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8. TERM; TERMINATION. The term of this Agreement shall continue unless terminated in accordance with this Section. We may terminate this Agreement at any time upon default by you of the license provisions of this Agreement, or any other material default by you of this Agreement not cured with thirty (30) days after written notice thereof. You may terminate this Agreement any time by terminating use of the System. Except for the first sentence of Section 2 ("License") and for Section 4(a) ("Limited Warranty"), all provisions of this Agreement shall survive termination of this Agreement. Upon any such termination, you shall certify in writing such termination and non-use to us.

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11. GENERAL: You shall not assign, delegate or sublicense your rights or obligations under this Agreement, by operation of law or otherwise, without our prior written consent, and any attempt without such consent shall be void. Subject to the preceding sentence, this Agreement binds and benefits permitted successors and assigns. This Agreement is governed by California law, without regard to its conflicts of law principles. The U.N. Convention on Contracts for the International Sale of Goods is disclaim. If any claim arises out of this Agreement, the parties hereby submit to the exclusive jurisdiction and venue of the federal and state courts located in Santa Clara County, California. In addition to any other rights or remedies, we shall be entitled to injunctive and other equitable relief, without posting bond or other security, to prevent any material breach of this Agreement. We may change the terms, conditions and pricing
relating to the future licensing of our Systems and other intellectual property rights, including this Agreement, from time to time. No waiver will be implied from conduct or failure to enforce rights nor effective unless in a writing signed on behalf of the party against whom the waiver is asserted. If any part of this Agreement is found unenforceable, the remaining parts will be enforced to the maximum extent permitted. There are no third-party beneficiaries to this Agreement. We are not bound by additional and/or conflicting provisions in any order, acceptance, or other correspondence unless we expressly agree in writing. This Agreement is the complete and exclusive statement of agreement between the parties as to its subject matter and supersedes all proposals or prior agreements, verbal or written, advertising, representations or communications concerning the System.

Every reasonable attempt has been made to comply with all licensing requirements for all components used in the system. Any oversight is unintentional and will be remedied if brought to the attention of Harmonic at support@harmonicinc.com.

Documentation Conventions

This guide may use some special symbols and fonts to call your attention to important information. The following symbols appear throughout this guide:

⚠️ DANGER: The Danger symbol calls your attention to information that, if ignored, can cause physical harm to you.

⚠️ CAUTION: The Caution symbol calls your attention to information that, if ignored, can adversely affect the performance of your Harmonic product, or that can make a procedure needlessly difficult.

⚠️ LASER DANGER: The Laser symbol and the Danger alert call your attention to information about the lasers in this product that, if ignored, can cause physical harm to you.

📖 NOTE: The Note symbol calls your attention to additional information that you will benefit from heeding. It may be used to call attention to an especially important piece of information you need, or it may provide additional information that applies in only some carefully delineated circumstances.

⚠️ IMPORTANT: The Important symbol calls your attention to information that should stand out when you are reading product details and procedural information.

💡 TIP: The Tip symbol calls your attention to parenthetical information that is not necessary for performing a given procedure, but which, if followed, might make the procedure or its subsequent steps easier, smoother, or more efficient.

In addition to these symbols, this guide may use the following text conventions:

<table>
<thead>
<tr>
<th>Convention</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typed Command</td>
<td>Indicates the text that you type in at the keyboard prompt.</td>
</tr>
<tr>
<td>&lt;Ctrl&gt;, &lt;Ctrl&gt;+&lt;Shift&gt;</td>
<td>A key or key sequence to press.</td>
</tr>
<tr>
<td>Links</td>
<td>The <em>italics in blue</em> text to indicate Cross-references, and hyperlinked cross-references in online documents.</td>
</tr>
<tr>
<td>Bold</td>
<td>Indicates a button to click, or a menu item to select.</td>
</tr>
<tr>
<td>ScreenOutput</td>
<td>The text that is displayed on a computer screen.</td>
</tr>
<tr>
<td>Emphasis</td>
<td>The <em>italics</em> text used for emphasis and document references.</td>
</tr>
</tbody>
</table>

NOTE: You require Adobe Reader or Adobe Acrobat version 6.0 or later to open the PDF files. You can download Adobe Reader free of charge from www.adobe.com.
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Harmonic®'s WFS is an open, extensible, and task-based client-server architecture ideal for managing video-centric workflows. The WFS enables control of multiple nodes with ProMedia Carbon as a transcoding farm. With the addition of Quality Control System (QCS) automated quality control engine, automated and scalable video verification process can be added to a transcoding farm. The distributed nature of WFS grants reliability and scalability while allowing the automated processing of transcoding tasks, failover support, job distribution management, job prioritization, load balancing, file transfer, status monitoring, and job notification.

Terms and Abbreviations

The following terms are used in this document.

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backup (MS SQL Server)</td>
<td>This server is not configured in the panel and should only be configured in the Replication Utility. It will maintain its role as backup throughout the entire life cycle of the system, regardless of which server is currently connected.</td>
</tr>
<tr>
<td>CIFS</td>
<td>Common Internet File System, operates as an application-layer network protocol primarily used to provide shared access to files, printers, serial ports, and miscellaneous communications between nodes on a network.</td>
</tr>
<tr>
<td>FTP</td>
<td>File transfer protocol, a standard for the exchange of program and data files across a network.</td>
</tr>
<tr>
<td>JM group</td>
<td>The set of controllers existing in the configuration.</td>
</tr>
<tr>
<td>Job</td>
<td>A complete workflow.</td>
</tr>
<tr>
<td>KMS</td>
<td>Key Management Server, Provides the key to use to encrypt the media files.</td>
</tr>
<tr>
<td>MIB</td>
<td>Management Information Base.</td>
</tr>
<tr>
<td>Primary (MS SQL Server)</td>
<td>The SQL server initially configured by the user to be used by WFS as default. It will maintain its role as primary throughout the entire life cycle of the system, regardless of which SQL server is currently connected.</td>
</tr>
<tr>
<td>QCS</td>
<td>Quality Control System.</td>
</tr>
<tr>
<td>Term</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Task</td>
<td>An atomic part of a workflow consumable by a single service.</td>
</tr>
<tr>
<td>UNC</td>
<td>Universal Naming Convention (Microsoft© Windows).</td>
</tr>
<tr>
<td>URI</td>
<td>Uniform Resource Identifier (URI) is a string of characters used to identify a name or a resource on the Internet. This allows use of specific protocols to provide interaction with representations of the resource over a network (typically the World Wide Web).</td>
</tr>
<tr>
<td>Watch Folder</td>
<td>A folder on a Windows® share or FTP server that has an associated workflow. When new files are placed in this folder WFS automatically triggers the associated workflow.</td>
</tr>
<tr>
<td>WFS</td>
<td>File-based Workflow System.</td>
</tr>
<tr>
<td>WFS Controller</td>
<td>The central controller for the WFS. Formerly known as WFS Engine.</td>
</tr>
<tr>
<td>WFS Node</td>
<td>The Node is the work service of WFS. It acts as the core consumer of tasks. Tasks are requested by the Node from the Controller and passed to the proper worker service. Worker services like transcoding (ProMedia Carbon, Xpress Transcoder), packaging (Xpress Packager), quality checking (QCS), file transfer, notification, and watch folder monitoring are all registered with the Node as a task type. This task type ensures the Controller’s response to a task request from a Node is met with a matching task.</td>
</tr>
<tr>
<td>Xpress Transcoder</td>
<td>ProMedia Xpress Transcoder enables faster-than-real-time transcoding of broadcast-quality video for multiscreen VOD applications.</td>
</tr>
<tr>
<td>Xpress Packager</td>
<td>ProMedia Xpress Packager performs specific requirements for each adaptive streaming format, whether Apple HTTP Live Streaming, Microsoft Smooth Streaming, or Adobe HTTP Dynamic Streaming.</td>
</tr>
</tbody>
</table>
The Building Blocks of WFS

WFS Controller

The Controller is the engine service of WFS. It acts as the core consumer of workflow jobs and a core distributor of job tasks in the process of workflow control, management, and execution. To provide scale, reliability, redundancy, and load balancing, the Controller utilizes a central database for all system, job, and task data.

WFS Node

The Node is the work service of WFS. It acts as the core consumer of tasks. Tasks are requested by the Node from the Controller and passed to the proper worker service. Worker services like transcoding (ProMedia Carbon), quality checking (QCS), file transfer, notification, and watch folder monitoring are all registered with the Node as a task type. This task type ensures the Controller’s response to a task request from a Node is met with a matching task.

WFS Manager

The Manager is the management and monitoring application for WFS. The Manager provides control over the creation and manipulation of presets, workflows, and workflow execution methods. It also allows for monitoring and review of all job and task activities.

Figure 1–1: WFS Components
Chapter 2  
System Roles

Before installing the WFS components, you should determine the roles of your systems within your farm. Roles within WFS are as described in The Building Blocks of WFS. A system can take on a single role or take on all three roles, which are determined by your system performance and farm size. CPU intensive processes like transcoding (a WFS Node worker service) should be deployed on a separate system from core processes like the WFS Controller or database.

*Figure 2–1* shows recommendations according to environment scale.

**NOTE:** WFS Node component includes QCS.

---

**Figure 2–1: System Roles**

**System Requirements**

There are two sets of requirements based on how you want your system to be configured:

- **All in One**
- **Role Based**
All-in-One

In this configuration, all WFS components reside on a single system.

- Processor: Intel® or AMD 3.0GHz or faster Memory: 4 GB (minimum), 6+ GB suggested.
- ProMedia Carbon 3.24. When you upgrade to this version or later, the Carbon preset tree in WFS will be upgraded to the tree in the upgraded Carbon. The new tree includes the User Preset folder. There is no effect on presets that are not Carbon, such as Xpress, RMP and QCS.
- QuickTime® v7.6.9 (for ProMedia Carbon).
- Windows Media Player® 11 (for QCS tools).
- Adobe® Acrobat Reader® (for QCS tools).
- WFS Replication Utility.

1Gbps Network Connection is needed for installation.

Role-Based

In this configuration the WFS components are on separate systems. This requires proper licensing on each system.

1Gbps Network Connection is needed for installation.

**NOTE:** To select the component, click the drop-down button and select *Will be installed on local hard drive.*

WFS Controller (engine)

- Processor: Intel or AMD 3.0GHz or faster Memory: 4 GB (minimum), 6+ GB suggested.
- 1Gbps Network Connection.

---

1. Faster processors, more processing cores, and more memory will increase performance.
WFS Node (includes Xpress Transcoder, Xpress Packager, AES Scrambler and QCS)\(^1\)

- Processor: Intel or AMD 3.0GHz or faster Memory: 4 GB (minimum), 6+ GB suggested.
- ProMedia Carbon 3.24. When you upgrade to this version or later, the Carbon preset tree in WFS will be upgraded to the tree in the upgraded Carbon. The new tree includes the User Preset folder. There is no effect on presets that are not Carbon, such as Xpress, RMP and QCS.
- QuickTime v7.6.9 (for ProMedia Carbon).
- Windows FSD (File System Driver) 3.1.2 or higher is required when working with MediaGrid
- 1Gbps Network Connection.

Xpress Transcoder and Packager

Only 64-bit operating system is supported.
- Processor: Intel or AMD 3.0GHz or faster Memory: 4 GB (minimum), 12+ GB suggested. (Faster processors, more processing cores, and more memory will increase performance.)
- Windows FSD (File System Driver) 3.1.2 or higher is required when working with MediaGrid.
- 1Gbps Network Connection.

WFS Manager (includes QC Manager)

- Processor: Intel or AMD 3.0GHz or faster Memory: 4 GB (minimum).
- QuickTime v7.6.9.
- Windows Media Player 11 (for QCS tools).
- Adobe Acrobat Reader (for QCS tools).
- 1Gbps Network Connection.

\(^1\) Xpress Transcoder and Packager, QCS and AES Scrambler require additional licenses.
Database (SQL Server® 2008 R2 Standard)

- Processor: Intel or AMD 3.0GHz or faster Memory: 2 GB (minimum).
- 1Gbps Network Connection.
- Microsoft .Net Framework 3.5 SP1 or better.
- For more requirement information please visit the following link: http://technet.microsoft.com/en-us/library/ms143506.aspx

WFS SNMP Agent

- WFS SNMP MIB file. Download the WFS SNMP MIB file from the WFS installation package.
- Download any SNMP Manager that allows you to view the SNMP traps in its browser.
- 1Gbps Network Connection.

**NOTE:** Only one WFS SNMP Agent should be installed in a WFS Farm.
Chapter 3
Installation

There are two installers for WFS. WFS_xxx_yyyyy.exe is the WFS components’ installer. DBP_xxx_yyyyy.exe is the WFS database package. Installation should be performed on all systems prior to configuring WFS. This will provide a smoother configuration process of settings’ interdependencies.

NOTE: Before you begin the installation, make sure that you are logged on with administrative privileges. For Microsoft Windows 2008 users, Desktop Experience must be enabled and installed prior to the installation of WFS Node with ProMedia Carbon.

Opened Firewall Ports

WFS requires specific ports to be open in firewalls for proper communication and operation. The installer opens all the required ports during the install. For a list of the opened ports, please see Chapter 4, Opened Ports.

Be sure to determine your system roles prior to installation. See System Roles for more information.

Installing the SQL Database

1. Copy the DBP_xxx_yyyyy.exe file to your system or insert the DVD containing the DBP_xxx_yyyyy.exe file into the system’s DVD drive.
2. Double-click the DBP_xxx_yyyyy.exe file to extract the Database package for installation.
3. Follow the on-screen instructions to perform the extraction.
4. After the extraction is completed, the Database Installer (DB_xxx_yyyyy.exe) will launch automatically.

NOTE: The extracted package will not be deleted after installation, it must be manually deleted.

5. The Database Installer will determine if prerequisites are required for your system. If required, click Next to install the required prerequisites. System reboot may be needed.
6. Read the Welcome information and click Next to continue.
7. Read the License agreement, check the “I agree...” box, and then click Next to continue.
8. Read the SQL Server Setup information; enter the SQL Instance Name and password for the “sa” user.

SQL Instance Name restrictions:
- Must be 2-16 characters long
- First character must be a letter
- No characters from set: *@,$%^+=.
- No spaces

Password restrictions:
- At least 8 characters long
- At least one uppercase and one lowercase character
- Must contain at least one digit
- At least one special character that includes *@#$%^+=.
Chapter 3 Installation

Installing the WFS Components

1. Copy the `WFS_xxx_yyyyy.exe` file to your system or insert the DVD containing the `WFS_xxx_yyyyy.exe` file into the system's DVD drive.
2. Double-click the `WFS_xxx_yyyyy.exe` file to run the wizard and then follow the on-screen instructions.
3. The installer package will determine if your system is compatible and extract its content for installation.
4. Read the Welcome information and click **Next** to continue.
5. Read the License agreement, check the "I accept..." box, and then click **Next** to continue.
6. Select the **Installation Option** that fits your system, change the install path if required, and then click **Next** to continue.

    Please refer to **System Roles** if you need guidance deciding which installation option to choose. Typically, All-in-One is for users with a single system and Role-Based is for users with more than one system in their farm. The installation wizard will walk you through and install all of the WFS components.

    **NOTE:** Only one WFS SNMP Agent should be installed in a WFS Farm.

    ProMedia Carbon is installed by default with the All-in-One option. If you do not wish to install the ProMedia Carbon version included with the WFS installer, please choose the Role-Based option. With this option, you can choose to exclude ProMedia Carbon when you install all of the other WFS components.

    Xpress Transcoder and Xpress Packager are installed automatically. There is no option to disable these functions in the Role-Based installation.

    The database redundancy can be configured using a standalone configuration utility dedicated for this purpose. When doing the All-in-one installation it is installed by default, however, if a Role-Based installation is selected, the WFS Replication Utility component should be added manually. See **Replication Utility**.

    **NOTE:** All WFS Nodes within the same farm must have the same WFS and ProMedia Carbon versions installed. This is required to provide consistent work results from all WFS Nodes.

7. If you chose the All-in-One option in the previous step, skip to the next step.

   Otherwise, select the appropriate WFS components for your system, and then click **Next** to continue.

   **NOTE:** A disk icon next to a component means it will be installed. A red X next to a component means it will not be installed, or if the component already exists, it will be removed from the system.
NOTE: For Xpress Transcoder worker service, if you are installing on a 32-bit machine, a warning message box displays after you click Next. The message indicates that the Xpress Transcoder Service will not be installed since it requires a 64-bit operating system to run. Click OK to acknowledge the message.

8. Select to use the credentials from either your local system account or a different account that you want to apply for WFS Services. Type in a valid User Name and Password if you choose to apply the credentials from a different account.

9. Click Next to continue.

10. Change the Start menu group, if needed.

11. Select the Create Shortcuts option, and then click Next to continue.

12. Read the Ready to install components information, verify the Components Summary for installation, and then click Next to start the installation process.

CAUTION: Once the installation begins, do not cancel the process midway. If component selection changes are required, allow the installation to finish, then uninstall and install with your component selection changes.

13. Monitor the installation progress, depending on your system environment; installation messages may require your attention.

14. Read the Installation Complete information, and click Finish to close the installer.

15. WFS in now installed and ready to be configured.

Proceed to WFS Panel to configure your WFS system. See WFS Panel Configuration. Normally the WFS Panel should be opened from the Windows task bar, but if it is closed or not available from the task bar, the WFS Panel can be accessed either from the Desktop Shortcut or from Start > All Programs > Rhozet > WFS > WFS Panel.

NOTE: For additional configuration information, please refer to the online help in the WFS Panel.

SNMP Trap Host/SNMP Manager Set Up

The SNMP Manager is an optional service. You do not need to set up this service if you don’t require to view an SNMP trap for the status change in the worker service, controller, connection loss with the database, or the failed jobs. The function of WFS SNMP Agent is mainly to generate and collect the alarms and send them to a 3rd party client/SNMP Manager. The SNMP Manager displays the alarm traps in its browser. These alarms generate when the controllers of the farm change status.

Download an SNMP manager tool that allows you to view the traps (this is 3rd party). For specific instructions on how to configure the SNMP Manager, please refer to the vendor’s instructions. Each tool has a different setup instructions for MIB configuration.

Locate the WFSMIB.mib file before setting up the browser. If you don’t know the location of this file or need assistance with selecting an SNMP Manager, refer to Contacting the Technical Assistance Center.

1. Copy the WFSMIB.mib file to the local path where the SNMP Manager is set up.
2. Install the SNMP Manager that you selected.
3. Start the SNMP Manager.
4. Load the WFSMIB.mib file to the browser.
5. Fill in the following to configure the agent properties:
   a. Agent IP address
b. Port  
c. Read Community - must be the same string as Write Community  
d. Write Community - must be the same string as Read Community  
e. SNMP Version - select the version.  
f. The port for receiving traps should match the “Port” value configured in the WFS SNMP Agent to receive the traps.

6. Save the information and prepare to install the WFS Components.

**Replication Utility**

This utility offers a database redundancy based on the Microsoft SQL Server 2008 R2 Standard Transactional Replication feature. It is used for:

1. Manual configuration of the database redundancy.
2. Manual switch over of the farm from the Primary server to the Backup server.
3. Automatic switch over of the farm from the Primary server to the Backup server in case the Primary server fails or goes off line.
4. Manual switch over of the farm from the Backup server back to the Primary server.
5. Monitor the replication status from the utility and the WFS Manager.

Select this option from the components as displayed in **Figure 3–1**.

![Figure 3–1: Replication Utility](image)

After installation is complete, the utility can be accessed from the **Start > All Programs > Rhozet > WFS > WFS Replication Utility**.

Refer to the utility’s online help for detail instructions for setting up the replication.

**Upgrading the WFS from an Earlier Release**

Follow these instructions to upgrade the WFS application from an earlier release.

**NOTE:** WFS Services do not retain the user credentials due to Windows Security after upgrade. Please note down the user credentials before upgrading.
Upgrading the WFS from an Earlier Release

1. Double-click the `WFS_xxx_yyyyy.exe` file to run the wizard and then follow the on-screen instructions.
2. Click **Next** on the Welcome screen, and you will notice that the installer has found the older version of WFS.
3. Click **Next**.

![Figure 3–2: Uninstalling Existing WFS Components](image)

The next step is the uninstallation process. The installer will start uninstalling the previous version of WFS.

4. On the License Agreement window, read the terms of the license agreement. If you agree with the terms of using this software, click the check box in `I accept the terms of the End User License Agreement`.
5. Click **Next**.
6. Depending on the configuration of your farm, you may select **All in One** or **Role Based** and click **Next**. See **Step 6** and **Step 8** in the installation instructions for information about your options.
7. Change the **Start** menu group, if needed.
8. Verify the information in the components summary matches your selections.
9. Click **Next** to continue.
10. Monitor the installation progress, depending on your system environment; installation messages may require your attention. You may require a ProMedia Carbon upgrade See **Upgrading ProMedia Carbon**.
11. Read the **Installation Complete** information, and click **Finish** to close the installer.
12. Your computer reboots automatically or you may need to reboot yourself.

WFS is now installed and ready to be configured. See **WFS Panel Configuration**.

**Upgrading ProMedia Carbon**

If you included ProMedia Carbon in the WFS installation options, WFS installer checks the ProMedia Carbon version on your system and prompts you to update to the latest version if needed. Follow the on-screen prompts to confirm.
When you upgrade to ProMedia Carbon 3.24 or later, the Carbon preset tree in WFS will be upgraded to the tree in the upgraded Carbon. You will be prompted to allow the update or cancel. The new tree includes the User Preset folder. There is no effect on presets that are not Carbon, such as Xpress, RMP and QCS.

You will be prompted to reboot the systems after upgrading ProMedia Carbon. After reboot, follow the same installation screen dialogs as the WFS installation.

**WFS Panel Configuration**

1. Proceed to the WFS Panel to configure your WFS system. Normally the WFS Panel should be opened from the Windows task bar, but if it is closed or not available from the task bar, the WFS Panel can be accessed either from the **Desktop Shortcut** or from **Start > All Programs > Rhozet > WFS > WFS Panel**.

2. Fill in the information from the WFS Controller portion that pertains to your environment. A Database Migration may be required. See the highlighted section in **Figure 3–3**.

3. If a migration is required, click **Setup**.

4. On the WFS Database Setup window, select **Migrate Database** and click **Continue**.

---

**Figure 3–3: Incompatible Database**
Upgrading the WFS from an Earlier Release

Chapter 3 Installation

5. Click **Finished**.
6. After the WFS Controller portion is finished, you can proceed to configure the WFS Node. Fill in the information from the WFS Node portion that pertains to your environment.

**NOTE:** You should have administrator privileges and network resource access.

7. Click **Apply**. Figure 3–6 displays the WFS Panel after a successful migration.

---

**Figure 3–4: Migrate Database**

If the migration succeeds, you will see the screen in **Figure 3–5**.

**Figure 3–5: Migration Successful**
8. Open the **WFS Manager** and select **File > Controller Connection**.
9. On the Controller Connection window, enter the IP address for your controller and click **Connect**. This will cause the WFS Manager to restart.
10. After the WFS Manager restarts, select **File > Preset Connection**.
11. The Preset Group shows the latest version of the preset. The DB Preset version shows the version that is currently in the Database. If these versions differ, click **Set** and then click **Update**.
   This process may take several minutes. Please wait for the process to complete.
12. After the preset is updated, you will see the message **Operation Completed Successfully**.

**NOTE:** If you don’t have ProMedia Carbon installed on your farm, click the check box **Do not show this window next time**. When you select this option, you won’t be prompted to configure the preset connection the next time that you launch the Preset Editor or browse to add target/filter through the Workflow Editor.

13. Click **Close**.
   WFS is now configured after the application upgrade.

**NOTE:** When you receive a new dongle, the Services must be restarted. Select **WFS Panel > Services > Restart** for the services that are licensed.

**NOTE:** For additional configuration information, please refer to the online help in the WFS Panel.
Maintaining the SQL Transaction Log File (Manual Backups)

In WFS 1.6 and later releases, by default the database installer installs the SQL database using the Simple Recovery Model. If you use the database migration option or the Replication Utility, the default recovery model is Simple.

In WFS releases earlier than 1.6, the default database installer would install the SQL database using the Full Recovery Model. The Full Recovery Model may cause the transaction log files to increase to an unmanageable size when a backup of the database is taken. When you backup your SQL database, you need to know the effects of each recovery model. This section provides an overview of the different recovery models, tips for shrinking the database log, and resources to help understand the proper management of the chosen recovery model.

SQL Server databases can use one of three different recovery models:

- Simple
- Full
- Bulk logged

The simple and full models are the most commonly used.

Simple Recovery Model

This is the default recovery model if the replication utility is used.

- In case of failure, you can only restore to the end of any backup you have.
- Transaction log:
  - No log backups
  - Log file space is automatically reused

Full Recovery Model

- In case of failure, you can recover to a specific point in time (assuming you have backups complete up to that time (Database Backups + Transaction Log Backups))
- A continuous sequence of log backups is called a log chain. A log chain starts with a full backup of the database, and is broken if the recovery model is changed to Simple.
- Transaction log: Once the log chain begins (after the first full backup), the transaction log will keep all completed transactions until a log backup is taken. As soon as the user takes a log backup, the completed transactions are marked as freed, allowing the physical disk space to be reused (space is reused, not shrunk). If no log backup is taken, the log file will continue to grow until such time that a log backup is taken. Thus, if using the full recovery model, periodic transaction log backups are required in order to keep the size of the transaction log at an acceptable level.

I'm seeing a very large transaction log file for my database. Why is this happening?

This may happen if the database is in Full Recovery Mode. For example, in WFS releases earlier than 1.6. Once a full backup is taken, SQL Server expects the user to take periodic transaction log backups to curb log file growth, otherwise the log file will continue to grow (and eventually cause disk space problems).
Changing to the Simple Recovery Model

When the SQL Databases use the Full Recovery Model, a full database backup is taken and the transaction log will begin to grow. These logs must be maintained.

If you don't have a need for this model, you can follow the steps below to switch to the simple recovery model.

1. Open the SQL Management Studio.
2. Take a log backup of WFSDDB. (See How to: Back Up a Transaction Log)
3. Go to the Options page.
4. Change the 'Recovery model' to Simple.
5. Click OK.

Now that the database is in the Simple Recovery Model, log file space will be automatically re-used. If it is already too large, you can shrink it using the instructions below.

Shrinking the Database Log

You can shrink the Transaction Log using the Shrink command (http://technet.microsoft.com/en-us/library/ms189493.aspx)

A Shrink command example is:

`DBCC SHRINKFILE (@LogicalFileName, @NewSize)`

where the size is in MB

The log file is generally located at `C:\Program Files\Microsoft SQL Server\MSSQL10_50.MSSQLSERVER\MSSQL\DATA\WFSDB_log.LDF`

So the command will be:

`DBCC SHRINKFILE ('<name of the log file>\.LDF', 50)`

This can be run as a query from SQL Management Studio. You may have to repeat this process multiple times to achieve the desired log size.

If you would like to use the Full Recovery Model, but have a transaction log file that is too large:

1. Stop all WFS Controller services.
2. Take a transaction log backup.
3. Run the shrink command (You may have to repeat step 2 and 3 multiple times to achieve the desired log size).
4. Ensure you have a proper maintenance plan in place to take log backups at your desired frequency (in order to keep the log size at an acceptable level and satisfy any backup requirements you may have).
5. Start all WFS Controller services.

Other Resources

Community-powered support for Harmonic

http://transcoding.communities.harmonicinc.com

How to: Back up a transaction log

How to: View or change the recovery model of a database

Recovery Model Overview

How to: Schedule a backup of the transaction log and how to schedule a full database backup

How to: Configure Redundancy and Fail-Over

Contact Harmonic Support for the WFS Redundancy and Fail-Over Configuration Application

Note.
The following ports are opened during the install:

<table>
<thead>
<tr>
<th>Port</th>
<th>Protocol</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1301</td>
<td>TCP</td>
<td>WFS Controller</td>
</tr>
<tr>
<td>8731</td>
<td>TCP</td>
<td>WFS API</td>
</tr>
<tr>
<td>7284</td>
<td>TCP</td>
<td>WFS Node</td>
</tr>
<tr>
<td>3702</td>
<td>UDP</td>
<td>WFS Auto Discovery</td>
</tr>
<tr>
<td>4385</td>
<td>TCP</td>
<td>WFS Preset Connector</td>
</tr>
<tr>
<td>1433</td>
<td>TCP</td>
<td>Default SQL Port</td>
</tr>
<tr>
<td>1434</td>
<td>UDP</td>
<td>Default SQL Port</td>
</tr>
<tr>
<td>161</td>
<td>UDP</td>
<td>WFS SNMP Agent</td>
</tr>
<tr>
<td>162</td>
<td>UDP</td>
<td>SNMP Trap Host</td>
</tr>
<tr>
<td>7285</td>
<td>TCP</td>
<td>Used for SNMP service. This is used only by the WFS panel for retrieving service status and is installed in the same machine as that of the SNMP Agent, so no firewall exception is added to this port.</td>
</tr>
</tbody>
</table>

WFS requires these ports to be open in firewalls for proper communication and operation.

Please take note that MSDTC is used by WFS. During installation, firewall exceptions for MSDTC.exe are added. If external firewalls are deployed in your network, it is important that ports used for MSDTC are not blocked. In this case, static port assignment for MSDTC is recommended, as the RPC process (TCP 135) for MSDTC opens ports dynamically.

Microsoft® defined a process to bind MSDTC to static port range by editing registry.

http://support.microsoft.com/kb/306843
Appendix A  
Contacting the Technical Assistance Center

Harmonic Global Service and Support has many Technical Assistance Centers (TAC) located globally, but virtually co-located where our customers can obtain technical assistance or request on-site visits from the Regional Field Service Management team. The TAC operates a Follow-The-Sun support model to provide Global Technical Support anytime, anywhere, through a single case management and virtual telephone system. Depending on time of day, anywhere in the world, we will receive and address your calls or emails in one of our global support centers. The Follow-the-Sun model greatly benefits our customers by providing continuous problem resolution and escalation of issues around the clock.

Table A–1: For Distribution and Delivery (D&D, Legacy Harmonic) Products

<table>
<thead>
<tr>
<th>Region</th>
<th>Telephone Technical Support</th>
<th>E-mail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Americas</td>
<td>888.673.4896 (888.MPEG.TWO) or 408.490.6477</td>
<td><a href="mailto:support@harmonicinc.com">support@harmonicinc.com</a></td>
</tr>
<tr>
<td>EMEA</td>
<td>+44.1252.555.450</td>
<td><a href="mailto:support.emea@harmonicinc.com">support.emea@harmonicinc.com</a></td>
</tr>
<tr>
<td>India</td>
<td>+44.1252.555.450</td>
<td><a href="mailto:support.emea@harmonicinc.com">support.emea@harmonicinc.com</a></td>
</tr>
<tr>
<td>Russia</td>
<td>+7.495.926.4608</td>
<td><a href="mailto:support.sm@harmonicinc.com">support.sm@harmonicinc.com</a></td>
</tr>
<tr>
<td>Africa</td>
<td>+44.1252.555.450</td>
<td><a href="mailto:support.emea@harmonicinc.com">support.emea@harmonicinc.com</a></td>
</tr>
<tr>
<td>Mainland China</td>
<td>+86.10.6569.5580</td>
<td><a href="mailto:chinasupport@harmonicinc.com">chinasupport@harmonicinc.com</a></td>
</tr>
<tr>
<td>Japan</td>
<td>+81.3.5565.6737</td>
<td><a href="mailto:japansupport@harmonicinc.com">japansupport@harmonicinc.com</a></td>
</tr>
<tr>
<td>Asia Pacific – Other Territories</td>
<td>+65.6542.0050</td>
<td><a href="mailto:apacsupport@harmonicinc.com">apacsupport@harmonicinc.com</a></td>
</tr>
</tbody>
</table>

Table A–2: For Production and Playout (P&P, Legacy Omneon and Rhozet) Products

<table>
<thead>
<tr>
<th>Region</th>
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</tr>
<tr>
<td>Japan</td>
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<td><a href="mailto:japansupport@harmonicinc.com">japansupport@harmonicinc.com</a></td>
</tr>
<tr>
<td>Asia Pacific – Other Territories</td>
<td>+65.6542.0050</td>
<td><a href="mailto:apacsupport@harmonicinc.com">apacsupport@harmonicinc.com</a></td>
</tr>
</tbody>
</table>
The Harmonic Inc. support website is:
http://www.harmonicinc.com/content/technical-support

The Harmonic Inc. Distribution and Delivery product software downloads site is:
ftp://ftp.harmonicinc.com

The Harmonic Inc. Playout and Production software downloads site is:

The Harmonic Inc. corporate address is:
Harmonic Inc.
4300 North First St.
San Jose, CA 95134, U.S.A.
Attn: Customer Support

The corporate telephone numbers for Harmonic Inc. are:
Tel. 1.800.788.1330 (from the U.S. and Canada)
Tel. +1.408.542.2500 (outside the U.S. and Canada)
Fax.+1.408.542.2511