image, then its title will be ignored.
- The images should be the same size as the video you are rendering onto, otherwise they will be copied starting at the top-left corner of the image, with 1:1 pixel mapping.

Using Carbon Coder with Canopus Edius or Adobe Premiere

Carbon Coder automatically installs a direct "print to file" plug-in for both Canopus EDIUS and Adobe Premiere video editing suites. This powerful plug-in will utilize Carbon Coder's vast selection of codecs to save your file. To use the Carbon Coder plug-in, follow the instructions below:



1. In either Adobe Premiere or Canopus EDIUS, select **File** then select **Print to File**.
2. Choose **Rhozet Carbon Coder** from the list.
3. Carbon Coder will start up automatically with the file from your editing program as the source.
4. Choose the target format(s) and then select the **Convert** tab to continue.

Error Handling

With Carbon 3.0 the error handling has been greatly improved. Error logs are available both through logging in Carbon as well as through the NT Event Log. Following are explanations of how to enable logging in Carbon, how to enable sending logs to the NT Event Log, and a list of common errors for reference.

Enabling Logging

To enable logging, open **Carbon Admin**, select the **Tools** menu, and then **Kernel Settings**. Once there, scroll down to the "Kernel Settings" section.

Log Jobs to Event Log

Setting this to **True** will log jobs into the Windows Applications Event Log.

Write Engine Log File

Setting this to **True** causes Carbon to write a general log file which contains general information for each transcoding job executed.

Log File Path

The general log file is written to this directory. Please note that the default directory has been changed from previous versions of Carbon and is now C:\Program Files\Common

Files\Rhozet\Carbon Coder\Kernel\. Also note that changing this setting requires restarting the system to take effect.

Log File Retention (days)

A new log file is created at midnight every day. This field determines how many day back to keep the old log files, for example setting this to 5 leaves today's log file and the log files from the preceding 4 days intact but removes log files any older than that. Setting this field to 0 (default) leaves all log files in place and never removes any.

You may additionally enable logging to an XML file.

- **Write XML Log File to File Share** – Setting this to **True** causes Carbon to write a general log file in XML format. This requires a machine restart to take effect.
- **File Path for XML Files** – the general XML-format log file is written to this directory. Changing this requires a machine restart to take effect.

By enabling the XML File (FTP) logging you can write an xml log to a remote ftp location. To do this set Write XML Log File to FTP Server to **True** and enter the appropriate information for the FTP server and path where you would like the XML file stored. For debugging purposes there are 4 additional types of information you can log (described below). It is important to note that enabling these logging options can significantly affect the performance of Carbon.

Log COM Interface Activity

Enabling this logs all Nexus COM based activities, for the purpose of debugging issues with an unresponsive GUI.

Note: This can slow down your transcoding and queue processing tremendously, use only for debugging and support. This setting requires a machine restart to take effect.

Log GUI Interface Activity

Enabling this logs all Nexus GUI based activities, for the purpose of debugging issues with an unresponsive GUI.

Note: This can slow down your transcoding and queue processing tremendously, use only for debugging and support. This setting requires a machine restart to take effect.

Log Watches

Setting this causes Carbon to write a watch folder log file, which contains processing information about source files dropped in watch folder and jobs created by watch folders.

Note: This should be used only for debugging and support.

Log Attached Watches

Setting this causes Carbon to write an attached watch log file; this contains processing information about FTP and LAN retrievals attached to watch folders.

Note: This should be used only for debugging and support.

Error List

Error Number	Description
x00000001	"This operation is not supported in this version. [CR:0x00000001]"
x00000002	"An unknown error occurred. [CR:0x00000002]"
x00000003	"A version conflict occurred. [CR:0x00000003]"
x00010F06	"The Transcoder cannot import this file format. [CR:0x00010F06]"
x00010F0A	"Destination Parameter problem occurred. [CR:0x00010F0A]"
x00010F0C	"Destination Interleaving violation [CR:0x00010F0C]"
x00010F0E	"Generic Target Error occurred. [CR:0x00010F0E]"
x00010F0F	"Copy Protection Device not found [CR:0x00010F0F]"
x00010F10	"Generic Error in Plugin. [CR:0x00010F10]"
x00010F11	"Your destination location has no free hard drive space available. The conversion was stopped. [CR:0x00010F11]"
x00010F12	"Could not write to your destination location [CR:0x00010F12]"
x00010F15	"File size limit reached. Your OS does not allow to write files larger than 4GB. The conversion was stopped. [CR:0x00010F15]"
x00010F16	"File system limit reached. Your File system does not allow to write files larger than 4GB. The conversion was stopped. [CR:0x00010F16]"
x00010F17	"File size limit reached. The conversion was stopped. [CR:0x00010F17]"
x00010F18	"Not enough memory available for the current operation [CR:0x00010F18]"
x00010F19	"The Conversion was aborted. [CR:0x00010F19]"x00010F1A="Your Transcoder Installation is damaged. Please run Setup again. [CR:0x00010F1A]"x00010F1D="Internal Application Error: (NOTIMPLEMENTED). [CR:0x00010F1D]"
x00010F1E	"The file name you specified is invalid. [CR:0x00010F1E]"
x00010F1F	"The Target File was not written correctly. It might contain errors. [CR:0x00010F1F]"
x00010F20	"Your souce video has an odd size. The Transcoder can only import sources with an even size. [CR:0x00010F20]"
x00010F22	"DirectX 9 or higher needs to be installed on your computer. The Transcoder can not start. [CR:0x00010F22]"x00010F23="QuickTime 6 or higher needs to be installed on your computer. The Transcoder can not start. [CR:0x00010F23]"
x00010F24	"This product requires EDIUS to be activated or in the trial period. Please activate EDIUS and try again. [CR:0x00010F24]"
x00010F25	"This product requires trial or activated version of EDIUS HDV. Please install and activate EDIUS HDV and try again. [CR:0x00010F25]"

Error Number	Description
x00010F26	"Can not add another module of this type (limit of simultaneous usage exceeded). [CR:0x00010F26]"
x00010F27	"Invalid parameters [CR:0x00010F27]"
x00010F28	"There is an error happened when create/open or process memory map file [CR:0x00010F28]"
x00010F29	"There is an error happened when create/open /set/reset event [CR:0x00010F29]"
x00010F2A	"Specified target filename is invalid. This can happen if you try to write to a read-only media or the target file already exists and is in use. [CR:0x00010F2A]"
x00010F2D	"The Transcoder detected stalling in the conversion. Possibly your source is no longer accessible. Click Stop to cancel your conversion [CR:0x00010F2D]"
x00010F2E	"Non-recoverable Frame Drop occurred during Capturing [CR:0x00010F2E]"
x00010F2F	"The job can not be rendered - please try again later (global resource currently not available). [CR:0x00010F2F]"
x00020001	"Plugin not found. [CR:0x00020001]" "Your source file name is invalid [CR:0x00020002]"
x00020003	"Audio/Video formats incompatible. [CR:0x00020003]"
x00020004	"Your system is low on memory. [CR:0x00020004]"
x00020005	"Conversion cancelled. [CR:0x00020005]"
x00020006	"This preset is referring to an exporter which is not installed on your system. [CR:0x00020006]"
x00020007	"This preset is invalid. [CR:0x00020007]"
x00020008	"The settings of this preset are invalid. [CR:0x00020008]"
x00020009	"Please select a target first. [CR:0x00020009]"
x0002000A	"The Transcoder can not import this file. Either the file format is not supported or the file is damaged. [CR:0x0002000A]"
x0002000B	"The Transcoder can not load the required plugin for this action. [CR:0x0002000B]"
x0002000C	"Copy-Protection Device not found. [CR:0x0002000C]"
x0002000D	"A Preset with the given name already exists. Please choose another name. [CR:0x0002000D]"
x0002000E	"The preset name you entered is not a valid file name. Either it is too long or contains invalid characters. Please choose another name. [CR:0x0002000E]"
x0002000F	"Couldn't change the category for the presets - possibly the presets are

Error Number	Description
x00020010	write protected or system presets. [CR:0x0002000F]" "Couldn't change the category for the some presets - possibly the presets are write protected or system presets. New Category was created but old category was kept. [CR:0x00020010]"
x00020011	"The project file is invalid. [CR:0x00020011]"
x00020012	"One or multiple sources/targets could not be restored [CR:0x00020012]"
x00020013	"One or multiple sources from the project file could not be loaded . [CR:0x00020013]"
x00020014	"One or multiple targets could not be restored from the project file. [CR:0x00020014]"
x00020015	"One or multiple filters could not be restored from the project file. [CR:0x00020015]"
x00020016	"Your system is low on virtual memory. The Transcoder needs sufficient virtual memory (150 MB) to perform the conversion. The Transcoder can not load this source file. [CR:0x00020016]"
x00021001	"Internal Application Error: (NOT_SUPPORTED). [CR:0x00021001]"
x00021002	"Internal Application Error: (PARAMETER). [CR:0x00021002]"
x00021003	"Internal Application Error: (INTERFACE). [CR:0x00021003]"
x00021004	"Internal Application Error: (DLLINTERFACE). [CR:0x00021004]"
x00021005	"Internal Application Error: (ENUMINDEX). [CR:0x00021005]"
x00021006	"Internal Application Error: (GRAPHSTATUS). [CR:0x00021006]"
x00021007	"Internal Application Error: (CLASSSTATUS). [CR:0x00021007]"
x00022001	"No audio filter found to perform required conversion. [CR:0x00022001]"
x00022002	"No video filter found to perform required conversion. [CR:0x00022002]"
x00022003	"Internal Error: unable to start conversion. [CR:0x00022003]"
x00022004	"Internal Error: unable to locate required filter. [CR:0x00022004]"
x00022007	"Audio/Video mismatch between source and target. [CR:0x00022007]"
x00022008	"Unable to spawn new thread. [CR:0x00022008]"
x00022009	"Unable to read source file. [CR:0x00022009]"
x0002200A	"Unable to write target file. [CR:0x0002200A]"
x0002200B	"Unable to start encoding preview. [CR:0x0002200B]"
x0002200C	"Internal Error: Unable to start video processing. [CR:0x0002200C]"
x0002200D	"Internal Error: Unable to start audio processing. [CR:0x0002200D]"
x0002200E	"Unable to start multipass encoding session. [CR:0x0002200E]"
x00022028	"Two or more Audio Normalize filters in sequence not allowed. [CR:0x00022028]"
x0002202A	"Cannot login to network share. [CR:0x0002202A]"

Error Number	Description
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Description

Each error description return by Rhozet Carbon will now end with the string "[CR:0x????????]" containing 8 hexadecimal characters. This will be visible to manual operators in the Job Queue Manager as well as in errors returned when using the API.

The first 3 hex digits identify the Rhozet Carbon module (0x000???? - 0xFFFF???), these could be importers, exporters, filters, etc. The last 5 hex digits identify the error (therefore both 0x00F00001 and 0x00C00001 could be generated for example)

Notes

- Identical error numbers with different error descriptions may occur, for example the string could be "Can't write to d:\\" or "can't write to e:\\" with the same error number representing "can't write to [letter]:\"".
- Identical error descriptions with different error numbers may occur, for example both the MXF and GXF source import modules may generate a "can't access Metadata" error description but since they have different module numbers the error numbers will be different.
- There is a common number space [0x000?????], designed for generic errors, which can appear when it is not possible to identify the module in which the error occurred.

MPEG Export File Extension

Carbon 3.0 allows you to change the export extension on any MPEG file through the MPEG Exporter. This can be changed to meet extension requirements of specialized systems. To change the extensions simply add the MPEG exporter as a Target. Depending on the Stream Type chosen you will be able to choose the extension of the Elementary, Program, or Transport streams.

Troubleshooting

This section illustrates some common video encoding problems and how you can fix or avoid them.

Video is Blocky or Appears to Break Up

The video image appears to break up into different moving blocks. Parts of previous video may appear in different locations. Notice in the example that elements of the correct video seem to be mixed with the older video. After some time, the image may recompose itself, producing a correct image.



Possible Causes

- **DVD media reading problem** – If you are seeing this type of problem after authoring a DVD and playing it back on a set-top DVD player, it could simply be a difficulty reading the DVD-recordable media. Try the same disc in a computer-based DVD player. If it plays in the computer without problems, try a different set-top player or a different brand or type of DVD-recordable disc. Many set-top players cannot reliably play all DVD-recordable discs.
- **Use of seek or trick-play in the player** – If you were playing the file and playback was okay until you used the player's fast-forward, rewind or scrubber to reposition the playback location, then it's probably not a problem at all. Depending on the format and player, the video may take until the next keyframe to start displaying properly. Try letting the file play through from start to end without interrupting it to verify. If the video displays correctly in a straight-through playback, then the output file is fine.
- **Video bitrate too low or not enough keyframes** – If the break-up only appears after scene changes, then the video bitrate is too low to handle the large change in the video. Increase the video bitrate to allow faster recomposition. Alternatively, if the target format supports keyframing, decrease the keyframe interval, thus increasing the number of keyframes. Keyframes provide a full video frame so large changes can be tracked and better compensated for.
- **Video bitrate too high** – When using a hardware decoder, such as for MPEG playback, in some cases a video bitrate that is too high can cause the image to break up. If the video bitrate is at or near the maximum setting, try reducing it a bit. If it plays on a software-based player but not on a hardware-based player, this may also be because the bitrate is too high.

Video Appears Fuzzy or Blurry

The video appears fuzzy or blurry. When played zoomed, it appears blocky, almost like viewing something through a frosted glass window.



Possible Causes:

- **DV playback not set to full quality** – If the problem occurs only with Microsoft DV AVI files, the problem may be due to the Digital Video decode setting being set to **Low**. When set to Low, DV files are decoded in low resolution, regardless of what the resolution of the actual file is.
- To fix this problem in Windows Media Player:
 - Open Windows Media Player, and look for the **Options** selection in the menu (usually under **Tools**).
 - Look for a setting called Digital Video that has a slider with **Small** at one end and **Large** at the other. In Windows Media Player 9, this is found by clicking **Advanced** in the **Performance**.
 - Set the slider to **Large**.
 - Close all open programs including **Windows Media Player**, then open the file for playback again. The file should now play in full resolution.
- **Video resolution too low** – When stretched to the original size, a low-resolution image will appear blocky. If you want or need to view the image at the same size as the original, you should increase the video frame size. In order to preserve quality and avoid similar effects due to too low a bitrate, the bitrate should be increased when increasing the video resolution.
- **Video bitrate too low** – Depending on the encoding format, a video bitrate that is too low can also produce blocky video as shown above. Increase the video bitrate to see if this is the case. If increasing the bitrate does not help, the video frame size needs to be increased.

Video Has Halos or Blocks Near Objects

The video appears to have halos around the edges of objects and/or block-like noise around near objects. There does not seem to be a loss of resolution, just loss of sharpness and some changes to colors.



Possible Causes

- **Video bitrate too low** – This type of effect is usually caused by setting the video bitrate too low. Increase the video bitrate to get a better result. If increasing the video bitrate produces too large a file, keep the video bitrate the same, but decrease the video frame size. When the choice is available, choosing **Optimize for Quality** instead of **Optimize for Speed** should also help.

Video Appears to Jitter

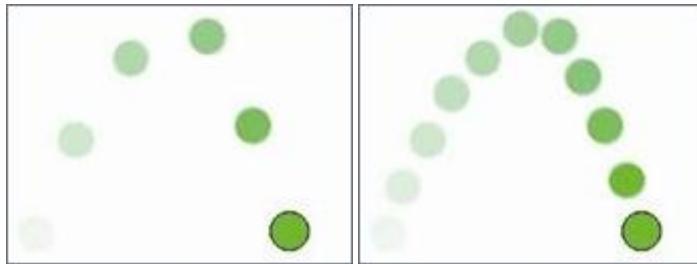
Movement in the video seems to jitter up and down. Moving objects may seem to take two steps forward then one step back.

Possible Causes

- **Single-field detail in interlaced output** – If the video appears to have vertical jitter or flashing horizontal edges, the source image may have single-field detail. This usually occurs with still images used for video. Carbon Coder normally makes the appropriate adjustments to avoid this situation, but if you still have trouble, try applying an antiflicker or deinterlace filter to your source before bringing it to Carbon Coder.
- **Improper source interlacing field order** – For interlaced sources, the interlacing mode may not be set correctly. Verify that the proper interlacing field order is set in the **Advanced Source Configuration**.
- **Improper target interlacing field order** – For interlaced output, the target field order may be incorrect for the playback device. Check the requirements of the intended playback device to determine the proper interlacing setting.

Video Movement Appears Jumpy

Movement in the video does not appear smooth – it seems to jump instead of move in a fluid fashion. Objects in motion seem to jump or “flash” to the next position like a strobe effect.



Possible Causes

- **Video frame rate too low** – If the video frame rate is too low, motion in the video will not appear smooth. Increasing the frame rate will help to improve the fluidity of motion but will also make the file size larger. Generally speaking, a frame rate below 15fps will result in unsatisfactory playback.
- **Streaming connection speed too slow** – Users viewing a streaming file that was made for a faster connection speed may see this type of “snapshots in time” effect. The user need a faster connection to the streaming server, a progressive download file should be used instead.
- **Playback machine too slow** – Some formats play with different frame rates depending on the speed of the viewer’s machine. Try playback on a faster computer to see if it plays better.

Audio and Video Are Out of Sync

Audio and video do not play in synchronization with each other. For example, a person talking may show their lips moving, but their speech may not be audible until a second or two later.

Possible Causes

Use of seek or trick-play in the player

If you were playing the file and playback was in-sync until you used the player’s fast-forward, rewind or scrubber to reposition the playback location, then it’s probably not a problem at all. Depending on the format and player, audio/video synchronization cannot be guaranteed after repositioning the playback point. Try letting the file play through from start to end without interrupting it to verify. If synchronization is maintained in a “straight-through” playback, then the problem is trick-play and not the output file.

Video and audio playing from different devices

If you are playing the video on one device and using a different device for audio, synchronization is not guaranteed. For example, DV files playing audio from the PC but using a connected DV camera or converter for video output will be unsynchronized. This is because there is a slight delay between the DV camera or converter between getting the DV data from the PC and outputting the decoded analog video. Thus, in this situation audio will appear to come slightly before the video.

Set-top DVD audio decoder problems

If you're seeing the problem using a set-top DVD player for playback, it could be a problem with the player itself. Some set-top DVD players have problems with audio synchronization, especially when the audio is AC3 format. Try a commercially-produced DVD in the player and see if it has the same problem. Also try playing your DVD with a software-based DVD player.

DVD authoring error

If your problem exists with an authored DVD, it could be a problem with the DVD authoring. Sub-standard DVD authoring can also cause audio/video sync problems. Try reauthoring the DVD with a different DVD authoring application.

Video Shows Strange Patterns or Blocks

The video shows strange patterns or blocks of different data.

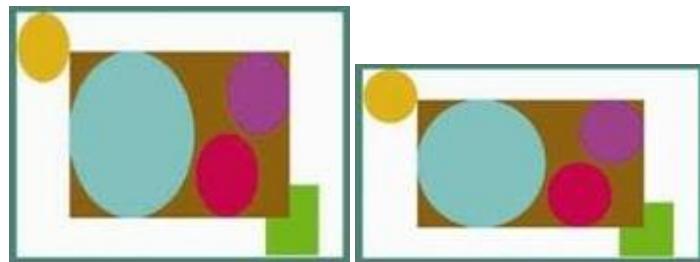


Possible Cause

- **Corrupt video file** – The data of the video file is probably corrupt. Check to see that the source file does not show the same problem, as any problems in the source will be faithfully reproduced in the output. If the problem only occurs in the output, try writing the file to a different drive or directory, or try a different compression format.

Video Appears Stretched or Squashed

The video appears to be stretched in one direction. Circles now appear as ovals and people are taller or wider than they should be.



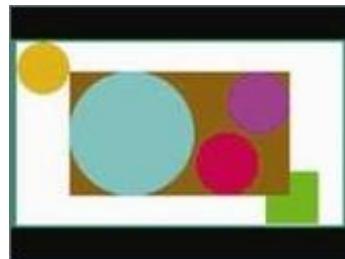
Possible Causes

- **Widescreen MPEG-2 output** – If your output is widescreen MPEG-2, then this is not a problem. Some MPEG-2 playback software does not properly size the video playback

according to the aspect ratio set in the MPEG-2 file. Thus, widescreen MPEG-2 files play back squashed. Authoring a widescreen DVD using this file and playing that DVD on a DVD player will produce a correct widescreen result.

- **Player does not compensate for pixel and frame aspect ratio** – Some media players do not compensate for video with non-square pixels and thus do not display video in the proper aspect ratio. This is not a problem with the encoding or Carbon Coder; it is a problem with the player. Try to find a player that properly compensates for non-square pixel playback.

Incorrect source aspect ratio setting – Check the aspect ratio setting in your source file. If it is set incorrectly, Carbon Coder will interpret the shape of the video image incorrectly and therefore process it incorrectly. Carbon Coder never does anything to stretch or squash the image – wide-screen sources converted to standard screen size will be scaled to fit into the standard width, a process known as letterboxing, as shown in the image below.



Cannot Load Encoded MPEG Files into DVD Authoring Software

Your DVD authoring software does not accept the MPEG files you made with Carbon Coder.

Possible Causes

- **File naming problem** – Some DVD authoring applications do not recognize the standard .m2p file extension for MPEG-2 program streams. Instead, they want files named .mp2 or .mpg instead. Try renaming the output file from .m2p to .mp2 or .mpg and try again.
- **Incorrect MPEG-2 file type** – Not all DVD authoring applications support MPEG-2 elementary streams (.m2v files and associated audio files) and MPEG-2 program streams (.m2p files), some will only accept one or the other. Check your DVD authoring software's documentation to see which type it supports and verify that you are creating the correct type with Carbon Coder.
- **Software does not accept MPEG files** – Some DVD authoring applications do not accept MPEG files as sources. If this is the case, you will need to use Carbon Coder to output a different file type (usually VOB) that the authoring application will accept or use a different authoring application. Consult your authoring software's documentation to find out what file types it accepts.

Application Notes

Please see www.rhozet.com for additional and updated Application Notes.

Nexus Credentials

Symptom

Watch folders, API scripts, and certain target folders say "Can't read from source," but the Carbon Coder GUI works properly.

Description

If you are getting errors such as "Can't read from source" when using the API or watch folders, or target files are not being written properly, the Rhozet background transcoding service called "Nexus" may not have the proper permissions/credentials. Normally the Nexus service has the credentials of the "Local System" account, you may need to change that to an authorized account. The Nexus service is responsible for handling requests from watch folders, the queue manager, and the API. The GUI tool can transcode independently without accessing the Nexus service in most instances, which is why you may not see those same problems when transcoding with the Carbon Coder user interface.

Instructions

Close all open Rhozet applications. This includes the Job Queue Manager which may still be open in the system tray.



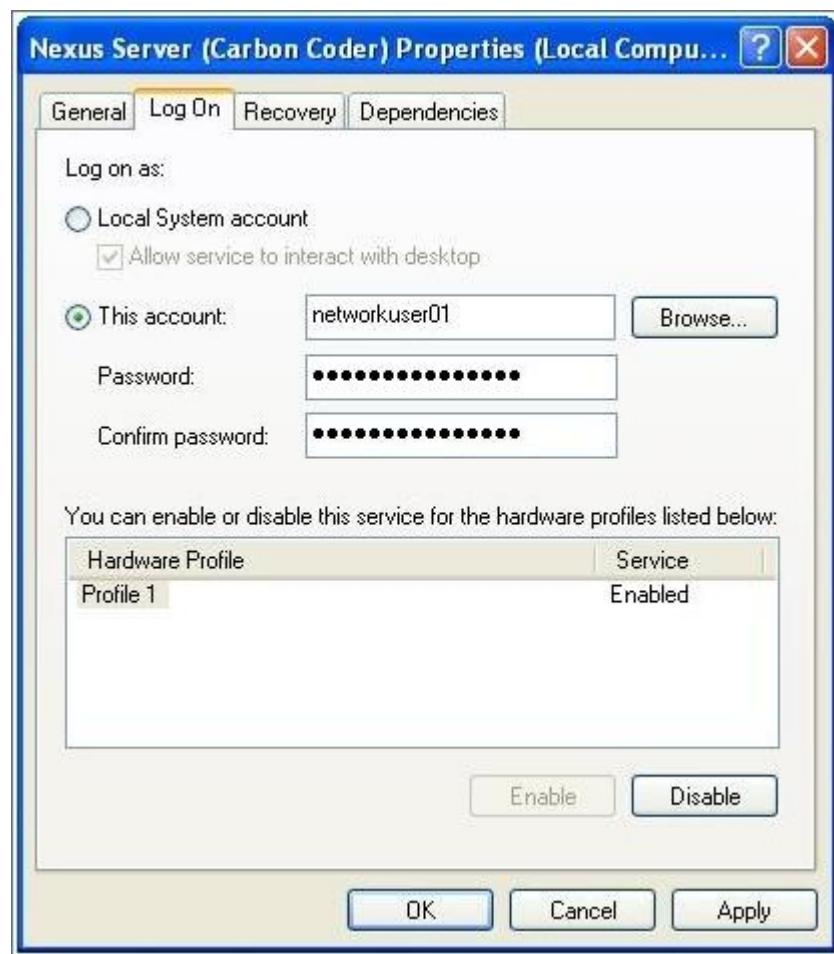
Right-click the icon in the system tray and select **Exit Queue Manager**. If you do not exit the Job Queue Manager properly it may behave strangely after you start Nexus.

1. Open the services console by going to **Start > Run**. Enter `services.msc` and press **OK**.

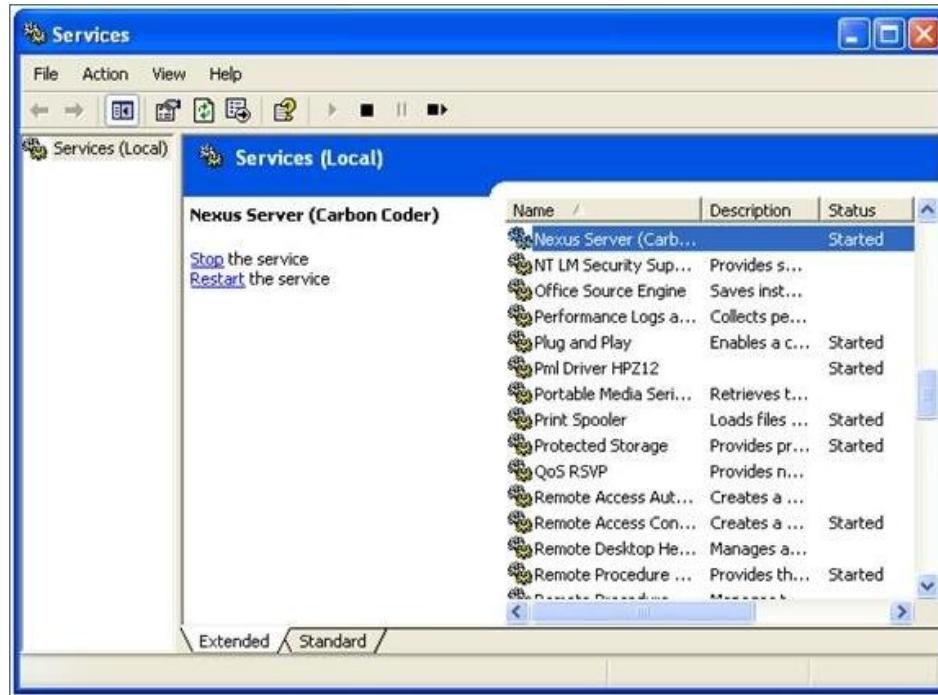


2. Double-click the **Nexus Server** service.

3. Select the **Log On** tab.
4. Set the credentials ("This account" and "Password") for the service to a user that has rights to access the share. It is recommended to use **Browse** to find the appropriate account, especially if this machine is part of a domain.



5. Close the **Nexus Server Properties** dialog box.
6. Now that the proper login credentials have been set, the Nexus Server service needs to be restarted for the changes to take effect. To do this right-click on **Nexus Server** and then click **Stop**.



7. Wait a few seconds after the service has stopped, then right-click on **Nexus Server** and click **Start**.
8. Nexus now has the credentials of the specified account, and jobs submitted with the API or watch folders should be able to access source files and write target files.

Remote Retrieval

Symptom

A watch folder is set up on a NAS or play-out server and is not processing new jobs.

Description

Carbon Watch Folders are "passive" processes, i.e. they wait for a signal from the file-system to indicate that a new file has been created in the Watch Folder path.

When working with some devices with drivers, such as NAS drivers or file-system drivers for video play-out systems, passive processes may not work properly. The reason is that some file system drivers do not *completely* simulate a real Windows file system, that is they do not notify passive processes when a new file has been created in a folder that the passive process is watching.

Instructions

For this reason it may sometimes be necessary to add "Remote Retrieval" to a standard Carbon Watch Folder. Remote Retrieval can either be FTP retrieval, or File System retrieval. Both types of Remote Retrieval periodically check the remote FTP server or remote file system for new files. If a

new file is discovered, Remote Retrieval checks again a second time, to see if the file size is constant. If the file size is not constant but growing instead, it means that the file is still being written to the remote device, and Remote Retrieval continues checking until the file size is constant.

When the new file has been verified to have a constant size, Remote Retrieval then copies it to the local file system, to the Watch Folder path that was specified when the Watch Folder was created. In the case of a File System type of Remote Retrieval, a shortcut can also be copied instead of the entire file. The Watch Folder then sees the new file and precedes to transcode it normally.

You can access the Remote Retrieval setup through the Watch Folder Manager. You will first have to click on an existing watch folder before clicking on **Remote Retrieval**. A file share/folder or FTP location can be targeted for the Remote Retrieval process. You will also need to specify the correct login info (username/password) if permissions are needed to access this location. Once you click **OK**, the Remote Retrieval process will be enabled for the location specified.

Note: If you choose the **File Share/Folder** option, make sure that you use only UNC paths of the form \\DeviceOrServerName\FILESYSTEM\Folder. Do not use mapped drives such as M:\Folder, since mapped drives are only valid for the user who is currently logged on, and cannot be accessed by background processes like Carbon Watch Folders.

Nexus Service

Transcoding manually uses a different process than transcoding with watch folders or using the API. The Carbon Coder program is a separate transcoder from the Windows Service that is also installed on a system when Carbon Coder or Carbon Server/Agent is installed. This service is called "Nexus", and by default just like every other Windows Service it has permission to only access resources on the same machine that it was installed on. On the other hand, the Carbon Coder program with the GUI has the same permissions as the account that the user enters to log on to the machine. That is why it is necessary to give Nexus permission to access network resources.

Note: With regards to mapped drives versus UNC paths; mapped drives only exist for the user that is logged in, Windows Services do not see mapped drives. That's why the UNC path works with watch folders and the API, and mapped drives do not.

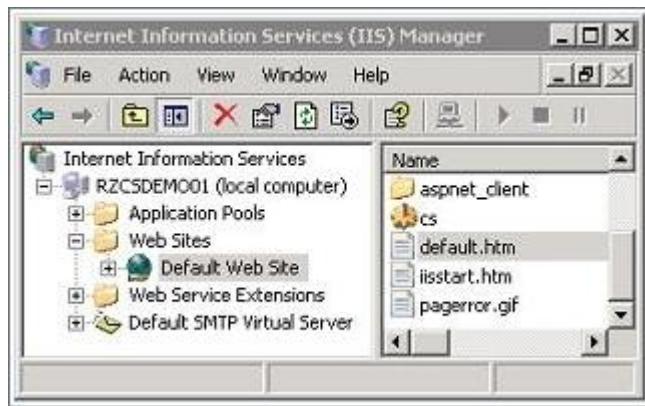
How to Disable Anonymous Access for Carbon Coder Web Interface

In certain situations it is recommended that users login to use the Web Interface. With a standard Microsoft Windows 2003 server installation by default the Internet Information Services (IIS) manager settings for web sites is set to allow anonymous access. Under this configuration the Web Interface for Carbon Server can be accessed by any user with the address to the Web Interface. You will find instructions below on how to disable anonymous access. Once this is done only users with a

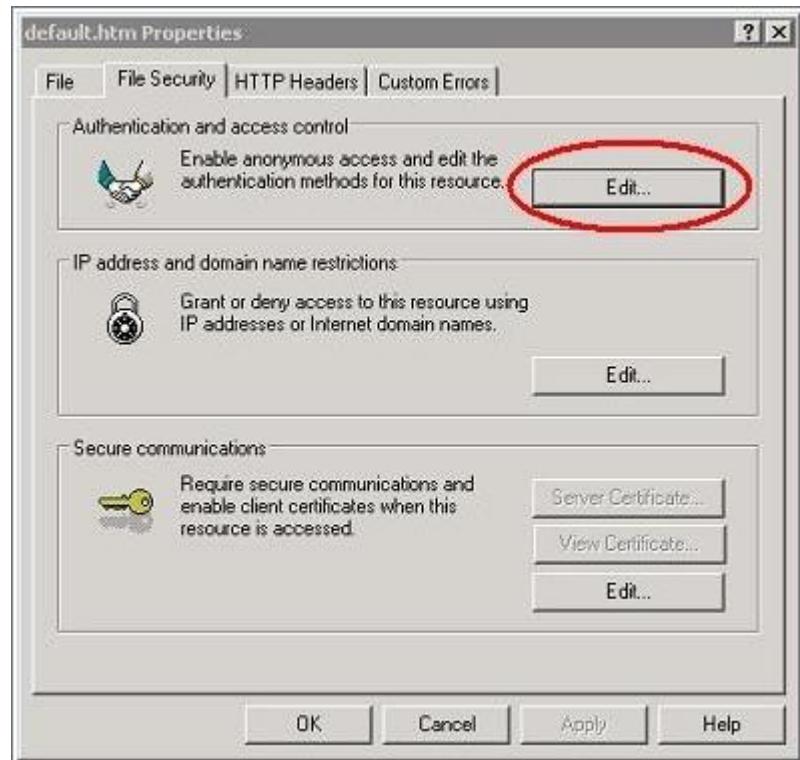
username and password for the Carbon server machine can access the Web UI. You can have the system administrator for the machine create a user login specifically to access the Carbon Coder Web UI.

Instructions for disabling Anonymous Access for the Carbon Coder Web Interface (default.htm):

1. Go to **Start > Control Panel > Administrative Tools**. Open up the **Internet Information Services (IIS) Manager**.
2. Select **Default Web Site** under 'Web Sites'. Right-click on **default.htm** and select **Properties** in the right panel.



3. Click **Edit** under the **File Security** tab in the **Authentication and access control** section.



4. Clear the **Enable anonymous access** option.



How to Change the Default MPEG File Extension

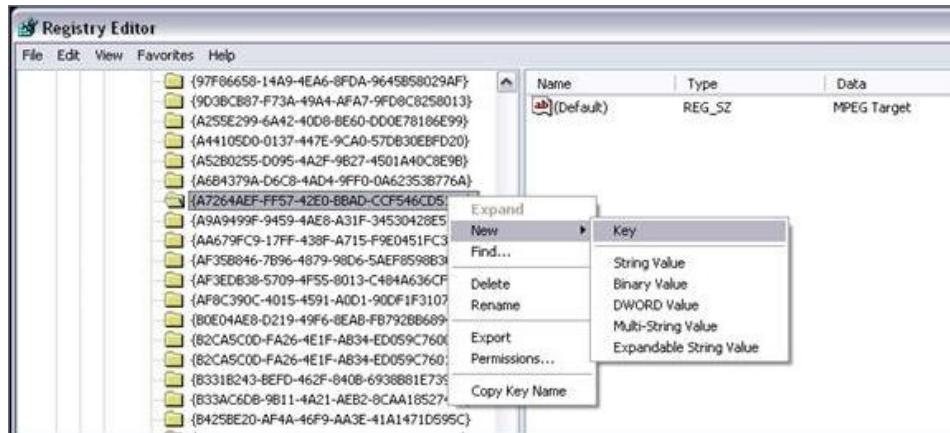
The following instructions explain how to change the default output file extension for mpeg files. For example, by default Carbon Coder uses the file extension .m2t for all mpeg-2 transport streams. If your situation calls for an mpeg-2 transport stream with the file extension of .mpg you can use the following instructions so that all mpeg-2 transport streams created by Carbon Coder will use the .mpg extension.

1. Run **regedit**.

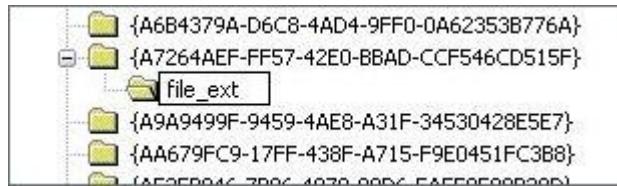


2. Browse to **HKEY_LOCAL_MACHINE\Software\Rhozet\Carbon Coder\{A7264AEF-**

FF57-42E0-BBAD-CCF546CD515F}.



3. Make a new subkey in this folder and name it **file_ext**.

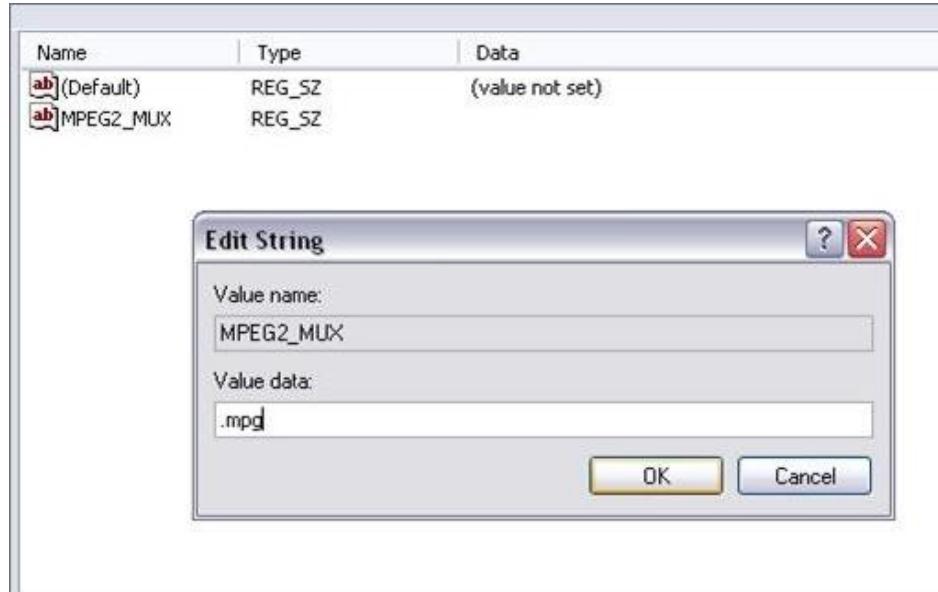


4. Right-click on the new key and select **New > String Value**.
5. Rename the new string to one of the following formats. You can add an individual key for each of the format types listed, but we recommend changing only those that you have to.

String Name	File Type Changed
MPEG1_MUX	Mpeg-1 System Stream
MPEG1_ELM_VIDEO	Mpeg-1 Elementary Stream – Video Portion
MPEG1_ELM_AUDIO	Mpeg-1 Elementary Stream – Audio Portion
MPEG2_MUX	Mpeg-2 Program Stream
MPEG2_ELM_VIDEO	Mpeg-2 Elementary Stream – Video Portion
MPEG2_ELM_AUDIO	Mpeg-2 Elementary Stream – Mpeg-2 Audio
WAVE	Mpeg-2 Elementary Stream – PCM Audio
MPEG2_TS	Mpeg-2 Transport Stream

6. Change the value of the new string to the file extension you would like the stream type to

have (e.g. .mpg).



7. Close **regedit**.
8. Restart Carbon Coder.

Rhozet USB Security Key Updater

Included with the Carbon Coder evaluation package is a USB Security Key that allows you to execute Carbon Coder for the duration of the evaluation period. Once the evaluation period expires, you can no longer run Carbon Coder.

When your evaluation period ends there are two things that you must do to extend your license. First, you must contact Rhozet to arrange for your evaluation to be extended. Second, you must update your current hardware security key to match your newly extended evaluation period.

Please be aware of the following conditions before updating your security key.

- The license file you receive from Rhozet (Step #6) should be applied to the **exact** same key you extracted the status information from (in Step #3), you cannot mix license files and apply them to keys other than the one they were generated for.
- For security reasons, you must run the update application on the same physical computer the security key is attached to. In the event this is not possible you can use Windows Remote Desktop to connect to the computer, but you must do so in console mode. To run Remote Desktop in console mode open a command prompt window and enter the following command:
mstsc /v:hostname /console.

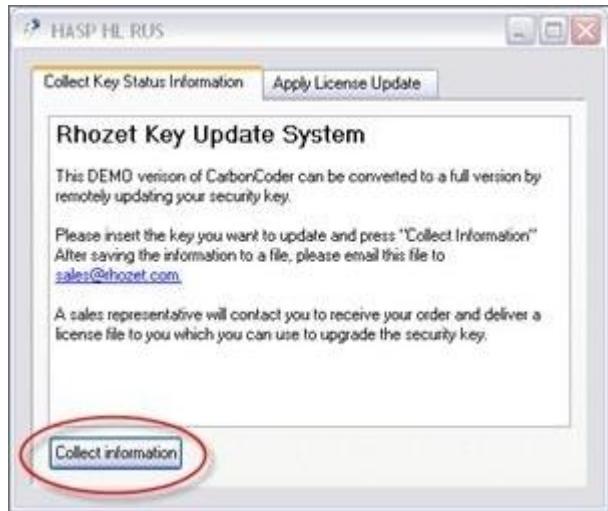
- It is very important to generate a completely new key status file (Step #3) every time your key expires. You cannot reuse old status key files.

Update Instructions

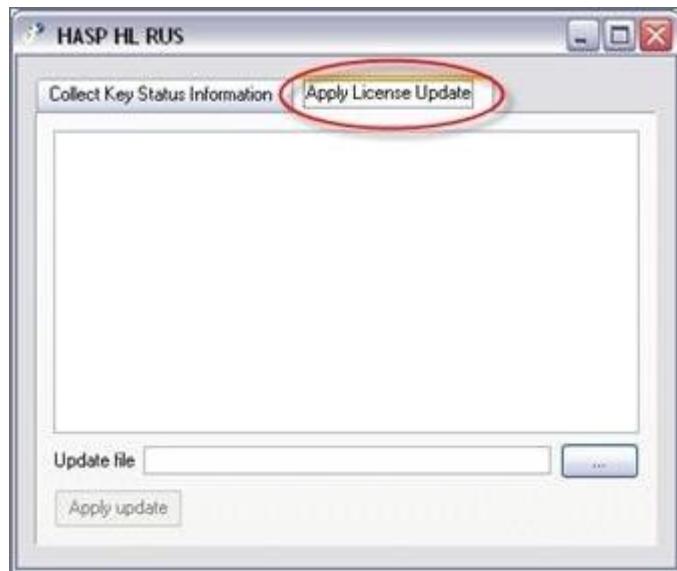
1. Download **USB Security Key update.zip** from <ftp://data.rhozet.com/USBSecurityKeyUpdate.zip>. Please use Internet Explorer 6.x, the link does not always function properly with Internet Explorer 7.x.
2. Using Windows Explorer, navigate to where you downloaded 'USB Security Key update.zip' and extract it. Once the files are extracted, run **KeyUpdate.exe**.
3. Once the program has launched, make sure the **Collect Key Status Information** tab is selected (select it if not).



4. Click **Collect information**.



5. A **Save** dialog box will open, select a file name to save the key status information in and click **Save**.
6. The USB Security Key will be read, information will be saved to the file you designated, and the screen will display a confirmation message like the following (the time and filename may be different): **19:41:49: Key status retrieved from HASP successfully. Information written to file C:\Temp\keystatus.c2v.**
7. Contact Rhozet support and obtain an email address to send your key status file to (this is the file you just generated, in the example above it's called "keystatus.c2v" and is located in the folder "C:\Temp").
8. Email the file to Rhozet and we will use your key status information file to generate a new license with the expiration date extended to be applied to your USB Security Key. We will then email a new license update file to you.
9. Once you receive the license update file, save it to disk, for example with the filename "C:\Temp\newlicense.v2c". Make sure the "USB Security Key update.exe" program is still running, and make sure the **Apply License Update** tab is selected (select it if not).



10. Click **Continue (...)** to the right of the **Update file** field.



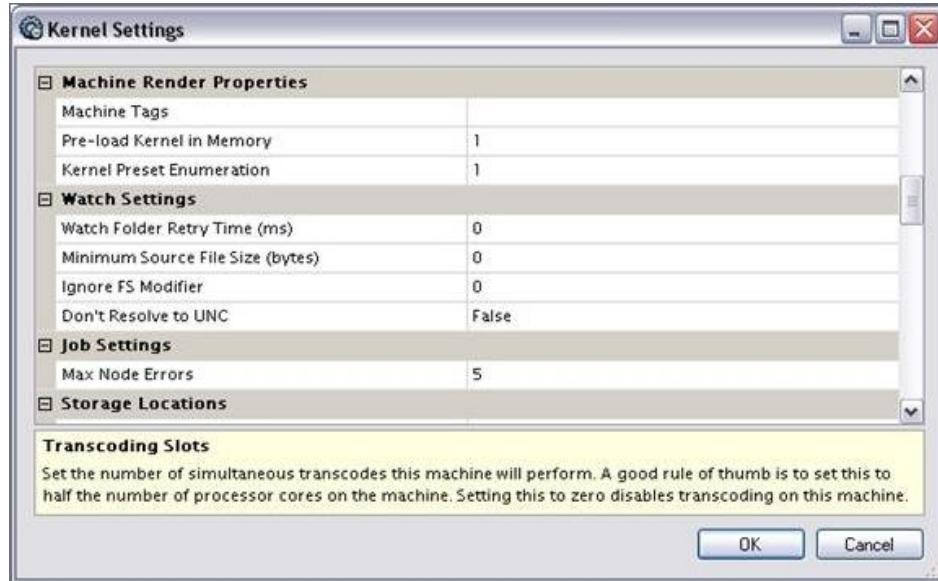
11. When the **Open** dialog box opens, navigate to the appropriate folder (in our example from above that would be "C:\Temp"), and select the file name to load the license information from (that was "newlicense.v2c" in our example), and click **Open**.
12. Now that the file name is now shown in the **Update file** field, click **Apply update**.
13. If the key is successfully updated, you should see a message like the following: **20:10:30: Applying update from file: C:\Temp\newlicense.v2c Update written successfully.** If you see this kind of message then your evaluation period has been successfully extended and you can now close the **USB Security Key update.exe** program and start evaluating Carbon Coder again.
14. Contact Rhozet support if you receive an error messages similar to this one: **19:57:48: Applying update from file: C:\Temp\newlicense.v2c Update failed: Key with requested id was not found.**

The "Tag" Mechanism

Carbon Server has the ability to 'tag' certain agents on its render farm to do specific types of jobs. A 'tag' is simply a word you define for a specific task or group of tasks. You may then create a job or watch folder that uses only the agents which have a certain tag. See instructions below to set up an agent and watch folder to use a "tag."

Instructions

1. Go to the desktop of the agent machine you want to assign a tag to and start the **Job Queue Manager** application.
2. Select **Tools>Advanced Kernel Options....**
3. In the **Machine Tags** field enter something like **Flash8**.



Note: You can enter multiple tags for one agent by separating each tag with a ;.

4. Click **Close**.
5. In the systray, right-click the **CarbonServer Farm Queue Manager** icon and select **Exit Queue Manager**.
6. Restart the Nexus service.
7. Using the Web UI, create a new watch folder.
8. When you add a target to the watch folder using the Carbon Server web interface, click on the double arrows in the **Job Tags** field, you should see the **Flash8** tag.
9. Select **Flash8** and finish adding the target.
10. Any transcoding jobs from this watch folder that will be converted to this target will now be run only on the machines that have the **Flash8** tag assigned to them in the **Advanced Kernel Options** dialog box.

Using Carbon Coder with On2 FlixExporter

If you would like to test the functionality of Carbon Coder combined with On2's Flash 8 encoder, Flix-Exporter, please follow the steps below.

1. Make sure Carbon Coder 2.05 or later is installed.
2. Download FlixExporter from the following link: <http://www.on2.com/cms-data/downloads/demo/SetupFlixExporterPCDemo.zip>.
3. Extract the downloaded zip file.

4. Run the included setup and follow the on screen prompts.
5. You will now be able to access FlixExporter through the Carbon Coder Interface.

How to add On2's FlixExporter as a target:

1. Open Carbon Coder, load your source(s) and click on the **Target** tab.
2. Add a new target.
3. Choose the **Quick Time File Exporter** preset from the "System" category and click **OK**.
4. Locate the **Select Exporter** target parameter and change it to **On2 Technologies Flash Video – FLV (DEMO)**.



Note: All files created using the demo version of FlixExporter will be watermarked by On2. If you would like to create video for production, simply purchase the full version of FlixExporter from On2 and follow the same steps. For more information on purchasing the full version of FlixExporter please visit www.on2.com.

Command Line Installation

The following document describes how to install Carbon Coder on a remote system from a network path.

1. Run the Carbon Coder setup locally from the command line on one of the systems you would like to install Carbon on remotely using the /r parameter: P:\setup.exe /r
This will create a setup.iss file in the windows directory.
2. Copy the Carbon Setup files to a directory on your network which all desired remote systems will have both read and write access to.
3. Copy the setup.iss file to the same location on the network as the Carbon Setup file.
4. Copy the file included with this setup, InstallCarbonCoder.bat, to the same network location as the Carbon Setup files.
5. Modify the InstallCarbonCoder.bat file by right-clicking on it and choosing **Edit**.

6. Replace **%CARBONCODER_SETUP_LOCATION%** with the full network path to the location of the Carbon Setup files.
7. Login to each remote system on which you would like to install Carbon Coder using an account with administrative privileges, usually using Remote Desktop.
8. Execute the InstallCarbonCoder.bat file.

InstallCarbonCoder.bat:

```
@echo off  
call net use P: "\%CARBONCODER_SETUP_LOCATION%" /PERSISTENT:NO  
P:  
cd \  
call P:\Setup.exe /s /f1"P:\setup.iss" /f2"C:\%COMPUTERNAME%.txt"  
call copy C:\%COMPUTERNAME%.txt "P:\Logfile\%COMPUTERNAME%.txt"
```

InstallCarbonCoder.bat will execute the Carbon Coder installation stored on a remote system. It also creates an install log file on the network location with the setup files for reference.

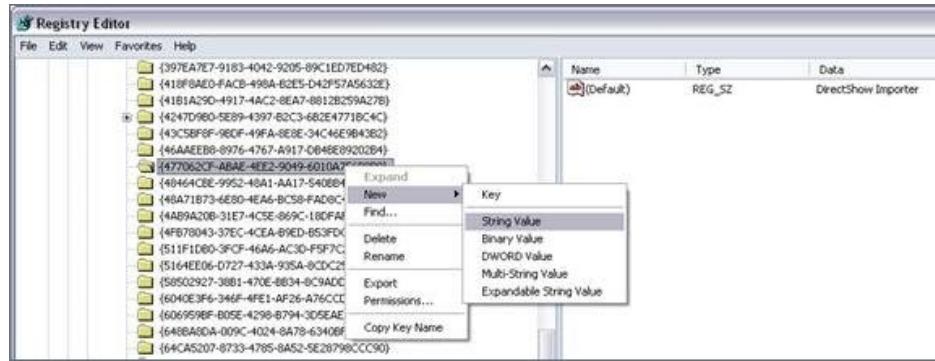
How To Import the DivX File Extension

The following instructions explain how to give Carbon the ability to import the *.divx file extension.

1. Run **regedit**.



2. Browse to **HKEY_LOCAL_MACHINE\Software\Rhozet\Carbon Coder\{477062CF-ABAE-4EE2-9049-6010A7E6B9B9}**.



3. Add a new string value to this key titled **ImportExtensions**.

Name	Type
ab](Default)	REG_SZ
ab] ImportExtensions	REG_SZ

4. Right-click on the ImportExtensions string and select **Modify**.
5. Change the value of the ImportExtensions string to **divx**.



6. Close **regedit**.
7. Restart Carbon Coder.

Note: When using a render farm, these instructions will need to be followed individually on each agent machine.

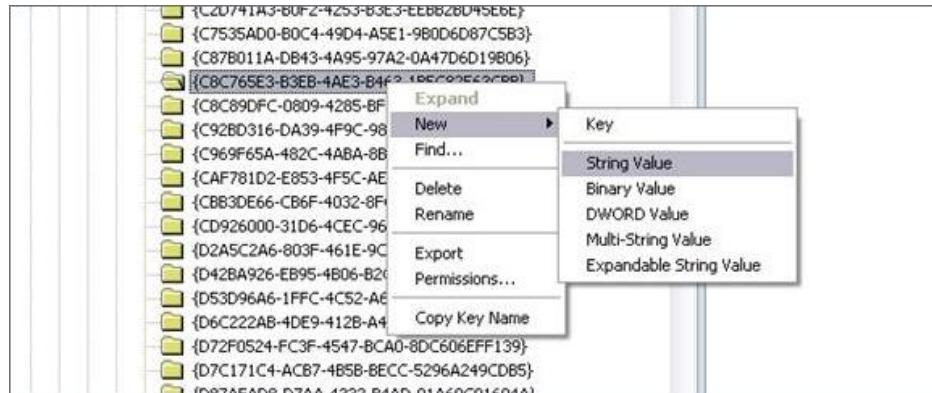
How to Import Force Using MPEG Importer Based on File Extension

The following instructions explain how to give Carbon the ability to import non-standard file extension with the MPEG importer.

1. Run **regedit**.



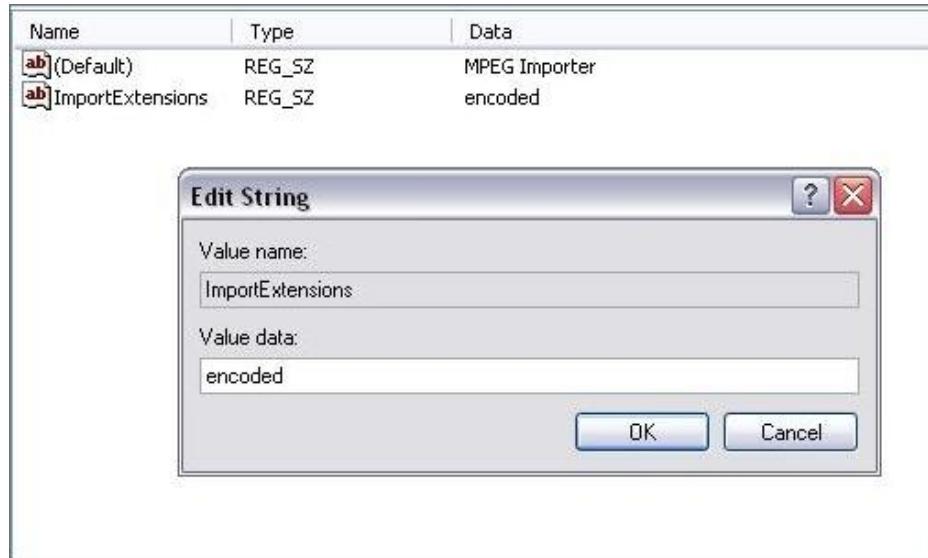
2. Browse to **HKEY_LOCAL_MACHINE\Software\Rhozet\Carbon Coder\{C8C765E3-B3EB-4AE3-B463-1B5C82E63CBB}**.



3. Add a new string value to this key titled **ImportExtensions**.

Name	Type
ab (Default)	REG_SZ
ab ImportExtensions	REG_SZ

4. Right-click on the **ImportExtensions** string and select **Modify**.
5. Change the value of the ImportExtensions string to the file extension that you would like to import. For example, if you want to import a file with extension ".encoded", then enter the value **encoded**.



6. Close **regedit**.
7. Restart Carbon Coder.

Note: When using a render farm, these instructions will need to be followed individually on each agent machine.

Rhozet Flash Support

With the 3.0 release support for Flash was added to Carbon Coder and Carbon Server. The following document summarizes the various ways in which Carbon supports Flash versions 7, 8, and 9.

Flash 7

- Carbon supports reading and writing.
- H.263 inside an FLV or SWF wrapper. This is very similar to "Flash-7 Sorenson", and works the same in all the players, like YouTube and 2-pass support.
- While the ability to export a SWF-wrapped file is supported it should be mostly seen as a vector format and not used for normal web video applications.

Flash 8

- Carbon only supports writing, this is a licensing issue.
- VP6 (licensed from Adobe) inside an FLV wrapper.
- Single Pass only, but high quality.
- High Speed.

- Takes advantage of Macro-Grid processing allowing multiple systems to work on a single encode.
- For multi-pass we support the On2 Pro Encoder, however it must be purchased separately for \$1500.
 - multi-pass
 - notoriously slow
 - a few additional parameters compared to Adobe.
 - There is a \$200 version of a QuickTime plug-in from On2 called the FlixExporter that is licensed for non-commercial use as stated on their website.

Flash 9

- Carbon 3.0 supports reading and writing.
- H.264 in an F4V wrapper. Video H.264 in other wrappers is also supported by Carbon but is not Flash 9.
- 1 and 2-pass support.

Regarding the Thomson MP3 Exporter

"Supply of this product does not convey a license nor imply any right to distribute content created with this product in revenue-generating broadcast systems (terrestrial, satellite, cable and/or other distribution channels), streaming applications (pay-audio or audio-on-demand applications and the like) or on physical media (compact discs, digital versatile discs, semiconductor chips, hard drives, memory cards and the like). An independent license for such use is required. For details, please visit <http://mp3licensing.com>."

Glossary

2

2-pass Variable Bitrate

A video encoding mode where two passes are performed on the video. The first pass analyzes the complexity of the video and the second pass encodes the video using different bitrates depending on the results of the analysis. 2-pass variable bitrate can produce better-looking video by reserving bits from areas of low complexity for use in areas of higher complexity.

A

Authoring

Refers to the process of taking your converted video files and creating a DVD, VideoCD or Super VideoCD using a authoring software package. Authoring software lets you do things like add chapters or menus to your disc and allows it to be played on many set-top players or computers. Examples of authoring software include Adobe Encore DVD, Ulead DVD Workshop, Roxio Easy CD Creator and Nero Burning ROM.

AVI

Short for Audio Video Interleave, an early video format developed by Microsoft for playback on Windows-based computers. AVI has been officially replaced by Windows Media Video but is still a popular format for both DV and CD-ROMs.

B

Bitrate

The measurement of the number of data bits per second in a file. Eight bits form one byte. Video files are normally measured in thousands of bits, or kilobits per second (kbps). The higher the bitrate, the larger the resulting file for a specified amount of time. Generally, the higher the bitrate, the better the quality of the video.

C

Codec

Short for compressor/decompressor, a codec is software that compresses video for storage purposes and then decompresses it for playback purposes. Codecs vary in quality - some are good for Web video while others are better for broadcast-quality video.

Constant Bitrate

A video encoding mode where each frame of video is encoded with a constant number of bits. There can be some variation in particular frames, but the overall average bitrate remains the same over a given time period. Constant bitrate video is generally easier to play back than variable bitrate video because it provides a constant flow of data.

D

Data Rate

The amount of data that is used in the video. Data rate is usually represented in thousands of bits per second or kilobits per second (kbps), however, it can also be represented in other units such as megabytes per second (MB/sec). Bitrate is a particular measurement of data rate.

DivX

A popular video compression method used for a wide range of purposes including Web video and High Definition video storage and playback. DivX uses MPEG-4 technology to achieve low bitrates and small file sizes.

DV

In general use, stands for digital video, meaning any digital representation of video. However, more recently it refers to the Consumer DV format which is a video compression format used in miniDV camcorders. In Carbon, DV refers to the Consumer DV format.

DVD

Popular format for storing and delivery high-quality video. DVDs use MPEG-2 video to provide broadcast-quality playback, as well as interactivity such as menus and chapter-points. DVDs can be played on set-top DVD players, as well as computers with a DVD-ROM drive and appropriate software.

F

Frame Rate

The number of video frames shown per second. In general, the higher the frame rate, the smoother the playback.

Frame Size

Refers to the pixel size of your converted video. You'll encounter a frame size option when you try to create CD-ROM or HD video. For CD-ROM video, 320x240 is half the size

vertically and horizontally of full-screen video (640x480). For HD video, resolutions are much higher so your options are 1920x1080 interlaced for 1080i, and 1280x720 for 720p.

M

MPEG

Short for Motion Picture Experts Group, the MPEG video format was created to provide a standard for compressing large-sized digital video files into a smaller size. MPEG-1 was intended for video delivered on CD-ROM, but can also be used for Web delivery. MPEG-2 is a broadcast-quality video format that is used for DVDs and digital television.

MPEG-1 Elementary Streams

MPEG-1 Elementary streams carry either audio or video, but not both. The file extensions for MPEG-1 elementary streams are .mpv or .m1v for video elementary streams and .mpa or .m1a for audio elementary streams.

MPEG-1 System Streams

MPEG-1 System streams carry both video and audio together in a multiplexed (mixed) arrangement where audio and video data occur together. The file extension for MPEG-1 system streams is .mpg but elementary streams are often named .mpg as well.

MPEG-2 Elementary Streams

MPEG-2 Elementary streams carry either audio or video, but not both. Higher-end DVD authoring software usually requires video in MPEG-2 elementary stream format. The file extensions for MPEG-2 elementary streams are .m2v for video elementary streams and .m2a for audio elementary streams.

MPEG-2 Program Streams

MPEG-2 Program streams carry both video and audio together in a multiplexed (mixed) arrangement where audio and video data occur together. Some DVD authoring applications require MPEG-2 Program streams for input. The file extension for MPEG-2 Program streams is .m2p but some programs use .mp2 or .mpg instead.

MPEG-2 Transport Streams

MPEG-2 Transport streams carry one or more MPEG-2 Program streams. Transport streams include extra data to provide additional robustness and are often used for satellite transmissions and off-air HDTV broadcasts. The file extension for MPEG-2 Transport streams is .m2t but some programs use as .ts or .tp instead.

MPEG-4 Streams

MPEG-4 streams can carry both video and audio as well as additional data together in a multiplexed (mixed) arrangement. MPEG-4 is often used for low-bandwidth video playback on handheld devices and on low-bandwidth devices such as wireless phones. The file extension for MPEG-4 streams is usually .mp4 but MPEG-4 streams are sometimes “wrapped” in QuickTime or AVI files.

N

Noise

For video, typically refers to noticeable dots, lines, or patterns that should not be in the video. Noise is generally noticeable in poor-quality source video.

NTSC

Short for North American Television Standards Committee. NTSC defines a particular way a video signal can be communicated. The NTSC broadcast format is used primarily in the United States, Canada and Japan. NTSC signals cannot be displayed by non-NTSC devices, such as PAL format televisions. NTSC signals are displayed at 29.97 frames per second.

O

Overscan Area

Most video output devices, such as televisions, don't show the entire video frame that is available. A small amount of the video's edges are hidden and not shown. Essentially, the video image shown is slightly smaller than the actual image being received. The unseen edges are called the overscan area.

P

PAL

Short for Phase Alternating Lines. PAL defines a particular way a video signal can be communicated. The PAL broadcast format is used primarily in Asia (except Japan), Australia and Europe. PAL signals cannot be displayed by non-PAL devices, such as NTSC format televisions. PAL signals are displayed at 25 frames per second.

Progressive Download

A method of viewing video where the viewer receives enough of the video file to start playback while it continues to receive the remainder of the video during playback. Progressive

download allows the viewer to start watching the video before it has been fully downloaded.

Q

QuickTime

Apple's popular format for audio and video playback. QuickTime supports a variety of additional interactivity features though they are not used often. Mac OS systems use QuickTime as the primary video format.

R

RealMedia

A popular streaming video format created by RealNetworks. RealMedia files provide varying quality video depending on the capabilities of the client machine and the encoded video.

Resolution

Typically refers to the frame size, but can also refer to the density of pixels. 640x480 is generally considered full-screen for computer video players.

S

Source video

In Carbon, source video refers to the source video file you are going to convert.

Streaming

The process of simultaneously receiving and viewing video. Streaming video playback displays video as it is received, with minimal, if any delay before playback begins. For good streaming video quality, a fast connection to the streaming server is required.

Streaming Server

A server which stores and delivers streaming content. A streaming server is usually a special machine running streaming server software that both stores and manages its viewers. Examples of streaming servers include QuickTime Streaming Server, Real Server and Windows Media Server.

Super VideoCD

A CD-based video delivery format that uses MPEG-2 compression to provide better-than-VHS quality video playback and limited interactivity, such as menus and chapters. Super

VideoCDs are popular because they use standard CD media and can be played in both computers as well as hardware Super VideoCD players and some DVD players. Super VideoCD is sometimes shortened to SVCD.

Synchronization

Refers to the audio matching the video being displayed. The easiest way to check synchronization is to make sure the dialog being spoken matches the mouth movements of the speaker.

T

Target video

In Carbon, target video refers to the video file created after you convert your source file.

V

VideoCD

A CD-based video delivery format that uses MPEG-1 compression to provide near-VHS quality video playback and limited interactivity, such as menus and chapters. VideoCDs are popular because they use standard CD media and can be played in both computers as well as hardware VideoCD players and some DVD players. VideoCD is sometimes shortened to VCD.

VOB

Abbreviation for Video Object. VOB is the native file format for DVD-Video discs. VOB files contain the audio and video data for the DVD and may also contain additional information, such as subtitles.

W

Watch folder

A folder or directory that is monitored by Carbon so that it can encode any files that are placed inside it.

Windows Media

A popular video format developed by Microsoft. Windows Media Video is the successor to the AVI format and is a common format for streaming video as well as video archiving and delivery.

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