



# Carbon Server 3.0 User Guide

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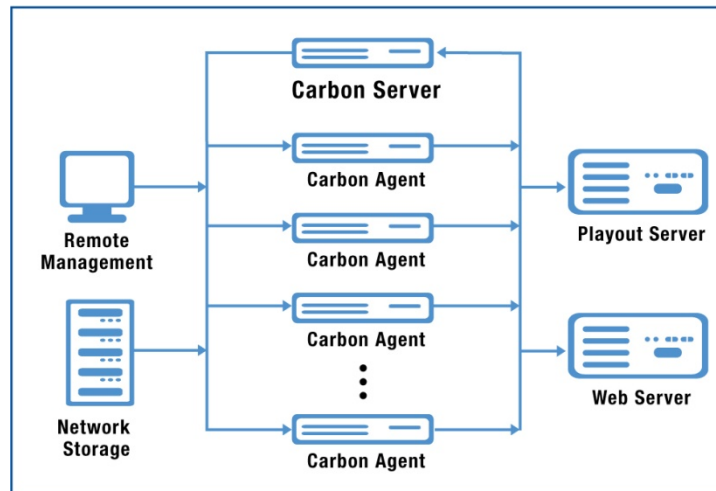
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## Introduction

Thank you for purchasing Rhozet Carbon Server. The Carbon Server application is used to control a distributed transcoding network. 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. Please see the Carbon Coder documentation 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. Please see the Carbon Admin documentation 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, which each have their own separate manual. Please see those documents for more detailed information.

### 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.

## Features

### **Supported Video Codecs**

- MPEG-1, MPEG-2, MPEG-4
- H.263, H.264, JPEG-2000, VC-1
- Windows Media, RealVideo, Flash
- DV25, DV50, DVCPPro, HDV
- DPX, DivX, Image Sequences

### **Supported Audio Codecs**

- PCM, MP3, DTS
- AAC, AMC, AMR-NB
- WAV, Broadcast WAV

### **Supported Containers**

- AVI, QuickTime
- ASF, WMA, WMV
- MXF (including D-10/IMX)
- MPEG-2 PS, MPEG-2 TS, VOB
- LXF, GXF, 3GPP, 3G2
- Windows Media Audio, RealAudio

### **Supported Systems**

- Leitch VR, Nexio
- Grass Valley Profile, K2
- Omneon Spectrum, Quantel sQ
- Avid Editing Systems, Apple Final Cut Pro, Adobe Premiere Pro, Canopus Edius

### **Basic Video Operations**

- Frame size conversion
- Frame rate conversion
- Color space conversion
- Aspect ratio conversion
- Interlace/De-interlace conversion
- Inverse telecine
- PAL/NTSC conversion
- SD/HD conversion
- Cropping

### **Video Processing**

- Fade in/out
- Black/white correction
- Blur
- Color correction
- Gamma correction
- NTSC-safe
- Median
- Rotate
- Sharpen
- Temporal noise reduction

### **Audio Processing**

- Normalize
- Fade In/Out
- Low-pass
- Volume
- Dynamic range compressor

### **Additional Operations**

- Timecode imprint
- Subtitle/CC imprint
- XML controllable titler
- Metadata transport and conversion
- Line 21/CC preservation/conversion
- Watermarking
- Logo insertion
- Native processing in 4:2:2 YCbCr or RGB
- 601/709 color space support
- Video capture support for supported capture devices which include the Viewcast Osprey 230, 240, 540, and 560.
- Multiple simultaneous target outputs
- Unlimited number of encoding passes supported
- Remote job submission
- Batch processing
- Watch folder automation
- Segment extraction/insertion
- Poster Frame Extraction

In addition to the formats that Carbon Server ships with, it also supports any QuickTime or DirectShow codecs that you would like to install in your system. Keep in mind that in order for a codec to be available to every transcoding node in the system, the codec must be **installed** on every transcoding node in the system, i.e. on both the Carbon Server machine and all Carbon Agent machines.

## System Requirements

### ***Minimum System***

- Intel® Pentium® 4 or AMD Athlon™
- 3 GHz Intel CPU or equivalent AMD speed rating
- 2 GB RAM
- 100 MB free hard disk space
- Microsoft® Windows® XP Professional, 2003 Server
- DirectX 9.0 or later
- QuickTime 7.31 for Windows 2003, QuickTime 7.4.5 for Windows XP
- USB 1.1 or 2.0 port for USB Hardware Key

### ***Recommended System***

- Intel® Xeon 5100 or 5300 series, or AMD Opteron, dual-core; dual- or quad-processor configuration
- 4 GB RAM
- 50 GB free hard disk space
- Microsoft® 2003 Server
- DirectX 9.0 or later
- QuickTime 7.31 for Windows 2003, QuickTime 7.4.5 for Windows XP
- USB 1.1 or 2.0 port for USB Hardware Key

# Installing Carbon Server

## Overview

A Carbon Server system consists of two components, Carbon Server and Carbon Agent. Carbon Server manages dispatching transcoding jobs to the individual machines running Carbon Agent. Carbon Server and Carbon Agent are always installed on separate machines. There must always be at least one installation of Carbon Server. The Carbon Server software can itself also simultaneously do transcoding, so therefore there may be zero or more installations of Carbon Agent.

Both Carbon Server and Carbon Agent install a Windows Service called **Nexus**. This service looks for new files in watch folders, reads the source files, performs the transcoding, writes the target files, and also processes API requests. It is therefore very important that this service is given access to all the folders on the network that contain source files, watch folder locations, presets, and folders where target files may be written. A description of how to grant access to Nexus is given below during the installation instructions of both Carbon Server and Carbon Agent.

Please note that there are instructions for installing Carbon Server for the very first time, such as on a clean system, and there are also instructions for upgrading an existing Carbon Server installation. The upgrade instructions also include steps on how to preserve presets and Watch Folders when upgrading. Please make sure you reference the appropriate section, as the installation steps are slightly different depending on whether you are installing for the first time or upgrading.

## Understanding the Installation Instructions

In these installation instructions, we have tried to provide you with both textual and graphical descriptions of the steps that you need to perform. The textual descriptions will say something like:

Click on **Start > Control Panel > Add or Remove Programs**

This means to go to the bottom left of your screen, click on the “Start” button, then select the “Control Panel” item, and then select the “Add or Remove Programs” item.

**IMPORTANT:** Appendix A contains additional troubleshooting and installation documentation for several special case scenarios and for common issues that we are aware of that you might need to consider before or while running your transcoding network. We recommend that you read this section carefully before installation and operation of your transcoding network. This can save you time and headaches. We mean it.

## ***Assumptions made before installing Carbon Server***

1. All machines have no other software installed.
2. Either Windows XP Professional SP2, or Windows Server 2003 Standard- or Enterprise Edition, SP2 or R2 is installed.  
<http://www.microsoft.com/technet/windowsserver/evaluate/features/compare.mspx>
3. QuickTime is installed.
4. All machines included in the farm are on the same TCP/IP subnet.
5. All machines included in the farm only have a single TCP/IP address.

## ***Configuring the Carbon Server Machine before Installation***

Before you install the Carbon Server application, you will need to correctly configure the Windows 2003 Server machine. Please follow the following steps:

- 1) Install Windows 2003 Server without any applications such as File Server, Web Server, or similar components; only install the base server components. The recommended configuration is "Windows Server 2003 Standard Edition with SP1". The "Small Business Server" configuration is not supported. Do not install any other third party applications on the Carbon Server machine, Carbon Server works best installed by itself as exclusive owner of the machine. This will also give you the best performance.
- 2) Decide whether you will use the new Carbon Server 3.0 Web User Interface. In previous versions of Carbon Server, it was necessary to use the Web UI, but Carbon Server 3.0 no longer requires it, and allows you to use the Carbon Coder UI and the new Carbon Admin application for managing Watch Folders and presets instead.  
If you have decided to use the Web UI, you must make sure that you install Internet Information Services (IIS) **before** you install Carbon Server. The Carbon Server installation also installs Microsoft dot NET framework 1.0 and 2.0, and Windows requires that IIS is installed before dot NET to avoid registration problems. If dot NET was installed on this machine (either during Carbon Server installation or by some other way, you can check by opening the "add or Remove Programs" Control Panel) and IIS was not yet installed, you must perform the following steps:
  - a) Click on **Start > Run**, type **cmd** and hit Enter. This will open a command line window.
  - b) Type **CD C:\Windows\Microsoft.NET\Framework**, and hit Enter.
  - c) Type **DIR**, hit Enter, and look for a folder named something like v2.0.50727 (look for the highest number folder of this form).
  - d) Type **CD v2.0.50727** or the name of the folder you found in the previous step and hit Enter.
  - e) Type **aspnet\_regiis** and hit Enter
  - f) Type **exit** and hit Enter to close the command line window.
- 3) If you are going to use the Web UI, you must install Windows Internet Information Services, which is used for displaying the Web UI.
  - a) Click on **Start > Control Panel > Add or Remove Programs**
  - b) On the left side of the window, click on **Add/Remove Windows Components**

- c) Select **Application Server** and click on the **Details...** button
    - i) Check **ASP.NET**
    - ii) Check **Internet Information Services (IIS)**
      - (1) Click **OK**
    - iii) Click **OK**
  - d) Click on the **Next >** button to begin the installation of IIS. The install process may request you insert the Windows 2003 Server CD.
- 4) 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.

## Carbon Server – 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.

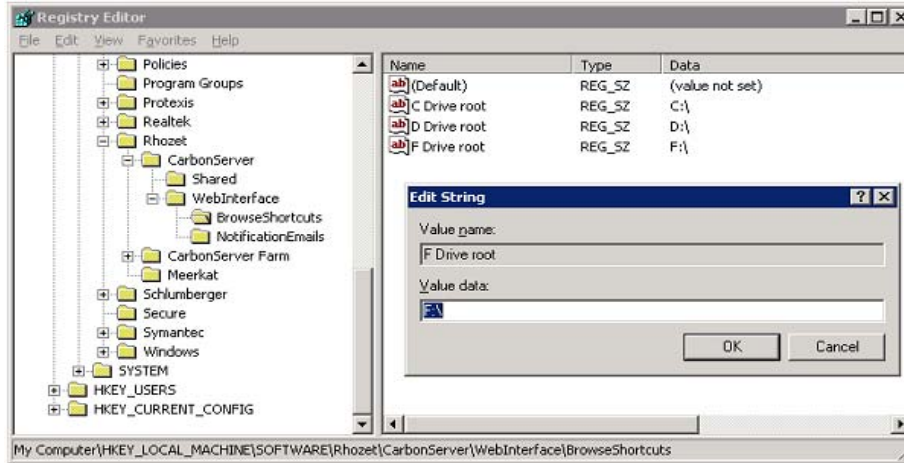
If an earlier version of Carbon Server has previously been installed on this machine, please skip this section and go to the section Carbon Server - Upgrade Installation instead.

- 1) 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:
  - a) 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.
  - b) 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.

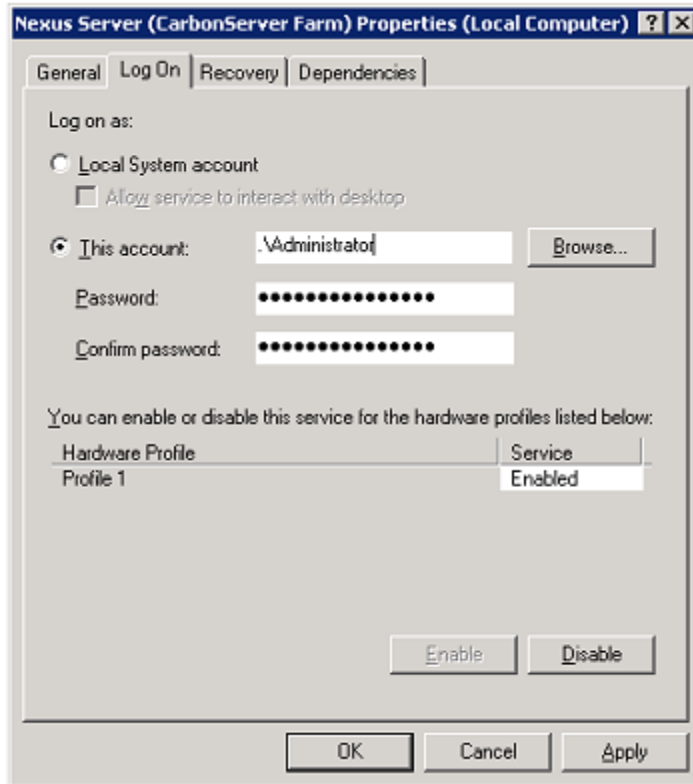
- 2) If you have decided to install the new Carbon Server 3.0 Web Interface:
  - a) Install the Carbon Server Web Interface from the `\Web Interface\Carbon3.0_WebUI.msi` path on the Carbon Server CD. You should accept the defaults for all of the settings.
  - b) Copy the file `default.htm` from `C:\inetpub\wwwroot\carbon` to `C:\inetpub\wwwroot` . When accessing the Web UI, browse to <http://localhost/carbon> (or <http://localhost>) .
  - c) 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.
- 3) Insert the supplied “Carbon Server” USB security key into a free 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 that 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 usually makes sense to finish installing the Carbon Server machine and all the Carbon Agent machines before creating domain- or workgroup accounts and setting service credentials.

- a) Create the account that has permission to access the network resources:
  - i) 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.
  - ii) If all machines are part of a Windows Domain, just create one domain user account like **cs\_service**
- b) 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:
  - i) Click on **Start > Control Panel > Administrative Tools > Services**
  - ii) Double-click the **Nexus Server (CarbonServer Farm)** service.
    - (1) Click on the **Log On** tab.
    - (2) Select the **This account** button, and set the credentials for the service, user name and password (twice):
      - (a) 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 the **Browse** button.



- (b) 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 the **Browse** button.
  - (3) Click **OK**
  - (4) Stop and restart the **Nexus** service
- iii) 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. Using Carbon Server Admin, verify that you can see all your old presets, Watch Folders, and retrievals & notifications.
5. 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:
  - a. Meerkat
  - b. Carbon Server Management Tool
  - c. Rhozet Carbon Server webinterface
  - d. MSDE
6. OPTIONAL: If you have decided to install the new Carbon Server 3.0 Web Interface:
  - a. 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.
  - b. Copy the file `default.htm` from `C:\inetpub\wwwroot\carbon` to `C:\inetpub\wwwroot`. When accessing the Web UI, browse to <http://localhost/carbon> (or <http://localhost>).
  - c. 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.

**IMPORTANT:** Reboot the system.

7. Make sure you follow the instructions in the Carbon Agent Installation section on page 14 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 following shortcut on the desktop:
  - a) **Carbon Agent Admin:** this tool lets you view and manage the transcoding jobs that are running on the local agent.

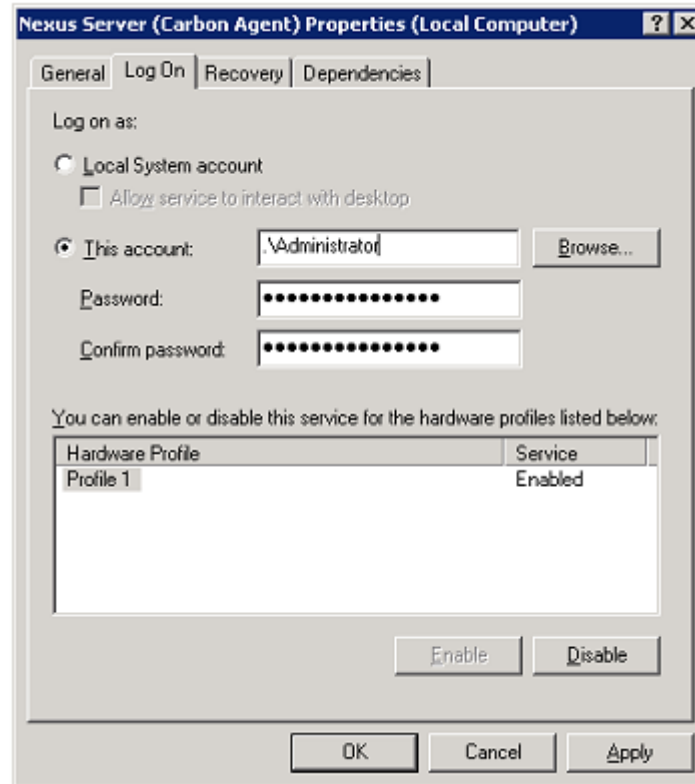
**IMPORTANT:** When the installer finishes, it offers to reboot the machine. It is very important to reboot at this time. Do not install any other applications before the machine is restarted.

- 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.

- a) Create the account that has permission to access the network resources:

- i) 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.
  - ii) 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.
- b) 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. 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:
- i) `HKLM\Software\Rhozet\CarbonServerFarm\Common\PresetCacheValidator\SysPresetDir`
  - ii) `HKLM\Software\Rhozet\CarbonServerFarm\Common\PresetCacheValidator\UsrPresetDir`
  - iii) `HKLM\Software\Rhozet\CarbonServerFarm\Common\PresetCacheValidator\WizPresetDir`
- c) 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:
- i) Click on **Start > Control Panel > Administrative Tools > Services**
  - ii) Double-click the **Nexus Server (Carbon Agent)** service.
    - (1) Click on the **Log On** tab.
    - (2) Select the **This account** button, and set the credentials for the service, user name and password (twice):
      - (a) 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 the **Browse** button.



(b) 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 the **Browse** button.

(3) Click **OK**

iii) Close the **Services** console.

6) Insert the supplied Carbon Agent USB security key into a free USB port on the Carbon Agent machine.

7) **IMPORTANT:** Reboot the machine.

## ***Post-installation configuration***

After the setup is completed, reboot all machines at least once to ensure that the services are started with the correct user credentials.

### **Settings for the Manager machine**

Here you select how you want the Carbon Server farm manager to operate. The Carbon Server farm manager can execute local jobs if desired. The priority of the Carbon Server machine is always lowest – jobs would only be assigned if no free slots on Carbon Agent machines are available. However, you may want to consider disabling the execution of jobs, so as not to decrease the performance of the user I/O being served by the Carbon Server machine.

In order to prevent the Carbon Server machine from doing local transcoding, set the number of available slots on the local machine to 0. See the Carbon Admin manual for more details.

### **Settings for Agent machines**

On the Carbon Server machine, start the Carbon Server Admin application, and click on the Carbon Machines tab to view the properties of the individual Carbon Agent machines. See the Carbon Admin manual for more details.

## ***Considerations for Operating Carbon Server***

### **File and Folder access**

Please consider that 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 “\\<Managemachine>\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 attention 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:
  - a) Logging: Write Engine Log File
  - b) Logging: Log File Path (if you want to change the location of the log files)
  - c) 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):
    - i) Debug - Logging: Log COM Interface Activity (Slow!)
    - ii) Debug - Logging: Log GUI Interface Activity (Slow!)
    - iii) Debug - Logging: Log Watches
    - iv) Debug - Logging: Log Attached Watches
- 3) Close the Carbon Server Admin application.
- 4) Restart the **Nexus** service to read the logging options:
  - a) Click on **Start > Control Panel > Administrative Tools > Services**
  - b) Select the **Nexus Server (CarbonServer Farm)** service, and click the “Restart the service” link 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 Uninstall 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 that 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 procedure below only when instructed.

- 1) Exit any Rhozet application.
- 2) Uninstall Carbon Server using "Start>Programs>Rhozet>CarbonServer Farm>Uninstall CarbonServer Farm".
- 3) Uninstall the following components and applications using the "Add or Remove Programs" Control Panel:
  - a) Carbon Server 3.0 Web Interface
  - b) CarbonServer Farm
- 4) Delete the following folders:
  - a) Delete the Program File folder:
    - (1) "C:\Program Files\Rhozet\"
  - b) Delete the user presets & system presets folder:
    - (1) "C:\Program Files\Common Files\Rhozet\"
  - c) Delete the watch folder information and job folder (jobs - completed and in progress - and watch folder information are stored here) :
    - (1) "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):
  - (1) "HKCU\SOFTWARE\Rhozet"
  - (2) "HKLM\SOFTWARE\Rhozet"
- 6) **IMPORTANT:** Restart the machine.
- 7) If necessary, re-install Carbon Server normally, rebooting when prompted.

## Appendix A: Troubleshooting

Please also see the Rhozet web site for more troubleshooting information:

<http://www.rhozet.com/support.html>

### ***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 and Carbon Agents***

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.

This also applies to all other hardware and software based firewalls that are installed between your Carbon machines. Please visit [www.microsoft.com](http://www.microsoft.com) or your firewall manufacturer's website for instructions on how to configure ports for specific services.

## ***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 the Carbon Server - Upgrade Installation instructions on page 12 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.
  - a. C:\Program Files\Common Files\Rhozet\CarbonServer Farm\User Presets\
  - b. 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. To do so:
  - a. Click on Start -> Run, type 'regedit', and press enter.
  - b. Open the directory HKEY\_LOCAL\_MACHINE\SOFTWARE\RHOZET
  - c. Right-click on the Carbon Server folder and choose export.
  - d. Save this file with the copies you made in Step 1.
3. Install Carbon Server on your new installation using the detailed instructions in the Carbon Server Manual (pgs. X-Y).
4. Import the registry file you created in step 2. PLEASE 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.
5. 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.

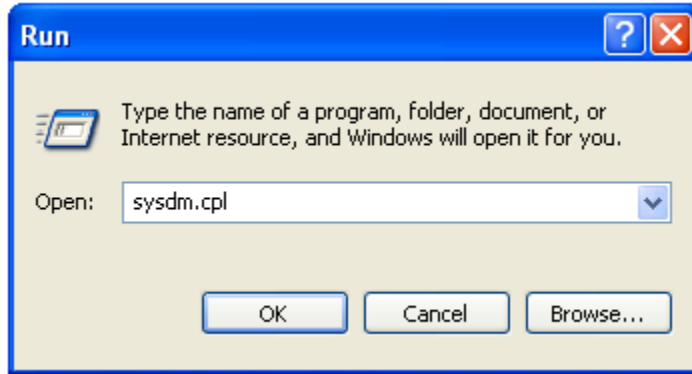
## ***Data Execution Prevention***

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".

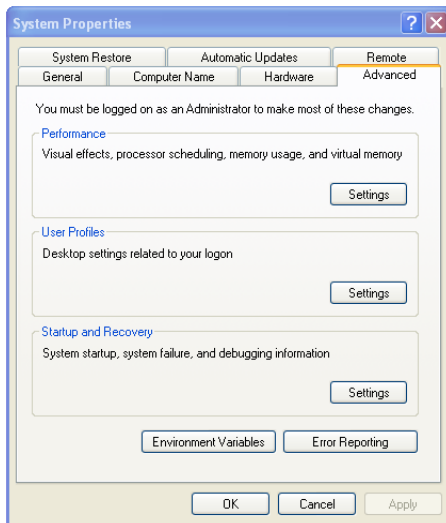
To solve this requires changing the Windows Data Execution Prevention (DEP) default setting; see the steps below how to set the DEP option.

### Instructions

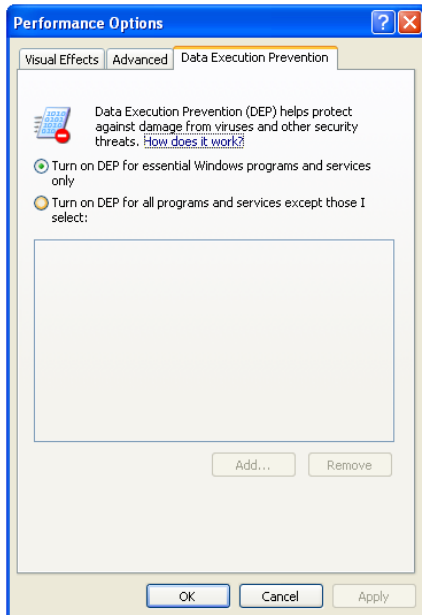
Click on "Start > Run," enter "sysdm.cpl," and click "OK" to open your System Properties dialog box.



Click on the “Advanced” tab.



In the “Performance” section click on the “Settings” button.  
Click on the “Data Execution Prevention” tab.



Select the option “Turn on DEP for essential Windows programs and services only”  
Click “OK” and exit the dialogs.

## ***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 the Kernel Settings section 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 menu. Under Tools, choose 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.