

Installation Guide

Wyse WSM™ Release 3.0

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WYSE
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1

Introduction

WSM is an operating system and application distribution and streaming technology that provides a cost-effective method to rapidly deploy and manage operating systems and applications to a large pool of users. It provides the core functions for streaming operating systems and applications to subscribers.

About this Guide

This guide provides the step-by-step instructions you need to install and configure a WSM environment. It also includes the requirements you must address before you begin the installation procedures. This guide is intended for experienced network administrators and Information Technology professionals who have installed and configured Windows operating systems and applications.

For a successful WSM installation, Wyse recommends a working knowledge of:

- Windows Server 2003 and Windows Server 2008
- Client/server systems and technologies
- Database systems and SQL Server
- Windows registry (including machine and user profiles, and software registry entries)
- Active Directory configuration
- Environments with an automated/centralized networking tool (Tivoli, OpenView, Unicenter, and so on)

Organization of this Guide

This guide is organized as follows:

- Chapter 2, "Overview," provides a general overview of the installation and setup process for standard and advanced WSM environments.
- Chapter 3, "Preparing for Installation," contains the pre-installation requirements you must complete to prepare the environment for WSM installation and configuration.
- Chapter 4, "Installing and Configuring the WSM Core Server," provides the detailed procedures you must complete to install and configure the WSM Core Server.
- Chapter 5, "Starting the WSM Core Server for the First Time," provides the detailed procedures you must complete after starting the WSM Core Server for the first time.
- Chapter 6, "Installing and Configuring the WSM Client," provides the detailed procedures you must complete to install the WSM Client.
- Chapter 7, "Installing and Configuring a WSM Edge Server," provides the detailed procedures you must complete to install a WSM Edge Server.
- Chapter 8, "System Maintenance," contains information to help you successfully maintain your WSM system.
- Chapter 9, "Upgrading WSM," provides the detailed procedures you must complete to upgrade your WSM system from a previous version.
- Chapter 10, "Troubleshooting," contains information and help on installation, setup, conflicts, and general troubleshooting.

- Appendix A, "Error Codes," includes errors that you may encounter in a displayed message or log file.
- Appendix B, "Bootting WSM on PXE and Non-PXE Networks," discusses PXE and non-PXE boot-up processes and how to boot WSM clients on networks that do not support PXE or that have not been configured to support PXE or standard DHCP.
- Appendix C, "Installing Your Own SQL Server," provides instructions for installing the supported SQL Servers.

Wyse Technical Support

To access Wyse technical resources, visit <http://www.wyse.com/support>. If you still have questions, you can submit your questions using the [Wyse Self-Service Center](#) (on the Wyse.com home page, go to **Support | Knowledge Base | Home** tab) or call Customer Support at 1-800-800-WYSE (toll free in U.S. and Canada). Hours of operation are from 6:00 A.M. to 5:00 P.M. Pacific Time, Monday through Friday.

To access international support, visit <http://www.wyse.com/global>.

Related Online Resources Available at Wyse

Getting Started Guide: Wyse WSM Appliance™ is intended for administrators of the WSM system. It provides a setup and configuration overview of the entire WSM system to help you get your WSM environment up and running quickly and easily.

Publisher Guide: Wyse WSM™ is intended for administrators of the WSM system. It describes how to use WSM Publisher to publish applications and to make them available for distribution.

Administrators Guide: Wyse WSM™ is intended for administrators of the WSM system. It provides information, and detailed system command and parameter configurations, to help administrators design and manage a WSM environment. It also explains how to use WSM, manage the availability of software applications for distribution to subscribers, manage application subscription licenses, install and configure published applications, provide subscriber profile and billing information for efficient application usage tracking, and control subscriber access to the WSM system.

Users Guide: Wyse WSM™ is intended for users of the WSM Client system. It provides detailed instructions on using the WSM Client to manage the applications available to users from a network server.

Wyse Thin Computing Software is available on the Wyse Web site at:
<http://www.wyse.com/products/software>.

Wyse Online Community

Wyse maintains an online community where users of our products can seek and exchange information on user forums. Visit the Wyse Online Community Forums at:

<http://community.wyse.com/forums/>



2

Overview

This chapter provides a general overview of the installation and setup process for standard and advanced WSM environments.

Overview of the WSM Installation and Using *What's Next*

This section contains a general overview of the steps you need to complete to install a WSM system.



Note

Using the *What's Next* Sections of this Guide: Depending on your desired environment (standard or advanced), you can follow the *recommended for users who want a standard WSM environment* option, or follow the options you need for the installation of an advanced WSM environment. In all cases, it is recommended to follow the *What's Next* sections for convenient installation and configuration.

Standard WSM Environment

WSM installation includes:

1. Meeting all pre-installation requirements as described in "Preparing for Installation."
2. Installing and configuring the WSM Core Server as described in "Installing and Configuring the WSM Core Server."
3. Logging on to the WSM *Administrator Console* of the Core Server to use the *Configuration Wizard* to add your Core Server License (required) and enable *Active Directory* integration with WSM (optional) as described in "Starting the WSM Core Server for the First Time."
4. Installing and configuring the WSM Client as described in "Installing and Configuring the WSM Client."
5. (Optional) Installing and configuring an Edge Server as described in "Installing and Configuring a WSM Edge Server."

Advanced WSM Environment

WSM installation includes:

1. Meeting all pre-installation requirements as described in "Preparing for Installation."
2. Installing and configuring the WSM Core Server as described in "Installing and Configuring the WSM Core Server."
3. Logging on to the WSM *Administrator Console* of the Core Server to use the *Configuration Wizard* to add your Core Server License (required) and enable *Active Directory* integration with WSM (optional) as described in "Starting the WSM Core Server for the First Time."
4. Creating a *Headquarters* to control and manage other sites as described in "Creating the Headquarters."
5. Installing and configuring the WSM Client as described in "Installing and Configuring the WSM Client."
6. Installing and configuring the WSM Core Server for a *Linked Site* as described in "Installing and Configuring the WSM Core Server."
7. Logging on to the WSM *Administrator Console* of the Core Server to use the *Configuration Wizard* to create a *Linked Site* as described in "Starting the WSM Core Server for the First Time."
8. (Optional) Installing and configuring an Edge Server as described in "Installing and Configuring a WSM Edge Server."

3

Preparing for Installation

This chapter contains the pre-installation requirements you must complete to prepare the environment for WSM installation and configuration. If you plan to install and configure WSM components on multiple machines, you will repeat some of the installation and configuration procedures in this guide. Likewise, you must also complete the pre-installation requirements for each related machine you intend to use.

Pre-Installation Checklist

Before you begin installing, make sure you have met the requirements on this checklist:

- If you are planning to install and use a WSM *Headquarters* with *Linked Sites*, be sure to plan accordingly as discussed in "Pre-Installation Checklist."
- Obtain and configure all hardware and software, as necessary (see "Hardware Requirements" and "Software Requirements").
- Install Windows 2003 Server or Windows 2008 Server systems on all server machines. Be sure that all systems are up-to-date with current Microsoft service packs, patches, and updates (see "Software Requirements").
- Install Microsoft Internet Explorer (IE) 6.0 or later on all machines.
- Obtain administrator rights and credentials on all systems involved with the installations. You will also need to understand the credentials required by WSM (see "System Security and Credentials").
- Ensure that all required server to server communications ports are available and open for proper communication between servers (see "Server to Server Communication Ports" and "Domain Names").
- Install and configure a DHCP Server on your network to provide IP addresses to your clients (see "Configuring the DHCP Server").
- Obtain a Server License File for each *Stand-Alone* or *Headquarters Core Server* you will install. WSM Server License files are provided to you in e-mail from Wyse (see "Server License Files").
- Use the *WSM_Prerequisites.msi* file to easily install Microsoft SQL Server 2005 Express (see "Installing Microsoft SQL Server Using the WSM Prerequisites File"), if you do not already have a supported SQL Server installed and configured for use with WSM. Be sure the server is running *before* you begin installing WSM.
- If you already have a supported SQL Server installed and configured for use with WSM, be sure you are running the latest Microsoft SQL Server Service Pack (see "Installing the Latest Microsoft SQL Server Service Pack").



Note

If you are planning to use a *Headquarters* and *Linked Sites*, you must install the Replication option of the SQL Server.

- If you are planning to integrate *Active Directory* with WSM (see *Administrators Guide: Wyse WSM™*), be sure that the Core Server and the Active Directory Server are part of the Domain *before* the administrator of the local system begins installing a WSM Core Server.

- If you are planning to install and use a WSM *Headquarters* with *Linked Sites*, it is *highly recommended* that you install Internet Information Services (IIS) on a machine to secure the communications between your *Headquarters* and *Linked Sites*. IIS configuration and integration with WSM will be completed during your installation procedures as discussed in "Creating the Headquarters" and "What's Next."
- Obtain and prepare a *Reference Device* for WSM Client installation as discussed in "Preparing the Reference Device Used for WSM Client Installation."

**Note**

What's Next: After you have completed all pre-installation requirements continue with "Installing and Configuring the WSM Core Server."

Planning for WSM Sites

WSM 3.0 introduces the concept of "Sites", whereby geographically dispersed locations can run WSM independently, each with its own database instance, yet managed from a central location. Each WSM Site is a fully-capable WSM installation, including a Core Server, database, and optional streaming servers. This allows remote offices or locations to continue normal operations even if network connectivity to the central-office or Headquarters is interrupted. Although each Site has a full WSM installation, all management and administration is performed from a central point.

**Note**

You can ignore WSM Site features and install a standard WSM system by following the *recommended for users who want a standard WSM environment* option found in the *What's Next* sections of this guide. After installing a standard WSM system, you can easily expand your installation to meet your advanced needs at a later time.

Use the following definitions when planning for WSM Sites:

- **Site:** A local group of a Core Server and Edge servers that use a local database and can function independently from other Sites or Headquarters. There are three types of Sites: *Headquarters*, *Linked Site*, and *Stand-Alone Site*.
- **Headquarters:** A special Site that is the focal point of WSM Administration, to control and manage other Sites. All administration activities, including OS and Application Image assignment and deployment, and server and device management, are performed from this location.
- **Linked Site:** A Site that is "linked to" or managed by a Headquarters Site. Administration activities for servers and devices at these Sites are performed from the WSM Server at the Headquarters Site.
- **Stand-Alone Site:** A Site that is not linked to or managed by any other Site. For example, an existing WSM 2.x installation with a single database and Core Server would be considered a "Stand-Alone Site" in WSM 3.0 terms (even if the servers were physically located at geographically dispersed locations).

**Note**

A WSM Site is not directly related to a physical location nor bounded by physical boundaries (such as a city or district). Administrators have complete flexibility in choosing how to organize their Sites. For example, you can set up a WSM Site for each city, or for each building in a campus, or, for a single floor in a building. You can even set up multiple "Sites" in a single room.

Hardware Requirements

Each machine must meet or exceed the minimum system requirements shown in Table 1.

Table 1 Server Hardware Requirements

Category	Minimum Requirements	Recommended
CPU	1 GHz CPU	3 GHz dual CPU or higher
RAM	512 MB	1 GB or higher
Disk Space	20 GB + AppSets size	100 GB (RAID) + AppSets size (if applicable)
Network Interface Card (NIC)	100 Mbps	1 Gbps



Note

These requirements may vary due to application and operating system sizes.

Software Requirements

In addition to the WSM software, you must install the software shown in Table 2 on each server. Installing the latest version of each software package is highly recommended.

Table 2 Server Software Requirements

Component	Software Requirements
Operating System	Microsoft Windows XP Pro SP3 or later, Windows 2003 Server, or Windows 2008 Server
Database Server	Microsoft SQL Server 2005, 2005 Express, or 2008
Directory Service (optional)	Microsoft Active Directory

System Security and Credentials

To keep the system secure, WSM uses various credentials. Most of these credentials are common for system administrators. The only new credential is for the WSM system itself. The following require passwords when they are installed:

- **WSM Database** - The database requires a username and password for executing SQL queries. Each server in WSM requires this password to access the database. This information is stored encrypted in the Windows registry after installation. The default account is *wsmdb*; the default password is *password@123*.
- **Windows Service** - All WSM servers are required to run as Windows Service with local system privileges.



Note

If you plan to integrate *Active Directory* with WSM *without* SSL, you must ensure that the *WSM OS Authentication Service* is running with the credentials of an *Active Directory* user with privileges to create and manage computer accounts (for example, a member of the *Account Operator* group). For more information about integrating *Active Directory* with WSM *without* SSL, refer to the *Administrators Guide: Wyse WSM™*.

- **WSM admin Account** - To administer the WSM provider environment, a default account named *admin* must be created in the system. This account enables you to log on for the first time and to configure the system. It is highly recommended that you change the default password (*admin*) after you log in for the first time.

Server to Server Communication Ports

The servers communicate through the port attribute in the server table. These values are not exposed through the *WSM Administrator Console*. However, a mechanism is in place to resolve port conflicts at startup. When the server detects a port conflict, it will try to allocate another port above it (for example: 5000 + 1, 5000 + 2, 5000 + 3, and so on). It will try for a maximum of 100 times before failing.

The following is a list of servers and default Server/Server communication ports (ensure that these ports are open for proper communication between servers):

- OS Authentication Service (Default Port: 6910)
- OS Streaming Service (Default Port: 6911; note that this port can be configured to a different port by an administrator through the Administrator UI)
- Application Authentication Service (Default Port: 8001)
- Application Streaming Service (Default Port: 8002)
- Monitor Service (Default Port Range: 5000-5100)
- Content Distribution Service (Default Port: 20248)
- Multicast Boot Service (Default Port: 10703)
- DHCP Proxy Service (Default Port: 67)
- Administration Service (Default Port: 8080)
- SQL Port (Default Port: 1433)
- If you have a firewall enabled on the server where the WSM Server software will be installed, you must also ensure that the following ports are configured as follows:
 - Content Distribution Service Client Port (Default Port: 20248)
 - NetBIOS Name Service (Default Port: 137)
 - TFTP Service (Default Port: 69)

Domain Names

It is important to use DNS entries for mapping IP addresses to servers. Although you can use IP addresses, it will make scaling and system changes more difficult. This entry point DNS will be used to allow the client to talk to the server farm. The DNS name that is used should be entered into the machine name when configuring the Core Server (as described in "Installing and Configuring the WSM Core Server"). Also, the client port configured in that section will be the port used by the clients and will need to be configured in both the firewall and load-balancing switch. WSM requires a minimum of two public IP addresses with DNS entries.

Configuring the DHCP Server

A DHCP Server must be installed and configured on your network to provide IP addresses to your clients. The DHCP options shown in Table 3 must be specified.

Table 3 DHCP server options

DHCP Option Number	Purpose	DHCP Option Value for the Thin Client
03	Gateway	Specific to the network. If a DNS server is not on the local area network, then specify the IP address of the gateway for the local area network in which the client resides. Otherwise, this option is optional.
06	IP Address of the DNS Server	Specify the IP address of DNS server that contains the record for the boot server.
60	Client Identifier	(Use Only if the DHCP Server is on the Same Machine as the WSM Server) - Set to PXE Client ("Configure DHCP option 60 to 'PXEClient'" in the server properties).

Server License Files

You need to obtain a WSM Server License file for each *Stand-Alone* or *Headquarters Core* Server installation (to start the WSM system and register network devices). WSM Server License files are provided to you in e-mail from Wyse. Wyse uses these license files to control client seats and prevent software piracy. A WSM Server License file is encrypted using a PKI to sign each key (based on X.509 SSL Certificate).

You need a license file for any of the following reasons:

- Adding additional network devices
- License expiration

License files are stored in the database in an encrypted format. You can add the license file to the system by using the *Administrator Console* (after the server installation is complete). For instructions on importing a license file, refer to "Installing and Configuring a WSM Edge Server." For more details on the *Administrator Console*, refer to the *Administrators Guide: Wyse WSM™*.

Installing Microsoft SQL Server Using the WSM Prerequisites File

In most cases, you can install an SQL Server on the same machine as the WSM servers for a single-server installation. To do so, it is *highly recommended* that you use the *WSM_Prerequisites.msi* file to easily and automatically install everything you need for an SQL Server 2005 Express installation (including Microsoft .Net Framework 2.0). Simply double-click the **WSM_Prerequisites.msi** file and follow the wizard.



Caution

During the installation, do not close the **Ready to Install the Program** window (which continues to show in the background during installation) and do not click **Install** more than once. Doing either of these will prevent a successful installation.



Note

For instructions on installing your own SQL Server, refer to "Installing Your Own SQL Server."

4

Installing and Configuring the WSM Core Server

This chapter provides the detailed procedures you must complete to install and configure the WSM Core Server. Although you can select custom installation configurations during the installation, it is recommended that you use the default configurations.



Note

Be sure you have completed all pre-installation requirements as described in "Preparing for Installation" *before* you begin installing the WSM Core Server.

Installing the WSM Core Server

Use the following guidelines:

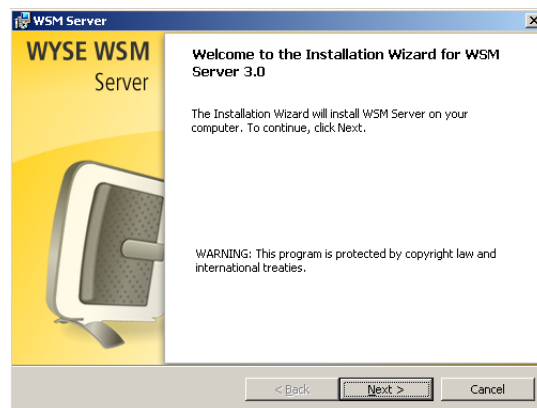


Note

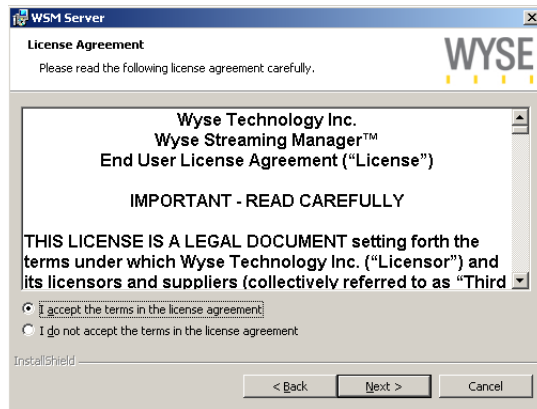
Use these instructions to install a Core Server that you can later designate as a *Headquarters* or a *Linked Site* as discussed in "Using the Configuration Wizard" and "Creating the Headquarters."

1. Double-click the **WSMServer.exe** to open the *Installation Wizard*.

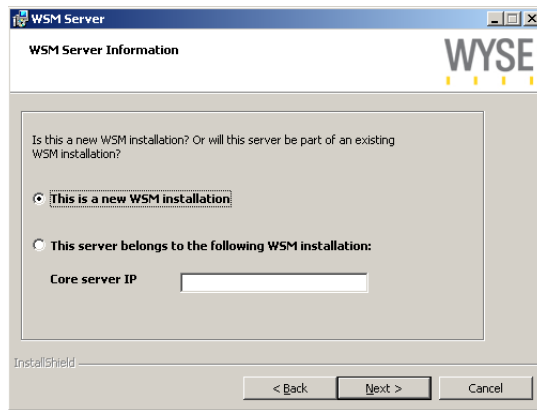
Figure 1 Installation Wizard - Core Server



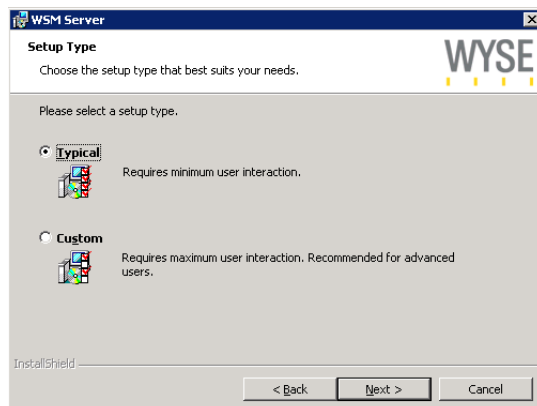
2. Click **Next** to open the *License Agreement* window.

Figure 2 License Agreement - Core Server

3. After reading the agreement, select the **I accept the terms in the license agreement** option and click **Next** to open the *WSM Server Information* window.

Figure 3 WSM Server Information - Core Server

4. Select the **This is a new WSM installation** option (to install the Core Server).
5. Click **Next** to open the *Setup Type* window.

Figure 4 Setup Type - Core Server

6. Depending on the setup you want, complete one of the following:

- (Recommended) If you want to use the default *Destination Folder*, default *Streaming Server*, and default *Database Server*, select the **Typical** option, and then click **Next** to open the *Database Server and Authentication Method* window and continue with step 10 (for default values used in the **Typical** option, refer to steps 7, 8, and 9).

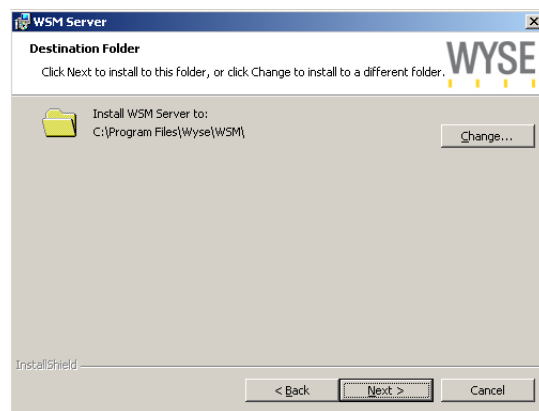


Warning

If you will be installing a WSM Edge Server in the future, be sure to note the default information in step 9 (the *Database Server* information), as you will need this information when you install the WSM Edge Server.

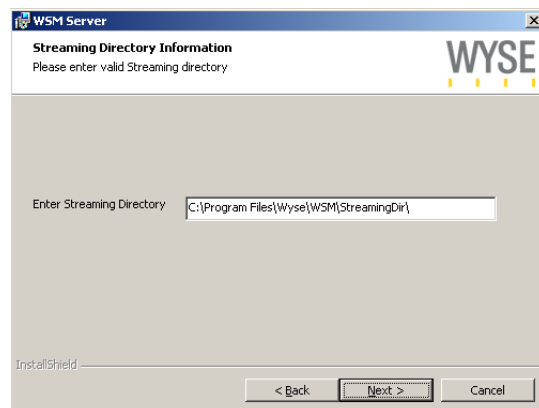
- If you want to select your own *Destination Folder*, *Streaming Server*, and *Database Server*, select the **Custom** option, and then click **Next** to open the *Destination Folder* window and continue with step 7.

Figure 5 Destination Folder - Core Server



7. Click **Next** to accept the default *Destination Folder* (*C:\Program Files\Wyse\WSM*) and open the *Streaming Directory Information* window.

Figure 6 Streaming Directory Information - Core Server



Note

The *Streaming Directory* is where the Write Cache files, OS Images, and Application Images will be stored.

8. Click **Next** to accept the default *Streaming Directory* (*C:\Program Files\Wyse\WSM\StreamingDir*) and open the *Database Server* window.

Figure 7 Database Server - Core Server

9. Use the following guidelines:

- Enter the *Database Name* to use for the SQL server (default is **StreamingDB**).



Note

Do not use special characters for the *Database Name*.

- Enter the *Username* for the database (default is **wsmdb**).
- Enter the *Password* for the database (default is **password@123**).
- Confirm the password by re-typing it in the **Re-Type Password** box.



Warning

If you will be installing a WSM Edge Server in the future, be sure to remember the information you enter in this *Database Server* window, as you will need this information when you install the WSM Edge Server.

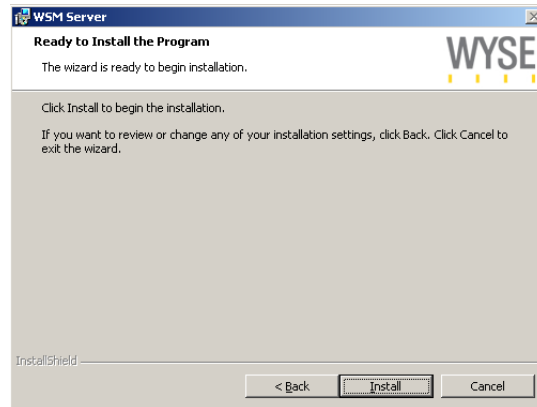
- Click **Next** to open the *Database Server and Authentication Method* window.

Figure 8 Database Server and Authentication Method - Core Server

10. Use the following guidelines:

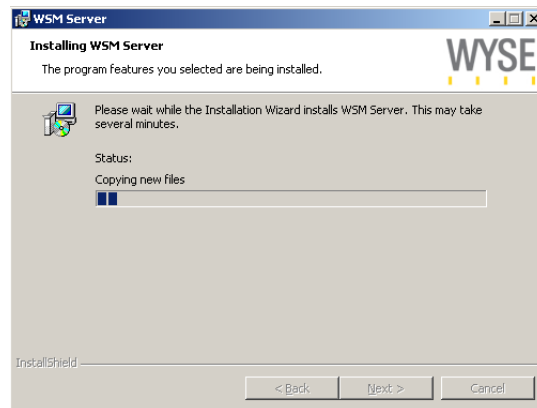
- **CAUTION:** Be sure to enter the *SQL Server Name* in the **Database** box (do not use (local)).
- Enter the *Login ID* and *Password* needed to connect to the database server in the appropriate boxes.
- Click **Next** to open the *Ready to Install the Program* window.

Figure 9 Ready to Install the Program - Core Server



11. Click **Install** to begin the installation.

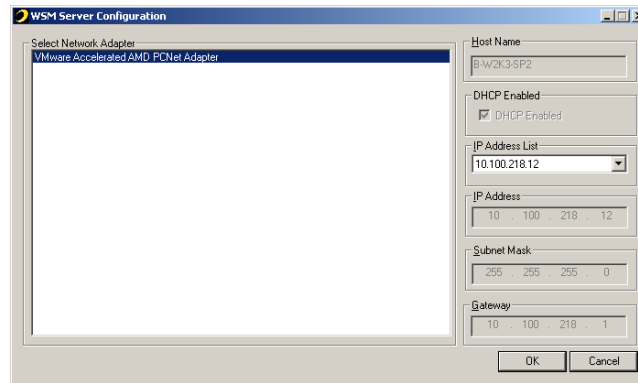
Figure 10 Installing WSM Core Server



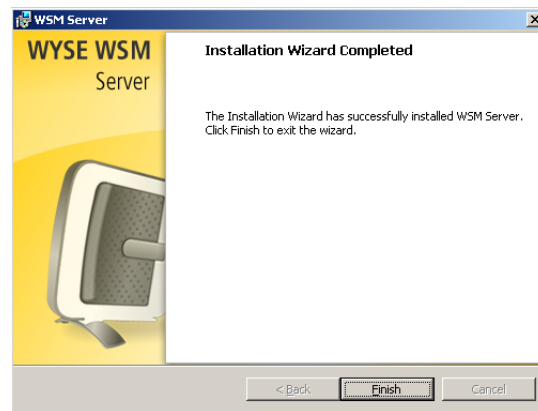
Caution

Do not interrupt the installation.

During the installation, the *WSM Server Configuration* window opens.

Figure 11 WSM Server Configuration - Core Server

12. Select the *Network Adapter* to use, select the *IP Address list* to use, and then click **OK** to save the configurations, close the *WSM Server Configuration* window, and open the *Installation Wizard Completed* window.

Figure 12 Installation Wizard Completed - Core Server

13. Click **Finish** to close the *Installation Wizard*.

What's Next

After you successfully install the WSM Core Server, continue with "Starting the WSM Core Server for the First Time," where you will use the *Configuration Wizard* (that appears after you logon to the *WSM Administrator Console* of the Core Server for the first time) to add your Core Server License (required) and enable *Active Directory* integration with WSM (optional).

5

Starting the WSM Core Server for the First Time

This chapter provides the detailed procedures you must complete after starting the WSM Core Server for the first time.



Note

Be sure you have successfully installed the WSM Core Server *before* you complete the procedures in this section.

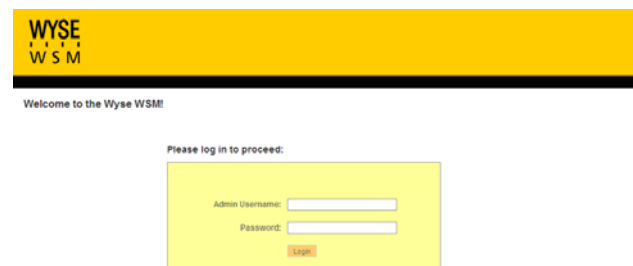
Using the Configuration Wizard

After you successfully install the WSM Core Server, you must logon to the WSM *Administrator Console* of the Core Server to use the *Configuration Wizard* to add your Core Server License (required) and enable *Active Directory* integration with WSM (optional).

Use the following guidelines:

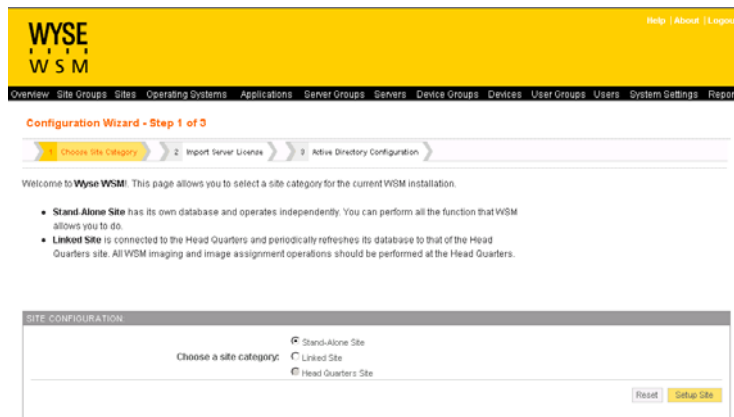
1. Open the WSM *Administrator Console* login page by clicking **Start | WSM Server | WSM** on the machine to which you have installed the WSM Core Server (you can also open a Web browser from any machine with access to the WSM Core Server and go to: `http://<ipaddress>:8080/admin/`).

Figure 13 Login page



2. Enter the *Admin Username* (default is **admin**) and *Password* (default is **admin**) and click **Login** to open the *Configuration Wizard*.

Figure 14 Configuration Wizard



3. Select the **Stand Alone** option and click **Setup Site** to open the *Import Server License* page.

**Note**

If you have already created a *Headquarters* and are now creating the Core Server for a *Linked Site*, select the **Linked Site** option. If you want to enable Web Sync, you must configure your IIS Server according to the WSM documentation (for detailed instructions on using merge replication over SSL, go to the Wyse Knowledge Base and search for **18755** to obtain “WSM Merge Replication over SSL”). If you do not plan to use Web Sync, the WSM Administration service running on the Core Server of the Linked Site must be configured to run as an account with privileges to access the shared folder. After configuring your options, click **Setup Site** to open the *Import Server License* page displaying the license file used by the *Headquarters* installation (which you will also use for the *Linked Site*).

4. Click **Browse** to find and select the *license.txt* file (provided to you by Wyse), and then click **Import Server License** to import the license and view the licence details (if you selected the **Linked Site** option, use the *Headquarters* license already displayed).
5. Click **Next** to open the *Active Directory Configuration* page.
6. Depending on whether or not you want to enable *Active Directory* integration with WSM, select or clear the **Enable Active Directory** check box:

**Note**

For information to help you decide whether or not you want to integrate *Active Directory* with your WSM system (or if you need to configure or re-configure *Active Directory* in the future), refer to the *Administrators Guide: Wyse WSM™*.

For *Linked Sites*, clear the **Enable Active Directory** check box as *Headquarters* will provide the *Active Directory* integration.

- If you clear the **Enable Active Directory** check box, click **Finish** to view the *System Overview Congratulations* page, and continue with step 17.
 - If you select the **Enable Active Directory** check box, the *Configure Active Directory* page expands (continue with step 7).
7. Enter the *Group Synchronizing Polling Frequency* time (number of seconds between synchronizing the members of user groups between *Active Directory* and the WSM database; default is **600** seconds; you can turn off the feature by setting the time to **0**).

8. Click **Next** to open the *Add Domain* page.
9. Enter the *Domain Name* of *Active Directory*.
10. (Optional) Enter the *DC Hostname or IP Address* of *Active Directory*.
11. Enter the *Active Directory User* (default is **wsmdb**).

**Note**

A user with privileges to create and manage computer accounts is needed for *Active Directory* integration. By default, members of the group named *Account Operators* or *Domain Administrators* have these privileges.

12. Enter the *Password*.
13. Click **Add Domain** to add the domain and open the *Import Groups* page.

**Note**

The domain is added to the list of available domains on the *Active Directory Domains* page.

14. Select the user groups you want to import into the WSM database by using the following guidelines:
 - Enter the group name you want in the **Group Name Contains** box (use only letters, numbers, dashes, spaces, the @ character, and periods).
 - Enter the *LDAP Context Root*.
 - Enter the *Max Results Limit* (**0** to the limit of all users in *Active Directory*).
 - After entering your filter criteria, click **Filter** to view the results.
 - Scroll through the list of groups and select the check boxes for the *Group Names* you want.
15. Click **Finish** to view the *System Overview Configurations* page.

**Note**

Users of these imported groups will automatically be added to the WSM *User Name* list on the *Users* page of the *Administrator Console*.

Figure 15 System Overview Configurations page

CATEGORY	STATUS	REQUIRES ATTENTION
Operating Systems	1 OS image is being shared.	
Applications	1 application image is being shared.	
Server Groups	There is a total of 5 server groups. There is a total of 5 servers.	2 server groups have no servers. 2 servers are not configured.
Device Groups	There is a total of 5 device groups. There is a total of 5 devices (5 network devices). Device Status summary: 4 up, 1 down, 1 other	1 device groups have no devices.
User Groups	There is a total of 5 groups.	
Users	There is a total of 50 users.	
Domains	Active Directory integration is enabled. There is 1 domain in the system.	

**Note**

The **Domains** link only appears in the *Category* list if *Active Directory* is enabled.

16. (Optional for creating the Core Server for a Linked Site Only) Restart the Administration Service.
17. After completing the *Configuration Wizard*, you can view the *Server Details* page to see that the Core Server *Services* are successfully running (*Status* is *Up* on each service) by clicking the **Servers** tab, and then clicking the *Name* link of the Core Server.

Figure 16 Core Server Details page

The screenshot displays the 'SERVER DETAILS FOR WSM-CORE-HQ' page. It includes a 'Manage server' button and a form for editing server details. Below the form is a table of services and their status.

SERVER DETAILS FOR WSM-CORE-HQ:

Name: wsm-core-hq
 Type: Core Server
 Description:
 IP Address:
 Streaming Directory:
 Status: Up

Buttons:

SERVICES:

Service Name	Port	Status (Start All / Stop All)
OS Authentication Service	6910	Up Stop View Log
OS Streaming Service	6911	Up Stop View Log
Application Authentication Service	8002	Up Stop View Log
Application Streaming Service	8001	Up Stop View Log
Monitor Service	5000	Up Stop View Log
Content Distribution Service	20248	Up Stop -
Multicast Boot Service	10703	Up Stop View Log
DHCP Proxy Service	67	Up Stop -
TFTP Service	69	Up Stop -

OS IMAGES STREAMED BY WSM-CORE-HQ:

Name	OS Class	Device Class	Status
Windows 7	Windows 7	Wyse R00LE	Ready
Windows Xp Sp3	Windows XP	Wyse R00LE	Ready

What's Next

Depending on what you need for your WSM environment, do one of the following:

- If you just configured and want to keep a *Stand-Alone Site*, continue with "Installing and Configuring the WSM Client."



Note

This is *recommended for users who want a standard WSM environment.*

- If you want to create a *Headquarters* to control and manage other sites, continue with "Creating the Headquarters."
- If you just configured a *Linked Site*, you can do one of the following:
 - If you want to install Edge servers for the *Linked Site*, continue with "Installing and Configuring a WSM Edge Server."
 - If you *do not* want to install Edge servers for the *Linked Site*, you are finished with WSM installation and can configure the rest of the WSM system according to your environment needs by following the appropriate procedures in the *Administrators Guide: Wyse WSM™*. For example, you may want to use the WSM *Administrator Console* to "register" (add) the OS Image to the WSM system and assign it to your WSM Servers and devices for streaming.

Creating the Headquarters

Use the following guidelines:

1. After completing the *Configuration Wizard* as described in "Using the Configuration Wizard," create a shared folder (on a machine outside of your WSM installations) with full read and write permissions that is accessible by your IIS Server and *Headquarters* Core Server, and the *Headquarters* SQL Server (the SQL server will use this shared folder to store a database snapshot of the *Headquarters* database).



Note

It is recommended that you create the shared folder on the same machine that you installed the *Headquarters* SQL Server. If you are running your SQL Server and SQL Server Agent process as Local System user, the shared folder is not accessible to SQL Server by default. You must configure permissions for the shared folder and grant access to the SYSTEM user. If the shared folder is on a different machine, then the SQL Server and SQL Server process must be run as an Administrator or with an account with full access to the shared folder. Configure similar permissions for the WSM Administration Service (if the shared folder is on a machine different from the *Headquarters* Core Server, then grant access to the WSM Administration Service).

2. In the WSM *Administrator Console*, click the **System Settings** tab, and then click the **Site Configuration** link to open the *WSM Sites Configuration* page.

Figure 17 WSM Sites Configuration page

System Settings
WSM SITES CONFIGURATION

This page allows you to select a site category for the current WSM installation.

- **Stand-Alone Site** has its own database and operates independently. You can perform all the function that WSM allows you to do.
- **Linked Site** is connected to the Headquarters and periodically refreshes its database to that of the Headquarters site. All WSM imaging and image assignment operations should be performed at the Headquarters. If you change a linked site to a stand alone site, all the SQL Server replication setup done by WSM are dropped Site data is deleted from Headquarters and non-site data are deleted from the site.
- **Headquarters Site** publishes its database using SQL Server replication methodology so that the information can be subscribed by linked sites. If you change the Headquarters site to a stand alone site, all the SQL Server replication setup done by WSM are dropped and this is not allowed if the Headquarters is already linked to other sites.

MESSAGES
Attention: Site Category cannot be changed for a Headquarters site that has linked sites.

[Refresh All Sites](#)

[Back to System Settings](#)
[Synchronization Logs](#)

SITE CONFIGURATION

Choose a site category:

Stand-Alone Site
 Linked Site
 Headquarters Site

Name of the Site:

Note: Name of the site must be unique across your organization.

Site Description:

Snapshot Folder:

Note: Snapshot Folder is a shared folder with read and write access for everyone. SQL Server uses this folder to store a database snapshot of the Headquarters database. Enter it in the format \\server.domain\folder.

[Reset](#) [Setup Site](#)

3. Select the **Headquarters Site** option.
4. Enter the *Name of the Site*.
5. Enter the *Site Description*.
6. Enter the location of the *Snapshot Folder* (created in step 1) in the format `\\server.domain\folder`.
7. Click **Setup Site**.
8. After creating the *Headquarters Site*, you can view the *Server Details* page to see that the *Headquarters Core Server Services* are successfully running (*Status* is *Up* on each service) by clicking the **Servers** tab, and then clicking the *Name* link of the *Headquarters Core Server*.

What's Next

After you have completed creating a *Headquarters*:

1. If you want to use merge replication over SSL, you must configure your IIS Server according to the WSM documentation.



Note

For detailed instructions on using merge replication over SSL, go to the Wyse Knowledge Base and search for **18755** to obtain "WSM: Merge Replication over SSL."



Note

The term Publisher is a replication term that indicates the database server that works as the source of WSM data. For WSM, this is the Core Server of *Headquarters*. Similarly the Subscriber indicates the consumer of the data. For WSM, this is the (Core Server of the *Linked Site*). Merge replication is the

process of distributing data from Publisher to Subscribers, allowing the Publisher and Subscribers to make updates while connected or disconnected, and then merging the updates between sites when they are connected. Merge replication allows various sites to work autonomously and at a later time merge updates into a single, uniform result. Merge replication includes default and custom choices for conflict resolution that you can define as you configure a merge publication. When a conflict occurs, a resolver is invoked by the Merge Agent and determines which data will be accepted and propagated to other sites.

2. (Optional) If you also plan to use Microsoft Windows Network Load Balancing for scalability, be sure to refer to the detailed WSM documentation on configuring load balancing for your Windows Server. Go to the Wyse Knowledge Base and search for **18775** to obtain "WSM: Network Load Balancing for Web Synch."
3. After you have completed configuring your IIS Server, continue with "Installing and Configuring the WSM Client."

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6

Installing and Configuring the WSM Client

This chapter provides the detailed procedures you must complete to install the WSM Client. Although you can select custom installation configurations during the installation, it is recommended that you use the default configurations.

WSM Client software adds the required drivers and functions for base OS streaming to the Client operating system. It also enables application streaming and subscriptions for individual client users. An easy-to-use operating system image creation tool is included in the WSM Client software, which is used to create a base OS Image that can be provisioned to client devices in your WSM environment.



Note

Be sure you have completed all pre-installation requirements as described in "Preparing for Installation" *before* you begin using the procedures in this chapter.



Warning

Do not install WSM Client software on a *Linked Site*.

Preparing the Reference Device Used for WSM Client Installation

WSM Client installation takes place on a *Reference Device* (PC, Wyse client device, or virtual machine) that contains the Windows XP Professional SP3 operating system (that you will later stream to your clients). If using a Wyse client device as a *Reference Device*, you must also have the device drivers for your specific Wyse client device installed on the operating system (obtained from the Wyse Web site). The *Reference Device* must be a client device of the type that you will use in your client environment (the client devices to which you will stream the OS Image—PC, Wyse client device, or virtual machine). For example, if you will use a specific Wyse thin client product in your WSM environment, then you must use that specific Wyse thin client product for the *Reference Device*. Thus, all devices of that specific Wyse thin client product in your WSM environment will be able to use the OS Image created specifically for them. If you will use multiple types of Wyse thin client products in your WSM environment, then you must use multiple *Reference Devices* accordingly (you will assign the OS Images to the clients for which they were created using the WSM *Administrator Console* later, as described in the *Administrators Guide: Wyse WSM™*).



Caution

It is highly recommended that the *Reference Device* be reserved for administrator *Reference Device* use only. Keeping a "clean" *Reference Device* can facilitate installations, deployments, patches, and OS Image testing.

A *Reference Device* for WSM Client installation can be physical machine (using WSM in a physical environment) or a virtual machine (using WSM in a VMware environment):

- **If the *Reference Device* is a physical machine:**
 - a. Use a USB CD-ROM drive to install the Windows XP Professional SP3 operating system (be sure to configure the operating system to meet the needs of all client devices that will boot from it later).

**Note**

When installing the operating system, be sure to boot the *Reference Device* from the USB CD-ROM drive. If the *Reference Device* tries to boot from a blank flash drive, you will see a disk error. To ensure the *Reference Device* boots from the external USB CD-ROM drive, you must set the USB DVD drive to be the first boot device. For most Wyse thin clients and appliances, you can use the one-time boot menu: Attach the USB CD-ROM drive to the thin client. During boot, press and hold the **P** key. Select the **USB Drive** option and press **Enter**. For Wyse mobile clients, you can enter and change the BIOS Setup Utility: During boot, press and hold the **F2** key. Enter the password **Fireport** (this is case sensitive) and press **Enter**. Select the **Boot Device** option and press **Enter**. Select the **USB Drive** option and move it to the 1 position by using the + key. Save the BIOS settings and reboot (you can return the original BIOS setup options at a later date if needed).

- b. (Optional) If using a Wyse client device, download and install the client device drivers you need for your specific device class (if you are using a *C90LE* for example, go to <http://www.wyse.com/serviceandsupport/support/downloads.asp>, select **C00LE** under *Wyse WSM* in the **Please choose your product (Active)** box, click **Search**, click the *File Name* link for the driver zip, and then use the **File Download** dialog box to install the drivers onto the Windows XP Professional SP3 operating system).
 - c. After you have installed the operating system (and if necessary, the device drivers) on the *Reference Device*, you are ready for the WSM Client software installation and can continue with "Installing the WSM Client on the Reference Device."
- **If the *Reference Device* is a virtual machine:**
 - a. Create a target VM machine on an ESX Server as described on the VMware Web site.
 - b. Use a USB CD-ROM drive to install the Windows XP Professional SP3 operating system (be sure to configure the operating system to meet the needs of all client devices that will boot from it later).
 - c. After you have installed the operating system on the *Reference Device*, you are ready for the WSM Client software installation and can continue with "Installing the WSM Client on the Reference Device."

Installing the WSM Client on the Reference Device

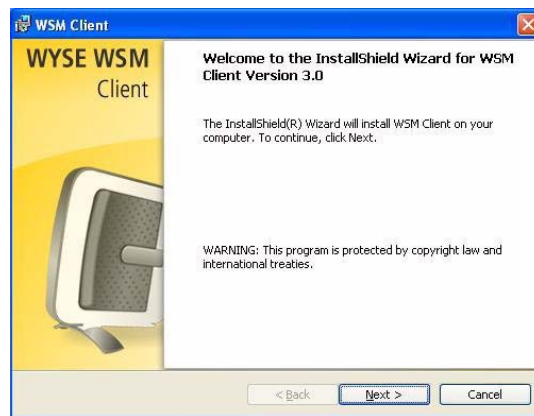
**Note**

Be sure you have completed all *Reference Device* requirements as described in "*Preparing the Reference Device Used for WSM Client Installation*" before you begin installing the WSM Client on the *Reference Device*.

Use the following guidelines:

1. Double-click **WSMClient.exe** to open the *InstallShield Wizard*.

Figure 18 InstallShield Wizard - WSM Client

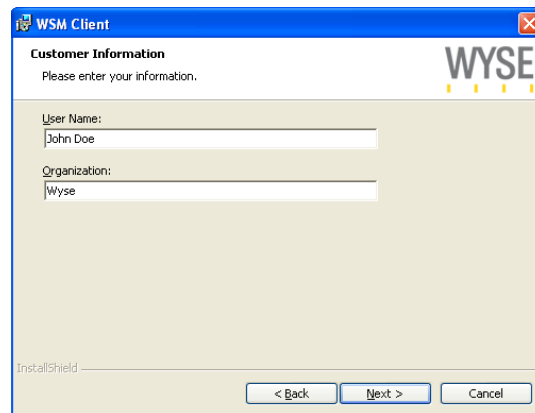


2. Click **Next** to open the *End User License Agreement* window.

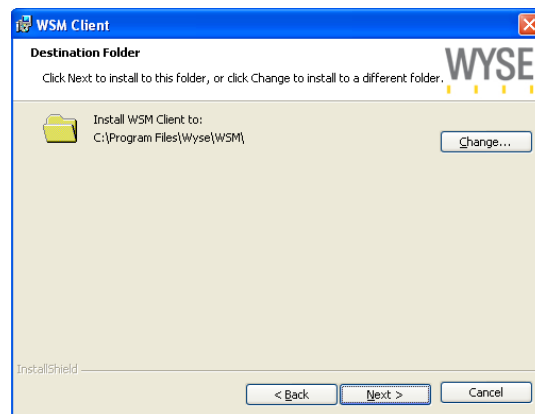
Figure 19 License Agreement - WSM Client



3. After reading the agreement, select the **I accept the terms in the license agreement** option and click **Next** to open the *Customer Information* window.

Figure 20 Customer Information - WSM Client

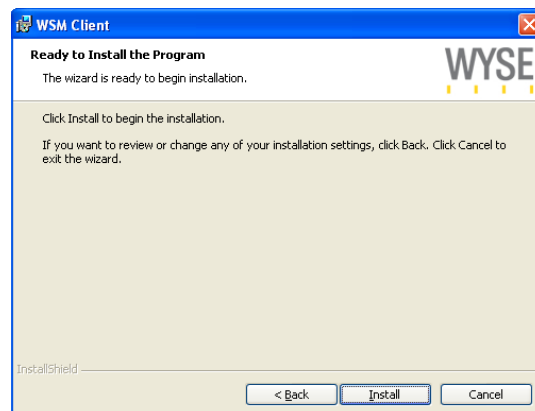
4. Enter the *User Name* and *Organization*, and then click **Next** to open the *Destination Folder* window.

Figure 21 Destination Folder - WSM Client

5. Click **Next** to open the *Ready to Install the Program* window.

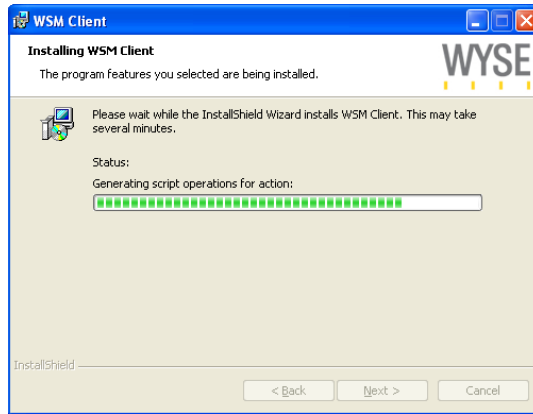
**Note**

If you have multiple Network adapters, then the *Select Network Adapter* window will be displayed prompting you to select the Network adapter.

Figure 22 Ready to Install the Program - WSM Client

6. Click **Install** to begin the installation.

Figure 23 Installing WSM Client



Caution

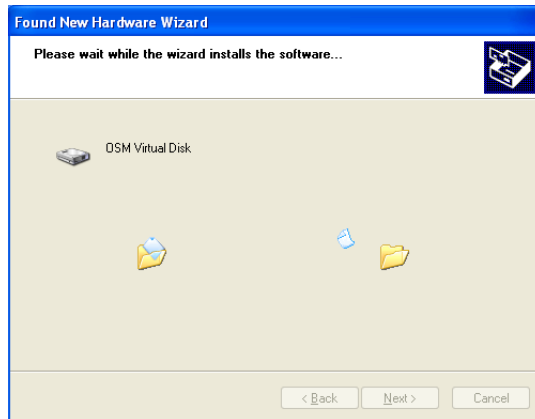
Do not interrupt the installation.

During the installation, the *Found New Hardware Wizard* opens.

Figure 24 Found New Hardware Wizard - WSM Client



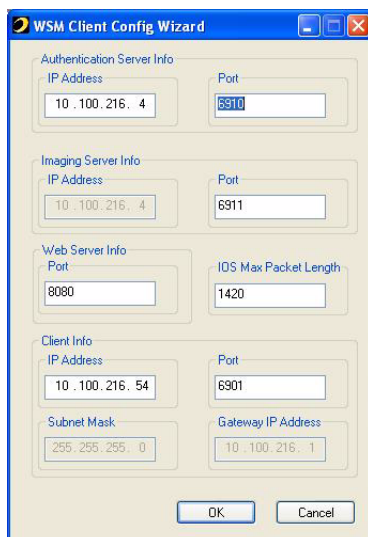
7. Select the **Install the software automatically (Recommended)** option and click **Next** to begin installation.

Figure 25 Installing hardware - WSM Client

After the software is installed, the *Completing the Found New Hardware Wizard* window appears.

Figure 26 Completing the Found New Hardware Wizard - WSM Client

8. Click **Finish** to close the wizard and open the *WSM Client Config Wizard*.

Figure 27 WSM Client Config Wizard

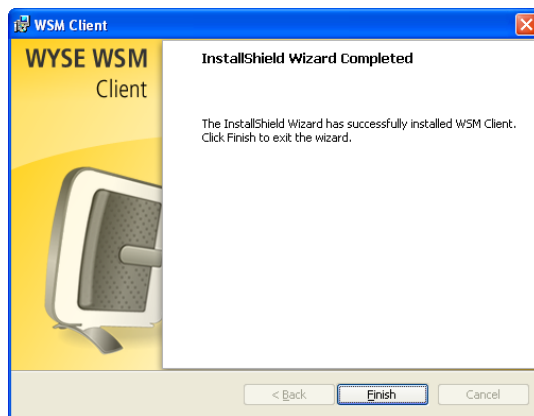
9. Use the following guidelines to complete the *WSM Client Config Wizard*:
- Enter the *Authentication Server Info IP Address* to be used by the *WSM OS Authentication Service* (this address is the same as the *Core Server*). The default *Port* information is automatically entered.
 - Enter the *Imaging Server Info IP Address* to be used by the *WSM OS Streaming Service* (this address is the same as the *Authentication Server Info IP Address*). The default *Port* information is automatically entered.
 - Enter the *Web Server Info Port* address, if necessary. This is the port on which the Web server runs. The default is entered automatically.
 - Enter the *IOS Max Packet Length*. This is the maximum data size of OS streaming packets sent from the server to the client; the default value is 1420. If your network requires a custom MTU (Maximum Transmission Unit) for IP packets (to meet encryption or other types of requirements), you can adjust this number to restrict the size of the packets. Set the value to 1370 to yield an MTU of 1398 (the maximum OS streaming data size [1370], plus the UDP header size [8], plus the IP header size [20]). Matching this value to the OS Streaming Max Packet Size registry setting on WSM servers is recommended.

**Note**

The default *Client Info IP Address* and *Port*, *Subnet Mask*, and *Gateway IP Address* are automatically entered.

- Click **OK** to close the *WSM Client Config Wizard* and open the *InstallShield Wizard Completed* window.

Figure 28 InstallShield Wizard Completed - WSM Client



10. Click **Finish** to close the *InstallShield Wizard*.
11. After completing the procedures in this section, restart the system (escape out of the network boot by pressing **ESC**). You now have the Windows OS Image you need (including the WSM Client software, and if necessary, the device drivers) for your WSM environment on the *Reference Device*.
12. Continue with "Capturing the OS Image from the Reference Device to the Core Server."

Capturing the OS Image from the Reference Device to the Core Server

✓ Note

Be sure you comply with all Microsoft operating system licensing requirements before capturing and streaming your Windows OS.

After installing the WSM Client software, you must capture the OS Image from the *Reference Device* to the Core Server for streaming.

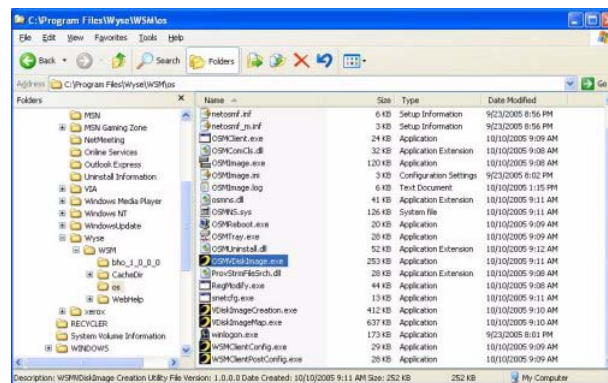
✓ Note

Be sure you have all peripherals you want to use (for example, keyboard, mouse, printers and so on) connected *before* you begin capturing the OS Image to the Core Server.

Use the following guidelines:

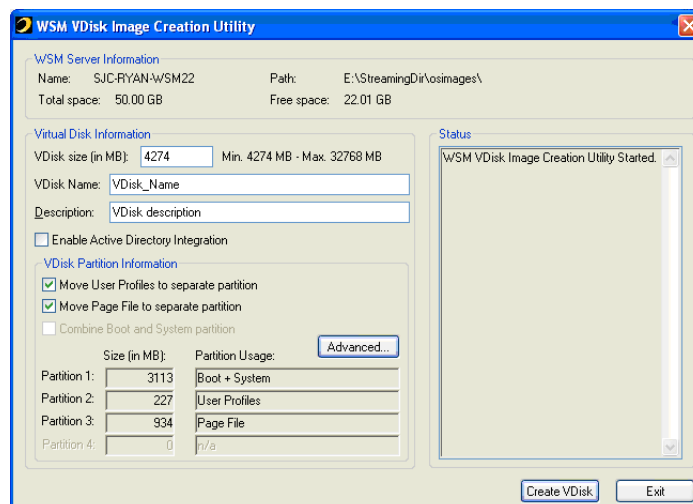
1. After installing the WSM Client software, locate *OSMVDiskImage.exe* (the default location is *C:\Program Files\Wyse\WSMos*).

Figure 29 OSMVDiskImage.exe



2. Double-click the **OSMVDiskImage.exe** to open the *WSM VDisk Image Creation Utility* window.

Figure 30 WSM VDisk Image Creation Utility



3. Use the following guidelines:

- Enter the *VDisk size* in MB (if you are running in *Shared* mode, the maximum virtual disk size is 32 GB).
- Enter a *VDisk Name*.
- (Optional) Enter a *Description* for the disk.
- Depending on whether or not you want to integrate WSM with *Active Directory*, select or clear the **Enable Active Directory Integration** check box.
- Depending on whether or not you want to move the *User Profiles* to a separate partition, select or clear the **Move User Profiles to a separate partition** check box.

**Note**

In previous versions of WSM, if the base OS image was updated, all user information was lost because the write cache had to be discarded. WSM 3.0 or later has the ability to separate the user data from the system information by placing the *User Profiles* folder on a different partition. This enhancement allows user profiles and data to persist even when the base OS image is updated. If you select this option, the WSM VDisk Image Creation Utility will automatically calculate a size for the new partition based on the specified size for the entire VDisk. When the *Move User Profiles to a separate partition* option is used, the resulting VDisk contains two partitions. Each of these partitions has its own cache mode so that you can control how data is stored on each partition. If the system partition is updated, the information in the *User Profile* partition is treated as still valid and will be kept. When capturing a VDisk with the *Move User Profiles to separate partition* option selected, a reboot is required to finish the VDisk creation.

- Depending on whether or not you want to move the *Page File* to a separate partition, select or clear the **Move Page File to a separate partition** check box.

**Note**

With WSM 3.0 or later you can also move the *Page File* to a separate partition of the VDisk. This allows excluding updates to the *Page File* when performing OS patching, resulting a smaller patch file to be distributed to the streaming servers.

- Use the **Advanced** command button to open a dialog box allowing you to modify the sizes of the partitions.

**Note**

The WSM VDisk Image Creation Utility calculates the minimum required size for the VDisk and will not allow you to create a VDisk that is smaller than this required size.

- Click **OK** to begin building the virtual disk.

After building is complete, the *Done* message appears in the *WSM VDisk Image Creation Utility* window.

4. Click **Finish** to complete the OS Image capturing process.

What's Next

Depending on what you need for your WSM environment, do one of the following:

- If you *do not* want to create a *Linked Site* or install Edge Servers, you are finished with WSM installation and must now use the *WSM Administrator Console* to “register” (add) the OS Image to the WSM system and assign it to your WSM Servers and devices for streaming. For information on using the *WSM Administrator Console*, refer to the *Administrators Guide: Wyse WSM™*.

**Note**

This is *recommended for users who want a standard WSM environment*.

- If you want to create a *Linked Site* to be controlled by an existing *Headquarters*, continue with "Installing and Configuring the WSM Core Server."

**Caution**

Before you create a *Linked Site*, be sure you have configured your IIS Server to enable SSL on IIS so that WSM Sites can use merge replication over HTTPS (see “What’s Next” on page 22).

- If you want to install Edge servers for use with a Core Server, continue with "Installing and Configuring a WSM Edge Server."

7

Installing and Configuring a WSM Edge Server

This chapter provides the detailed procedures you must complete to install a WSM Edge Server. Although you can select custom installation configurations during the installation, it is recommended that you use the default configurations.



Note

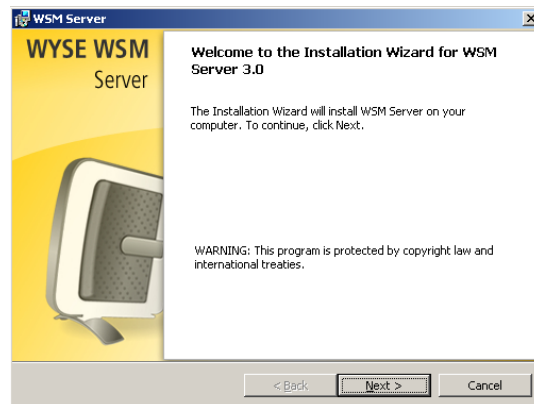
Be sure you have completed all pre-installation requirements as described in "Preparing for Installation" and installed the WSM Core Server *before* you begin installing a WSM Edge Server.

Installing a WSM Edge Server

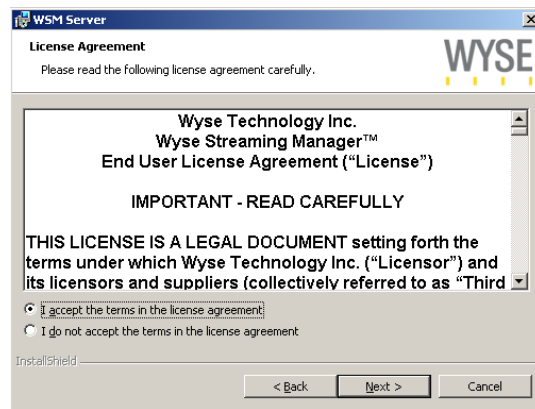
Use the following guidelines:

1. Double-click **WSMServer.exe** to open the Welcome window.

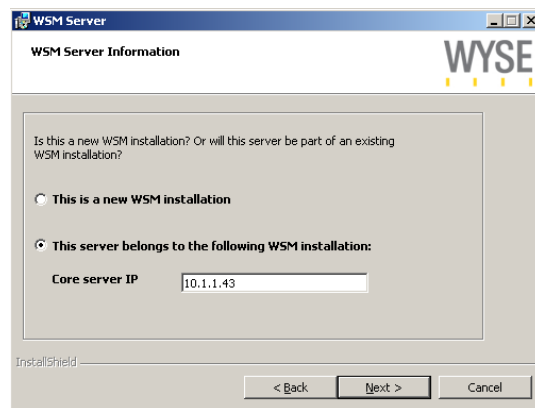
Figure 31 Installation Wizard - Edge Server



2. Click **Next** to open the *License Agreement* window.

Figure 32 License Agreement - Edge Server

3. After reading the agreement, select the **I accept the terms in the license agreement** option and click **Next** to open the *WSM Server Information* window.

Figure 33 WSM Server Information - Edge Server

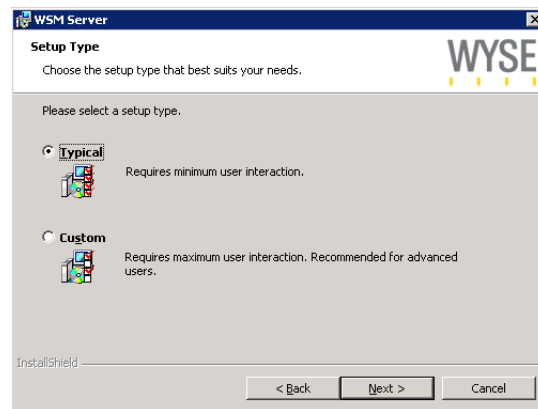
4. Select the **This server belongs to the following WSM installation** option and enter the *Core server IP* address for connection to the Core Server.
5. Click **Next** to open the *Setup Type* window.

**Note**

If the WSM Edge Server cannot connect to the Core Server Registry (for example, the remote registry is disabled on the Core Server for security reasons), then a warning message appears.

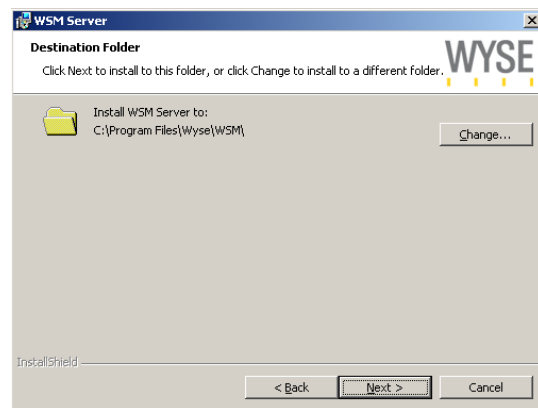
Figure 34 Warning message - Edge Server

Click **OK** to close the warning message and open the *Setup Type* window.

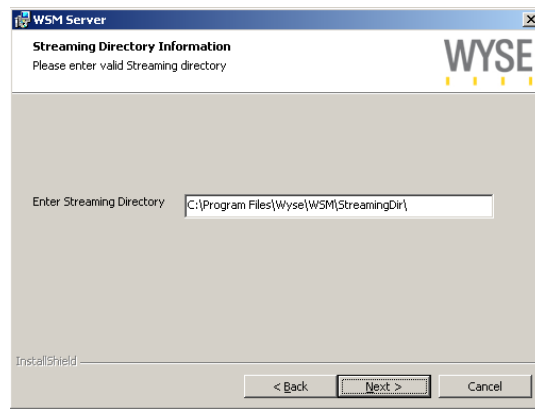
Figure 35 Setup Type - Edge Server

6. Depending on the setup you want, complete one of the following:

- (Recommended) If you want to use the default *Destination Folder*, default *Streaming Server*, and default *Database Server*, select the **Typical** option, and then click **Next** to open the *Database Server and Authentication Method* window and continue with step 10 (for default values used in the **Typical** option, refer to steps 7, 8, and 9).
- If you want to select your own *Destination Folder*, *Streaming Server*, and *Database Server*, select the **Custom** option, and then click **Next** to open the *Destination Folder* window and continue with step 7.

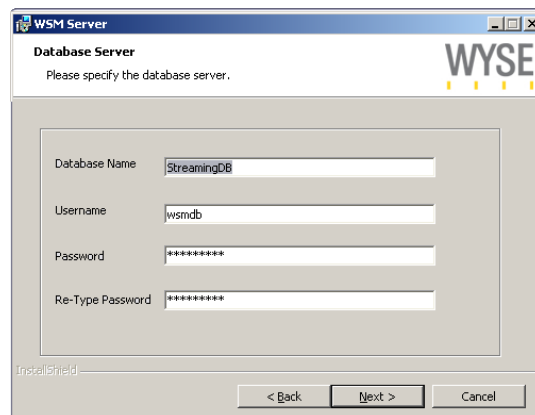
Figure 36 Destination Folder - Edge Server

7. Click **Next** to accept the default *Destination Folder* (*C:\Program Files\Wyse\WSM*) and open the *Streaming Directory Information* window.

Figure 37 Streaming Directory Information - Edge Server**Note**

The *Streaming Directory* is where the Write Cache files, OS Images, and Application Images will be stored.

8. Click **Next** to accept the default *Streaming Directory* (*C:\Program Files\Wyse\WSM\StreamingDir*) and open the *Database Server* window.

Figure 38 Database Server - Edge Server

9. Use the following guidelines:

- Enter the *Database Name* to use for the SQL server (default is **StreamingDB**).

**Note**

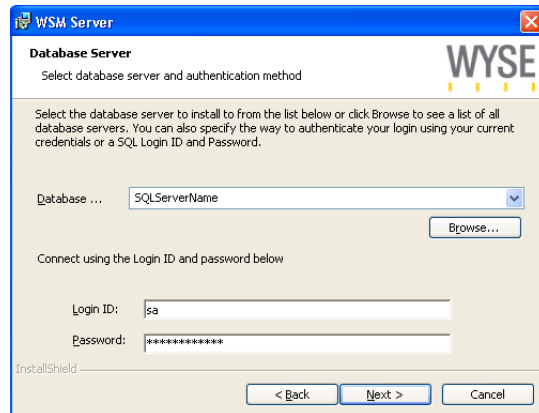
Do not use special characters for the *Database Name*.

- Enter the *Username* for the database (default is **wsmdb**).
- Enter the *Password* for the database (default is **password@123**).
- Confirm the password by re-typing it in the **Re-Type Password** box.

**Warning**

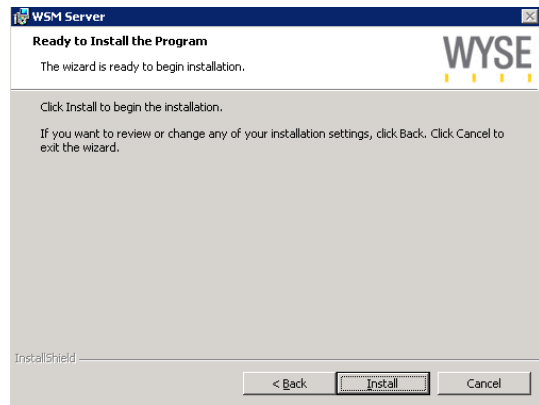
Be sure to use the same information that you entered in the *Database Server* window when you installed your Core Server as described in "Installing the WSM Core Server."

- Click **Next** to open the *Database Server and Authentication Method* window.

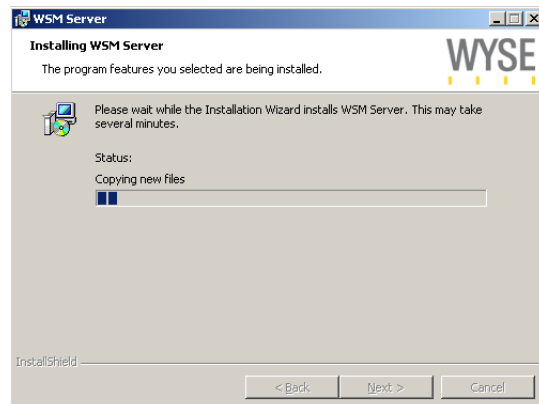
Figure 39 Database Server and Authentication Method - Edge Server

10. Use the following guidelines:

- **CAUTION:** Be sure to enter the *SQL Server Name* in the **Database** box (do not use (local)).
- Enter the *Login ID* and *Password* needed to connect to the database server in the appropriate boxes.
- Click **Next** to open the *Ready to Install the Program* window.

Figure 40 Ready to Install the Program - Edge Server

11. Click **Install** to begin the installation.

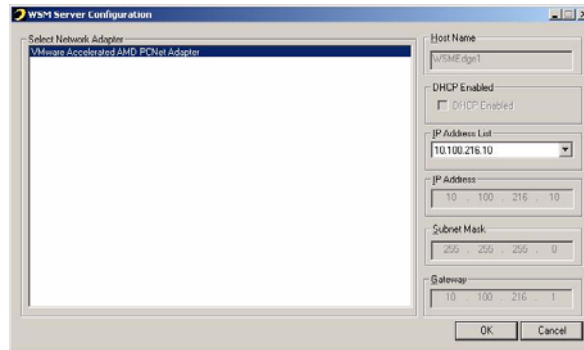
Figure 41 Installing WSM Edge Server

**Caution**

Do not interrupt the installation.

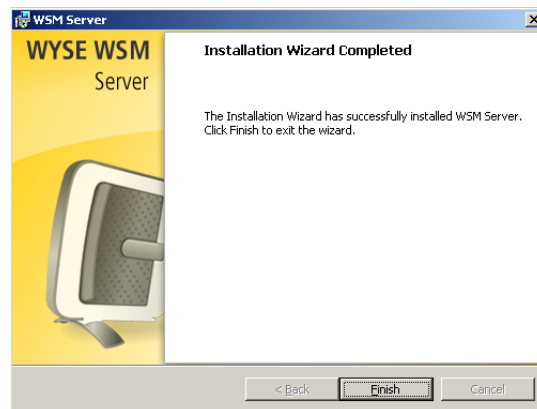
During the installation, the *WSM Server Configuration* window opens.

Figure 42 WSM Server Configuration dialog box - Edge Server



12. Select the *Network Adapter* to use, select the *IP Address list* to use, and then click **OK** to save the configurations, close the *WSM Server Configuration* window, and open the *Installation Wizard Completed* window.

Figure 43 Installation Wizard Completed - Edge Server



13. Click **Finish** to close the *Installation Wizard*.
14. Continue with "Starting the Edge Server Services."

Starting the Edge Server Services

After you successfully install a WSM Edge Server, you must use the *WSM Administrator Console* to start the services on the Edge Server.

Use the following guidelines:

1. Open the *WSM Administrator Console* login page by clicking **Start | WSM Server | WSM** on the machine to which you have installed the WSM Core Server related to the Edge Server (you can also open a Web browser from any machine with access to the WSM Core Server and go to: `http://<ipaddress>:8080/admin/`).
2. Enter the *Admin Username* (default is **admin**) and *Password* (default is **admin**) and click **Login** to open the *Administrator Console*.
3. Click the **Servers** tab, and then click the *Name* link of the Edge Server to open the *Edge Server Details* page.

Figure 44 Core Server Details page - Creating an Edge Server

The screenshot shows the WSM Administrator Console interface. At the top, there is a navigation menu with tabs for Overview, Site Groups, Sites, Operating Systems, Applications, Server Groups, Servers, Device Groups, Devices, User Groups, Users, System Settings, and Reports. The 'Servers' tab is selected, and the 'SERVER DETAILS' page is displayed for the server 'WYSM-SITEB-E1'. The page includes a 'Manage server' button and a 'SERVER DETAILS FOR WYSM-SITEB-E1' form. The form contains the following fields:

- Name: WYSM-SITEB-E1
- Type: Streaming Server
- Description: (empty text box)
- IP Address: 10.200.221.54
- Streaming Directory: E:\WYSMStreamingDir
- Status: Up

Below the form is a 'SERVICES' table with the following columns: Service Name, Port, and Status (Start All / Stop All). The table lists the following services:

Service Name	Port	Status (Start All / Stop All)
OS Authentication Service	6910	Up Stop View Log
OS Streaming Service	6911	Up Stop View Log
Application Authentication Service	8002	Up Stop View Log
Application Streaming Service	8001	Up Stop View Log
Monitor Service	5000	Up Stop View Log
Content Distribution Service	20248	Up Stop -
Multicast Boost Service	10703	Up Stop View Log
DHCP Proxy Service	67	Up Stop -
TFTP Service	69	Up Stop -

4. Click the **Start All** link next to the *Status* list to start all services on the Edge Server (*Status* is *Up* on each service).

What's Next

Depending on what you need for your WSM environment, do one of the following:

- If you want to install and configure additional Edge Servers, repeat the procedures in "Installing a WSM Edge Server."
- If you *do not* want to install and configure additional Edge Servers, you are finished with WSM installation and can configure the rest of the WSM system according to your environment needs by following the appropriate procedures in the *Administrators Guide: Wyse WSM™*. For example, you may want to use the *WSM Administrator Console* to "register" (add) the OS Image to the WSM system and assign it to your WSM Servers and devices for streaming.

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8

System Maintenance

This chapter contains information to help you successfully maintain your WSM system.

Managing Passwords Used by WSM

WSM uses three sets of username and password credentials. Use the following guidelines to manage the passwords used by WSM:



Caution

It is strongly recommended to use an appropriate password security policy.

- **WSM Database** – If you need to change the database user account password (default is *password@123*), you must change the account password on the database itself and then restart the *WSM Administration Web Service* (on the server go to **Start | Administrative Tools | Services**, right-click **WSM Administration Web Service**, and click **Restart**). The next time you login to the *Administrator Console*, the *Database Configuration* page displays allowing you to edit the database configurations (including the user account *Password*). After changing the database configurations you must restart all services on all servers for the changes to take effect (see *Administrators Guide: Wyse WSM™*).
- **Windows Service** – If you change the Windows system password for the administrator user account and it affects any WSM services, then you must update any affected WSM service listed in the *Windows Services Console*. For example, if the *WSM Administration Web Service* is started by that administrator user account, then you must change the password in the **Properties** dialog box of the *WSM Administration Web Service* (on the server go to **Start | Administrative Tools | Services**, right-click **WSM Administration Web Service**, click **Properties**, click the **LogOn** tab, and then enter and confirm the new password for the account).
- **WSM Administrator Console** – To change the administrator account password for the *WSM Administrator Console*, login to the *Administrator Console*, click the **System Settings** tab, click the **Change Admin Password**, and use the *Change Admin Password* page.

Backing Up the WSM Database for System Recovery

It is highly recommended that you back up the *WSM Database* for system recovery purposes. WSM stores all system, topology, user, application, and usage data in the *WSM Database*. By backing up the *WSM Database* you can recover all WSM system data. Use standard backup procedures common to database servers. For fault-tolerant systems, it is also recommended to replicate the database for fail-over.

About WSM Server Services

Each WSM server (Core Server or Edge Server) provides these services:

- **WSM Administration Web Service** - Provides an administration interface (*Administrator Console*) for WSM.
- **OS Authentication Service** - Prevents unauthorized devices from connecting to the WSM system. It informs each device which OS Image it is configured to receive.
- **OS Streaming Service** - Responds to OS Image requests from client devices.
- **Application Authentication Service** - Manages and tracks application licenses; meters application usage.
- **Application Streaming Service** - Services end-user application client requests.
- **Monitor Service** - Monitors and controls the WSM services on the WSM server. This service detects errors and outages, allows you to stop and start the servers, and monitors server load.
- **Content Distribution Service** - Synchronizes the repositories of OS Images and Application Images between the Core Server and remote servers.
- **Multicast Boot Service** - Multi-casts an OS Image to devices when the system is set up to provide the OS Image in multi-cast mode.
- **DHCP Proxy Service** - Responds to requests from PXE devices; prevents WSM servers from responding to PXE requests from “outside” devices that are not part of the WSM system.
- **TFTP Service** - Allows for thin client booting, data transfer, and so on.

Understanding and Using the Log Files of WSM

Errors pertaining to WSM and related components are logged to the *System Event Viewer*. Descriptions of errors regarding licensing, server connections, database problems, configuration errors, and so on, are available through the *System Event Viewer*.

WSM stores log files in the *WSM Database* and on your file system. These files have a set size limit (default is 10,000,000 bytes) and will rollover when they become larger than the limit (making the system self-maintaining).

The *Profile Log* is a log of communication statistics on the server side providing information on how long the request queue is at a given time, the effective bandwidth amount of requests received so far, and the type of requests received so far. It is located at the */server-install/log* folder with the name in the format of:

```
prof-<erver-id>-<random>.txt. Format: Date [universal-time]
[start-time] [delta-time] [request-count] [S/M] [CLIENT/CACHE]
[IP address] [app-id] [fileID,pageID] (S=single, M=multiple)
```

About WSM System Monitoring

WSM includes built-in monitoring tools that can be used to watch and check the health of the WSM system. After login to the *Administrator Console*, the *System Overview* page appears allowing you to quickly view important summary information for each functional area of the WSM system. The *System Overview* page also provides links to all of the functional areas so you can easily perform many of the administrator duties that are required to run and maintain your WSM environment. For example, the *System Overview* page allows you to quickly see that a server requires your attention (as WSM notes this server issue in the *Requires Attention* area) and provides you a link to the server page that you need to address the issue.

For fault-tolerant provider systems, it is recommended to have system hardware monitoring in place. Third-party system monitoring software can be configured to watch and report on system status, including:

- Ping availability and response times
- % CPU Utilization
- Memory Available
- Bandwidth consumption

The following list provides a few examples of system monitoring software:

- Tivoli by IBM
- Big Brother by Quest software
- Nagios by Nagios
- Performance Monitor by Microsoft

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9

Upgrading WSM

This chapter provides the detailed procedures you must complete to upgrade your WSM system from a previous version.



Note

Upgrading WSM will upgrade your existing environment as it is currently designed. For example, upgrading WSM 2.x to WSM 3.0 will keep your Core Server installation as a “Stand-Alone” installation or “Site” (in WSM 3.0 terms—see “Pre-Installation Checklist”). To implement the new WSM 3.0 *Sites* feature, you must first upgrade to WSM 3.0, and then follow the instructions on creating the Sites you want as described in this guide and in the *Administrators Guide: Wyse WSM™*.

Preparing for Upgrade Installation

Use the following guidelines:

1. Back up the *WSM Database* in your current system *before* you begin the upgrade process.
2. Schedule the upgrade for a time when you can upgrade all of the servers at the same time.
3. Ensure that all devices are shut down during the upgrade process.

Performing the Upgrade

You *must* perform the upgrade installations in the following order:

1. Core Server (see “Upgrading the Core Server and Edge Servers”).
2. All current Edge Server installations (see “Upgrading the Core Server and Edge Servers”).
3. All current Client installations (see “Upgrading WSM Client Components”).



Note

Application Images *do not* require upgrading. All Application Images of previous WSM versions are compatible with the new WSM version.

Upgrading the Core Server and Edge Servers

A WSM upgrade consists of a single installation package (**WSMServer.exe**) that you must use on *first* the Core Server and *then* each Edge Server that you currently have installed. Simply download the installation package to each server, and then double-click **WSMServer.exe** to open and use the installation wizard.

During an upgrade, the installation:

1. Checks the server for an existing installation of WSM.
2. Prompts you for an upgrade confirmation after discovering that previous WSM components are installed.
3. Prompts you for confirmation of the existing database settings.



Caution

It is recommended that you select the existing database settings and *not* change them at this time. If you must change the location of the database, you must completely uninstall your current WSM installation (see "Uninstalling: How to Uninstall WSM Software"), and then install the new WSM version according to the instructions in this guide.

4. Removes the existing version of WSM components.



Warning

During the upgrade for the servers, a message may appear informing you that a reboot is needed after the existing WSM components have been removed. *Do not* reboot the servers at this time. Click **OK** to close the message.

5. Installs the new version of WSM components.
6. Retains the previously existing WSM settings.
7. Adds default values for the new WSM features that are available.



Note

After the upgrade is successfully completed, a message will appear prompting you to reboot so the new WSM components can be used from the servers. You must reboot the servers at that time.

8. After upgrading the Core Server and all Edge Servers, continue with "Upgrading WSM Client Components."

Upgrading WSM Client Components

WSM Client upgrade installation takes place on each *Reference Device* you currently have reserved for administrator *Reference Device* use only (as discussed in "*Preparing the Reference Device Used for WSM Client Installation*"). For example, if you use multiple types of Wyse thin client products in your WSM environment, then you must "upgrade" each *Reference Device* accordingly (you will assign the OS Images to the clients for which they were created using the WSM *Administrator Console* later, as described in the *Administrators Guide: Wyse WSM™*).

 **Caution**

For WSM Client upgrading, it is highly recommended that you use the *Reference Device* reserved for administrator *Reference Device* use only. Keeping a "clean" *Reference Device* can facilitate installations, deployments, patches, and OS Image testing.

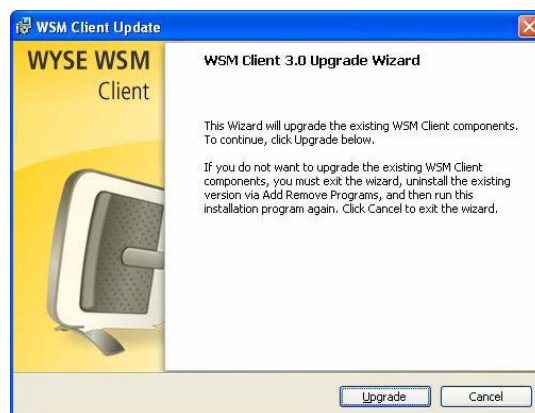
 **Note**

Be sure you have completed all *Reference Device* requirements as described in "*Preparing the Reference Device Used for WSM Client Installation*" before you begin upgrading WSM Client components. This is a good time to consider "refreshing" your *Reference Device* after backing it up. For example, if you want to update the operating system version you currently use in your WSM 2.x environment (for example, Windows XP Professional SP 2 to Windows XP Professional SP 3) at the same time as you upgrade WSM 2.x to WSM 3.0, you can install Windows XP Professional SP 3 on the *Reference Device* (as described in "*Preparing the Reference Device Used for WSM Client Installation*") before you upgrade the WSM Client components using the procedures in this section.

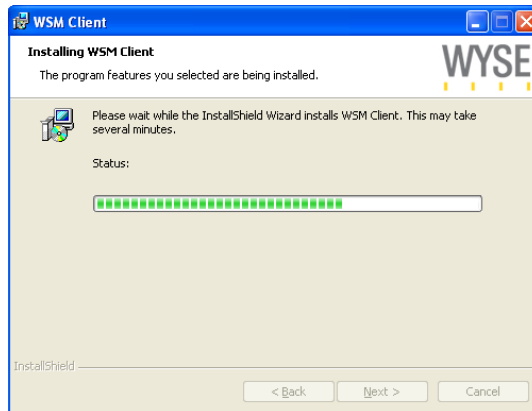
Use the following guidelines:

1. After downloading the WSM Client software to each *Reference Device* you use, double-click **WSMClient.exe** to open the *WSM Client Upgrade Wizard* (the software automatically determines whether or not the installation is an upgrade).

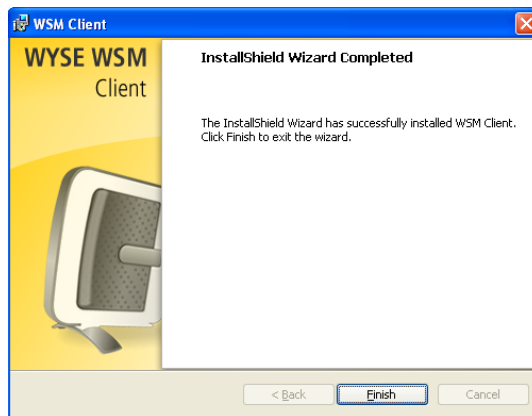
Figure 45 WSM Client Upgrade Wizard



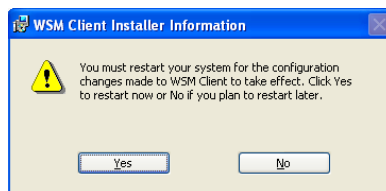
2. Click **Upgrade** to start the installation.

Figure 46 Installing WSM Client - Upgrade

After installation is complete, the *InstallShield Wizard Completed* window appears.

Figure 47 InstallShield Wizard Completed - WSM Client Upgrade

3. Click **Finish** to close the wizard and open the *WSM Client Installer Information* message prompting you to restart your system so that configuration changes made to *WSM Client* can take effect.

Figure 48 WSM Client Installer Information - Upgrade

4. Click **Yes** to restart your system.

**Note**

What's Next: After completing the WSM Client upgrade you can continue with capturing the OS Image from the *Reference Device* to the Core Server for streaming as described in this guide (see "Capturing the OS Image from the Reference Device to the Core Server") and in the *Administrators Guide: Wyse WSM™*.

10 Troubleshooting

This chapter contains information and help on installation, setup, conflicts, and general troubleshooting. For a complete list of error codes and descriptions, refer to "Error Codes."

This chapter includes:

- "Active Directory: Connection Error Messages when Enabling Active Directory"
- "Audio: Solving Audio Problems in the Streaming Environment"
- "Core Server: Verifying that WSM Core Server Services are Running"
- "Database: Verifying that the WSM Database is Operational and Configured Correctly"
- "Hostname and IP Address: Performing Changes"
- "HTTP Error:404 /admin/ not found RequestURL=/admin/ powered by jetty"
- "Network Device: Error Messages when Adding a Network Device from Active Directory"
- "ODBC: Verifying that the ODBC is Operational and Configured Properly"
- "OS Image: Capturing an OS Image after Cancelling the Capture Process"
- "OS Image: Reconfiguring an OS Image"
- "WSM Services: Verifying a Successful Installation by Viewing the WSM Services"
- "Uninstalling: How to Uninstall WSM Software"

Active Directory: Connection Error Messages when Enabling Active Directory

Problem: After enabling and configuring *Active Directory* for the first time (as described in "Using the Configuration Wizard"), clicking **Finish** produces an error stating that *Active Directory* cannot be connected.

Solution: Use the following procedures:

- Be sure that the Core Server and the *Active Directory* server are part of the Domain *before* the administrator of the local system begins installing the WSM Core Server.
- Ensure that the display name for the *Active Directory* User is the same as the user name used for connecting to *Active Directory*.
- Ensure that you can ping the Domain (for example, *wsm.com*).

Audio: Solving Audio Problems in the Streaming Environment

Problem: All non-administrator users on the locally streamed OS Image are having audio problems.

Solution: Use the following procedures:

1. Shut down all client devices booted from this OS Image.
2. Change the OS Image mode to **No Cache (Private Mode)** using the *Administrator Console* (for procedures on editing an OS Image, refer to the *Administrators Guide: Wyse WSM™*).
3. Boot one client device from the OS Image in **No Cache (Private Mode)**.
4. Login to the client device as an administrator and set the registry values as follows:
A *DWORD* value named *SType* must be created and set to 19601 (decimal) in both of the following keys:
 - HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Efsd\
 - HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\OTFileSpoofers\
5. Shut down the client device.
6. Change the OS Image mode back to either **Persistent Cache (Shared Mode)** or **Volatile Cache (Shared Mode)** using the *Administrator Console* (for procedures on editing an OS Image, refer to the *Administrators Guide: Wyse WSM™*).
7. Login as a non-administrator user, and verify that the audio is working properly.

Core Server: Verifying that WSM Core Server Services are Running

To verify that WSM Core Server services are running (if using *Headquarters* and *Linked Sites*, be sure to also verify Core Servers on all *Linked Sites*):

1. Log in to the WSM *Administrator Console*.
2. Click the **Servers** tab to open the *Servers* page.
3. Click the *Name* link of the Core Server to open the *Server Details* page.
4. Ensure that the Core Server *Services* are successfully running (*Status* is *Up* on each service). If necessary (any service *Status* is *Down*), click the **Start All** link next to the *Status* list to start all services on the Core Server.

Database: Verifying that the WSM Database is Operational and Configured Correctly

To verify that the *WSM Database* is operational and configured correctly:

1. Using SQL Server *Enterprise Manager*, verify that the *StreamingDB* database exists. To verify that SQL Server user account *wsmdb* is set up correctly, open *Enterprise Manager*, expand your SQL Server tree to expand the *Security* folder, click **Users**, verify that *wsmdb* exists and that it has the proper permissions (by right-clicking the *wsmdb* name, selecting **Properties**, clicking the **Database Access** tab, selecting **StreamingDB**, and then verifying that the **db_owner** and **Public** boxes are selected).

2. Verify that the *ODBC Connection* is configured correctly:
 - a. Open the **Control Panel**, choose **Administrative Tools**, and click **Data Sources (ODBC)**.
 - b. Click on the **System DSN** tab, enter **StreamingDB**, and then click **Configure** to open the **Microsoft SQL Server DSN Configuration** dialog box.
 - c. Click **Next**, and then click **Client Configuration**. to open the **Add Network Library Configuration** dialog box.
 - d. Select the **TCP/IP** option, enter the appropriate IP information for your SQL Server, and then click **OK**.
 - e. Click **Next** to finish establishing the ODBC database connection.
 - f. Click **Test Data Source**, and then click **Next** to determine whether the ODBC connection has been set up correctly (you should see the *Tests Completed Successfully* message to know that the server installation setup is now complete).

Hostname and IP Address: Performing Changes

If the Hostname or IP Address of a server is changed, WSM will attempt to automatically detect and reconfigure itself:

- **IP address of a Core Server or an Edge Server is changed** — If the IP address of a Core Server or an Edge Server changes, there is an automatic update of the corresponding WSM Data. If for any reason this automatic update fails, a message is displayed in the *Overview* page of the *Administrator Console* to reflect this inconsistency. In this situation, you must reconfigure the system manually according to your required configurations (for configuration guidelines, refer to the *Administrators Guide: Wyse WSM™*).
- **Name of a Core Server or an Edge Server is changed** — If the name of a Core Server or an Edge Server changes, there is an automatic update of the corresponding WSM Data. If for any reason this automatic update fails, a message is displayed in the *Overview* page of the *Administrator Console* to reflect this inconsistency. In this situation, you must reconfigure the system manually according to your required configurations (for configuration guidelines, refer to the *Administrators Guide: Wyse WSM™*).
- **Hostname of the SQL Server machine is changed** — If the hostname of the SQL Server machine is changed, SQL Server must be reconfigured to continue to function correctly. If your SQL Server is on the same machine as your WSM Server software and you have used the default WSM password (**password@123**), then WSM will automatically reconfigure the SQL Server. If for any reason this automatic update fails, or SQL Server is installed on a different machine than your WSM Server software, a message is displayed in the *Overview* page of the *Administrator Console* to reflect this inconsistency. Use the link provided in this message to open a page where you can enter a username and password and make this update manually. WSM will then reconfigure SQL Server.

HTTP Error:404 /admin/ not found RequestURL=/admin/ powered by jetty

Problem: You are logging in to the *Administrator Console* and you encounter the following error message:

"HTTP Error:404 /admin/ not found RequestURL=/admin/ powered by jetty."

Solution: Use the following procedures in the order presented:

1. Ensure your *WSM Administration Web Service* is running (see "WSM Services: Verifying a Successful Installation by Viewing the WSM Services"). If you still encounter the error, go to Step 2.
2. Ensure that your database is correctly configured and running. If you still encounter the error, go to Step 3.
3. Open the registry at `HKLM\System\CurrentControlSet\Services\WSMAdminService`, add a multi-string key called `DependOnService`, set the value to `MSSQLSERVER`, and then reboot the Core Server.

Network Device: Error Messages when Adding a Network Device from Active Directory

Problem: You are trying to add a *Network Device* from the *WSM Administrator Console* and you encounter an error message.

Solution: Use the following procedures in the order presented:

1. Ensure that the *Network Device* is created in *Active Directory*.
2. If you are using *Active Directory* integration *without* SSL, change the *OS Authentication Service* to run using a user account with *Account Operator* credentials.
3. Ensure that the *Active Directory* connection *Status* is *Up*.

ODBC: Verifying that the ODBC is Operational and Configured Properly

To allow communication between the WSM Server and the database, the installer creates and configures an Open Database Connectivity (ODBC) connection. Use the following guidelines to verify that the ODBC Data Source is configured properly:

1. Open the **Control Panel**, choose **Administrative Tools**, and click **Data Sources (ODBC)**.
2. Click on the **System DSN** tab and click **Configure** to open the **Microsoft SQL Server DSN Configuration** dialog box.
3. In the *Name* box, enter **StreamingDB**; in the *Which SQL Server do you want to connect to?* box, enter the IP address of your SQL Server; and then click **Next**.
4. Select the **With SQL Server authentication using a login ID and password entered by the user** option (for the question: *How should SQL Server verify the authenticity of the login ID?*).
5. In the *Login ID* box, enter **wsmdb**; in the *Password* box, enter the password for **wsmdb**; then click **Next**.

6. Select the **Change the Default Database To** check box, select **StreamingDB** in the list, and then click **Next**.
7. Click **Next** to finish establishing the ODBC database connection.
8. Click **Test Data Source**, and then click **Next** to determine whether the ODBC connection has been set up correctly (you should see the *Tests Completed Successfully* message to know that the server installation setup is now complete).

OS Image: Capturing an OS Image after Cancelling the Capture Process

Problem: A user cancels the OS Image capture process and then cannot restart the capture process again.

Solution: Reboot the *Reference Device* to the hard disk, and then start the OS Image capture process again as described in "Capturing the OS Image from the Reference Device to the Core Server."

OS Image: Reconfiguring an OS Image

If you want to copy or move an OS Image from one Core Server (for example, a lab environment) to another Core Server (for example, a production server), then that OS Image must first be reconfigured. Similarly, if you want to change the current *Active Directory* integration mode (*Enabled* or *Disabled*), then that OS Image must be reconfigured.



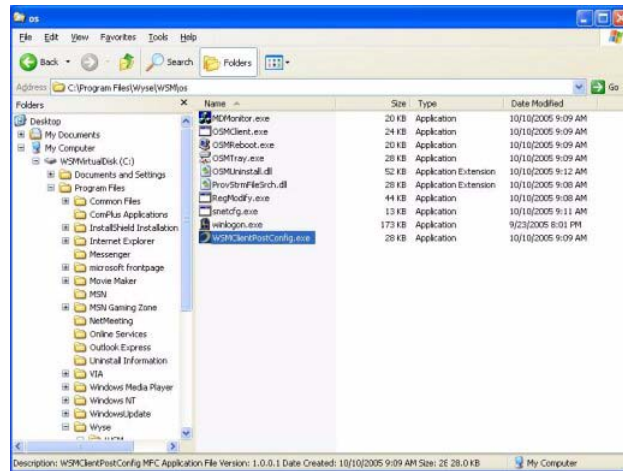
Note

The reconfiguration procedures must be done on a client machine that has been booted from this OS Image in **No Cache (Private Mode)**. For procedures on adding an OS Image and assigning it to a server, refer to the *Administrators Guide: Wyse WSM™*.

To reconfigure an OS Image:

1. (This step is only required if you want to change the current *Active Directory* integration from *Disabled* to *Enabled*) Join the OS Image to the Domain you specified (when you added the OS Image using the *Administrator Console*) by using the Microsoft procedures for joining a Domain, reboot the system, and then continue with Step 2.
2. Login as a user with administrator privileges on the *Reference Device* and locate *WSMClientPostConfig.exe* (default location is *C:\Program Files\Wyse\WSM\os*).

Figure 49 WSMClientPostConfig.exe



3. Double-click the **WSMClientPostConfig.exe** file to open the *WSM Client Post Configuration* window.
4. Use the following guidelines:
 - Depending on whether or not you want to integrate WSM with *Active Directory*, select or clear the **Enable Active Directory Integration** check box.
 - If you want to change the WSM Core Server settings, select the **WSM Core Server settings** check box and enter the new IP Address of the Core Server, and Port settings of the WSM OS Streaming Server.
 - Click **OK**.
5. Shut down the *Reference Device*.
6. Log in to the *Administrator Console* and edit the OS Image so that either the **Persistent Cache (Shared Mode)** or **Volatile Cache (Shared Mode)** option is selected for *Mode*. For procedures on editing an OS Image, refer to the *Administrators Guide: Wyse WSM™*.
7. If the intention of this reconfiguration was to move the OS Image to a different Core Server, the OS Image can be now copied to that new Core Server, and added to the new Core Server using the *Administration Console*. For procedures on adding an OS Image to a server, refer to the *Administrators Guide: Wyse WSM™*.

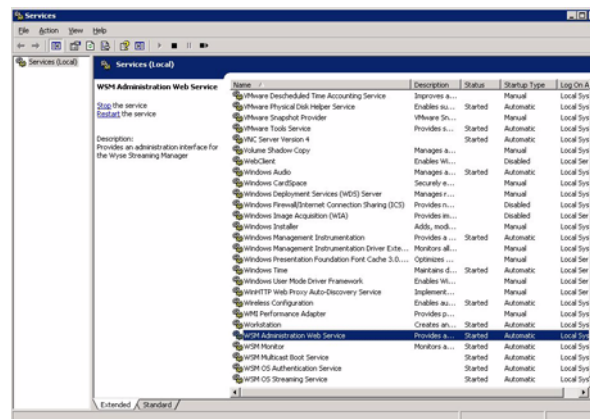
After completing the procedures in this section the OS Image is ready to be used by multiple client machines.

WSM Services: Verifying a Successful Installation by Viewing the WSM Services

A successful installation can be verified by:

- Clicking **Start | Control Panel | Administrative Tools | Services**, and viewing that the following services are running in the *Services* folder (to start, stop, or restart a service, right-click on the service file and select the option you want from the menu):
 - WSM Administration Web Service** - Provides an administration interface for WSM (*Administrator Console*).
 - WSM Monitor** - Monitors and controls WSM services on the machine to which it is loaded.
 - WSM Multicast Boot Service** - Allows you to multi-cast the operating system information to devices when the system is setup to provide the OS Image in multi-cast mode.
 - WSM OS Authentication Service** - Allows you to manually start and stop the authentication service for WSM.
 - WSM OS Streaming Service** - Allows you to manually start and stop the streaming service for WSM.

Figure 50 Services folder and WSM files



- Logging in to the *WSM Administrator Console*, clicking the **Servers** tab to open the *Servers* page, clicking the *Name* link of the Core Server to open the *Server Details* page, and viewing that the following services are running (to start or stop services, click the appropriate *Start*, *Stop*, *Start All*, *Stop All* link available for the services):
 - OS Authentication Service** - Allows you to manually start and stop the authentication service for WSM (same as **WSM OS Authentication Service** in the *Services* folder).
 - OS Streaming Service** - Allows you to manually start and stop the streaming service for WSM (same as **WSM OS Streaming Service** in the *Services* folder).
 - Application Authentication Service** - Manages subscriber licenses and metering application usage.
 - Application Streaming Service** - Services end-user application client requests.
 - Content Distribution Service** - Allows you to synchronize the repositories of OS and Application images between the Core and remote servers.

- **DHCP Proxy Service** - Allows you to prevent any unauthorized devices from connecting to the WSM system. It also prevents WSM from responding to other PXE requests from devices that are not part of the WSM system.
- **TFTP Service** - Allows for thin client booting, data transfer, and so on.

Figure 51 Core Server Details page - verifying services

The screenshot shows the WSM Core Server Details page. The page title is "SERVER DETAILS" and it includes a "Delete this Server" link. Below the title, there is a description of the server and a "Back to Servers" link. A "Manage server" button is also present. The main section, titled "SERVER DETAILS FOR WSM CORE", contains the following information:

- Name: WSM Core
- Type: Core Server
- Description: Core Server
- IP Address: 10.100.105.50
- Streaming Directory: E:\WSMStreamingDir
- Status: Up

At the bottom of this section are "Reset" and "Save Changes" buttons. Below the server details is a table of services:

Service Name	Port	Status (Start / Stop / All)	View Log
OS Authentication Service	6910	Up Stop	View Log
OS Streaming Service	6911	Up Stop	View Log
Application Authentication Service	8002	Up Stop	View Log
Application Streaming Service	8001	Up Stop	View Log
Monitor Service	5000	Up Stop	View Log
Content Distribution Service	20240	Up Stop	View Log
Multicast Boot Service	10703	Up Stop	View Log
DHCP Proxy Service	67	Up Stop	View Log

Uninstalling: How to Uninstall WSM Software

To uninstall WSM software, use the Windows *Add or Remove Programs* tool (follow the Windows procedures for removing a program).



Note

Some uninstallations may require a reboot.

A

Error Codes

This appendix includes errors that you may encounter in a displayed message or log file. For information and help on installation, setup, conflicts, and general troubleshooting, refer to "Troubleshooting."

Table 4 Error codes, symbolic representation, and error description

Code	Symbolic Representation	Error Description
2	OTERROR_AI_BAD_XML_FORMAT	Missing configuration data in the <code>basicConfig.jsp</code> file for the <code>AutoInstall</code> routine.
4	OTERROR_AI_SYSCHECK_REJECTED	Failed <code>AutoInstall</code> system check because of existing <code>MacID</code> .
10	OTERROR_AI_ENVTEST_BAD_OS	Unsupported Operating System version.
15	OTERROR_AI_ENVTEST_NO_APPSERV	Could not ping the Application server, probably because of an Application server outage or a firewall issue.
16	OTERROR_AI_ENVTEST_NO_SLIMSERV	Could not ping the Application Authentication Server, probably because of a Application Authentication Server outage or a firewall issue.
26	OTERROR_AI_TERMINAL_SESSION_DET	Client cannot be installed using Terminal Services.
3002 to 3008	OTERROR_EMS*	Network communication time-out.
3024 to 3030	OTERROR_EMS_PROXY*	Proxy issues with authentication or proxy gateway detection.

Table 4 Error codes, symbolic representation, and error description, Continued

Code	Symbolic Representation	Error Description
5006	OTERROR_SLIM_AT_ALREADY_HELD	User attempted to run more sessions of an application than allowed (for information on license management, refer to the <i>Administrators Guide: Wyse WSM™</i>).
5010	OTERROR_SLIM_USER_DISABLED	Disabled or deleted user attempted to run an application session.
7003	OTERROR_APS_BAD_PAGE_NUMBER	The page requested is not valid. Either the appset has been unloaded or published incorrectly.
8001	OTERROR_DB_CONNECT_FAILURE	Servers could not connect to the database. Be sure that the ODBC and JDBC configurations are correct and the database is up.
10021	OTERROR_MONITOR_TERMINATED	Monitor terminated.
100020	OTERROR_OUT_OF_MEMORY	AutoInstall component cannot download the configuration XML, usually because of an old AutoInstall version.

B

Booting WSM on PXE and Non-PXE Networks

This appendix discusses PXE and non-PXE boot-up processes and how to boot WSM clients on networks that do not support PXE or that have not been configured to support PXE or standard DHCP.

Comparing PXE and Non-PXE Boot-Up Processes

This section discusses WSM client boot-up process, boot-up requirements, and boot-up features in PXE and non-PXE networks.

PXE and Non-PXE Boot-Up Processes

This section compares the PXE and non-PXE boot-up processes. In each environment, the bootstrap file resides in a different location:

- **PXE environment:** The WSM PXE bootstrap file (*vldrmi13.bin*) resides on a network TFTP server that is accessible by the WSM client.
- **Non-PXE environment:** The WSM non-PXE bootstrap file (*secrmi13.bin*) resides on a hard disk, floppy disk, or USB key attached to the WSM client.

Table 5 displays the boot-up process in PXE and non-PXE environments.

Table 5 Boot-up process in PXE and non-PXE environments

	PXE Boot-Up	Non-PXE Boot-Up
1	The WSM client boots up with the LAN/PXE boot option enabled.	The WSM client boots up to the hard disk, floppy disk, or USB-key device.
2	In BIOS, the PXE client is executed.	BIOS loads and initiates the WSM non-PXE bootstrap file from the hard disk, floppy disk, or USB-key device.
3	The BIOS PXE client obtains network configurations and boot-server information from the DHCP server (for this to occur, the DHCP or proxy DHCP server must support PXE extended protocol).	The WSM non-PXE bootstrap file tries to obtain network configurations from the standard DHCP server. If DHCP fails, the user can enter network configurations manually. (These statically configured network settings are saved in permanent storage so that they can be used on subsequent boot-ups.)

Table 5 Boot-up process in PXE and non-PXE environments , Continued

	PXE Boot-Up	Non-PXE Boot-Up
3A	The BIOS PXE client downloads and executes the WSM PXE bootstrap file from the WSM server using TFTP.	
4	The WSM PXE bootstrap file communicates with the WSM Login server and starts the streaming process.	The WSM non-PXE bootstrap file communicates with the WSM login server and starts the streaming process.

PXE and Non-PXE Boot-Up Requirements

Table 6 displays the requirements for PXE and non-PXE boot-up.

Table 6 Requirements for PXE and non-PXE boot-up

	PXE Boot-Up	Non-PXE Boot-Up
WSM Client BIOS	Must support PXE v0.99 or later.	Must support PXE v2.0 or later. (PXE is not used, but the UNDI APIs within PXE support must be present for the non-PXE bootstrap file to communicate with the network. Some BIOS do not load UNDI support when the PXE Boot option is not used. A WSM non-PXE bootstrap will fail with a “No APIs” error when running on such BIOS.) If the non-PXE bootstrap file resides on a USB key, the BIOS must support booting to a USB key.
DHCP server	Must support PXE.	Support is optional. If not supported, the user can enter a static IP for the WSM client.
WSM bootstrap installation	The WSM bootstrap file must reside on a TFTP server that the WSM client can access over the network. This file location is established during the WSM server installation.	The WSM bootstrap file must be programmed into the WSM client hard disk, floppy disk, or USB key. This is a manual process. See “Non-PXE Bootstrap Deployment” for details.

PXE and Non-PXE Boot-Up Features

Table 7 displays the features in PXE and non-PXE boot-up.

Table 7 Features of PXE and non-PXE boot-up

	PXE Boot-Up	Non-PXE Boot-Up
Use DHCP	Yes	Yes (optional)
Use statically entered network configuration (IP, gateway, subnet mask, DNS servers, domain name)	No	Yes (if DHCP fails)
WSM login server IP	Hard-coded in the bootstrap file upon WSM installation	DNS lookup on hostname "WSMServer" or if DNS fails, manually entered
Dynamically obtain new WSM login servers list from existing login server	No	Yes
Save login servers list to permanent storage; use saved settings on subsequent boot-ups	No	Yes
G key reset (pressing the G key on boot-up restores the WSM bootstrap file to default settings)	N/A	Yes

Non-PXE Bootstrap Deployment

To boot a WSM client on a network that does not support PXE, the bootstrap file must reside on a local storage device attached to the WSM client, and the WSM client BIOS must be able to boot to the storage device where the non-PXE bootstrap file is installed. This section contains the deployment options and setup instructions for booting a WSM client from a non-PXE bootstrap file on a floppy disk, hard disk or flash drive, or USB key.

Wyse supports these non-PXE boot media and WSM client combinations:

- Wyse thin client, mobile client, or appliance: USB key, USB floppy disk.
- X86-based PCs: Hard disk, built-in and USB floppy disk.
- VMware virtual session: Floppy disk (in floppy disk image file format).

Launching Non-PXE from a Floppy Disk

The WSM non-PXE boot floppy image file can be downloaded from the Wyse Knowledge Base at: www.wyse.com/serviceandsupport/support/kbase.asp.

To configure a VMware virtual session floppy device:

1. Select the WSM non-PXE boot floppy image file.
2. Connect at power up.
3. Power up the virtual session when you have finished configuring the virtual session floppy device.

To configure Wyse thin clients and X86-based PCs:

1. Use any third-party tool (such as *diskimage*) to program a 1.44MB floppy disk from the WSM non-PXE boot floppy image file.
2. Configure the WSM Client BIOS to boot from the built-in or USB floppy disk.
3. Plug in the WSM non-PXE boot floppy and power up the WSM client.

Launching Non-PXE from a Hard Disk or Flash Drive

This section explains how to prepare a non-PXE hard disk or flash drive for WSM non-PXE bootstrap and how to boot from a non-PXE hard disk or flash drive.

Preparing the Hard Disk or Flash Drive

Use the WSM Bootstrap Utility to prepare a hard disk or flash drive so that you can use it for a WSM non-PXE bootstrap. This application is available in the Client Utilities package.

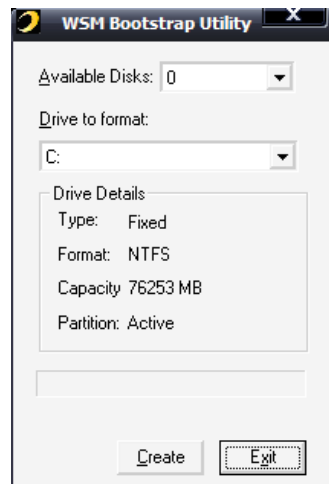


Note

You cannot create a bootstrap partition on a bootstrap partition previously created by the WSM Bootstrap Utility. Even if you specify the size of the partition to be the required 8MB, Windows in most cases rounds the size of the partition to less than 8MB, rendering the bootstrap invalid. To create a new bootstrap partition, either erase the old partition and allocate 8MB or more to it, or create a new partition larger than 8MB.

After you start the utility, the **WSM Bootstrap Utility** dialog box appears.

Figure 52 WSM Bootstrap Utility dialog box



To prepare a hard disk or flash drive for a WSM non-PXE bootstrap:

1. In the *Available Disks* list, select a drive connected to the system. Network drives and mapped drives are not listed.
2. In the *Drive to Format* list, select the drive you want to format as the drive for the WSM non-PXE bootstrap (if a hard disk has existing partitions, all available partitions will be listed in the *Drive to Format* list). After selecting a drive, review the *Drive Details* area to make sure the drive is sufficient for the WSM non-PXE bootstrap:
 - **Type:** Lists the type of drive. Hard disks and flash drives are *fixed*.
 - **Format:** Lists the format that the drive supports—FAT, FAT32, or NTFS.
 - **Capacity:** Lists the storage capacity of the drive. The minimum capacity requirement for a non-PXE boot partition is 8MB.
 - **Partition:** Indicates whether the partition you selected is an active partition.

3. Click **Create** to begin creating a non-PXE bootstrap partition on the drive you selected. The WSM Bootstrap Utility:
 - Changes the drive's partition information to show 8MB only.

**Note**

Even if the drive being partitioned is more than 8MB in size, if you select it as the WSM non-PXE bootstrap drive, its size is reduced to 8MB and the remaining capacity is wasted. However, you can reuse the wasted space by creating another drive using the Windows Disk Management Console.

- Formats the drive with the FAT12 format, makes it Active (bootable), and installs the WSM non-PXE bootstrap.

**Warning**

The partition will be re-partitioned and reformatted. Any existing files on the partition will be erased.

**Note**

In the case of a raw disk with no existing partitions, clicking **Create** begins creating a non-PXE bootstrap partition on the raw disk. The utility creates an 8MB partition in FAT12 format, makes it bootable, and installs the non-PXE bootstrap file.

Booting from a Non-PXE Hard Disk or Flash Drive

To boot from a non-PXE hard disk or flash drive:

1. Make sure your WSM client BIOS is configured to boot from the local hard disk.
2. Start the WSM client.

Launching Non-PXE from a USB Key

To prepare a USB key as the WSM non-PXE bootstrap partition, the USB flash key must be pre-formatted to a bootable hard drive in the FAT16 or FAT32 format. You can format drives for FAT16 or FAT32 with any third-party tool that creates bootable USB keys.

**Note**

The Wyse® USB Firmware Tool™ provides a simple USB imaging solution to help you quickly and easily image supported devices. For information on using the Wyse USB Firmware Tool, refer to the *Users Guide: Wyse USB Firmware Tool™*.

Preparing the USB Key

To prepare the non-PXE USB key:

1. Use a third-party tool to format a USB key to a bootable hard drive in FAT16 or FAT32 format (note that floppy drive partitions are not acceptable).
2. With the USB key plugged in, launch the WSM Bootstrap Utility.
3. Select the drive letter to which the USB key is mounted and click **Create**. The WSM Bootstrap Utility installs a WSM non-PXE bootstrap file on the USB key. The drive is *not* re-formatted; any existing files on the drive are preserved.

Booting from a Non-PXE USB Key

To boot to the WSM client:

1. Configure the WSM client BIOS to boot to the USB key (For specific models and product instructions, refer to the *Users Guide: Wyse USB Firmware Tool™*).
2. Start the WSM client.

Entering Network Configuration Information for Non-PXE Boot-Up

In a network that does not have a DHCP server, the WSM non-PXE bootstrap file cannot obtain the network configuration information from a standard DHCP server. To provide this information, the user must enter a valid IP address for the client computer, and optionally, the Gateway IP, subnet mask, and DNS IP on the initial screen (you can press **Esc** to bypass a specific input request if you do not know the information being requested). Finally, the user must enter at least one WSM Authentication Server IP address so that the client computer can boot up through the WSM server.



Note

Network configuration information is saved in permanent storage so that it can be used on subsequent boot-up. To erase previously entered network configurations, press the **G** key on client boot. Users will then be presented with a *G*-key menu with one of the options displayed as “<option number>: Clear previously saved network configurations and Login Server lists?”. Enter <option number> and confirm the operation by typing **yes** when prompted.

C

Installing Your Own SQL Server

This appendix provides instructions for installing the supported SQL Servers.

In special cases of a large production environment, it is recommended that you install the Database Server on a server machine that is separate from the WSM servers. WSM supports three databases: SQL Server 2005 Express, SQL Server 2005 SP1 or later, and SQL Server 2008. Make sure that your network is configured to allow all servers to communicate with your database on the configured SQL port. All servers will authenticate with the database using configured credentials.



Caution

You should refer to the documentation provided by the database vendor for complete installation instructions, performance enhancements, and setup.



Note

IMPORTANT: In most cases, you can install an SQL Server on the same machine as the WSM servers for a single-server installation. To do so, it is *highly recommended* that you use the *WSM Prerequisites InstallShield Wizard* as described in "Installing Microsoft SQL Server Using the WSM Prerequisites File."

Installing SQL Server 2005 Express, SQL Server 2005 SP1 or Later, or SQL Server 2008

Use the following guidelines:

1. Start SQL Server installation.
2. Select the **Server Components, Tools, Books Online, and Samples** option.
3. Click **Next** to accept the licensing terms and conditions.
4. Click **Install** to install software components required prior to installing SQL Server.
5. Click **Next** when the component installation is complete (it may take several minutes for the components to be installed and configured).
6. After a system configuration check is complete and the **Microsoft SQL Server Installation** dialog appears, click **Next** to open the **Registration Information** dialog box.
7. Clear the **Hide Advanced Configuration Options** check box.
8. After the next system configuration check is complete, click **Next**.
9. Enter your name and company name, and then click **Next**.
10. Select the components **SQL Server Database Services** (be sure that the sub item *Replication* is selected by clicking **Advanced** to view the sub items and selecting **Replication**), select the **Workstation Client** components, and then click **Next**.

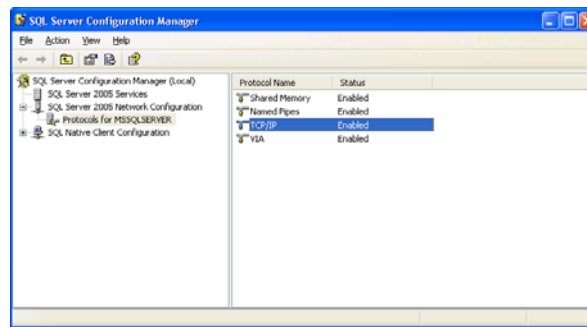
11. Select **Default instance** (*don't* specify a named instance), and then click **Next**.
12. Select **Use the Local System Account**, and then click **Next**.
13. Select **Mixed Mode** as your Authentication mode, and then click **Next**.

 **Note**

Verify that the database is configured to run in *Mixed Mode* for authentication. WSM uses both ODBC and JDBC to communicate with the database using SQL authentication. If *Mixed Mode* is not selected, the servers cannot communicate with the database. This setting is located under the *Security* tab of the database properties labelled *SQL Server and Windows NT*.

14. Select the **SQL Collations** option, select **Dictionary Order, Case-Insensitive, for Use with 1252 Character Set**, and then click **Next**.
15. Clear both of the error usage and reporting boxes, and then click **Next**.
16. Click **Install** to start the installation (the installation may take several minutes).
17. After all components have been installed and configured, click **Next**.
18. Review the installation summary and click **Finish**.
19. After installation is complete, be sure to enable the *Named Pipes* and *TCP/IP* protocols for SQL Server by opening the *SQL Server Configuration Manager* and enabling the protocols (for each, right-click and select **Enable**).

Figure 53 SQL Server Configuration Manager



 **Note**

If you plan to install the database on a separate server, install *SQL Server Client Tools* on the same machine that will host the WSM Server software.

Installing the Latest Microsoft SQL Server Service Pack

It is highly recommended that you download and install the latest service pack for the SQL Server version that you are using. For complete information on SQL service packs, refer to the Microsoft Web site.

 **Note**

If you are given the option to modify the *Authentication Mode* during service pack installation, be sure to select **Mixed Mode** to allow the WSM Core Server software to access the database.

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