



Trial Guide

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# Introduction to the Trial Guide

This trial guide is designed to help you quickly set up and evaluate Microsoft® Application Virtualization (App-V) in a test environment. This guide provides details of the steps necessary to install Microsoft Application Virtualization server components, for both Microsoft System Center Application Virtualization Management Server and Microsoft System Center Application Virtualization Streaming Server. You will install Microsoft Application Virtualization Desktop Client, publish the shortcuts of sequenced applications, and then stream and run these virtual applications on App-V clients. You will learn to virtualize a select set of applications using the Microsoft Application Virtualization Sequencer. You will also configure clients to run applications in a standalone environment.

To help this process flow as smoothly as possible, we recommend that you read this guide carefully before installing the Microsoft App-V platform.

## Audience for This Guide

This guide was written for Microsoft Windows® system administrators. As an information technology (IT) professional, you should have sufficient knowledge and experience to accomplish the following tasks:

* Set up operating systems and install applications.
* Add computers to domains.
* Set up and work comfortably with Active Directory® Domain Services and Microsoft Domain Name System (DNS).

# Product Documentation

Comprehensive documentation for App-V is available on Microsoft TechNet in the App-V TechCenter at [http://go.microsoft.com/fwlink/?LinkID=122939](http://go.microsoft.com/fwlink/?LinkId=122939). The TechNet documentation includes the online Help for the App-V Sequencer, the App-V Client, and the App-V Server. It also includes the Planning and Deployment Guide and the Operations Guide.

## Overview of Microsoft Application Virtualization

Microsoft Application Virtualization enables you to deploy, update, and support applications as services in real time, on an as-needed basis. When you use App-V, you transform individual applications from locally installed products into centrally managed services. Applications become available everywhere they need to be—no computer pre-configuration or changes to operating system settings are required. Microsoft Application Virtualization consists of the following components.

### Microsoft System Center Application Virtualization Management Server

The App-V Management Server delivers sequenced applications on-demand to the App-V Desktop Client and the Terminal Services Client. The App-V Management Server uses Microsoft SQL Server for its data store, and one or more App-V servers can share a single SQL data store. The App-V Server authenticates requests and provides the security, metering, monitoring, and data gathering that you need. The server uses Active Directory and supporting tools to manage users and applications.

The App-V System also includes the App-V Management Console and Management Web Service. Administrators use the App-V Management Console (a Microsoft Management Console, or MMC, snap-in) to configure App-V Management Servers. Using the App-V Management Console, administrators can add and remove applications, change File Type Associations (FTAs), and assign access permissions and licenses to users and groups. The App-V Management Web Service is the communication conduit between the App-V Management Console and the SQL data store. These components can all be installed on a single server computer, or on one or more other computers depending on the required system architecture.

### Microsoft Application Virtualization Desktop Client

The App-V Desktop Client automatically sets up and manages virtual environments for App-V sequenced applications, publishes the applications to the user's desktop, and manages connections to the App-V server. The App-V Client stores user-specific virtual application settings in each user's profile—for example, registry and file changes.

### Microsoft Application Virtualization Terminal Services Client

The App-V Terminal Services Client is used on a Terminal Server and performs the same functions as the Desktop Client.

### Microsoft Application Virtualization Sequencer

The App-V Sequencer is a wizard-based tool that administrators use to create App-V sequenced applications. The Sequencer produces the application “package,” which consists of several files. These files include a sequenced application (.sft) file, one or more Open Software Description (.osd) ”link” files, one or more icon (.ico) files, a manifest xml file that can be used to distribute sequenced applications with electronic software delivery (ESD) systems, and a project (.sprj) file. Optionally the Sequencer can generate a Windows Installer file (.msi) that can be deployed to clients configured for standalone operation. The .sft, .osd, and .ico files are stored in a shared content folder on the Management Server and are used by the App-V client to access and run sequenced applications.

### Microsoft Application Virtualization Streaming Server

This server has streaming capabilities, including active/package upgrade without the Active Directory or SQL Server requirements. However, it does not have a publishing service, or licensing or metering capabilities. The publishing service of the App-V Management Server is used in conjunction with the App-V Streaming Server, so the Management Server configures the application but the Streaming Server delivers it.

# Trial System Requirements

For this evaluation, one computer will run Microsoft Internet Information Services (IIS), the App-V Management Web Service, the App-V Management Console, Microsoft SQL Server and the App-V Management Server. A second computer will run the App-V Desktop Client. You will need to set up a third computer as a Windows domain controller with Windows DNS. You will also need an additional computer for testing the App-V Sequencer. Optionally, you will need additional separate computers if you want to evaluate the App-V Terminal Services Client and the App-V Streaming Server. All of the computers must be members of a common domain (Figure 1). You can use virtual machines on a single physical computer that meets the system requirements of this trial.



**Figure 1. Application Virtualization trial in an isolated network**

In this trial, it is important that you set up Microsoft Application Virtualization in a test lab, completely separate from your production network. The purpose of this evaluation is for you to acquire basic experience with the App-V platform. You can address any questions relating to integration into your production environment, such as security concerns and enterprise-level design, later. Also, only basic platform functionality will be covered in this guide, to simplify the procedures and focus on proof of concept.

The following section lists the computer systems used for this trial evaluation.

### Windows Domain Controller

* Windows Server 2008 with Active Directory Domain Services and Microsoft DNS

### Microsoft System Center Application Virtualization Management Server

* Windows Server 2008 (32-bit or 64-bit)
* IIS 7.0
* Microsoft .NET Framework 2.0 or higher
* Microsoft SQL Server 2005 Express Edition

**Note:** The computer host name of this server cannot begin with a number.

### Microsoft Application Virtualization Desktop Client

* Windows Vista® Business, Enterprise, or Ultimate Editions, Windows XP Professional (SP2 or SP3) (32-bit only)

### Microsoft Application Virtualization Sequencer

* Windows Vista® Business, Enterprise, or Ultimate Editions, Windows XP Professional (SP2 or SP3) (32-bit only)

Optional systems:

### Microsoft Application Virtualization Terminal Services Client

* Windows Server 2008 (32-bit only)

### Microsoft Application Virtualization Streaming Server

* Windows Server 2008 (32-bit or 64-bit)

# Checklist of Tasks

The following table lists all the tasks that need to be completed in the correct order. If you have not worked with App-V before, it is strongly recommended that you follow this sequence of tasks carefully to ensure a successful installation and test of the App-V system. If you complete all the tasks listed under “Basic Tasks” you will have successfully completed the basic system evaluation. If you want to continue with evaluating other system components, refer to the list of tasks under “Additional Information”.

## Basic Tasks

|  |  |  |
| --- | --- | --- |
| **Area** | **Task** | **Method** |
| Server Setup | Set up the Active Directory domain controller, and configure Active Directory groups and accounts. | [Set Up the Active Directory Domain Services Domain Controller](#_Set_up_the) |
| Set up the server operating system and configure IIS. | [Set Up the Microsoft Application Virtualization Management Server](#_Configure_Set_up) |
| Install SQL. | [Install Microsoft SQL Server 2005 Express Edition SP2](#_Install_Microsoft_SQL) |
| Install the App-V Management Server. | [Install the App-V Management Server](#_Server_Installation) |
| Client Setup | Install the client. | [Installing Microsoft Application Virtualization Desktop Client](#_Installing_Microsoft_Application) |
| Configure the publishing server. | [Publishing the Default Application](#_Publishing_the_Default) |
| Configure and test the Default Application. | [Streaming the Default App](#_Streaming_the_Default)lication |
| Sequencer Setup | Install the Sequencer. | [Installing Microsoft Application Virtualization Sequencer](#_Installing_Microsoft_Application_1) |
| Sequence an application. | [Sequencing Word Viewer 2003](#_Sequencing_Word_Viewer_1)  [Sequencing Silverlight for Internet Explorer](#_Sequencing_Silverlight_1.0) |
| Application Deployment | Import and configure the application. | [Publish the Application](#_Publish_the_Application) |
| Application Test | Log on to the client or perform a publishing refresh, and start the application. | [Stream the Application](#_Stream_the_application) |

## Additional Information

|  |  |  |
| --- | --- | --- |
| **Area** | **Task** | **Method** |
| Streaming Server | Install and configure | [Microsoft Application Virtualization Streaming Server](#_Microsoft_System_Center) |
| Configure the client | [Client Configuration](#_Client_Configuration) |
| Standalone MSI | Understand how to use the MSI file for offline deployment | [Offline Deployment Using the Sequencer-Generated .Msi File](#_Offline_Deployment_Using) |
| Terminal Server | Understand the use of the Terminal Server client | [Microsoft Application Virtualization Client for Terminal Servers](#_Troubleshooting) |
| Secure Setup | Information about setting up a secure server. (Optional) | [Setting Up Application Virtualization for Secure Connections](#_Setting_up_Application_1) |
| Troubleshooting | Troubleshooting | [Common Errors on Microsoft Application Virtualization Client](#_Common_Errors_on) |

# Installing Microsoft System Center Application Virtualization Management Server

The section guides you through the step-by-step process of installing Microsoft System Center Application Virtualization Management Server.

**Note:** You must use the software and operating system versions listed in the following section to ensure that the instructions and screen shots are accurate for the purposes of your testing and evaluation.

## Set Up the Active Directory Domain Services Domain Controller

The following items must be configured on the domain controller computer:

* Windows Server 2008
* Active Directory Domain Services

## Configure the Active Directory Groups and Accounts

*Perform the following steps on the Windows Server 2008 computer used for Active Directory Domain Services:*

### Active Directory

Before you install the App-V Management Server, you must create the following objects in Active Directory:

* Organizational Unit (OU): Create an OU in Active Directory for Microsoft Application Virtualization–specific groups, and for the necessary Microsoft Application Virtualization domain account.
* Microsoft Application Virtualization Administrative Group: Microsoft Application Virtualization requires you to select an Active Directory group to use as an App-V administrators group for controlling administrative access to the Management Console. Create a security group named “AppV Administrators”, and add to this group every user who needs to use the Management Console. You cannot create this group directly from the Microsoft System Center Application Virtualization Management Server installer.

**Note:** For the purposes of this guide, only a single-domain setup is supported in your test lab environment. If you create groups, create them as global groups. Multi-domain and multi-forest scenarios are supported but are outside the scope of this guide.

* Microsoft Application Virtualization Users Group: Microsoft Application Virtualization requires that every user account that accesses Microsoft Application Virtualization functions be a member of a provider policy associated with a single group for general platform access. You can use an existing group (such as Domain Users) or create a new group. Create a group named “AppV Users”.
* Domain Test User Account: This account will be the user test account for Microsoft Application Virtualization end-user functionality. Add your domain test user account to each of the groups discussed in this list. If you do not, application shortcuts on the App-V client will not display in your test user account.
* Application Groups: Microsoft Application Virtualization associates the right to use an individual application with an Active Directory group. For the purposes of this guide, we will associate all test applications with the Domain Users group, even though many other options exist for production use. If you decide to use individual groups for application publishing, a user will need to logout and log back into the system to refresh his or her applications if the user has been added to a new application group. This is not necessary if you are assigning a virtual application to an existing group that the user was already a member of during the last logon.

## Set Up the Microsoft Application Virtualization Management Server

The following items must be installed on the management server computer before installing Microsoft System Center Application Virtualization Management Server. The computer must also be joined to the Active Directory domain that the accounts and groups were created in.

* Windows Server 2008
* IIS 7.0 configured with ASP.NET (and required role features)
* Microsoft SQL Server 2005 Express Edition

*Perform the following steps on the computer that will be the App-V Management Server:*

### Configure IIS 7.0 for Windows Server 2008

Add the Web Server (IIS) role with the following role services enabled:

* ASP.NET (and all required role services and features)
* Windows Authentication
* IIS Management Scripts and Tools
* IIS 6 Management Compatibility

### Install Microsoft SQL Server 2005 Express Edition SP2

Using SQL Server 2005 Express Edition is not a supported configuration for a production environment of Microsoft Application Virtualization. The Express Edition was chosen to facilitate the setup of this trial environment only.

1. Download [Microsoft SQL Server 2005 Express Edition SP2](http://www.microsoft.com/downloads/details.aspx?FamilyID=31711d5d-725c-4afa-9d65-e4465cdff1e7&DisplayLang=en).
2. Run **SQLEXPR32.EXE** (or if you are using 64-bit, **SQLEXPR.EXE**).
3. Read and accept the license agreement, and then click **Next**.
4. On the **Installing Prerequisites** page, click **Install**.
5. Click **Next**. The Microsoft SQL Server 2005 Setup wizard will launch.
6. On the **Welcome** page, click **Next**.
7. On the **System Configuration Check** page, verify that all checks were successful and then click **Next**.
8. On the **Registry Information** page, enter a **Name** and **Company** and then click **Next**.
9. On the **Feature Selection** page, click **Client Components** select **Entire feature will be installed on local hard drive**, and then click **Next**.
10. On the **Authentication Mode** page, click **Mixed Mode** and enter and confirm a **sa** password.
11. Click **Next**.
12. On the **Configuration Options** page, select the **Add user to the SQL Server Administrator role** check box and then click **Next**.
13. On the **Error and Usage Report Settings** page, click **Next**.
14. Click **Install**.
15. When setup is finished, click **Next**.
16. On the **Completing Microsoft SQL Server 2005 Setup** page, click the **Surface Area Configuration tool** link.
17. Click the **Surface Area Configuration for Services and Connections** link.
18. In the console tree, under **Database Engine,** click **Remote Connections**.
19. In the details pane, select **Local and remote connections** and click **Apply**.
20. In the alert dialog, click **OK**.
21. In the console tree, under **Database Engine**, click **Service**.
22. Click **Stop**, wait until the MSSQLSERVER service stops, and then click **Start** to restart the MSSQLSERVER service.
23. In the console tree, click **SQL Server Browser**.
24. In the details pane, select **Automatic** from the **Startup type** list box.
25. Click **Apply**.
26. Click **Start** to start the **SQLBrowser** service.
27. Click **OK**.
28. Close the **SQL Server 2005 Surface Area Configuration** page.
29. Click **Finish**.

**Note:** Do not lock down these or any component of this server, and do not try to reuse your standard server image. The purpose of this limited trial is to evaluate Microsoft Application Virtualization in a test lab—not to determine whether Microsoft Application Virtualization will run in your production environment.

### Install the App-V Management Server

*Perform the following steps on the computer that will be the App-V Management Server:*

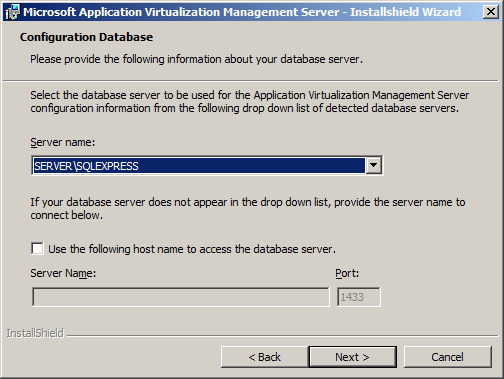
**Note:** Before beginning the installation, verify that the SQL Server (SQLEXPRESS) service is started.

1. Using an account with local administrator privileges, extract and run the setup executable for Microsoft System Center Application Virtualization Management Server.
2. On the **Welcome** page (Figure 2), click **Next**.



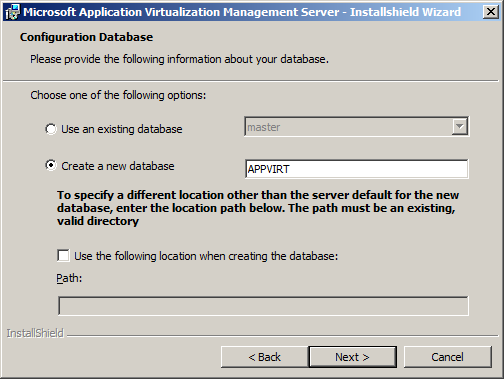
**Figure 2. Welcome page**

1. Read and accept the license agreement, and then click **Next**.
2. On the **Microsoft Update** page, click **Next**.
3. On the **Registering Information** page, type a **Name** and **Organization** in the corresponding boxes and then click **Next**.
4. On the **Setup Type** page, choose **Typical** install and then click **Next**.
5. On the **Configuration Database** page (Figure 3), click the **Server** drop-down list and then select the list entry for this server “<servername>\SQLEXPRESS”. Click **Next**.



**Figure 3. Configuration Database initial page**

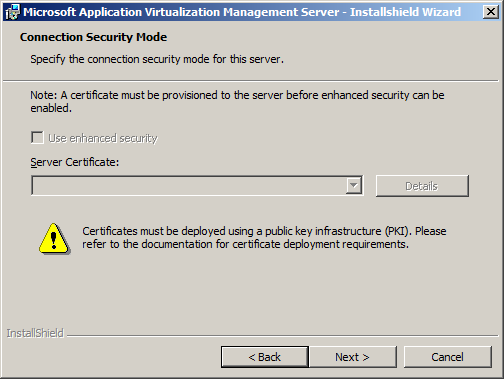
1. On the next **Configuration Database** page (Figure 4), choose **Create a new database** and then click **Next**.



**Figure 4. Configuration Database page for specifying the database**

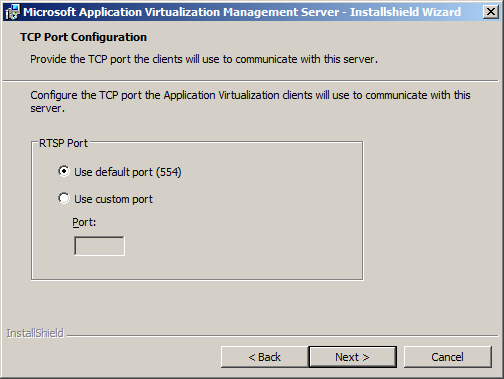
1. On the **Connection Security Mode** page (Figure 5), click **Next**.

**Note:** Configuring the management server for secure connections is covered in the [Setting Up Application Virtualization for Secure Connections](#_Troubleshooting) portion of this trial guide.



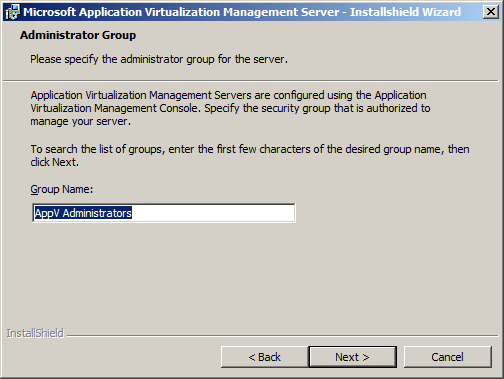
**Figure 5. Connection Security Mode page**

1. On the **TCP Port Configuration** page (Figure 6), click **Next**.



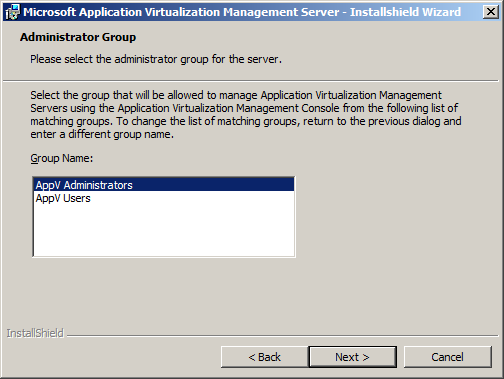
**Figure 6. TCP Port Configuration page**

1. On the **Administrator Group** page (Figure 7), type the name of the AppV Administrators group and then click **Next**.



**Figure 7. Administrator Group page**

You can also type the first few letters of the group name, and then click **Next**, to display a list of groups (Figure 8). Choose the **AppV Administrators** group, and then click **Next**.

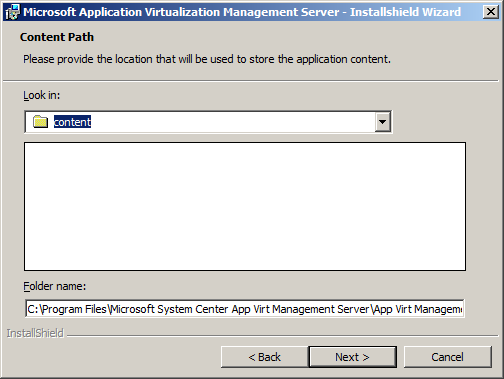


**Figure 8. Group Selection page**

1. On the **Default Provider Group** page, type the name of the App-V users group “**AppV Users**”, and then click **Next**.

**Note:** This is the group to which all users must belong for access to Microsoft Application Virtualization–enabled applications.

1. On the **Content Path** page (Figure 9), accept the default location of the Microsoft System Center Application Virtualization Management Server **content** folder by clicking **Next**.



**Figure 9. Content Path page**

1. The wizard now has all the information it needs to perform the installation. Click **Install**.

The wizard will copy the necessary files, install services, and create a database as specified in the preceding steps. When the wizard finishes, the Microsoft System Center Application Virtualization Management Console shortcut is displayed in the Administrative Tools group.

1. After the installation wizard completes, click **Yes** to restart the server.
2. After the server has restarted, click **Start | Administrative Tools | Services**, select the **Application Virtualization Management Server** service and click **Start**.

**Important:** The App-V Management Server service fails to start on boot if the SQL Server service has not yet started. It will be necessary to start the App-V service after any reboot to the Management Server.

1. Open **Windows Explorer**, go to **C:\Program Files\Microsoft System Center App Virt Management Server\App Virt Management Server\content** and share the **content** folder. Ensure that **Read** access to this folder is given to **Everyone**.   
   **Note:** If you are using a 64-bit operating system version, the folder will be under C:\Program Files (x86)\Microsoft System Center App Virt Management Server\App Virt Management Server\content.

### Create a Program Exception in Windows Firewall

1. On the computer being used for the App-V Management Server, click **Start**, type **Firewall**, and select **Windows Firewall with Advanced Security**.
2. In the management console, select **Inbound Rules**.
3. In the Actions pane, click **New Rule…**.
4. On the Rule Type page, select **Program** and click **Next**.
5. On the Program page, select **This program path** and then click **Browse**.
6. Navigate to **C:\Program Files\Microsoft System Center App Virt Management Server\App Virt Management Server\bin** and select **sghwdsptr.exe**.  
     
   **Note:** If you are using a 64-bit operating system version, the folder will be under **C:\Program Files (x86)\Microsoft System Center App Virt Management Server\App Virt Management Server\bin.**
7. Click **Next**.
8. On the Action page, select **Allow the connection** and click **Next**.
9. On the Profiles page, accept the default values and click **Next**.
10. Enter a name and description for the rule in the corresponding boxes and click **Finish**.
11. Repeat these steps to add a rule for **sghwsvr.exe**.

**Note:** This step is necessary to allow the client computers to connect to the server using RTSP(S).

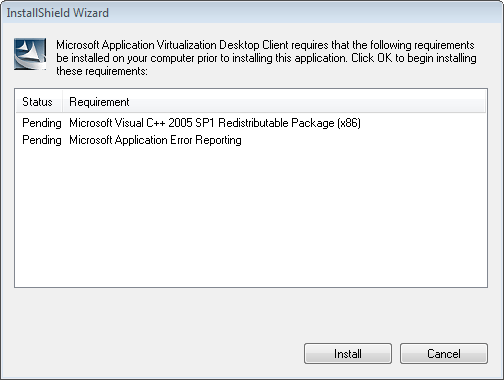
You now have completed the installation of the Microsoft System Center Application Virtualization Management Server. If you encountered any errors during the process, please refer to the [Troubleshooting](#_Troubleshooting_1) section at the end of this guide.

# Installing Microsoft Application Virtualization Desktop Client

The section guides you through the step-by-step process of installing Microsoft Application Virtualization Desktop Client on a Windows Vista computer.

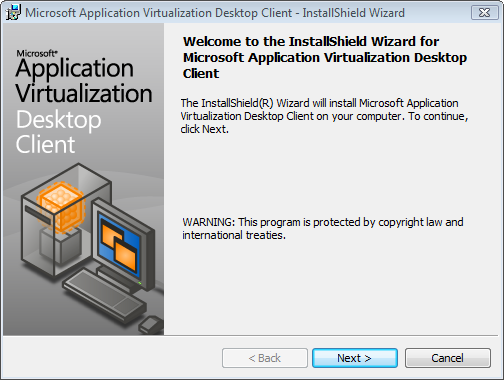
*Perform the following on the computer to be the App-V client:*

1. Extract and run the setup executable for Microsoft Application Virtualization Desktop Client.
2. The setup wizard will scan for and prompt you to install **Microsoft C++ Redistributable Package, Microsoft MSXML** and **Microsoft** **Application Error Reporting** if they are not installed (Figure 10).



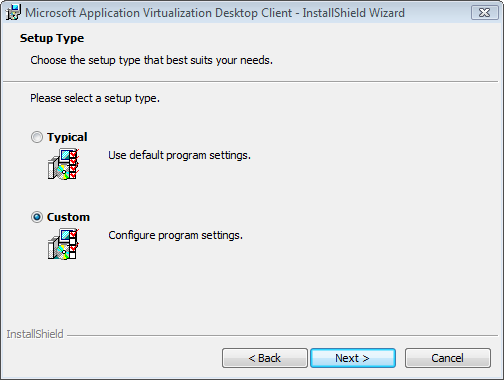
**Figure 10. Installation requirements**

1. In the **InstallShield Wizard** dialog box, click **Install**.
2. On the **Welcome** page (Figure 11), click **Next**.



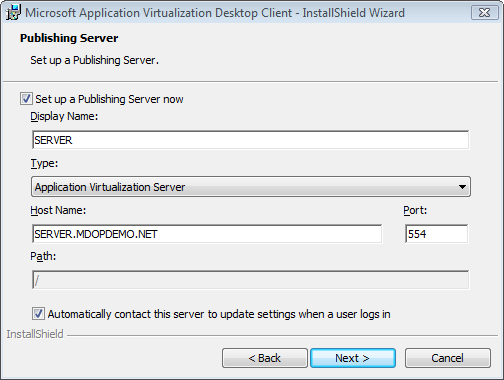
**Figure 11. Welcome page**

1. Read and accept the license agreement, and then click **Next**.
2. On the **Microsoft Update Opt** **In** page, click **Next**.
3. On the **Setup Type** page (Figure 12), choose the **Custom** radio button, and then click **Next**.



**Figure 12. Setup Type page**

1. On the **Destination Folder** page, click **Next**.
2. On the **Application Virtualization Data Location** page, leave the default settings and click **Next**.
3. On the **Cache Size Settings** page, leave the default data storage setting and then click **Next**.
4. On the **Runtime Package Policy Configuration** page, leave the default settings and click **Next**.
5. On the **Publishing Server** page (Figure 13), select **Set up a Publishing Server now**.



**Figure 13. Publishing Server page**

1. In the **Display Name** box enter the name of the server you have set up in the previous section. In the **Host Name** box, type the fully qualified domain name (FQDN) of the Application Virtualization Management Server.
2. In the **Type** drop-down list, select **Application Virtualization Server**.
3. In the **Port** box, ensure that port **554** is selected.
4. Leave the **Automatically contact this server to update settings when a user logs in** check box selected, and then click **Next**.
5. Click **Install** to begin the installation of the Microsoft Application Virtualization Desktop Client.
6. When the installation is complete, click **Finish**.
7. Log off of the client computer.

# Testing the Default Application

You are now ready to test the basic functionality of the App-V system by launching the Default Application on the App-V Client that you just installed. The Default Application is provided as part of the installation and is automatically copied to the Management Server during installation. It is used to verify that the server was installed and configured correctly but it needs to be published to the client so that the user can access it.

## Publishing the Default Application

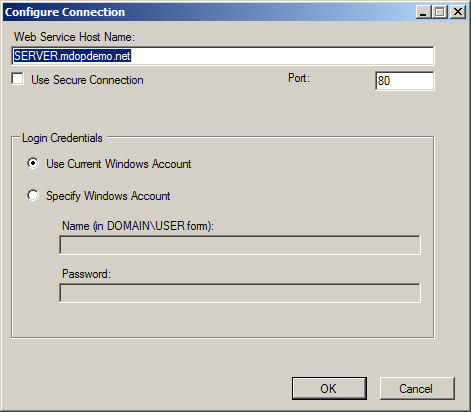
*Perform the following steps on the App-V Management Server:*

1. Click **Start |** **Administrative Tools | Application Virtualization Management Console**.

The App-V Management Console is installed on the App-V server by default. In a production environment, you can optionally choose to install the Management Console on any system capable of running MMC.

1. In the App-V Management Console, click **Actions** | **Connect to Application Virtualization System**.
2. In the **Configure Connection** dialog box (Figure 14), deselect the **Use Secure Connection** check box.
3. In the **Web Service Host Name** field, type the FQDN of your management server, and then click **OK**.

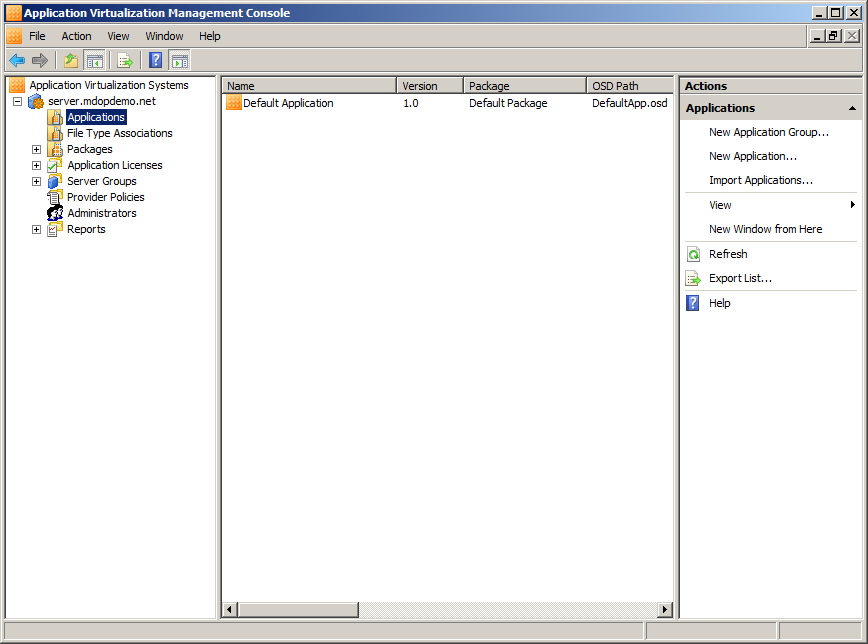
**Note:** You can also use **localhost** for the Web Service Host Name because in this case it is installed on the same server.



**Figure 14. Configure Connection dialog**

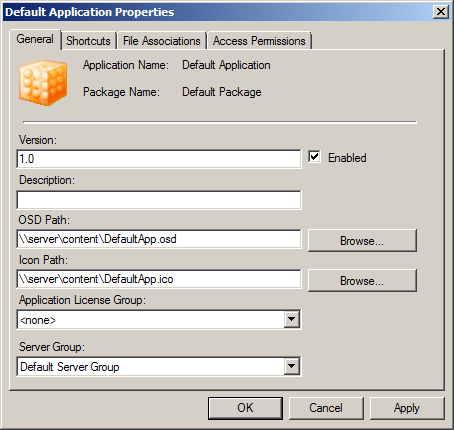
**Note** The account you are using to log on to the App-V Management Server computer must be a member of the App-V Administrators group “AppV Administrators” you created in Active Directory.

1. In the console tree, right-click the server node and click **System Options…**.
2. On the **General** tab, in the **Default Content Path** textbox, enter the UNC path to the content share you created on the server during installation, \\<server name>\content.   
     
   **Note:** use the FQDN for the server name so that the client can resolve the name correctly.
3. Click OK.
4. In the console tree, expand the server node in the left pane, and then click **Applications** (Figure 15).



**Figure 15. Application Virtualization Management Console**

1. In the details pane, click **Default Application** and then, in the **Actions** pane, click **Properties**.
2. In the properties dialog (Figure 16), next to the **OSD** **Path** box, click **Browse**.
3. In the **Open** dialog, type **\\<server name>\content** and press **Enter**. You must use the actual server name here.   
     
   **Important:** Ensure that the values in both the **OSD Path** and **Icon Path** boxes are in UNC format, (for example **\\<server name>\content\**DefaultApp.ico), and point to the **content** folder you created when installing the server. Do **not** use **localhost** or a file path containing a drive letter such as **C:\Program Files\..\..\content**.
4. Select the **DefaultApp.osd** file and click **Open**.
5. Perform the previous steps to configure the icon path.  
   l



**Figure 16. Default Application Properties page**

1. Click the **Access Permissions** tab, and confirm that the App-V Users group is granted access to the application.
2. Click the **Shortcuts** tab, and then click **Publish to User’s Desktop**.
3. Click **OK** to accept the changes for the default application.
4. Open **Windows Explorer,** and go to the **content** directory.
5. Double-click the **DefaultApp.osd** file, and open it with **Notepad**.
6. Change the **HREF** to the following:

CODEBASEHREF=”RTSP://<FQDN of your server>:554/DefaultApp.sft”.

1. Close the **DefaultApp.osd** file and save changes.

## Streaming the Default Application

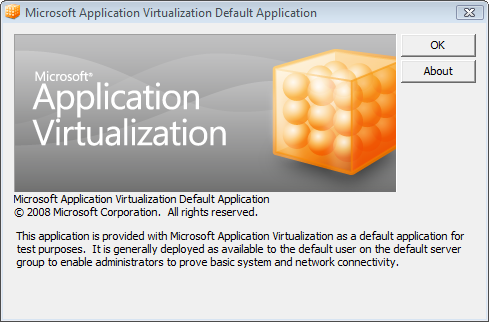
*Perform the following steps on the App-V client:*

1. Log on as a user who is a member of the Application Virtualization Users group you created called “AppV Users”.

**Note:** To meet Microsoft security standards, Microsoft Application Virtualization has implemented the Microsoft Windows version of Kerberos as the default security provider. This ticket must be refreshed by logging in and out of the system in order to refresh the group membership information in the Windows token. Once this occurs, the virtual applications will be refreshed on the client with the updated assignments.

1. On the desktop, double-click the **Default Application Virtualization Application** shortcut.

A status bar, displayed above the Windows notification area, reports that the application is launching. If a "Launch Failed" message displays, click the message to see more information about the error. After a successful launch, the title screen for the Default Application displays (Figure 17).



**Figure 17. Default Application dialog box**

1. Click **OK** to close the dialog box.

You have now confirmed that the Microsoft Application Virtualization system is running correctly. If you have encountered any errors performing these procedures, please refer to the “[Troubleshooting](#_Troubleshooting_1)” section at the end of this guide.

# Installing Microsoft Application Virtualization Sequencer

The Microsoft Application Virtualization Sequencer is used to create the virtual applications and application packages that are streamed to the App-V Clients.

During the sequencing process, the Sequencer program is placed in monitor mode, and the application to be sequenced is installed on the sequencing computer. Next, the sequenced application is started, and its most important and commonly used functions are exercised so that the monitoring process can configure the primary feature block, which contains the minimum content in an application package that is necessary for an application to run. When these steps are complete, monitoring mode is stopped and the sequenced application is saved and tested to verify correct operation.

## Before You Install Microsoft Application Virtualization Sequencer

The Sequencer computer must meet the same minimum requirements as Microsoft Application Virtualization Desktop Client. However, when sequencing applications in a production environment, use high-performing computers that are optimized for processing throughput, with at least 4 GB of RAM and a fast CPU (3 GHz or faster). Fast hard disks and the use of separate disk volumes can also improve performance. Virtual machines are ideal for sequencing because they can easily be reset, or you can use a physical computer with a clean image on a local partition to enable rapid re-imaging after each package sequencing operation has been completed.

There are two main methods for setting up the sequencer computer for this trial:

### Option 1: Virtual Machine

Do a fresh install of a supported operating system to a virtual machine (VM). *Do not* use your "standard desktop image" or install any other applications on this image at this time. Add a second virtual hard disk and within the VM set the drive letter to "Q." Enable **Undo disks** and commit the existing configuration, or create a snapshot if using Hyper-V. After each time you sequence an application, turn off the VM and discard the undo disk to this VM or apply the saved snapshot to get back to a "clean" operating system.

### Option 2: Physical Computer

Create at least two partitions on the hard disk. Make the first partition at least 4 GB in size for the operating system. The second partition should consume the remainder of the hard disk space, preferably more than 10 GB in total size. Set the drive letter to "Q" for the second partition. Do a fresh install of a supported operating system to the first partition. *Do not* use your "standard desktop image" or install any other applications on this image at this time. Use a disk imaging utility to store an image of the first partition on the second partition. This method lets you rapidly restore the sequencing computer to a "clean" installation of your operating system, after each time you sequence an application.

## Why a Q Drive?

Why sequence to a Q drive? The purpose is for the core application installation path to remain constant across all computers in the enterprise, which might not have constant system drives; for example, drive M for terminal servers and drive C for desktop computers. This is accomplished using a real drive or partition on the Microsoft Application Virtualization Sequencer computer and a virtual drive on Microsoft Application Virtualization clients. The virtual drive on Microsoft Application Virtualization clients is created by App-V’s virtualization technology and *not* by a disk partitioning tool. The Q drive is the default drive letter and can be changed if needed in a production roll out. It’s a best practice to sequence to the same drive letter as the client will use in production.

## Dynamic Suite Composition

Dynamic Suite Composition (DSC) provides a method for administrators to control which virtual applications will be combined to create a unified, virtual working environment for an application set. DSC provides a way for the administrator to specify mandatory or optional dependencies between virtual applications. After a virtual application is run on the client, it will also launch the dependent virtual application’s environment, allowing the combination of both virtual environments. DSC enables a “one-to-many” scenario for middleware applications. An example case for the use of DSC is applications that require the Java Runtime Environment (JRE). The administrator sequences the JRE into its own virtual application. The administrator then resets the sequencer, installs the JRE locally and then sequences the dependent application. A dependency is then created between the single virtual JRE package and the different virtual dependent applications. This “one-to-many” scenario allows multiple virtual applications to share the same virtual JRE package. DSC reduces the sequencing overhead because only one JRE needs to be sequenced instead of re-sequencing the JRE into each individual package. Updates are also simplified because only the single JRE package is updated instead of multiple packages.

DSC is an important part of Microsoft Application Virtualization 4.5; however, for the sake of simplicity, this trial guide does not include the process as part of the instructions. For more information about Dynamic Suite Composition, please see <http://go.microsoft.com/fwlink/?LinkID=133129>.

## Files Created by the Sequencer

When sequencing a Windows application, the Sequencer produces the following files:

ICO – The .ico (icon) file specifies the application icons that appear on the Microsoft Application Virtualization client desktop. When you double-click the icon, you are actually launching the shortcut to the corresponding .osd file, described below, that begins the data streaming and application launch process. From the user perspective, the experience of launching a Microsoft Application Virtualization-enabled application is identical to launching a locally stored application.

OSD – The .osd (Open Software Description) file provides the information necessary to locate the .sft file for the application and set up and launch the application. This information includes the application name, the name and path to the executable file, the name and path to the .sft file, the suite name, the supported operating systems, and general comments about the application.

SFT – The .sft file contains the asset files that include one or more Windows applications. Microsoft Application Virtualization Sequencer, without altering the source code, packages these asset files into chunks of data that can be streamed to the Microsoft Application Virtualization client. The file is divided into two distinct blocks. The first block, called the *primary feature block*, consists of the application’s most-used features, as configured by the sequencing engineer. This block is streamed to the Microsoft Application Virtualization client the first time the user launches the application. The remainder of the application is in the *secondary feature block*. This block is streamed to the Microsoft Application Virtualization client on demand. By default, the blocks are divided into 32 KB "chunks" of data.

SPRJ – The .sprj (Sequencer project) file is generated when a project is saved. The .sprj file contains a list of files, directories, and registry entries that are excluded by the Sequencer. Load this file in the Sequencer to add, change, delete, or upgrade any of the applications in the suite. A common example of when you might use the .sprj files is when you add service packs to an application.

Manifest File – The manifest file (xml based) can be used by ESDs to deploy applications using App-V’s SFTMIME scripting language.

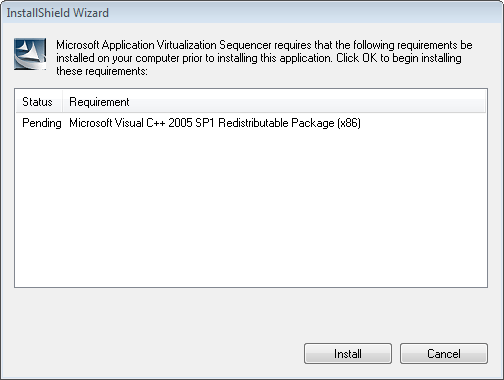
MSI – The App-V Sequencer can optionally generate .msi files that can be deployed to clients configured for stand-alone operations.

## Install Microsoft Application Virtualization Sequencer

*Perform the following steps on the computer used for Microsoft Application Virtualization Sequencer:*

**Important:** The computer used for the Sequencer must contain only a fresh installation of the Windows operating system. Do not install Microsoft Application Virtualization Sequencer on a computer that hosts Microsoft System Center Application Virtualization Management Server or Microsoft Application Virtualization Desktop Client.

1. Run the setup executable for Microsoft Application Virtualization Sequencer.
2. The setup wizard will scan for and prompt you to install **Microsoft Visual C++ 2005 SP1 Redistributable Package** (Figure 18).



**Figure 18. Visual C++ installation**

1. In the **InstallShield Wizard** dialog box, click **Install**.
2. On the **Welcome** page, click **Next**.
3. Read and accept the licensing agreement, and then click **Next**.
4. Accept the default installation path, and then click **Next**.
5. Click **Install**.
6. When the installation is complete, click **Finish**. Microsoft Application Virtualization Sequencer will start.

**Note:** You should now save a snapshot of the VM or save a fresh image if you are using a physical computer. This will enable you to reset the sequencing computer to a clean base state and have the operating system and the Sequencer installed after each package sequencing operation has been completed.

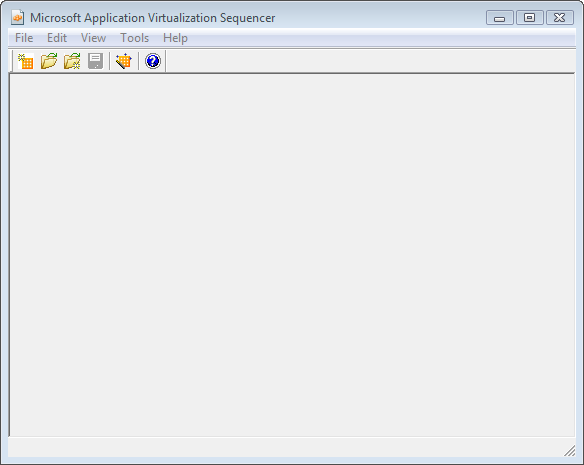
# Sequencing Word Viewer 2003

This section provides detailed instructions to carry out a simple sequencing process. You can use Word Viewer 2003 as a test case that you can easily and quickly deploy using the Microsoft Application Virtualization platform.

*Perform the following steps on the App-V Sequencer:*

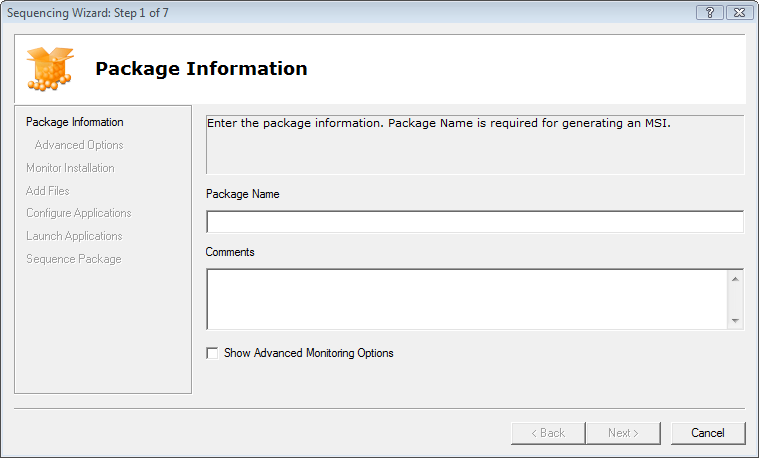
**Important:** Follow these steps *exactly* as written.

1. [Download **Word Viewer 2003**](http://www.microsoft.com/downloads/details.aspx?FamilyID=95e24c87-8732-48d5-8689-ab826e7b8fdf&) and then copy the installer to a temporary directory on the App-V Sequencer computer.
2. Open **Windows Explorer**, go to the **Q:\** drive and create a folder named **wdviewer.2k3**.
3. Create a directory on the Sequencer desktop called **WordViewer2003**. You will save the output of the Sequencer to this directory.
4. Click **Start | All Programs | Microsoft Application Virtualization | Microsoft Application Virtualization Sequencer** to open Microsoft Application Virtualization Sequencer (Figure 19).



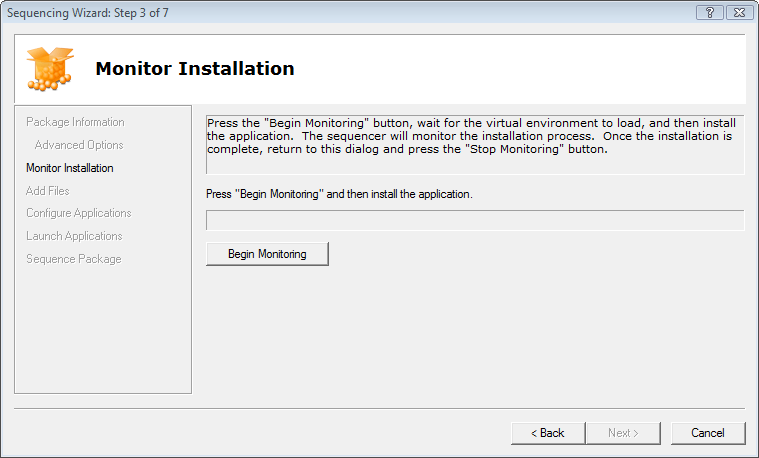
**Figure 19. Microsoft Application Virtualization Sequencer**

1. Click **File | New Package**. The **Sequencing Wizard** displays.
2. On the **Package Information** page (Figure 20), provide the following information:
   1. Package Name: **Word Viewer 2003**. The package name is a common label for all of the applications in the software suite. For example, the package Microsoft Office 2007 comprises Microsoft Word, Microsoft PowerPoint, etc.
   2. Comments: Use this field to record relevant information, such as the person who sequenced the application, specific configuration, etc.



**Figure 20. Package Information page**

1. Click **Next**.
2. On the **Monitor Installation** page (Figure 21), click **Begin Monitoring**.

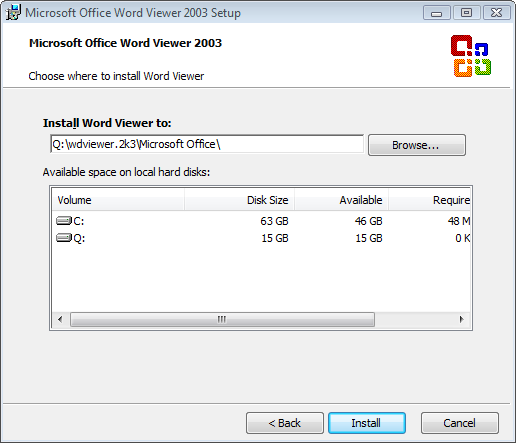


**Figure 21. Monitor Installation page**

1. In the **Browse For Folder** section, browse to and select **Q:\wdviewer.2k3**, and then click **OK**.
2. Wait for the monitor to load the virtual environment and to display the status **Monitoring started. Please begin installation**.

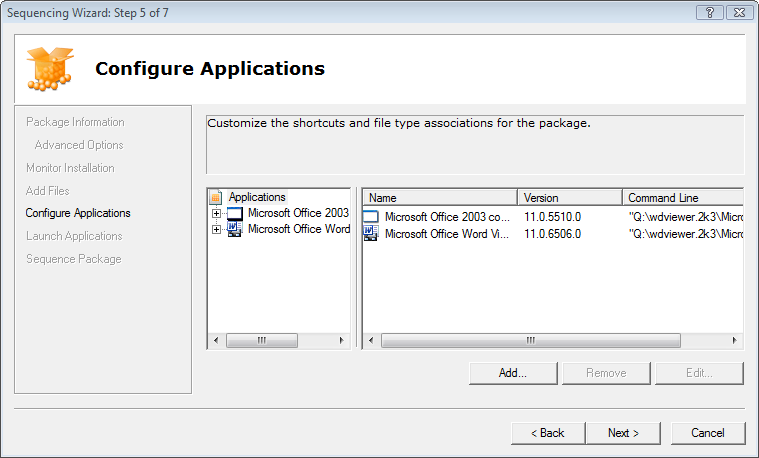
**Note:** Open instances of Windows Explorer and command prompts will not be monitored. In the following steps, you can install the application using Windows Explorer.

1. Open the folder that contains the wdviewer.exe installer, and run the **Word Viewer 2003** installer.
2. Accept the terms of the license agreement, and then click **Next**.
3. Click **Browse**, go to **Q:\wdviewer.2k3**, click the **New Folder** button to create the **Microsoft Office** folder, click the **Microsoft Office** folder, and then click **OK**.
4. On the **Install Word Viewer to** page (Figure 22), click **Install**.



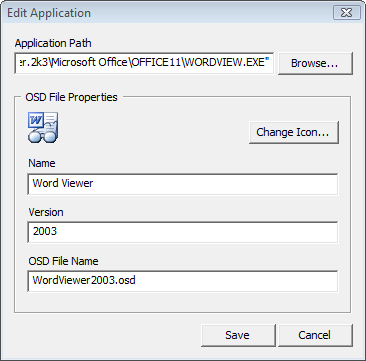
**Figure 22. Install Word Viewer to page**

1. In the **Success** dialog box, click **OK**.
2. In Windows Explorer, go to **Q:\wdviewer.2k3\Microsoft Office\OFFICE11** and double-click **WORDVIEW**.
3. Click **Cancel** and close Word Viewer.
4. Switch to the **Sequencing Wizard**, and click **Stop Monitoring**.
5. When the monitoring is finished, click **Next**.
6. On the **Add Files to Virtual File System** page, click **Next**.
7. On the **Configure Applications** page (Figure 23), click **Applications**.



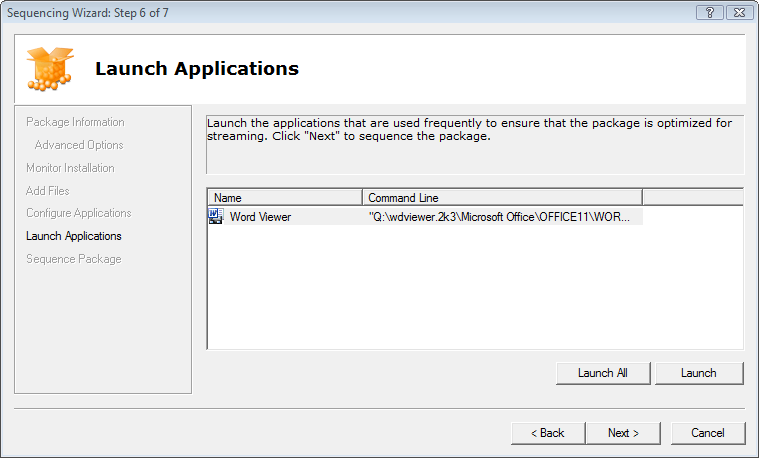
**Figure 23. Configure Applications page**

1. In the details pane, click **Microsoft Office 2003 component**, and then click **Remove**.
2. Click **OK**.
3. In the details pane, click **Microsoft Office Word Viewer 2003**, and then click **Edit**.
4. In the **Edit Application** dialog box, set the following .osd file properties (Figure 24) and then click **Save**.
   1. Name: **Word Viewer**
   2. Version: **2003**
   3. OSD Filename: **WordViewer2003.osd**.



**Figure 24. Edit Application dialog box**

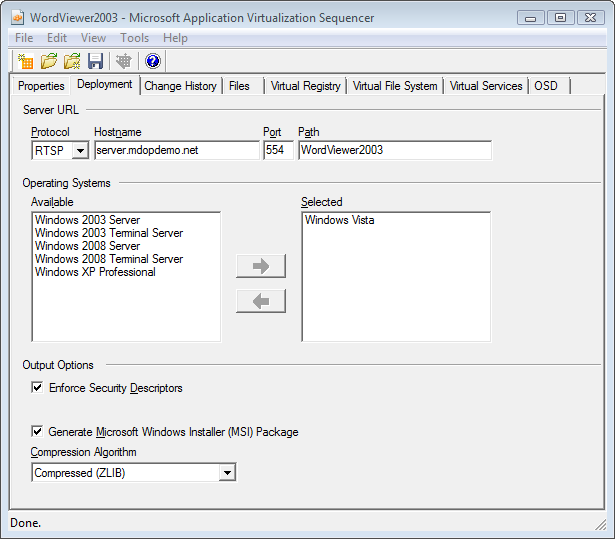
1. Click **Save**.
2. Under **Applications**, expand **Word Viewer**.
3. Click **File Type Associations** to view the FTAs the Sequencer has recorded.
4. Click **Shortcuts** to view where the shortcuts for this application will be located on the Microsoft Application Virtualization client desktop.
5. When you are done viewing this information, click **Next**.
6. On the **Launch Applications** page (Figure 25), click **Word Viewer,** and then click **Launch**.



**Figure 25. Launch Applications page**

The **Launch Applications** page lets you start the applications associated with the shortcuts Microsoft Application Virtualization created. This will determine the primary feature block which contains the portion of the application required to launch the application on the Microsoft Application Virtualization client.

1. In the **Open** dialog box, click **Cancel**.
2. In **Word Viewer**, click **File | Exit**.
3. Click **Next**.
4. On the **Sequence Package** page, when the sequencing is complete, click **Finish**.
5. On the Sequencer summary page, click the **Deployment** tab.
6. Set the following properties for the package (Figure 26):
   1. Protocol: **RTSP**
   2. Hostname: ***FQDN of Management Server***
   3. Path: **WordViewer2003**
   4. Generate Microsoft Windows Installer (MSI) Package: ***Enabled***
   5. Compression Algorithm: **Compressed (ZLIB)**
   6. Operating Systems: Check that the operating system displayed is the same as that used on your client computer.



**Figure 26. Deployment tab**

1. Click **File | Save**, and then go to the folder **WordViewer2003** that you created on the desktop and save your work as **WordViewer2003.sprj**.
2. Close theSequencer.
3. Copy the **WordViewer2003** folder to the **content** share on the App-V Management Server.

**Note:** Microsoft Application Virtualization Sequencer–generated .msi files can be deployed to clients configured for stand-alone operations. See the [Offline Deployment](#_Offline_Deployment_Using) section of this trial guide for more information about configuring clients for offline operation and deploying Sequencer-generated .msi files.

## Publish the Application

Next, you will import the newly sequenced application on the App-V Management Server and publish it to the client computer.

*Perform the following steps on the App-V Management Server:*

1. In **Administrative Tools**, click **Application Virtualization Management Console**.
2. In the console tree, expand the server node, and then click **Applications**.
3. Right-click **Applications** and then click **Import Applications…**.
4. Navigate to **\\<server name>\content**, and open the **WordViewer2003** folder.
5. Click the **WordViewer2003.sprj** file, and click **Open**. The New Application Wizard will launch.
6. On the **General Information** page, verify that values for the **OSD Path** and **Icon Path** are in UNC format (for example, \\server\content\WordViewer2003\WordViewer2003.osd) and that the **Enabled** check box is selected.
7. Click **Next**.
8. On the **Published Shortcuts** page, select the appropriate shortcut location checkboxes and click **Next**.
9. On the **File Associations** page, click **Next**.
10. On the **Access Permissions** page, click **Add**.
11. In the **Add/Edit User Group** dialog, navigate to the appropriate user group to access the application (App-V Users) and click **OK**.
12. Click **Next**.
13. On the **Summary** page, review the configuration information and click **Finish**.

## Stream the Application

*Perform the following steps on the App-V Client:*

To access the newly published application, log off of the Microsoft Application Virtualization Desktop Client computer and log on as a member of the user group to which the application is assigned. The application will now be available to clients at the designated shortcut locations.

# Sequencing Silverlight for Internet Explorer

This section walks you through creating a virtual environment for Windows Internet Explorer with the Microsoft Silverlight plug-in. The web plug-in will appear only in a virtualized copy of Internet Explorer, and will not be installed in the local Internet Explorer. Because Internet Explorer is part of the operating system, it cannot be sequenced. We will therefore point to the local Internet Explorer executable file on each Microsoft Application Virtualization client, and apply the changes within the virtual environment so that they can interact with the local environment.

*Perform the following steps on the App-V Sequencer:*

**Caution:** You must reset the virtual machine, or restore the clean image if using a physical computer, used for sequencing before you start a new sequencing task. This is so that you always start with a clean system containing only the Sequencer installation. This is a **critical requirement** for all sequencing work with App-V.

1. Open **Windows Explorer** and go to drive **Q**.
2. Create a directory named **slvrlght.001**.
3. Click **Start | All Programs | Microsoft Application Virtualization | Microsoft Virtual Application Sequencer**.
4. Click **File | New Package**.
5. On the **Package Information** page, type the following information in the relevant boxes:
   1. Package Name: **Silverlight**
   2. Comments: **Sequenced on Windows Vista using 4.5**
6. Click **Next**.
7. On the **Monitor Installation** page, click **Begin Monitoring**.
8. In the **Browse For Folder** dialog, go to **Q:\slvrlight.001** and click **OK**.
9. Wait a moment for the virtual environment to load and the status text to read “Monitoring started. Please begin installation.”
10. Open **Internet Explorer**, go to <http://www.microsoft.com/silverlight/get-started/install/default.aspx>, and then click the link to install the latest version.
11. Follow the prompts to complete the installation, and wait until the installation process completes.
12. Close **Internet Explorer**.
13. Switch to the Sequencer and click **Stop Monitoring**.
14. Click **Next**.
15. On the **Add Files to the Virtual File System** page, leave the default values and click **Next**.
16. On the **Configure Applications** page, click **Add** and then click **Browse**. Browse to the location of the executable for Internet Explorer **iexplore.exe**. The default location is under C:\Program Files\Internet Explorer. Click on **iexplore.exe** and click **Open**.
17. Enter the following information in the relevant fields:
    1. Name: **IE with Silverlight**
    2. Version: **1.0**
    3. OSD File Name: **Silverlight.osd**
18. Click **Add**.
19. Click **Next**.
20. On the **Launch Applications** page, click **IE with Silverlight** and click **Launch**.When Internet Explorer opens, open the Silverlight web page at [http://www.microsoft.com/silverlight](http://www.microsoft.com/silverlight/get-started/install/default.aspx) and confirm that it is working correctly. Close Internet Explorer and click **Next**.
21. Click **Yes**.
22. On the **Sequence Package** page, click **Finish**.
23. On the Sequencer summary page, click the **Deployment** tab.
24. Enter the following information in the relevant fields:
    1. Protocol: **RTSP**
    2. Hostname: ***FQDN of the Management Server***
    3. Path: **Silverlight**
    4. Compression Algorithm: **Compressed (ZLIB)**
25. Click **File | Save**.
26. Go to the desktop and create a folder named **Silverlight**.
27. Open the **Silverlight** folder.
28. Change the **File Name** to **Silverlight**.
29. Click **Save** and close the Sequencer.
30. Copy the folder **Silverlight** to the **content** directory on the App-V Management Server.
31. Add the new application to the App-V Management Console, following instructions in the section [Publish the Application](#_Perform_the_following).
32. On the App-V Desktop Client, log on and off to receive the newly published application. If needed, follow the instructions in the section [Stream the application](#_Test_the_application) earlier in this guide.

**Note:** At this point, you have successfully completed the basic tasks provided with this trial guide for evaluating the main features of the App-V system. The next section includes additional tasks and information about several other aspects of the App-V system that you might want to evaluate as well.

# Microsoft Application Virtualization Streaming Server

The Microsoft Application Virtualization Streaming Server is an App-V system that can be used to provide a local source of package content for client computers that are in a remote office away from the Management Server. The package content files are often very large, up to 4 GB in size, so in a production environment for optimum performance they should be placed in a content share that is accessible by the client computers over a high speed local area network. Streaming very large files across a wide area network (WAN) is not recommended because of the typical bandwidth limitations of WAN links.

The Streaming Server has streaming capabilities that include active/package upgrade without the Active Directory or SQL Server requirements of the Microsoft System Center Application Virtualization Management Server. However, it does not have a publishing service, licensing capabilities, or metering capabilities. This service is intended to provide lightweight virtual application delivery at branches without the additional management overhead of Active Directory or Microsoft SQL Server in each branch. The publishing service of the Microsoft System Center Application Virtualization Management Server is used in conjunction with the Microsoft Application Virtualization Streaming Server, so the Management Server centrally controls the virtual application publishing, but the local Streaming Server dynamically delivers the package content from the local network. The trial guide will show how these two capabilities can be used together.

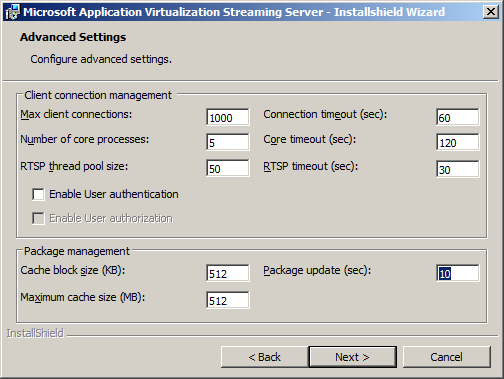
## Configure the Microsoft Application Virtualization Streaming Server

*Perform the following steps on the computer that will be the App-V Streaming Server:*

### Installation

1. Launch the Streaming Server setup executable. The **Microsoft Application Virtualization Streaming Server** installation wizard will appear.
2. On the **Welcome** page, click **Next**.
3. Accept the terms of the licensing agreement, and then click **Next**.
4. On the **Microsoft Update Opt** **In** page, click **Next**.
5. On the **Customer Information** page, enter text in the **User Name** and **Organization** boxes, and then click **Next**.
6. On the **Installation Path** page, click **Next**.
7. On the **Connection Security Mode** page, click **Next**.
8. On the **TCP Port Configuration** page, click **Next**.
9. On the **Content Root** page, click **Next**.
10. On the **Advanced Settings** page (Figure 27), clear the **Enable User authentication** check box.
11. Change the **Package update (sec)** to **10** sec.

Normally this setting is 30 minutes, but for the purposes of our demonstration we will change it to 10 seconds to speed up the process.



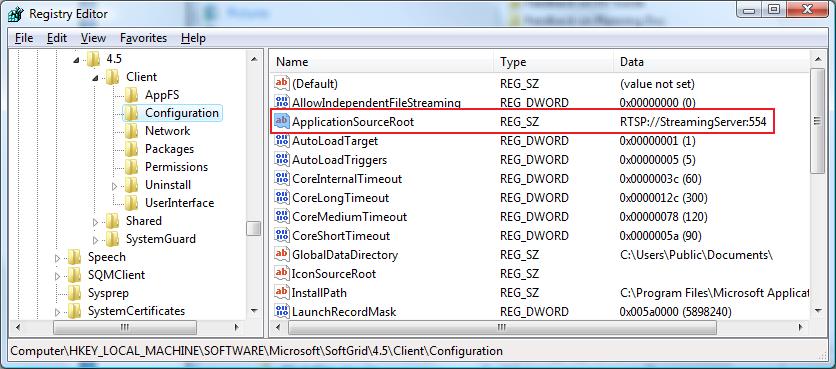
**Figure 27. Advanced Settings page**

1. Click **Next**.
2. On the **Ready to Install the Program** page, click **Install**.
3. On the **Completed** page, click **Finish**.
4. Click **Yes** to restart the server.
5. In **Windows Explorer**, go to **C:\Program Files\Microsoft System Center App Virt Streaming Server\content**,and share the **content** folder. Ensure that **Read** access to this folder is given to **Everyone**.  
     
   **Note:** If you are using a 64-bit operating system version, the folder will be under **C:\Program Files (x86)\Microsoft System Center App Virt Streaming Server\content**
6. Copy the **WordViewer2003** folder, from the **content** share on the Management Server, into the **content** share on the Streaming Server.
7. Follow the instructions under [Create a Program Exception in Windows Firewall](#_Create_a_Program) to create rules in the server firewall for the App-V services.

## Client Configuration

*Perform the following steps on the Microsoft Application Virtualization client:*

1. Click **Start | Administrative Tools | Application Virtualization Client**.
2. In the console tree, click **Applications**.
3. Right-click **Word Viewer 2003** and click **Delete**.
4. Click **Yes**, and close the **Application Virtualization Client** console.
5. Open the **Registry Editor**.
6. In the **Registry Editor**, go to **HKEY\_LOCAL\_MACHINE\SOFTWARE\Microsoft\SoftGrid\4.5\Client\Configuration** (Figure 28).
7. In the details pane, double-click **ApplicationSourceRoot**.
8. Enter the URL to the streaming server. For example, if your streaming server name is “StreamingServer”, you would enter “RTSP://StreamingServer:554” and then click **OK**.



**Figure 28. Configuration**

1. Close the **Registry Editor**.
2. In the system tray, right-click the **Microsoft Application Virtualization** icon and click **Refresh Applications**.
3. On the desktop, double-click **Word Viewer 2003**. Word Viewer will load and stream from the Streaming Server, and then launch an **Open** dialog box.
4. Click **Cancel**, and then close **Word Viewer 2003**.
5. In **Administrative Tools**, click **Application Virtualization Client**.
6. In the console tree, click **Applications**.
7. Right-click **Word Viewer 2003** and click **Properties**.
8. Click the **Package** tab, and view the **Package URL** field.

You will notice that the package is now streaming from the Microsoft Application Virtualization Streaming Server content share.

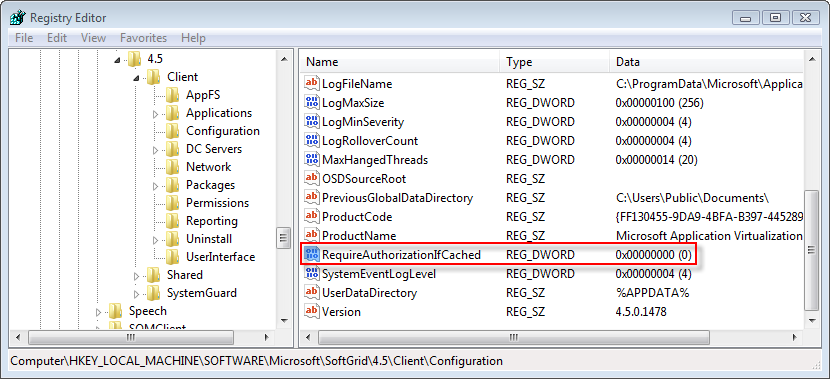
# Offline Deployment Using the Sequencer-Generated .Msi File

The Microsoft Application Virtualization Sequencer has an option to create an .msi file that automates the addition of the virtual application. The .msi file can be used by an ESD system to automatically publish the shortcuts and FTAs and to load the application into cache. It can also be used directly on the client in standalone mode. Standalone mode requires the client to go into offline mode, which allows only.msi-based updates of the virtual applications; streaming is not allowed while in offline mode. This mode is meant for rarely connected users who need the power of virtualized applications, but do not have access to a server. A Group Policy administrative template (.adm) is available at <http://go.microsoft.com/fwlink/?LinkID=121835> to manage these settings centrally through group policy.

## Configuring the Client for Standalone Mode

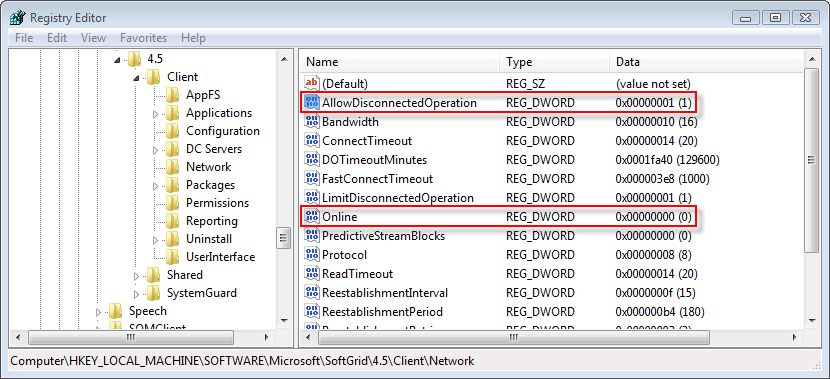
*Perform the following steps on the Microsoft Application Virtualization client:*

1. Click **Start | Administrative Tools | Application Virtualization Client**.
2. In the console tree, click **Applications**.
3. Right-click **Word Viewer 2003** and click **Delete**.
4. Click **Yes** to confirm and close the **Application Virtualization Client**.
5. Open the **Registry Editor**.
6. Go to **HKEY\_LOCAL\_MACHINE\SOFTWARE\Microsoft\SoftGrid\4.5\Client\Configuration** (Figure 29).
7. In the details pane, double-click **RequireAuthorizationIfCached**.
8. In the **Value** data field, type **0**, and then click **OK**.



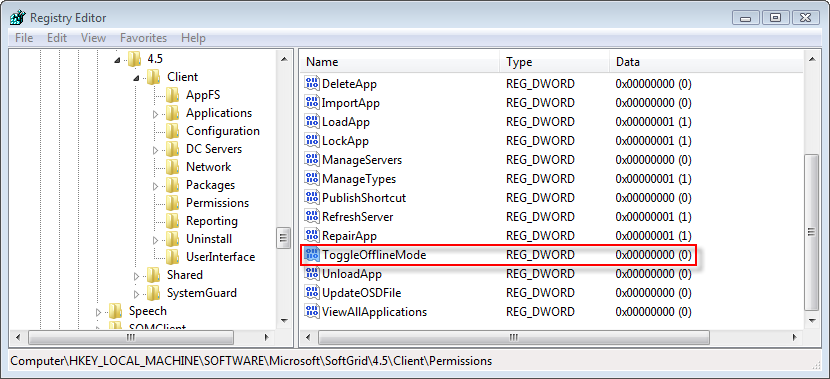
**Figure 29. Configuration for standalone mode**

1. In the console tree, under **Client**, click **Network** (Figure 30).
2. In the details pane, double-click **AllowDisconnectedOperation**.
3. In the **Value** data field, ensure the setting is **1**, and then click **OK**.
4. In the details pane, double-click **Online**.
5. In the **Value** data field, ensure the setting is **0**, and then click **OK**.



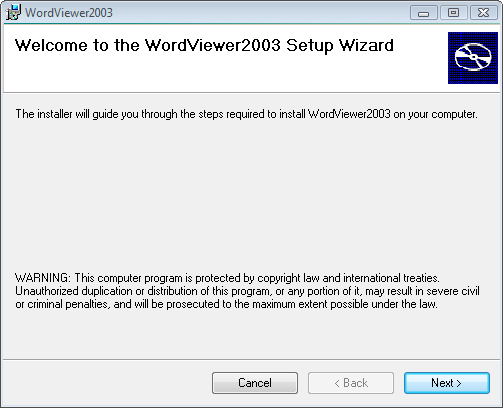
**Figure 30. Network**

1. In the console tree, under **Client**, click **Permissions** (Figure 31).
2. In the details pane, double-click **ToggleOfflineMode**.
3. In the **Value** data field, type **0**, and then click **OK**.



**Figure 31. Permissions**

1. Close the **Registry Editor**.
2. Open the Services applet in Control Panel and restart the service named “Application Virtualization Client” so that these changes will take effect.
3. Copy **WordViewer2003.msi** and **WordViewer2003.sft** from the files in the WordViewer2003 folder sequenced earlier in the guide to the client computer.
4. Double-click **WordViewer2003.msi.**
5. In the **Word Viewer 2003 Setup Wizard** (Figure 32), on the **Welcome** page, click **Next**.



**Figure 32. Word Viewer 2003 Setup Wizard Welcome page**

1. On the **Installation Complete** page, click **Close**.
2. Click **Start | Programs | Word Viewer 2003**. The application will launch an **Open** dialog box.
3. Click **Cancel**, and then close **Word Viewer**.

# Microsoft Application Virtualization Client for Terminal Servers

The installation and operation of Microsoft Application Virtualization Terminal Services Client is almost identical to that of Microsoft Application Virtualization Desktop Client.

## Testing Applications

You can log on to the Terminal Server multiple times using Remote Desktop Protocol (RDP) and test the various applications simultaneously.

# Setting Up Application Virtualization for Secure Connections

The following role must be installed on the domain controller computer:

* Active Directory Certificate Services

The following items must be configured on the management server computer:

### Server Certificate

*Perform the following steps on the Microsoft Application Virtualization Management Server:*

To configure the App-V Management Server for secure connections a certificate has to be provisioned to the server. The following requirements must be met for the App-V Management Server to use a provisioned certificate for secure configuration:

* Certificate must be valid.
* Certificate must contain the correct Enhanced Key Usage (EKU) – Server Authentication (OID 1.3.6.1.5.5.7.3.1).
* Certificate FQDN must match the server on which it is installed.
* Client (and server) need to trust the root CA.
* Certificate Private Key has to have permissions changed to allow App-V Service account access to the certificate (see below).

Perform the following to issue a certificate to the Management Server and configure it for use with Microsoft Application Virtualization:

1. Click **Start**, type **mmc**, and press **Enter**.
2. In the console, click **File | Add/Remove Snap-in…**.
3. In the **Available snap-ins** list, select **Certificates** and click **Add**.
4. On the **Certificates snap-in** page, select **Computer** **account** and click **Next**.
5. On the **Select Computer** page, click **Finish**.
6. Click **OK**.
7. In the console tree, expand **Certificates**.
8. Right-click **Personal** and click **All Tasks | Request New Certificate…**.
9. On the **Certificate Enrollment** page click **Next**.
10. Select the **Computer** check box and click **Enroll**.
11. Click **Finish**.
12. In the console tree, expand **Personal** and click **Certificates**.
13. In the details pane, right-click the certificate issued to the computer and click **All Tasks | Manage Private Keys…**.
14. Click **Add**, type **Network Service**, and press **Enter**.
15. Give the NETWORK SERVICE account **Read** permissions on the certificate.
16. Click **OK**.
17. Close the MMC console.

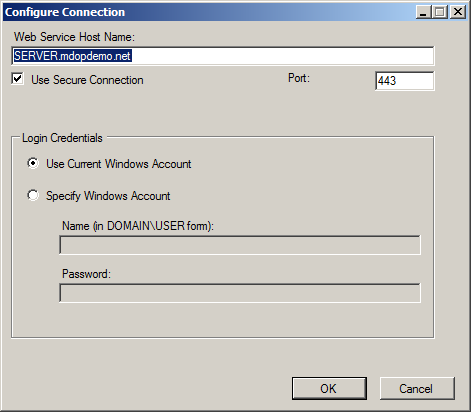
### Configure IIS 7.0 to Allow Secure Connections:

*Perform the following steps to secure connections to the Microsoft Application Virtualization Management Web Service.*

1. Click **Start | Administrative Tools | Internet Information Services (IIS) Manager**.
2. Expand **<server name> | Sites** and click **Default Web Site**.
3. In the Actions pane, click **Bindings…**.
4. In the **Site Bindings** dialog, click **Add…**.
5. From the **Type:** drop-down menu select **https**, from the SSL certificate list select the certificate issued to the server from the CA, and then click **OK**.
6. Click **Close**.

### Secure the Application Virtualization Management Console Connection to the Web Service

1. Click **Start | Administrative Tools | Application Virtualization Management Console**.
2. In theconsole tree, select **<server name>**, in the Actions pane, click **Configure Connection…**.
3. In the **Configure Connection** dialog (Figure 33), select the **User Secure Connection** checkbox.



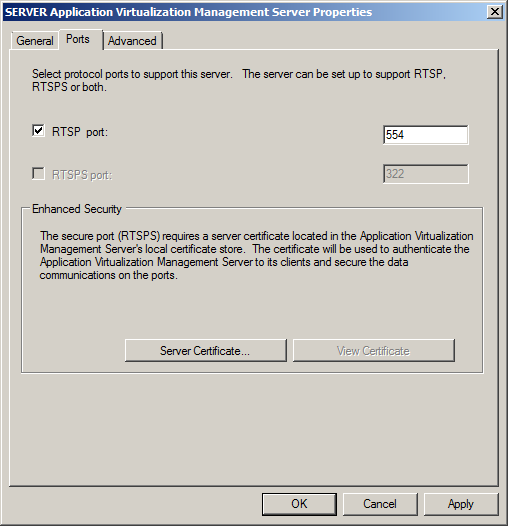
**Figure 33. Configure Connection dialog**

1. Click **OK**.

### Configuring the Application Virtualization Management Console for RTSPS:

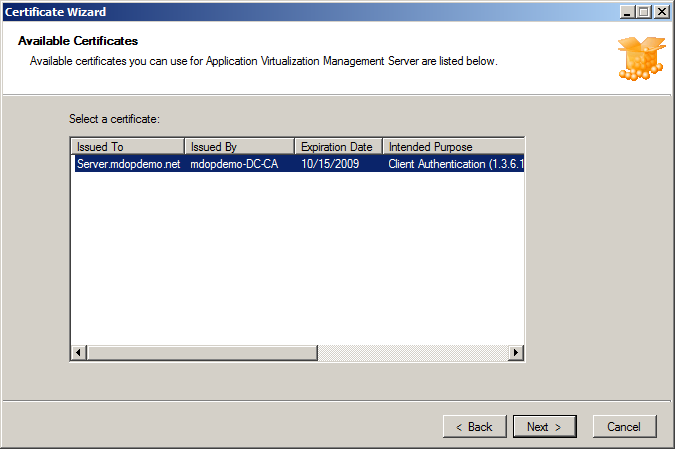
*Perform the following steps on the Microsoft Application Virtualization Management Server:*

1. In theApplication Virtualization Management Console, expand **<server name> | Server Groups** and click **Default Server Group**.
2. In the details pane, right-click **<server name>** and click **Properties**.
3. In the server properties dialog, click the **Ports** tab.
4. On the **Ports** tab (Figure 34), under **Enhanced Security**, click **Server Certificate…**.



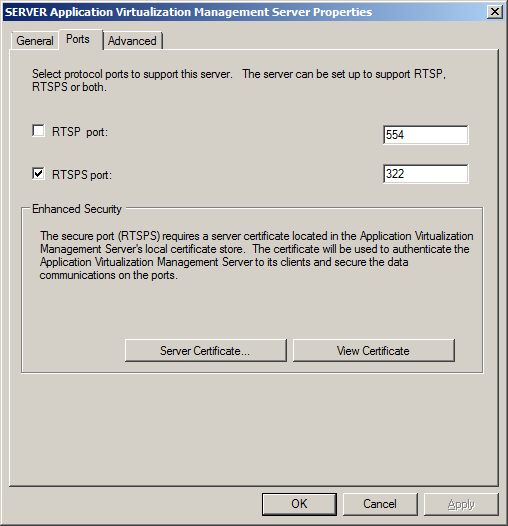
**Figure 34. Ports tab**

1. In the **Certificate Wizard**, on the **Welcome** page, click **Next**.
2. On the **Available Certificates** page (Figure 35), select the certificate you provisioned for use with AppV and click **Next**.



**Figure 35. Available Certificates page**

1. On the **Certificate Summary** page, click **Finish**.
2. In the server properties dialog (Figure 36), on the **Ports** tab, click to select the **RTSPS port** check box and deselect the **RTSP port** check box.



**Figure 36. Ports tab**

1. Click **OK**.
2. In the warning dialog, click **OK**.
3. Click **Start | Administrative Tools | Services**, select the **Application Virtualization Management Server** service and click **Restart**.
4. Close **Services**.
5. Open **Windows Explorer**, and go to the **content** directory.
6. Double-click the **DefaultApp.osd** file, and open it with **Notepad**.
7. Change the **HREF** to the following:

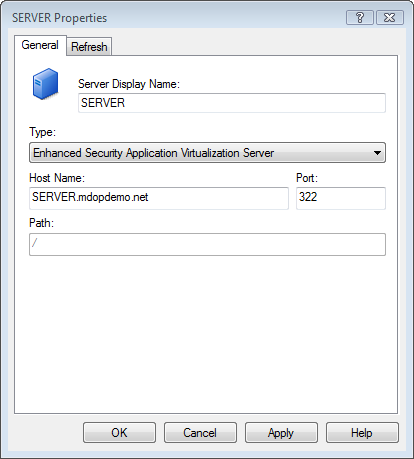
CODEBASEHREF=”RTSPS://SERVER.mdopdemo.net:322/DefaultApp.sft”.

1. Close the **DefaultApp.osd** file and save your changes.

### Configuring the Application Virtualization Client for RTSPS:

*Perform the following steps on the Microsoft Application Virtualization Client:*

1. Click **Start | Administrative Tools | Application Virtualization Client**.
2. In the console tree, click **Publishing Servers**.
3. In the details pane, right-click**<server name>**and click **Properties**.
4. In the server properties dialog (Figure 37), expand the **Type** drop-down list and click **Enhanced Security Application Virtualization Server**.



**Figure 37. Server Properties dialog**

1. Click **OK**.
2. In the console tree, click **Applications**.
3. In the details pane, right-click **DefaultApp** and click **Unload**.
4. Close the Application Virtualization client.
5. On the desktop, double-click **Default Application**.
6. In the Microsoft Application Virtualization Default Application dialog, click **OK**.

# Troubleshooting

This section addresses some of the most common pitfalls you might encounter when you install, configure, and test the Microsoft Application Virtualization platform.

If you need additional help, search either the [Microsoft Knowledge Base](http://support.microsoft.com/search/?spid=12357&adv=1) or the [Application Virtualization TechCenter](http://technet.microsoft.com/en-us/appvirtualization/default.aspx).

## Common Errors on the Microsoft Application Virtualization Client

The following sections list the most common errors encountered with Microsoft Application Virtualization

desktop Client and the most common solutions to those errors.

* When you attempt to refresh the server you get an error that says, "The client failed to download..." and "The server could not authorize you to access the requested data..."
* The application shortcut is not on the Microsoft Application Virtualization client desktop.
* The application did not stream to the Microsoft Application Virtualization client. If the application fails to stream you see the "Launch Failed" error message above the notification area.

## Possible Causes

* The user account used to log on to the Microsoft Application Virtualization client is not a member of the Microsoft Application Virtualization Users group or is not a domain user account.
* The .sft, .ico, and/or .osd files are not in the Microsoft System Center Application Virtualization Management Server “content” folder. Copy these file to C:\Program Files\Microsoft Application Virtualization\Microsoft System Center Application Virtualization Server\Application Virtualization Server\content.
* There are typing errors in the .osd and .ico paths in the application record in Microsoft Application Virtualization Management Console.
* The Microsoft Application Virtualization client cannot access the “content” directory on the Microsoft Application Virtualization server. Check the permissions settings on the content share.
* The Microsoft Application Virtualization client cannot access the Microsoft System Center Application Virtualization Management Server. Check network settings, cabling and firewall exceptions for the server services.
* The “content” folder on the Microsoft System Center Application Virtualization Management Server is not set to share or to be shared with everyone who has read access.
* The Microsoft Application Virtualization client is not a member of the domain.
* The user lacks necessary permissions to access the application. Reread and follow the procedure regarding importing .osd files, paying close attention to setting the access group.
* The operating system of the Microsoft Application Virtualization client computer is not listed in the .osd file of the application.

If none of the above appears to be the cause of the problem, check the Microsoft Application Virtualization client log (Sftlog.txt) in Desktop Clientfor errors. The file can be found here:

* *C:\Documents and Settings\All Users\Application Data\Microsoft\Application Virtualization Client*: Windows XP, Windows Server 2003
* *C:\ProgramData\Microsoft\Application Virtualization Client*: Windows Vista, Windows Server 2008

# Accessing the Microsoft Support Knowledge Base

To access the Microsoft Support knowledge base and search for answers to the most frequently asked questions, go to [Microsoft Support](http://support.microsoft.com/).

# Contacting Microsoft Training

To register for training courses, to obtain course descriptions, and to get information about Microsoft certifications, go to [Microsoft Training & Events](http://www.microsoft.com/shared/core/1/webservice/navigation.asmx/DisplayDownlevelNavHtml?navPath=/global/SiteTemplates/5257839b-b661-44b7-9194-2bc147d897b0.xml&groupName=Training%20%26%20Events).